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ELEMENTS OF LIFE, COLOURS OF ASIA

THE WATER EDITION

ASIAN Geographic™

NO. 140 ISSUE 1/2020

ASIA'S BLUE BODIES

Water People

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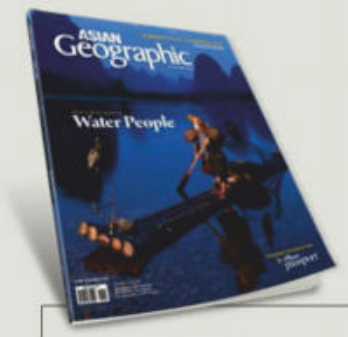
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ON THE COVER
Fisherman and bird, China

PHOTO: KYAW BO BO HAN,
FINALIST FOR IMAGES OF ASIA 2018

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PHOTO: DONELL GUMIRAN, FINALIST OF IMAGES OF ASIA 2018



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Varanasi is a city of contrasts. Death and life, asceticism and hedonism, learning and ignorance – all exist side by side here.

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Volcanoes are typically associated with the colours black for cold lava and white for steam rising from craters. But some volcanic places have an abundance of rainbow colours.

BY CARL-BERND KAEHLIG

TOP LEFT
Portrait of a lady in Varanasi, Uttar Pradesh, India

TOP RIGHT
Dead trees on Mount Papandayan, West Java, Indonesia

Asian Geographic passport
NO.139 ISSUE 6 (2019/2020)

ERRATUM

We'd like to apologise for the error in the map of India in Issue 139.



{ EDITOR'S NOTE }



"You can't cross the sea merely by standing and staring at the water."

— Rabindranath Tagore

◆ ◆ ◆

My father was a chief engineer for over a third of his life, and spent months at a time on voyages around the world. He and my mother moved from Rajasthan to Mumbai, and eventually to Singapore in the nineties, and I always guessed it was because my father had a vision so far and wide he could never establish a home in one place. While he has stopped sailing, he still works closely with the waters, whether it is regarding ship consultancy, ocean governance, or maritime environmental concerns, and home to him is vast – like the tides he revels in.

The ocean does this to us. I've never been out at sea, but the deep blue has always held some sort of fascination for me: How people have been traversing it for centuries, its significance in cultures and traditions, and all that lurks beneath. From birth to the journey of life, and even in death, water is a vital element in all lives, whether it is through consumption, livelihood, or part of an ingrained ritual.

Let us bring you through this journey, as we swim through Chinese and Hindu philosophies, the oceans and river systems, and other blue-themed surprises. I promise that this issue will grab your attention and bring to light the immense beauty of this elixir of life. Sit back, and let the tides take you in.



Shreya Acharya

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Wu Xing: The Five Corners of a Circle

Wu xing **– directly translating to "five elements" – is an ancient Chinese philosophy that encompasses five phases of the universe's ongoing existence and development. The five components are Wood (*mu*), Fire (*huo*), Earth (*tu*), Metal (*jin*), and Water (*shui*). Seen as transitional material forces that flow successively, these elements are an inherent part of Chinese principles, beliefs, and culture.**



The five phases that the elements represent are around 72 days each and are used to describe a colour, as well as state, in Nature.

- **Water/Blue/Winter:** a period of retreat, where stillness and storage pervades
- **Wood/Green/Spring:** a period of growth, which generates abundant wood and vitality
- **Fire/Red/Summer:** a period of swelling, flowering, brimming with fire and energy
- **Earth/Brown/Transitional season:** the in-between transitional seasonal periods, associated with levelling, dampening (equalling to moderation), and fruition
- **Metal/Silver/Autumn:** a period of harvesting and collecting

The concept of *wu xing* is central in Chinese thought, including the fields of science, philosophy, medicine, astrology, and *feng shui*. The principle of the five phases describes a creation cycle and a destruction cycle in any sort of interaction between the phases.

Creation cycle:
- Water nourishes Wood
- Wood feeds Fire
- Fire creates Earth (as ash)
- Earth holds Metal
- Metal collects Water

Destruction cycle:
- Wood parts Earth (roots or trees can prevent soil erosion)
- Earth dams (or muddies or absorbs) Water
- Water extinguishes Fire
- Fire melts Metal
- Metal chops Wood



While *wu xing* is thought of as having its roots going back to the first records of Chinese intellectual history, it was not yet in a comprehensive form. However, the evidence gathered from these eras – such as oracle bone inscriptions used in divination rituals to predict and discern outcomes in Nature and human affairs from the Shang dynasty – show that the *wu xing* theory was already forming, albeit in a rough pattern. Associations of territories with directions, colours, spirits, and rituals in and after this era also suggest the later correlational developments in *wu xing*.



LEFT
Oracle bone inscriptions

While there is more evidence of the development of *wu xing* after the Shang dynasty, it was during the Han dynasty that one of the most fundamental texts containing material on *wu xing* theory stemmed from. An example is from the *Huainanzi* (*The Masters of Huainan*) from 139 BCE: "The natural qualities of Heaven and Earth do not exceed five. The sage is able to use *wu xing* correctly in order to govern without waste." The *Huainanzi* was the first to standardise the number five as a philosophy, and it also drew correlations between *wu xing* in cosmology and morality, even extending to the medical implications of the system. As such, sages were the ones who knew what to do with *wu xing*, and were able to rule the country, heal patients, and manage the transformations of life and longevity. Han thinkers also used the system to account for an ordered sequence or cycle of change.

In Chinese history and retrospectively, the successive dynasties were linked to each of the five phases. The Xia dynasty (2200–1750 BCE) was Wood, the Shang dynasty (1750–1040 BCE) was Metal, the Zhou dynasty (1100–256 BCE) was Fire and the colour red, and the founder of the Qin dynasty (221 BC to 206 AD) chose black and water as his symbols.

Wu xing today as a developed thought has been incorporated into Chinese lives, whether it is the way space is arranged (*feng shui*) to medicine, or to one's date of birth. Having become a distinct philosophical tradition during the Han dynasty, *wu xing* gradually developed into a conceptual device that is used to explain not only cosmology, morality, and medicine, but virtually every aspect of Chinese life and Chinese thinking.

FLOWING THROUGH LIFE:

The Water Element

Water is an inherent part of our lives. It covers about 71 percent of Earth's surface and makes up almost 60 percent of our bodies. In Chinese philosophy, water represents this vital element in all its forms: as the elixir of life, in the vast oceans and its rapid waves, and the rivers that run through the world – like veins that transmit life into cities, homes, and hearts.



Text **Shreya Acharya**

Bruce Lee famously said, "You must be shapeless, formless, like water. When you pour water in a cup, it becomes the cup. When you pour water in a bottle, it becomes the bottle. When you pour water in a teapot, it becomes the teapot. Water can drip and it can crash. Become like water, my friend."

Water is one of the five elements in the Chinese philosophy of *wu xing*. This theory first appeared in the studies of Taoism, during the spring and autumn period sometime between 770–476 BC. It rapidly expanded with its use in Chinese medicine, philosophy, *fengshui*, fortune-telling, and martial arts – and is still prevalent to date.

The five elements – wood, fire, earth, metal, and water – are generated by the interaction between *yin* and *yang*. Not so much the actual physical forms of wood, fire, earth, metal, and water, each element can be better understood as an expression of its qualities, and as components of life and matter. Wood and fire pertain to *yang*, while metal and water relate to *yin*, and earth represents the perfect harmony between *yin* and *yang*. Conceptually, we can understand the Five Elements as energetic forces created by interactions between *yin* and *yang*.

The interactions of the five astrological elements are circular. In the nurturing cycle, water breeds wood, wood grows fire, fire turns into earth (ash), earth yields metal, metal turns into water, and the cycle begins again. In the controlling cycle, water puts out fire, fire controls metal, metal cuts wood, wood extracts nutrients from earth, and earth absorbs water, and the cycle begins again.

According to Taoist belief, the water element manifests in the evening and at nighttime, as well as in the north and in winter. Picture the sea from the shore: Water is the energy that has boundless potential, even though it may appear to be calm on the outside. The water element also promotes conservation – literally and metaphorically.

The 6th century BC was a time of philosophical growth for ancient China. It was during this time that the two most influential spiritual leaders native to China, Confucius and Lao-tzu, are thought to have lived and taught. The philosophies that they practised, Taoism and Confucianism, existed simultaneously and have attracted a large following over the past 2,000 years.

To "regard Human and Nature as a whole" is a Confucian ideology that was first mentioned in the Han Dynasty, about 2,000 years ago. It meant to convey that human beings consist of just one part in the system of Nature, and hence we, as a species, should not try to control and alter the system. The fundamental concept of Chinese traditional culture is the concept of circulation: Everything in Nature is supposed to move circularly to maintain a level of stability and harmony.

While Confucianism is distinguished by its concern for the cultivation of human relations towards a harmonious society rather than one's relations with the supernatural or natural, it is wrong to regard the civilisational legacy of Confucius to be purely humanistic. Confucianism is a philosophy that also contains profound environmental ethics through its inclusiveness of Heaven, Earth, and the Human order. Relations between people and the natural world are therefore of intrinsic interest to those who profess Confucian ethics. ♦ AG



The Water Element Across Cultures

Japanese beliefs

Japanese traditions use a set of elements called the *godai*, which translates to "five great". These elements are earth, water, fire, wind/air, and void. The elements are derived from Indian *Vastu shastra* philosophy and Buddhist beliefs; in addition, the classical Chinese elements (*wu xing*) are also prominent in Japanese culture, especially to the influential Neo-Confucianists during the Edo period.

Sui or *mizu*, meaning water, represents fluidity, flowing, and the formless things in the world. Outside of rivers and lakes, plants are also categorised under *sui*, as they adapt to their environment, growing and changing according to the direction of the sun and the changing seasons. Blood and other bodily fluids are represented by *sui*, as are mental or emotional tendencies towards adaptation and change.

Represented by a circle, *sui* is ready to move at the slightest movement – a ball ready to roll or bounce. *Sui* flows, representing the formless things of the world, including emotions: ever-changing, ebbing and flowing like tides.

Hinduism

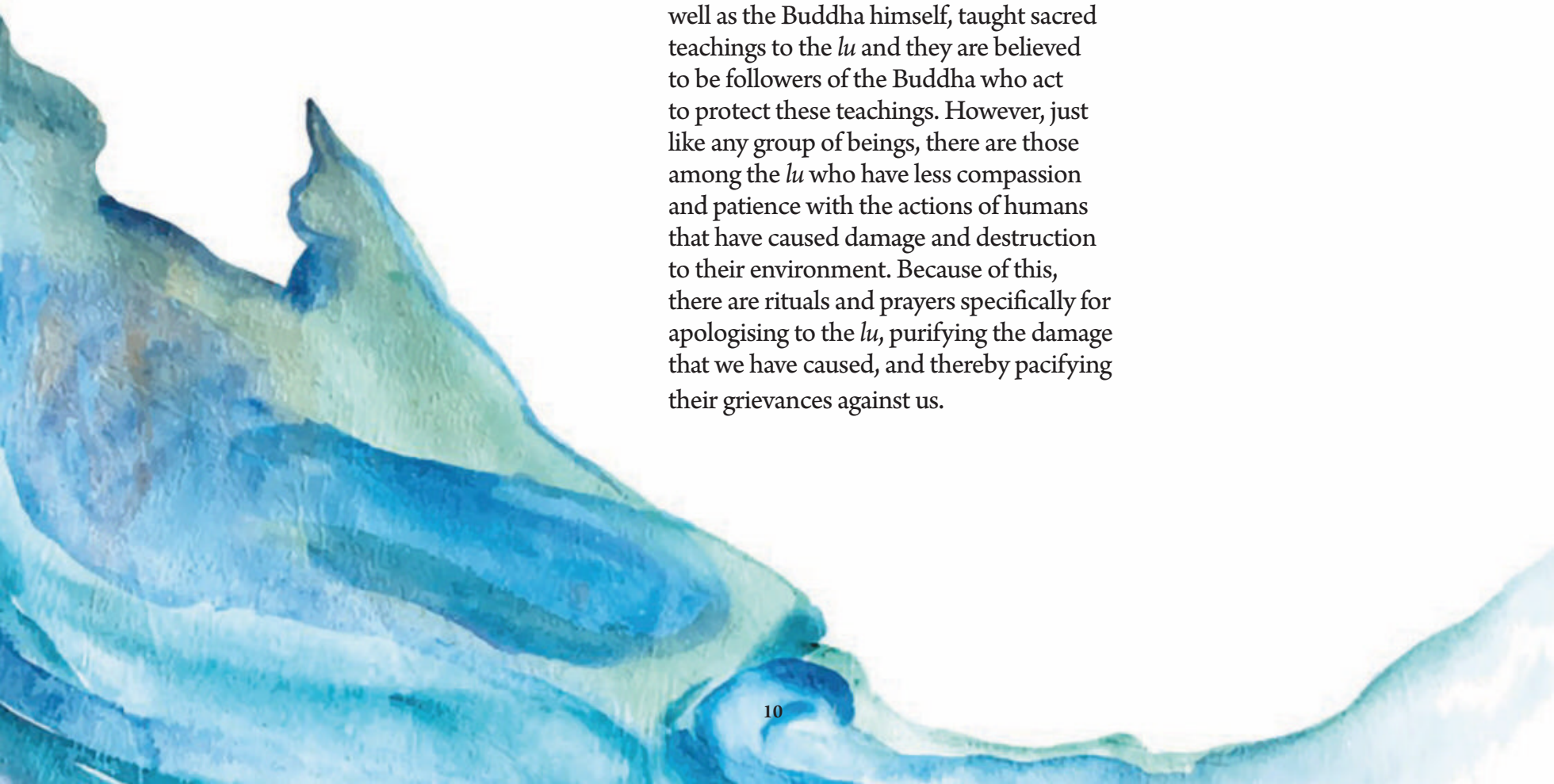
The system of five elements are found in the *Vedas* and known as *pancha mahabhuta*, translating to "five great elements". These elements are *bhūmi* (earth), *ap* or *jala* (water), *tejas* or *agni* (fire), *marut*, *vayu* or *pavan* (air or wind) and *vyom* or *shunya* (space or zero) or *akash* (ether or void). The combination of these five elements make up our body, and upon death, each part will dissolve into its respective element.

In Hinduism, the second most important element is "water", or *jala* in Sanskrit. This element has no odour but can be heard, felt, seen and tasted. In the human body, blood and other fluids also represent the element. *Ap* is also the name of the *deva*, "Varuna", a personification of water, one of the Vasus in most later Puranic lists.

Tibetan philosophy

The element of water is referred to as *chu*. It is symbolised by the shape of a circle, the colour blue and the sound "mang", derived from the unique vibration of this element. In the Yungdrung Bön tradition, it is believed that one of the spirit types that live in water are called *lu*, or *naga*. *Lu* also live in trees and rocks, but are primarily associated with water.

In ancient times, accomplished lamas, as well as the Buddha himself, taught sacred teachings to the *lu* and they are believed to be followers of the Buddha who act to protect these teachings. However, just like any group of beings, there are those among the *lu* who have less compassion and patience with the actions of humans that have caused damage and destruction to their environment. Because of this, there are rituals and prayers specifically for apologising to the *lu*, purifying the damage that we have caused, and thereby pacifying their grievances against us.



Zoroastrianism

Persian philosopher Zarathustra (600–583 BC) described the four elements of earth, water, air and fire as "sacred". As such, in Zoroastrianism, water (*aban*) and fire (*atar*) are agents of ritual purity, and the associated purification ceremonies are considered the basis of ritual life. The ancient Iranians respected water as the source of life that nourished plants, animals and men. In their cosmology, water was the second of the seven "creations" into which the world was divided. Water filled the lower half of the spherical "sky", all of it thus lying beneath the Earth. There was a great sea, Vourukaša, or "the gathering place of the waters". This was fed by mythical rivers and the Pūtika sea, from which the water of Vourukaša came. In the centre of Vourukaša rose a mountain, and around its summit gathered vapours that were scattered as rain clouds. Hence, all the water that flowed in or descended on the Earth came from Vourukaša, and the smallest spring or dewdrop could be regarded as representing the whole creation of water. Since the creation was essential to their life, the ancient Iranians evidently made offerings to it, to keep it pure and vivifying.

The use of water in libations has continued in Zoroastrianism until today. It is poured on the ground before a sacrifice or at the beginning of certain acts of worship. Because of its sacredness, it should never be drawn from a well or stream in the dark. Apart from the *āb-zōhr*, made directly to water itself, other sacrifices (including the blood sacrifice) were offered to divinities connected with water, namely, Ābān, Apąm Napāt, and Arədvī Sūrā.

Water as a Character

Going back to the role of water in Chinese philosophy, the element signifies more than its physical form. Water symbolises humility, in the way that flowing water always stays rooted to the earth, not seeking attention or recognition despite being the giving force that keeps us – and all other life forms – alive. It represents harmony, not battling anything that comes before it, but flowing around it instead. Water also portrays openness, for it is adaptable to change – evident in its evolution based on temperature, allowing itself to be a solid, a liquid, or gaseous.

As all life has its origins in the sea from the beginning of time, our lives, too, begin with the water element. From our limitless potential that starts in the wombs of our mothers', we emerge into the world, subsequently ending our water phase as the wood phase begins, successively followed by the fire, Earth and Metal phases. Finally, our lives end in the water phase, as we die and re-emerge as a form of energy.

Too Much of a Good Thing

The deep blue can spark some sort of fear – whether of the deep, of the unknown, or of any inner turmoil – and this is not a coincidence. The emotion associated with the water element is fear. As such, when a person's water element is unbalanced, unreasonable fear could take the balance in the body out of proportions.

After all, water is about clarity, flow, fluidity, emotions, and adaptation. Too strong and it feels like a threat – a wave or current that will carry you away. Too weak, and there is no sense of connection or flow – things are frozen. Water may be evasive and difficult to pin down, but it is also clear and transparent.

THE WATER ELEMENT IN A NUTSHELL:

Time of year



Winter

Energy



Floating

Attitude



Objective, artistic, original, flexible

Organ



Kidney and bladder

Taste



Salty

Colour



Blue, black, dark blue

Natural form



Water bodies such as lakes, oceans and rivers; rain, snow, cloud, fog



What Makes a Water Baby

If you're in a café or a lounge, chances are that water babies are all around you. Water babies love hanging out with friends and chatting – the deeper the conversation, the better. They are creative writers, musicians, and philosophers, aptly labelled as they enjoy delving into the depths of life.

Water babies are the ones at art galleries observing a painting for hours, and the ones that enjoy slow walks and stopping to smell the flowers. Water babies take their time; they don't rush as they take in everything around them.

Water babies like convenience and expect to be served. Doing things themselves and following through with ideas is not their strong suit. Their ideas are unique and inspiring, but putting those ideas into action proves a challenge.

Life can looked warped to the water babies that dive too deep into their thoughts. They may feel isolated. Imagine diving into a swimming pool, then opening your eyes underwater to look up – you can see above and below the surface, but things look distorted. This is how life can look to a water baby, where everything can become exaggerated and a different reality may be perceived.

The 12 Zodiacs



Water Rat

Feb 15 1972–Feb 2 1973
Feb 11 2032–Jan 30 2033

Characteristics:
Shrewd, strategic



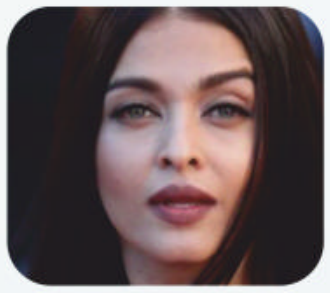
South Korea
Yoo Jae-Suk (1972)
Comedian, Host and Television Personality



Water Ox

Feb 3 1973–Jan 2 1974
Jan 31 2033–Feb 18 2034

Characteristics:
Realist, practical, observational, tenacious, ambitious



India
Aishwarya Rai Bachchan (1973)
Actress, Model



Water Tiger

Feb 5 1962–Jan 24 1963
Feb 1 2022–Jan 21 2023

Characteristics:
Keen to learn, strong sense of self-esteem



USA
Tom Cruise (1962)
Actor, Producer



Water Rabbit

Jan 25 1963–Feb 12 1964
Jan 22 2023–Feb 9 2024

Characteristics:
Gentle, amicable, able to adjust readily to different conditions, easily influenced



China
Donnie Yen (1963)
Actor, Martial Artist, Director

PICTURES: SHUTTERSTOCK AND WIKIMEDIA COMMONS



Water Dragon

Jan 27 1952–Feb 13 1953
Jan 23 2012–Feb 9 2013

Characteristics:
Farsighted, persistent, resilient, perfectionist



Russia
Vladimir Putin (1952)
President of Russia



Water Snake

Feb 14 1953–Feb 2 1954
Feb 10 2013–Jan 30 2014

Characteristics:
Clever, creative, lively, sentimental



China
Xi Jinping (1953)
Seven President of the People's Republic of China



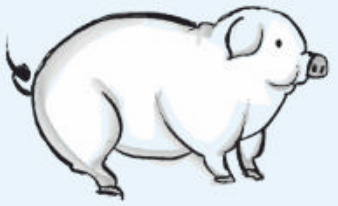
Water Dog

Jan 25 1982–Feb 12 1983

Characteristics:
Thoughtful, brave, organised



India
Priyanka Chopra (1982)
Actress, Singer, Model



Water Pig

Feb 13 1983–Feb 1 1984

Characteristics:
Earnest, subjective, individualistic



North Korea
Kim Jong-Un (1983)
Supreme Leader of North Korea



Water Horse

Feb 15 1942–Feb 4 1943
Feb 12 2002–Jan 31 2002

Characteristics:
Amicable, charming, easy-going, helpful, affectionate



North Korea
Kim Jong-Il (1942)
Second Leader of North Korea



Water Rooster

Jan 26 1933–Feb 13 1934
Jan 23 1993–Feb 9 1994

Characteristics:
Smart, quick-witted, able to find solutions quickly to difficulties



USA
Serena Williams (1981)
Professional Tennis Player



Water Goat

Feb 5 1943–Jan 24 1944
Feb 1 2003–Jan 21 2004

Characteristics:
Farsighted, persistent, resilient, perfectionist



Japan
Akinori Nakayama (1943)
Japanese Olympic Athlete



Water Monkey

Feb 4 1992–Jan 22 1993

Characteristics:
Smart, quick-witted, fond of being in the limelight



Brazil
Ronaldinho Gaúcho (1980)
Brazilian former Professional Footballer and Ambassador for Barcelona



Delving into the Deep

EXPLORING THE WATER BODIES OF ASIA

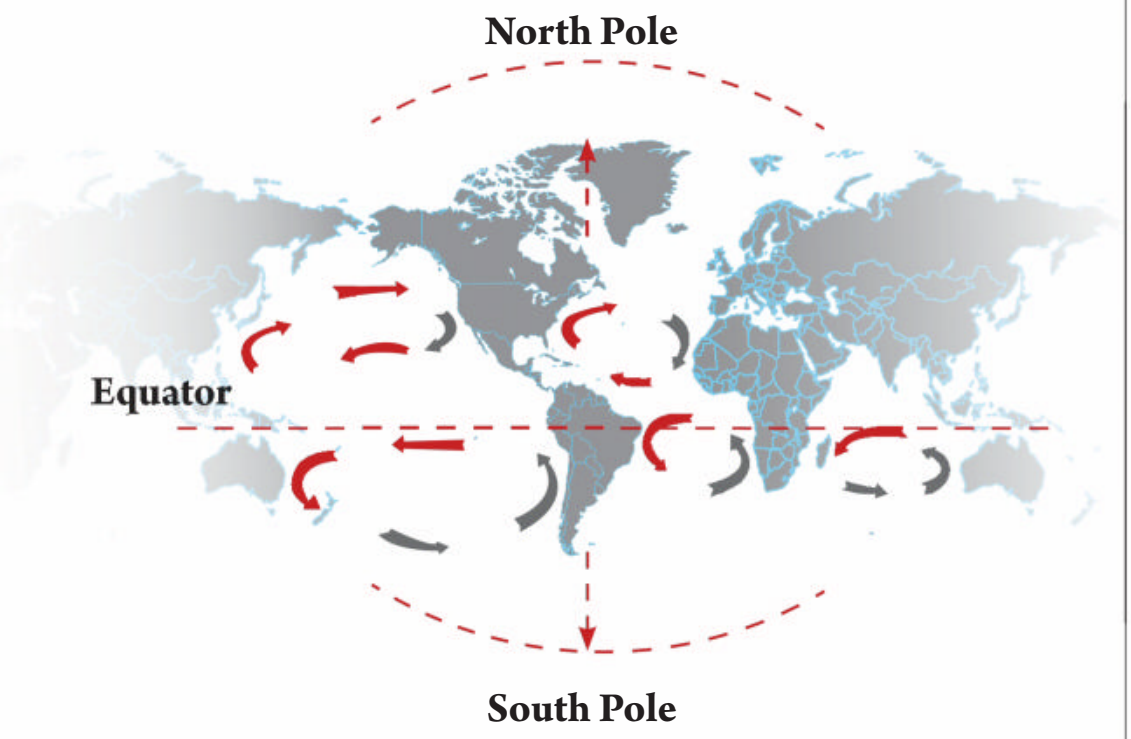
Asia is caught between two huge oceans, the Indian Ocean to the west and the Pacific to the east. In between these water bodies is a complex geography of land and water that has given rise to some of the most fascinating and species-rich seas – and subsequently rivers – in and around the continent. Dive in and explore the vast water bodies of the continent as we take you not only through Asia's oceans, rivers, and island nations, but also their significance in the different cultures and religions around the region.

Oceans | Seas | Rivers | Island Nations | Water People


LEGEND
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RIVER
MONGOLIA
NORTH KOREA
SEA OF JAPAN
SOUTH KOREA
JAPAN
CHINA
EAST CHINA SEA
PACIFIC OCEAN
TAIWAN
MYANMAR
SOUTH CHINA SEA
PHILIPPINE SEA
THAILAND
PHILIPPINES
VIETNAM
ANDAMAN SEA
MALAYSIA
CELEBES SEA
BISMARCK SEA
SOLOMON SEA
JAVA SEA
INDONESIA
FLORES SEA
BANDA SEA
TIMOR SEA
ARAFURA SEA

Oceans, Seas, Rivers – What's the Difference?

Oceans, seas and rivers are the Earth's prized assets, influencing the survival of flora and fauna, as well as sustaining organisms and all living creatures alike. The first civilisations were shaped by the presence of these resources, and these bodies of water have also been key factors in the progress of trade and geographic exploration.



Warm Currents
Transport warm water away from the equator, toward the poles

Cold Currents
Transport cold water toward the equator, away from the poles

What Is an Ocean*?*

An ocean is a huge saltwater body surrounding the continent that covers two-thirds or **71 percent of the Earth's surface.** It is home to vast aquatic animal species and organisms, as well as coral reefs.

Earth's smallest ocean is the Arctic Ocean and the deepest is the Pacific Ocean. Various water movements distinguish the Antarctic (or Southern) Ocean from the Atlantic, Pacific, and Indian Oceans.

The temperatures of the oceans are different in the various parts of the world. For example, icebergs are formed by very cold waters near the poles, while waters around the equator are relatively warm.

LARGEST
bodies of **saltwater**

The Global Ocean is divided into
5 OCEANS
– the Pacific, Atlantic, Indian, Southern, and Arctic Oceans.

The average depth of the oceans is
3,700m
Less than
5%
of the oceans has been explored

Forms approximately
71%
of Earth's surface and
90%
of the Earth's biosphere

The ocean contains
97%
of Earth's water

There are various hypotheses for the origins of water on Earth. One widely held view is that the atmosphere and the oceans accumulated gradually over millennia with the "degassing" of the interior of the Earth: Water vapour escaping from the molten rocks of the early Earth condensed into rain and filled the basins that are our oceans. Another theory suggests that the oceans could not form out of the protoplanetary disk because it was much too hot for water to condense. Instead, water was delivered to Earth by impacts from icy planetesimals originating at a distance from the Sun where ice could form.

What Is a ***Sea****?*

Although there are no major differences between a sea and an ocean, **a sea is an extension of the ocean** partly or wholly covering surrounding the land, and is therefore **significantly smaller than an ocean.**

The word "Sea" is also used to denote smaller, partly landlocked sections of the ocean and certain large, entirely landlocked, saltwater lakes, such as the Caspian Sea, the North Sea, the Red Sea, and the Dead Sea. These water bodies contain minerals like salts of magnesium, calcium, and potassium, amongst many other elements – some in minute concentrations.

HUGE
body of **saltwater**



Seas are smaller than oceans and are usually located **where the land and ocean meet.** Typically, seas are partially enclosed by land.

The term "seven seas" has been used to describe the world's great water bodies for a long time. But there are actually about **50 water formations that can be called a "sea,"** and they are quite diverse when it comes to their size, location, and ecosystems.

The three main reasons warming causes global **sea level to rise** are: oceans expand, ice sheets lose ice faster than it forms from snowfall, and glaciers at higher altitudes also melt.



There are about
50 SEAS



What Is a ***River****?*

A river is a large, flowing water body that merges into a sea or an ocean.
The tributaries of a river are known as streams, creeks and brooks. Rivers are part of the hydrological cycle. The water in rivers comes from precipitation through a drainage basin, surface runoff, and other sources such as groundwater recharge, springs, and the release of stored water in natural ice and snowpack.

THIN and
LONG body
of **freshwater**



A **river is a natural flowing watercourse,** usually freshwater, flowing towards an ocean, sea, lake or another river. In some cases a river flows into the ground and becomes dry at the end of its course without reaching another body of water.

More than half a percent of Earth's nonglaciated land surface – about 773,000 km^2 – **is covered with rivers and streams**



Rivers could be a possible impact point due to **rising sea levels**



There are about
165 major
RIVERS



Here is an outline of the widely accepted theory of how seas and oceans were formed billions of years ago:

1 Water vapour escaped from the Earth's molten rocks.



2 The surface of the Earth began to cool.



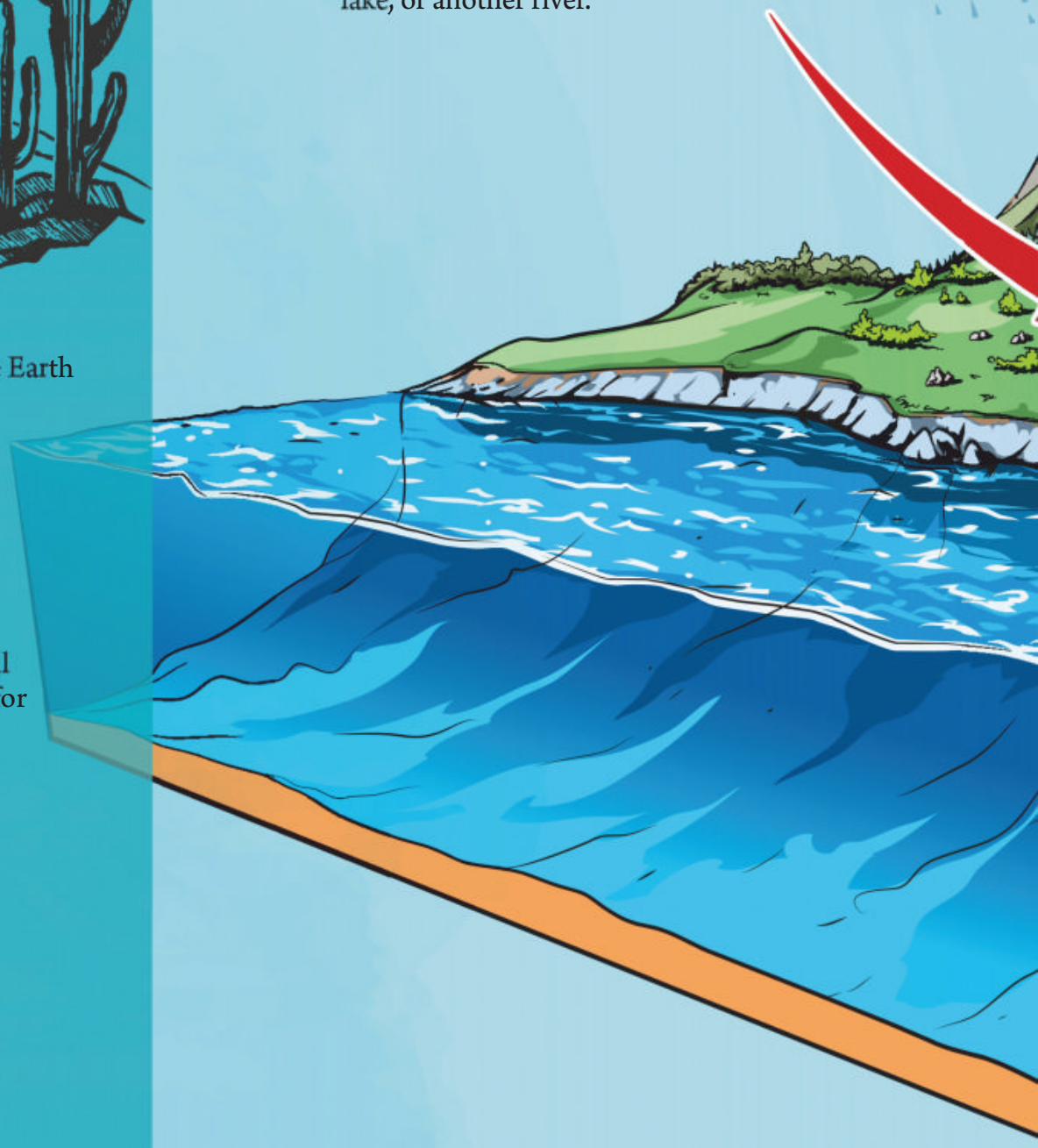
3 Rain started to fall and it continued for millions of years.

4 Large hollows in the Earth's crust contained large bodies of water.

5 With the force of gravity, the primeval waters remain bound to the planet.

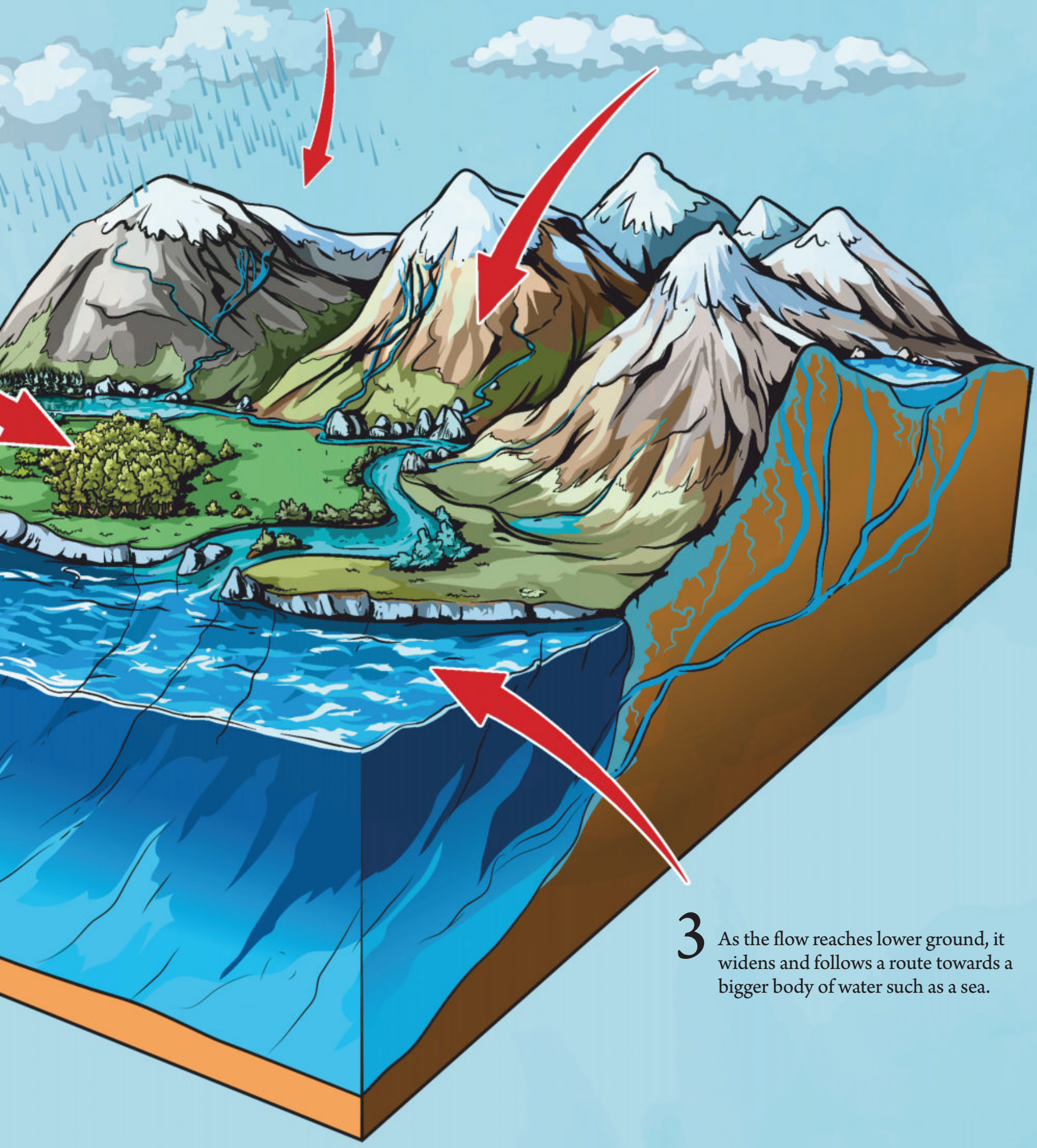
Here is an outline of how rivers are generally formed:

A river is a naturally flowing body of water which runs across lands and comes from higher areas. This fresh water leads to a sea, lake, or another river.



1 Water from melting ice or rain runs down a slope. The running water follows cracks in the land.

2 Different small streams meet. The uniting streams become larger and larger until the flow develops into a river.



3 As the flow reaches lower ground, it widens and follows a route towards a bigger body of water such as a sea.

Oceans

Asia has both the highest and the lowest points on the surface of the Earth, has the longest coastline of any continent, is subject to the world's widest climatic extremes, and, consequently, produces the most varied forms of vegetation and animal life on Earth. In addition, the peoples of Asia have established the broadest variety of human adaptation found on any of the continents.

PACIFIC OCEAN

ATLANTIC OCEAN

INDIAN OCEAN

SOUTHERN OCEAN

ARCTIC OCEAN



AREA (MILLION KM^2)	VOLUME (MILLION KM^3)	AVERAGE DEPTH (M)	COASTLINE (KM)
168.7	669.9	3,970	135,663
85.1	310.4	3,646	111,866
70.6	264.0	3,741	66,526
22.0	71.8	3,270	17,968
15.6	18.8	1,205	45,389

Arctic Ocean

The Arctic Ocean is the fifth largest, and covers an area of 15.6 million square kilometres. The ocean has an average depth of 1,205 metres and a total volume of 18.8 million cubic kilometres, which is 1.4 percent of the Earth's waters. Despite being the world's shallowest and smallest ocean, it is the second biggest drainage basin, after the Atlantic Ocean basin. The ocean's coastline has a length of approximately 45,389 kilometres.

Oceans of the World

Atlantic Ocean

The Atlantic Ocean covers an area of 85.1 million square kilometres, making it the second-largest ocean in the world. The ocean's area is about 23.5 percent of the Earth's total surface area. The Atlantic is divided into two parts, the North and South Atlantic Ocean, which are separated by the equator. The ocean has an average depth of 3,646 metres and has a volume of 310.4 million cubic kilometres, which is about 23.3 percent of the Earth's total water.

The Atlantic Ocean is connected to Antarctica to the south, the Pacific Ocean in the southwest, the Arctic Ocean in the north, and the Indian Ocean to the southeast, and its coastline has a total length of 111,866 kilometres.



ARCTIC



NORTH AMERCIA



ATLANTIC OCEAN

Southern Ocean

The Southern Ocean, also referred to as the Antarctic Ocean, is the fourth largest, with an area of 22 million square kilometres. Its area makes up 6.1% of the Earth's total surface. The Southern Ocean consists of the southernmost waters and has a volume of 71.8 million cubic kilometres. It has an average depth of 3,270 metres and its coastline has total length of 17,968 kilometres. The Southern Ocean is unique since it forms a region in which cold waters from Antarctica and warmer waters of the sub-Antarctic mix.

SOUTH AMERCIA





SOUTHERN OCEAN



OCEAN

Pacific Ocean

The Pacific Ocean covers an area of about 168.7 million square kilometres and is the world's biggest ocean. Its area represents 46.6 percent of the world's total water surface. The Pacific is located between Asia, Australia, the Americas, and Antarctica, forming a coastline of 135,663 kilometres. The Pacific Ocean also has two divisions, the North and the South Pacific Ocean, which are separated by the equator. The ocean has an average depth of 3,970 metres and a volume of 669.9 million cubic kilometres, which makes up about half of the Earth's total water.





ASIA

PACIFIC OCEAN

AFRICA

INDIAN OCEAN

Indian Ocean

The Indian Ocean is the third largest, and covers a total area of 70.6 million square kilometers. Its area represents 19.5 percent of the Earth's total surface. The Indian Ocean has an average depth of 3,741 metres and makes up 19.8 percent of the Earth's total water. Africa, Australia, Asia and the Southern Ocean surround the ocean to the west, east, north, and south, respectively. The coastline of the Indian Ocean has a total length of 66,526 kilometres.



Pacific Ring of Fire



Much of the geography of Southeast Asia is dictated by the Pacific Ring of Fire, a geologically active zone around the edges of the Pacific, that encompasses the region and shapes the landscape, producing volcanoes, mountains, island chains and trenches. This complex geography has also produced 15 unique seas and many straits, which between them comprise the most complex and diverse ecosystem on the planet.

About 90 percent of the world's earthquakes and about 81 percent of the world's largest earthquakes occur along the Pacific Ring of Fire. Approximately 10 percent of the world's active volcanoes are found in Japan, which lies in a zone of extreme crustal instability. They are formed by subduction of the Pacific Plate and the Philippine Sea Plate, and almost 1,500 earthquakes are recorded yearly.

Minor tremors occur almost daily in one part of the country or another. Major earthquakes occur infrequently; the most famous in the 20th century being the Great Kantō earthquake of 1923, in which 130,000 people died, and the Great Hanshin earthquake of 1995, in which 6,434 people died. On March 11, 2011 a magnitude 9.0 earthquake hit Japan, the country's biggest ever and the fifth largest on record, according to US Geological Survey data. Undersea earthquakes also expose the Japanese coastline to tsunamis.

The 1991 eruption of Mount Pinatubo in the Philippines is the world's second-largest terrestrial eruption of the 20th century. Successful predictions of the onset of the climactic eruption led to the evacuation of tens of thousands of people from the surrounding areas, saving many lives, but as the surrounding areas were severely

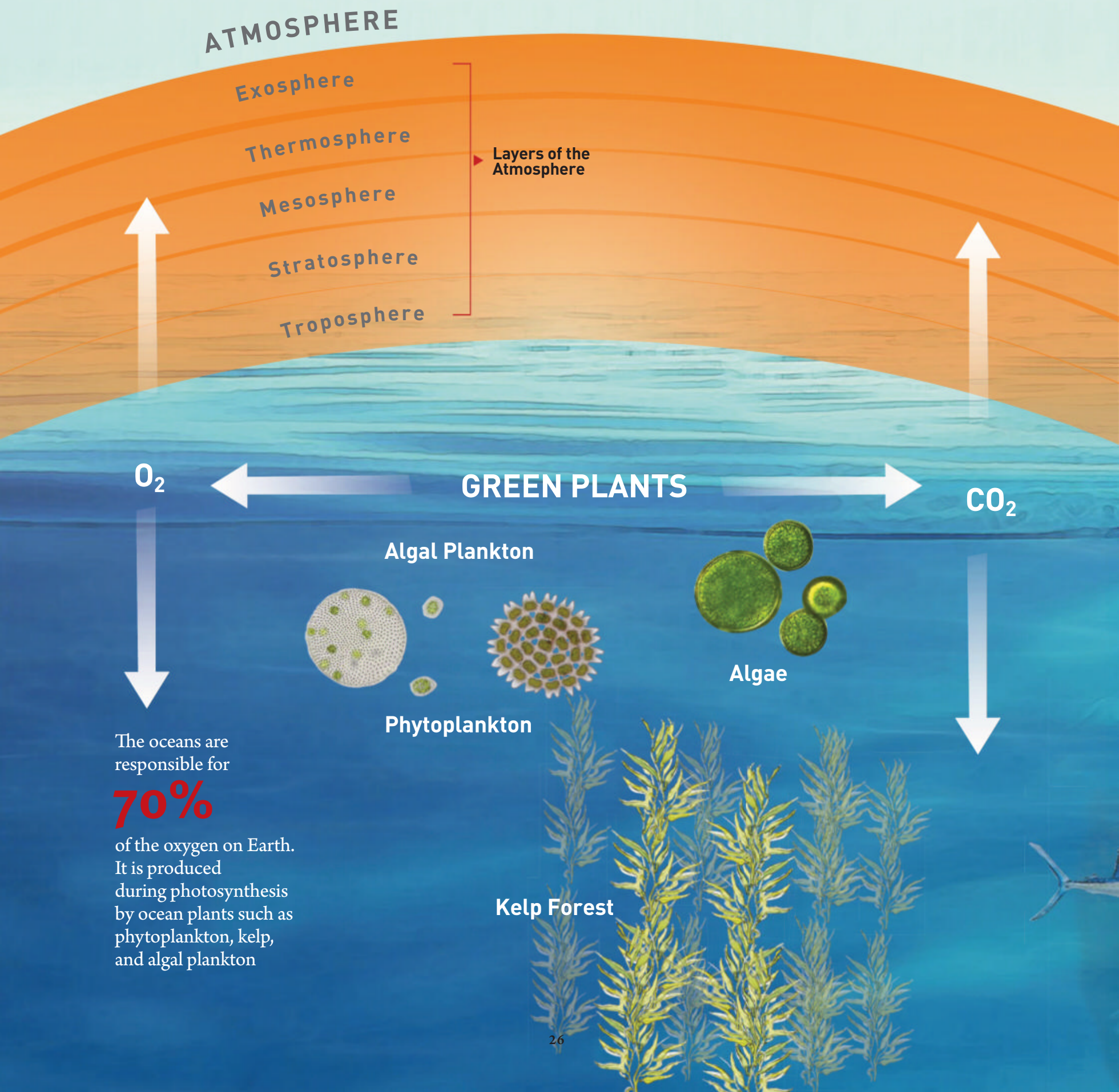
damaged by pyroclastic flows, ash deposits, and later, lahars caused by rainwater remobilising earlier volcanic deposits, thousands of houses were destroyed.

Along the Pacific Ring of Fire, the volcanoes in Indonesia are among the most active. They are formed due to subduction zones of three main active tectonic plates, namely the Eurasian Plate, the Pacific Plate, and the Indo-Australian Plate. Some of the volcanoes are notable for their eruptions, for instance, Krakatau (Krakatoa) for its global effects in 1883, Lake Toba for its supervolcanic eruption estimated to have occurred between 69,000 to 77,000 years ago, which was also responsible for six years of volcanic winter, and Mount Tambora, for the most violent eruption in recorded history in 1815. The eruption of Mount Tambora caused widespread harvest failures in Northern Europe, the Northeastern United States, and eastern Canada in 1816, which was known as the "Year Without a Summer".

MAIN
Mount Bromo, Indonesia

Why Are the Oceans Important?

The oceans store carbon dioxide and are a vital source of oxygen. The oceans absorb carbon dioxide from the atmosphere. Colder waters absorb more CO_2; warmer waters absorb less. The oceans, with their rich ecosystems of species, are also bearing the brunt of our plastic addiction. With eight million US tonnes of plastic waste entering the ocean every year, the damage this is causing constitutes a crisis on a massive scale.



The oceans are responsible for

70%

of the oxygen on Earth. It is produced during photosynthesis by ocean plants such as phytoplankton, kelp, and algal plankton

There are three main ways the plastic we use every day ends up in the oceans:

1. Throwing recyclable plastic in the trash
Plastic put in the trash ends up in landfill. When rubbish is being transported to landfill, plastic is often blown away because it's so lightweight, and from there, it can eventually clutter around drains and enter rivers and the sea.

2. Littering
Litter dropped on the street doesn't just stay there – rainwater and wind carries plastic waste into streams and rivers, and through drains, which lead to the ocean.

3. Products thrown down the drain
Many of the products we use daily are flushed down toilets, including wet wipes, cotton buds and sanitary products. Microfibres are released into waterways when we wash our clothes in the washing machine. They are too small to be filtered out by waste water plants and end up being consumed by small marine species, eventually ending up in our food chain.

SOURCE: WWF

The oceans are home to diverse species that depend on clean and balanced ecosystems for survival. As humans, we also depend on the oceans as a source of oxygen, a source of food, and for regulating the climate

Marine protected areas (MPAs) are vital for healthy, resilient and productive ecosystems

250,000 known species live in coral reefs including more than **4,000** different species of fish and **800** species of hard corals.

Scientists estimate there may be up to **8 million** undiscovered species living in and around coral reefs.

Top Ten Types of Trash Found in the World's Oceans

Ocean Conservancy's International Coastal Cleanup 2018 report listed the top 10 waste items found in the oceans.




Styrofoam Takeout Containers
Straws/ Stirriers
Plastic Beverage Bottles

Sustainable Management of Oceans and Coastal Environment

Finding policy solutions that create sustainable societies and help protect our fragile water planet

Text **Dr Jai Acharya**

Oceans provide humanity with many goods and services: They are a crucial source of food and livelihood for millions of people and they produce more than half of the oxygen we breathe. However, the marine environment is under severe stress from multiple anthropogenic pressures that are acting together in unexpected ways.

The deteriorating health of the oceans, the over-exploitation of living resources, irreparable damage to biodiversity and the new emerging challenges of climate change are serious concerns for genuine stakeholders in ocean governance, welfare and sustainable management matters.

Climate change and the unsustainable use of natural resources, resulting in the degradation of ecosystems and leading to biodiversity loss worldwide, are clear signs that today's humanity is living and consuming at the expense of future generations. We therefore need to develop and implement long-term solutions that help to create just, peaceful and sustainable societies that work together to pass on a healthy planet.

Sustainable management of oceans and coasts is a major political concern. Yet, despite a vast number of initiatives, policies and projects at all levels of governance, there is limited coordination between these different policies. The trends in marine ecosystem decline underline the urgent need for effective implementation of international agreements and policy on oceans. These policies need to respond to the latest scientific advice, take an ecosystem approach, incorporate climate change mitigation and adaptation, and consider social and cultural contexts.



INTEGRATED POLICIES FOR OCEANS AND COASTS

The governance of our oceans and coasts is complex and fragmented. Sectors such as fisheries, aquaculture, oil and mineral extraction, energy generation, transport and recreation, use the same space and often have conflicting needs. As a result, it is common to have many ministries/agencies with separate mandates, policies and legislation involved in governing the marine environment. A policy that takes into consideration all uses, stakeholders and threats to a given coastal or marine region is critical for the long-term strategic planning for the future sustainable use of these resources.

Integrated Coastal Zone Management

Coasts are dynamic places, being at the interface of the land and the ocean, and support a diverse range of habitats and biodiversity. Half of the world's population lives within 100 kilometres of the sea, including in major cities. Coastal areas worldwide face problems of degradation as well as flooding and erosion. These are expected to increase due to global climate change and sea level rise. Tropical coastal ecosystems such as mangroves serve as important natural storm and flood protection for people living in coastal areas.

Coastal erosion can be the result of natural process and human activities. Natural forces such as wind, waves, near-shore currents, storm surge, tsunamis and delta subsidence can trigger erosion. Human activities that result in the destruction of coastal habitats such as mangrove forest, beach forest, sand dunes or coral reefs can also produce erosion. Coastal areas may recover naturally from erosion related to natural factors or human activities over time without additional disturbance, but the construction of engineered hard structures that permanently modify coastal morphology and processes can produce permanent change. It must also be understood that coastal erosion is highly influenced by the rate of sea-level rise, which has doubled in the last century. To address coastal erosion issues, the proven best practices include international co-operation and assistance along with involvement of

local people by making them aware of the severity and training them in management practices at a local level.

Guidelines for integrated coastal zone management were first introduced at the international level in 1992 at the Rio Earth Summit to address the fragmented, sectorial approach to coastal development and further discussed in subsequent the Rio+20 conference in 2012.

The outcome of Rio+20, encapsulated in the document "The Future We Want", included many recommendations relating to ocean and seas. Within two months it was followed by a major initiative of the UN Secretary General Mr Ban Ki-Moon, who launched his comprehensive "Ocean Compact" on August 23, 2012.

The stated aim of the UNSG was to set out a strategic vision for the UN System to deliver on its ocean-related mandates, consistent with the Rio+20 outcome in a more coherent manner and to aim to provide a platform for all stakeholders to collaborate and accelerate progress in the achievement of the common goal of "Healthy Oceans for Prosperity". The concept of "Blue Economy" given by International Ocean Institute (IOI) President Dr Awni Benham also reflects similar thoughts. It is expected to build upon the range of existing and ongoing activities of UN organisations to assist member states to implement the United Nations Convention for the Law of the Sea (UNCLOS) and other relevant global and regional conventions.

THE PUBLIC TRUST DOCTRINE – AN ANCIENT PRINCIPLE FOR A MODERN PROBLEM

In addition to the policy approaches discussed above, there are other useful legal instruments that could accelerate the integration of intergenerational equity into political decision-making.



One such instrument is the Public Trust Doctrine, which supports intergenerational equity, accountability and stewardship of natural resources. This ancient legal principle dates back to the 6th century CE and the laws of the Roman Emperor Justinian:

"By the law of Nature, these things are common to mankind – the air, running water, the sea, and consequently the shores of the sea. All rivers and ports are public: Hence the right of fishing in a port, or in rivers, is common to all men."

— Institutes of Emperor Justinian, Book 2, Div. 1 (535 CE)

Under this principle, common natural resources belong to both current and future generations. Elected governments are charged with making decisions regarding the use of these resources in the interest of their citizens, thereby providing a philosophical framework to structure the relationship between generations, as well as between citizens, governments and natural resources. The doctrine is used to negotiate conflict between public and private uses of natural resources. The Public Trust Doctrine has been incorporated into international law as well as national and state constitutions and laws. Unlike policies and statutory laws, the Public Trust Doctrine is continually refined by the courts and adapted to local circumstances through its application in case law. For example, the California Supreme Court has decreed that the public trust encompasses the public's needs from the state's waters, such as recreation and ecological values. It can also adapt to changing needs. The Public Trust Doctrine has the potential to form the basis for a coherent legal framework to protect common-pool fisheries in the seas that lie beyond national jurisdiction.

The International Ocean Institute (IOI) in Malta has also embraced as its core policy "Pacem in Maribus" (Peace in the Oceans) Declaration as "Declaring the ocean space, the surface of the sea, the water column, the seabed and its subsoil as common heritage of mankind, that forever changed humanity's relationship with the ocean and environment of our planet."

CONCLUSION

The Ocean Compact milestone launched by the UN Secretary General emphasises on the implementation of UNCLOS and the fact that it up-scales commitments of member states and recommits the UN System with a mechanism for follow-up and co-operation. Further, it provides an effective system for a sustainable management of oceans and brings closer the Blue Economy concept of living from the ocean and with the ocean in a sustainable relationship as it addresses the nexus of ocean and coasts and the protection of life and property. The Compact's prime goal and objective is the protection of people and the improvement of the well-being of the oceans, while Rio+20 focused more on the living resources of the ocean.

"The governance of our oceans and coasts is complex and fragmented."



Dr Jai Acharya is a proactive ocean and maritime environmental activist, conducting Maritime Education and Training with an emphasis on maritime environmental awareness and protection of the ocean environment. He is Honorary Director for International Ocean Institute (IOI) Singapore, and has been consistently contributing for the cause of ocean welfare via the Ocean Governance Framework under the United Nations Convention on the Law of Sea (UNCLOS) and the Blue Economy.

Amazing Oceanic Discoveries

QIANDAO LAKE, CHINA

The Lion City

The Lion City, otherwise known as *Shi Cheng*, is an ancient submerged city that lies at the foot of Wu Shi Mountain (Five Lion Mountain), now located about 25 to 40 metres beneath Qiandao Lake (or Thousand Island Lake) in China. Despite more than 50 years underwater, the entire city has been preserved completely intact, transforming it into a virtual time capsule, thanks to its well-preserved architecture and carvings that date back 1,400 years. The Lion City was built during the Eastern Han Dynasty (25–200 AD), and was first set up as a county in 208 AD. It was once the centre of politics and economics in the eastern province of Zhejiang. But in 1959, the Chinese government decided a new hydroelectric power station was required, so it built a man-made lake, submerging *Shi Cheng* under 40 metres of water.

RYUKU ISLANDS, JAPAN

The Yonaguni Monument

These pyramids that lie underwater are fraught with mystery. Experts argue as to whether they are man-made or a naturally occurring phenomenon. If you incline towards the former, then these structures were made during the last ice age, around 10,000 BC. These pyramids also resemble those found in Mexico and Central America… Strange! But here's where things get stranger: There are no other underwater structures found in this area. The latter argument claims that the pyramids are a result of basic geology and classic stratigraphy for sandstones, which tend to break along planes and give you these very straight edges, particularly in an area with lots of faults and tectonic activity.

PHOTO: IMGUR.COM/GALLERY/QR5AR



TAMIL NADU, INDIA

The Pagodas of Mahabalipuram

Mahabalipuram's early history is shrouded in mystery. Stories passed from one generation to the next relate a large, beautiful city that once occupied the area, with seven pagodas so spectacular the gods became jealous and had six of them consumed by the ocean. Initially considered old wives' tales, after the 2004 tsunami hit the area the ocean receded 500 metres, exposing a long, straight row of large rocks and some statues and small structures. The discovery prompted the Archaeological Society of India and the Indian Navy to search for other ruins in the area. They discovered that the row of large stones people had seen immediately before the tsunami, were part of a 70-metre wall. They also discovered remains of two other submerged temples and one cave temple within 500 metres of the shore. Although these findings do not necessarily correspond to the seven pagodas of myth, they do indicate that a large complex of temples did exist in Mahabalipuram.

GUJARAT, INDIA

The Atlantis of the East

Legend has it that the city of Dwarka, known as the "Atlantis of the East", was built by Lord Krishna himself and he made it his home. It is believed that the city was subsequently damaged and engulfed by the sea. Dwarka remained in Hindu myth until archaeologists and Indian Navy divers discovered underwater ruins on India's western coast. After all these years it turns out that the 12,000-year-old city of Dwarka was not just a legend, but a real place that existed once upon a time.

OPPOSITE PAGE
The Lion City, China

BELOW
Mahabalipuram, India

PHOTO: SHUTTERSTOCK



Unique Finds Underwater

200m

332m

650m

700m



The oldest turtles, such as the **Leatherback Sea Turtle**, can be found down to these depths



The **Coelacanth** was thought to be extinct… until it was found in the deep in 1938



The **Japanese Spider Crab** is the **largest crab in the world**. Its legs can extend to almost four metres!

955m

1,000m

1,010m



The **Orange Roughy** can live up to 200 years

1,300m



Goblin Sharks are "living fossils" whose lineage has existed for 125 million years

1,810m



Narwahals dive down to this depth up to 15 times a day to look for food

2,215m

3,000m

OCEAN SURFACE

EPIPELAGIC ZONE
(SUNLIGHT ZONE)



The bioluminescent **Firefly Squid** measures up to 7.6 cm at maturity and dies after one year of life. Its light attracts small fish that the squid feeds upon

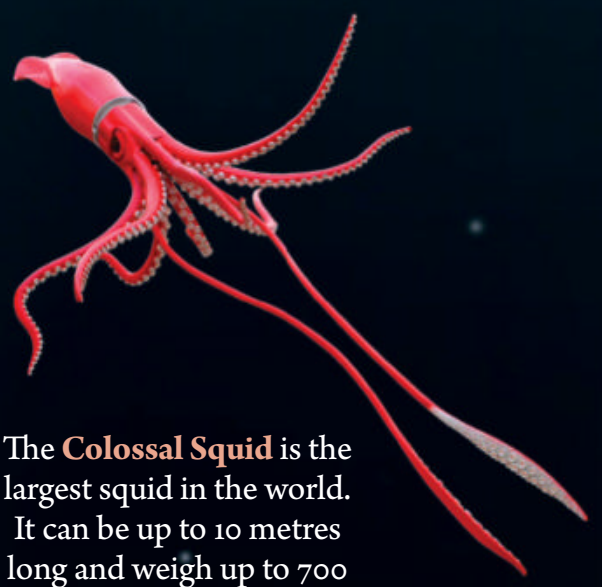


Ahmed Gabr, Egypt, holds the **Guinness World Records** for both The Deepest Scuba Dive (Male) and The Deepest Scuba Dive in Sea Water

MESOPELAGIC ZONE
(TWILIGHT ZONE)

BATHYPELAGIC ZONE
(MIDNIGHT ZONE)

No sunlight reaches this deep. Many of the creatures found here cope by creating bioluminescence, their own light. Many deep sea creatures also have long life spans. Deep sea creatures can go *years* without eating.



The **Colossal Squid** is the largest squid in the world. It can be up to 10 metres long and weigh up to 700 kilograms!



Cuvier's Beaked Whales are the deepest diving mammals



3,800m

3,900m

The **Titanic** sank to its final resting place here in 1912



Patagonian Toothfish have antifreeze proteins in their tissues that prevent them from freezing in the subzero temperatures

5,400m

5,510m

6,000m

6,230m

7,220m

Challenger Deep, the deepest known point in the ocean, was first ventured to in 1960 by **Jacques Piccard** and **Don Walsh**. Their descent took almost five hours and the two men spent barely 20 minutes on the ocean floor before undertaking the three-hour-and-fifteen-minute ascent. Their early departure was due to their concern over a crack in the outer window caused by the temperature differences during their descent.

7,455m

This is the deepest point of the **Java Trench** in the Indian Ocean

8,847m

This is the height of **Mount Everest**

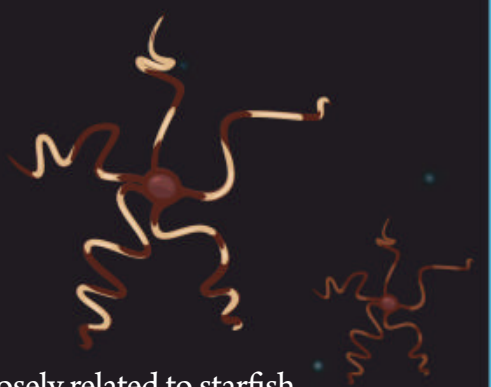


10,929m

ABYSSOPELAGIC ZONE

(THE ABYSS)

We have passed by the average depth of an ocean (3686 metres). But some go deeper. Only a few creatures can survive the low temperatures and extreme pressures here.



Closely related to starfish, **Brittle Stars** crawl across the seabed using their flexible arms for locomotion

The deepest point of the **Manila Trench** in the South China Sea

HADALPELAGIC ZONE

(THE TRENCHES)

More people have been to the moon than here. Conditions are extreme and life is sparse here.



The **USS Johnston,** sunken in World War II, is the deepest shipwreck ever found



The **Comb Jelly** has been around for 500 million years

What Makes a Sea *a Sea*?

While the definition of a sea is not completely set in stone, a sea is generally defined as a portion of the ocean that is partly surrounded by land. In some cases, a sea is completely landlocked, such as the Caspian Sea, which lies between Russia and Iran, and which is also referred to as the world's largest lake. The Aral Sea and the Dead Sea are also surrounded by land and contain saltwater, but many oceanographers consider them lakes. This leaves dozens of water bodies that fit the traditional definition of a sea despite being quite different from one another. A sea can be more than 2.6 million square kilometres in area, such as the Caribbean Sea. Or, it can be as tiny as the Sea of Marmara, a Turkish body of water of less than 12,950 square kilometres that connects the Aegean Sea and the Black Sea.

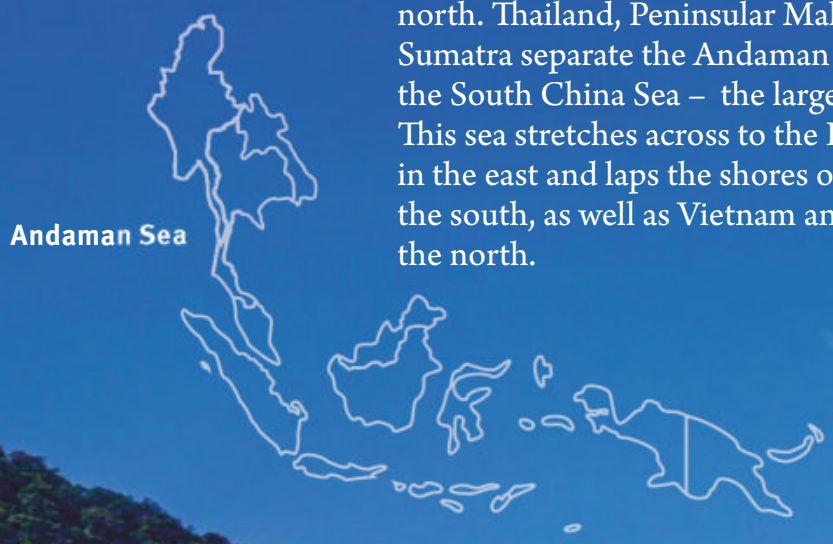


SEAS OF ASIA (AREA IN THOUSAND SQUARE KILOMETRES)

1	PHILIPPINE SEA	5,695
2	ARABIAN SEA	3,862
3	SOUTH CHINA SEA	3,500
4	SEA OF OKHOTSK	1,583
5	EAST CHINA SEA	1,249
6	SEA OF JAPAN	978
7	LACCADIVE SEA	786
8	ARAFURA SEA	650
9	ANDAMAN SEA	600
10	TIMOR SEA	610
11	BANDA SEA	470
12	RED SEA	438
13	BLACK SEA	436
14	YELLOW SEA	380
15	JAVA SEA	320
16	CELEBES SEA	280
17	SULU SEA	260
18	FLORES SEA	240
19	MOLUCCA SEA	200
20	HALMAHERA SEA	90

A World of Seas

The Andaman Sea sits between the Indian Ocean and touches the coasts of Myanmar, Thailand, Indonesia, and Malaysia, drifting into the Bay of Bengal in the north. Thailand, Peninsular Malaysia, and Sumatra separate the Andaman Sea from the South China Sea – the largest in Asia. This sea stretches across to the Philippines in the east and laps the shores of Borneo to the south, as well as Vietnam and China to the north.



The South China Sea comes to a head in the shallow Gulf of Thailand. This is one of the few parts of Asia where the flow of water is slow, meaning the water is not as rich in nutrients as other seas in the region.

Separated from the South China Sea by the island of Palawan is the Sulu Sea. The Sulu Sea is one of the smallest, but most productive of Asia's seas, marking the northern tip of the now famous Coral Triangle, the most biologically diverse marine region on Earth. It reaches northern Borneo to the south and the islands of the Visayas and Mindanao in the Philippines to the east.

The Sulu Sea is deep, bringing nutrient rich upwellings from great depths, which support the spectacular congregations of marine life found at sites such as Sipadan and the remote Tubbataha Reefs.

To the east, the Philippine Sea reaches out to the Pacific Ocean. Here, where the Pacific tectonic plate disappears below the Philippine plate, the sea plunges to the greatest depths on the planet, hitting 10.9 kilometres at its deepest – the famous Mariana Trench.



DID YOU KNOW

The origins of the phrase "Seven Seas" can be traced to ancient times. In various cultures at different times in history, the Seven Seas has referred to bodies of water along trade routes, regional bodies of water, or exotic and faraway bodies of water.

In Greek literature, the Seven Seas were the Aegean, Adriatic, Mediterranean, Black, Red, and Caspian seas, with the Persian Gulf thrown in as a "sea".

In Medieval European literature, the phrase referred to the North Sea, Baltic, Atlantic, Mediterranean, Black, Red, and Arabian seas.

After Europeans "discovered" North America, the concept of the Seven Seas changed again. Mariners then referred to the Seven Seas as the Arctic, the Atlantic, the Indian, the Pacific, the Mediterranean, the Caribbean, and the Gulf of Mexico.



STUART WESTMORLAND/CORBIS

Charming Corals

Coral reefs are the flowerbeds of the sea, home to a vast number of the creatures with whom we share this planet. Constructed painstakingly by millions upon millions of tiny animals called "coral polyps", reefs are made up of the calcium carbonate that the polyps secrete and the colourful algae that live symbiotically with the corals and on which they feed.

Like most animals, corals love sunlight, so they tend to thrive in shallow, clear waters. This is why many tropical coastlines are fringed with reefs. And Asia is reef-galore!

Unfortunately for corals, they are not the only animals that like living on the coast – we do too. And we tend to build our villages, towns, cities and resorts by the sea and our construction projects do not sit comfortably side-by-side with the corals' own building work.

When it rains, as it so often does in the tropics, topsoil and trash flows out of our towns and into the sea, where it covers the reefs, depriving the corals and algae of the sunlight they need, killing them. Dirty water from our drains also ends up in the ocean and promotes the growth of "bad" algae on the reefs, which kill and replace the "good" algae, starving the corals and leading to the dull brown reefs depressingly familiar to divers these days.

Red Sea

Egypt's coastline possesses a significant proportion and considerable range of the coral reefs found in the Red Sea with about 3,800 square kilometres of reef habitat. The northern part of the Red Sea has the highest coral diversity, particularly well developed in the north and central portions (off the coasts of Egypt, Saudi Arabia, Sudan), with large sizable offshore reef complexes containing small islands, fringing reefs, and a variety of reef-associated habitats.

The Red Sea coral reefs are the northernmost in the Indian Ocean, and most of the Red Sea coast is rimmed by shallow submarine shelves and extensive fringing reef systems – by far the dominant reef type found here. The most actively growing corals include highly branched species of the genera *Acropora* and *Porites*.

Its offshore reefs defy classic reef type categorisation, and included in this catchall category are atoll-like rings of coral, elongated coral ridges that rise abruptly from considerable depths on both sides and peculiar complex reef patterns of odd shapes. Such Red Sea coral reef formations are the result of the active and unusual tectonic forces that have been at work here for millennia and continue today.

Particularly important in the light of global warming predictions is the fact that Red Sea corals have developed an unusually high tolerance to the extreme temperatures, salinity and occasional turbidity (caused by huge seasonal dust storms) that occur in the region. Such conditions would be lethal or highly damaging to most hard corals found elsewhere. The water clarity is exceptional in the Red Sea because of the lack of river discharge and low rainfall, and the reefs are not heavily impacted by the suspension and dissipation of fine sediments that plague reefs in tropical oceans near large landmasses.



MICRONESIA

Palau

This area exhibits an abundance of coral reef habitat types covering almost 525 square kilometres. The reef types include barrier reefs, fringing reefs and atoll habitats with 1,457 patch reefs scattered throughout the lagoons. While no corals are endemic to Palau, the archipelago's coral diversity is comparable to the highest coral diversity areas of Indonesia and Australia. These reefs host 385 coral species (approximately 200 species of soft corals) belonging to 66 genera.

Just outside of the Coral Triangle, three ocean currents converge in Palau's waters, bringing a rich diversity of nutrients that supports the growth of a large variety of corals. Circulation of the Pacific Ocean, the Philippine Sea and the Celebes Sea brings larva of coral from different parts of the Indo-Pacific region. Between the coastal mangroves of Babeldaob and the outer reef walls of the Ngemelis and Pelelui exists an extensive shallow and deepwater lagoon containing limestone islands, sheltered marine lakes and narrow passages that provide a mixture of different habitats that promote the survival of many different types of corals.

INDO-PACIFIC REGION

Andaman & Nicobar Islands

The coral reefs of the Andaman and Nicobar Islands are ecologically the most diverse within the Indo-Pacific region. Scleractinian corals play an important role in maintaining the marine biodiversity of this area, and 418 species belonging to 17 families of corals have been identified so far. The seas of the Andaman and Nicobar Islands are home to twice as many coral species compared to any reef areas of India.

Its boulder corals, on average, grow 1.2–2.5 centimetres per year, and branching corals, being more fragile, often break during storms, generating fragments that in turn can turn into new coral colonies. These corals have a relatively rapid growth rate at approximately 15 centimetres per year. Massive corals (including families like Portidae and Faviidae), though relatively slow growing, have very stable profiles and are rarely damaged by strong wave action. This region hosts coral families that consist of a good plethora of species. Among them are types such as branching corals, encrusting corals, submassive corals, solitary corals and massive corals, which triumph over others mainly in terms of resilience.







MICHELE WESTMORLAND/CORBIS

NORTHWESTERN PAPUA

Bird's Head Peninsula

The Bird's Head Peninsula hosts 574 species of coral – which is 95 percent of the Coral Triangle's and 72 percent of the world's total population. Raja Ampat sits within this region, and is the world's coral diversity hotspot with 553 species. Glaciation and accompanying sea level changes successfully isolate species, which also offers long-term stability of the Pacific region.

These waters have colonies of both branching and massive corals, heterogeneous due to the exposure to different wave and light climates, low degree of sedimentation, and the availability of sand, coral rubble, seagrass or mangrove nurseries.

Some 85 percent of Southeast Asian coral reefs are already under threat, and the Coral Triangle has the highest proportion of "Vulnerable" and "Near Threatened" coral species based on IUCN Red List criteria. Ranked as the Indonesian government's top priority for the conservation of marine biodiversity, these reefs are sacred and their importance to the seas is unparalleled.



Asia's UNESCO Marine World Heritage Sites

The UNESCO World Heritage Marine Programme consists of 50 flagship marine protected areas of Outstanding Universal Value. These are Asia's "Beacons of Hope in a Changing Ocean".

Source: UNESCO


Ha Long Bay


Tubbataha Reefs


Sundarbans

1987

INDIA

Sundarbans National Park
The park supports threatened mammals such as the Irrawaddy and Ganges River dolphins

1991

INDONESIA

Ujung Kulon National Park
The park is home to amphibians including the vulnerable estuarine crocodile

1991

INDONESIA

Komodo National Park
As well as its famous dragons, the park is rich in marine, from whale sharks, manta rays, and ocean sunfish to blue-ringed octopuses, pygmy seahorses, and nudibranchs

1993

PHILIPPINES

Tubbataha Reefs Natural Park
The site is a pristine coral reef with a 100-metre perpendicular wall, lagoons and coral islands

1994

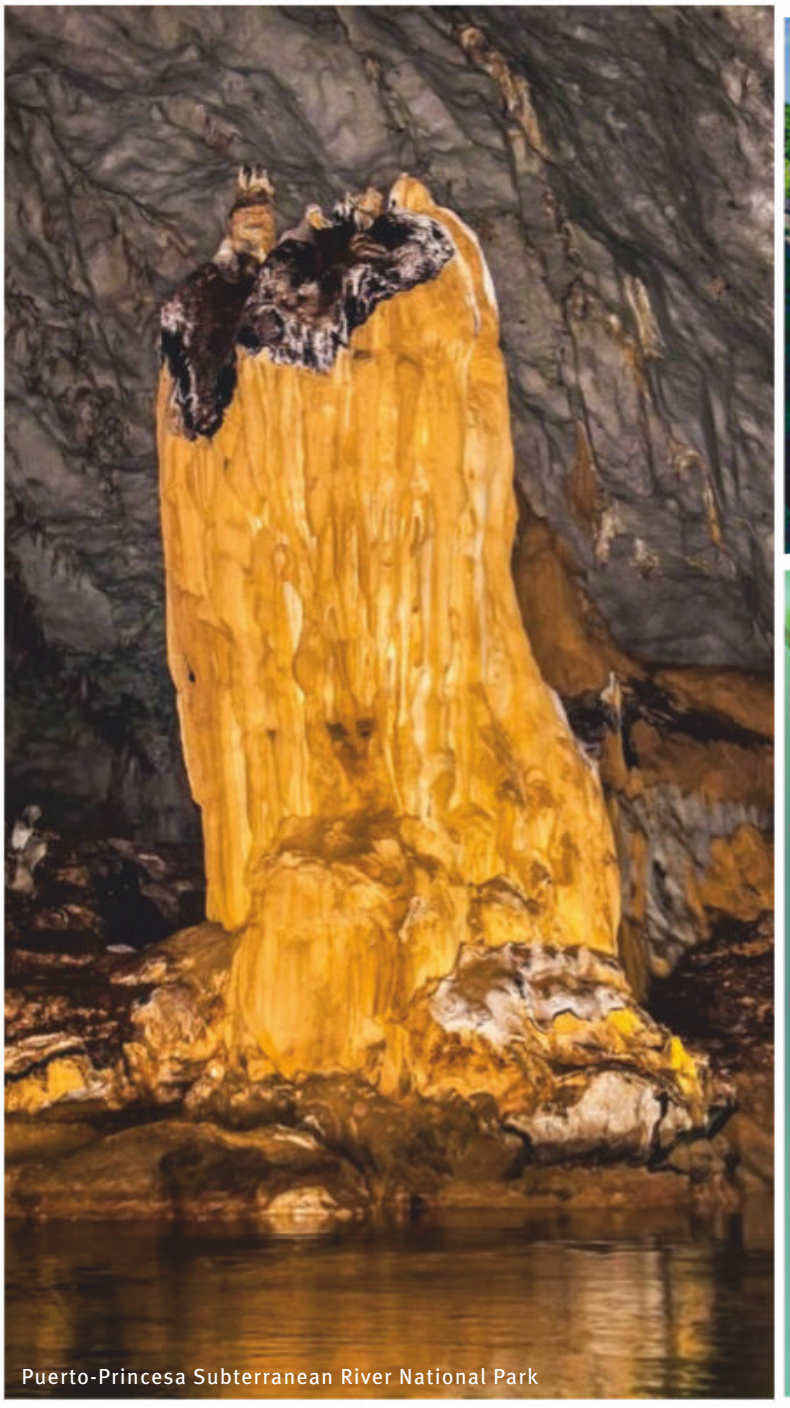
VIETNAM

Ha Long Bay
The exceptional scenic beauty is centred around the drowned limestone karst landforms, displaying spectacular pillars with a variety of coastal erosional features such as arches and caves

1997

BANGLADESH

The Sundarbans
Adjacent to the border of India's Sundarbans World Heritage site, the forest is known for threatened species such as the estuarine crocodile and the Indian python



Puerto-Princesa Subterranean River National Park



Shiretoko Peninsula



Ogsawara Island

1999

PHILIPPINES

Puerto-Princesa Subterranean River National Park
The site includes a subterranean river system that flows directly into the sea

2005

JAPAN

Shiretoko Peninsula
The site is globally important for marine mammals including Steller's sea lion

2008

YEMEN

Socotra Archipelago
The marine life here includes 253 species of reef-building corals and 730 species of coastal fish

2011

JAPAN

Ogasawara Islands
The islands demonstrate evolutionary processes and feature many endemic species

2012

PALAU

Rock Islands Southern Lagoon
The complex reef system features over 385 coral species and a variety of habitats

Suffocating the Seas

Plastics have been found in the stomach contents of at least

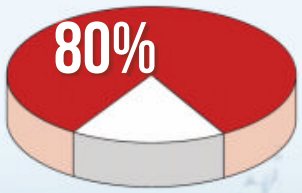
700 **Marine Species**



Plastic debris causes over

80%

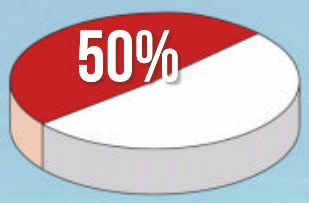
of all cases of ingestion and entanglement, affecting:



All known species of **Sea Turtles**



At least **half** of all species of marine mammals





At least

One-fifth

of all species of seabirds

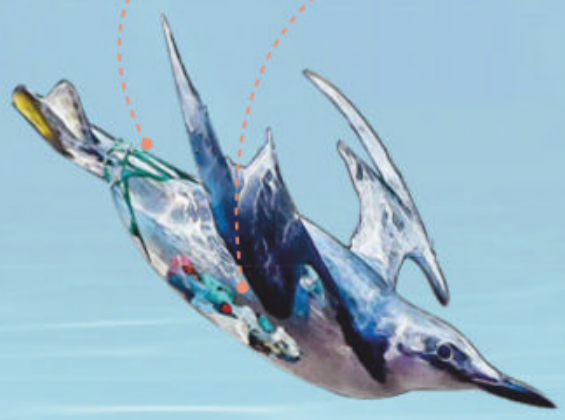


A significant percentage of marine species have been found to have ingested, or become entangled in, plastics

Seabirds

16% entangled

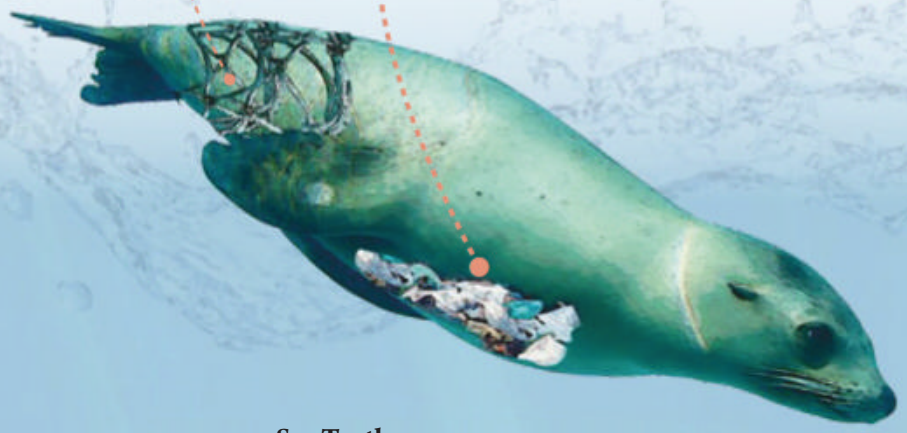
36% ingested



Marine Mammals

28% entangled

23% ingested



Sea Turtles

86% entangled

86% ingested



Ghost nets (abandoned or lost fishing gear) drift through the ocean indefinitely, entangling and killing millions of marine animals every year

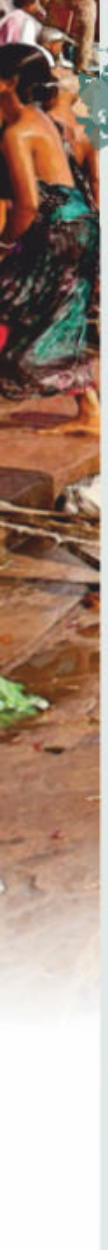


Microplastic ingestion could result in the organism transporting harmful chemicals, possibly to humans as well



Microplastics were discovered in human stool samples in a pilot study of eight participants from Europe, Japan and Russia by the Environment Agency Austria in 2018. Six of the eight participants consumed fish and all of them drank from plastic bottles and ate food wrapped in plastic







The River Runs Deep

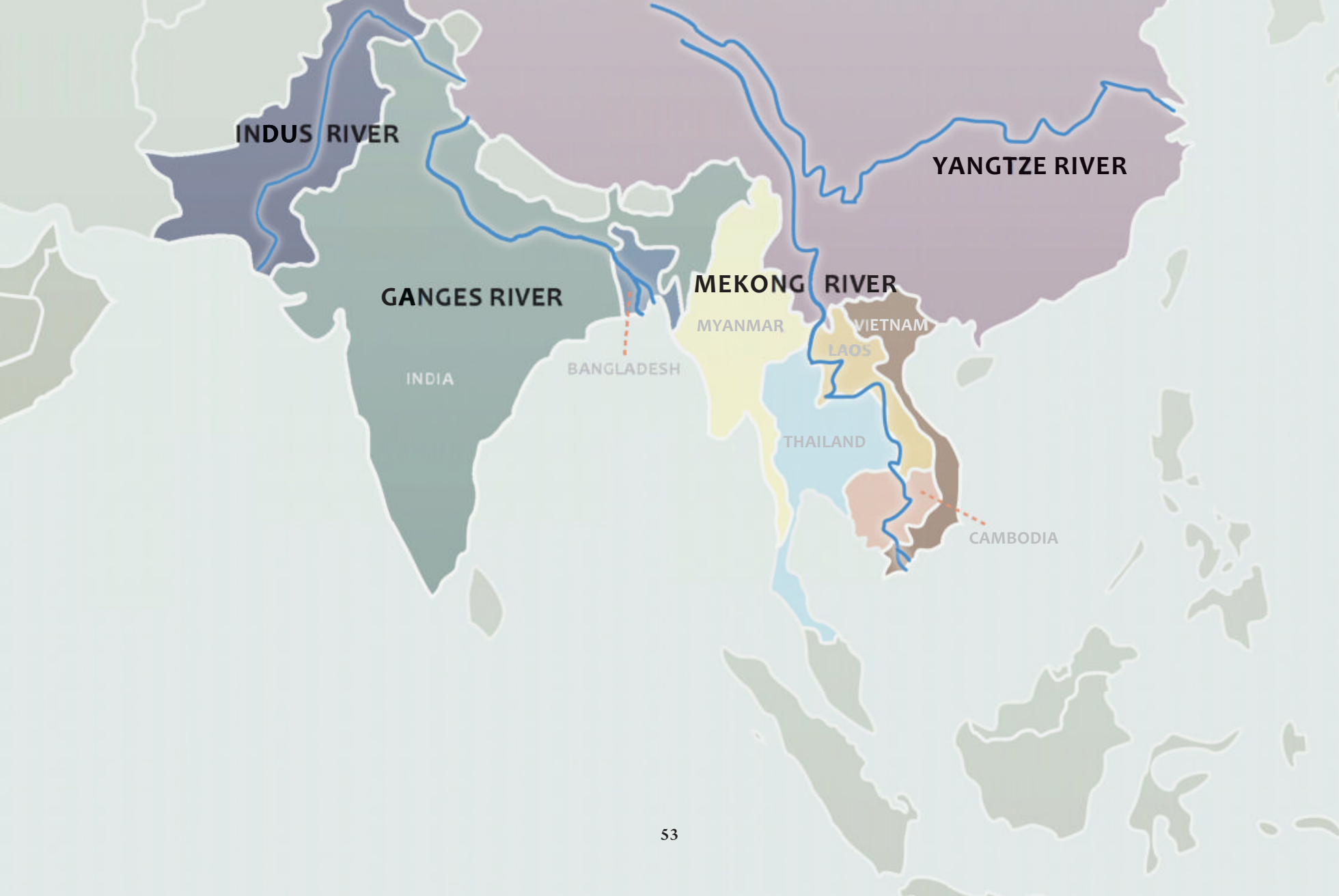
Great poets all over the world have written about rivers, and why not? On their epic journeys from mountain to sea, they nurture and provide, shaping both our landscapes and our cultures. Irrigation has allowed for agriculture to flourish and provides hydration for millons. Rivers are also a mighty sight to behold, often carrying with them great cultural and religious significance, and history that is encapsulated in every drop.

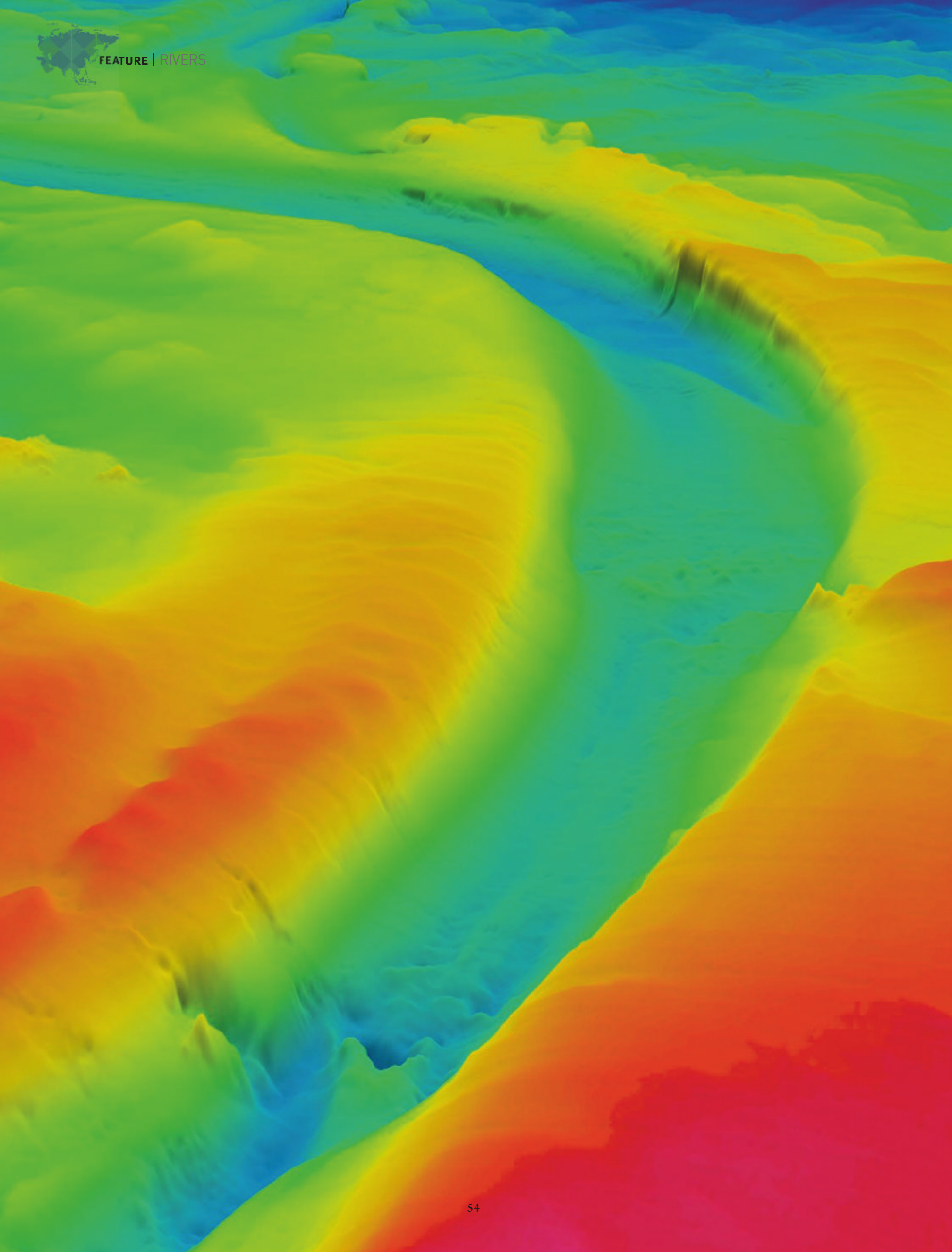
This natural flowing watercourse usually flows towards an ocean, sea, lake or another river. In some cases, a river flows into the ground and becomes dry at the end of its course without reaching another body of water. A river begins at a source (or several sources), follows a path or a course, and ends at a mouth, or several mouths. The water in a river is usually confined to a channel, made up of a stream bed between banks. In larger rivers, there is often also a wider floodplain shaped by flood-waters over-topping the channel. Floodplains may be very wide in relation to the size of the river channel. This distinction between the river channel and floodplain can be blurred, especially in urban areas where the floodplain of a river channel can become greatly developed by housing and industry.

By depositing nutrient-rich sediments to floodplains and deltas, rivers have produced some of the world's most fertile agricultural land. Just about every civilisation has its origins in line with a major river – Mesopotamia's Tigris-Euphrates, Egypt's Nile, and China's Yellow and Mekong rivers for instance. Rivers are the most biodiverse ecosystems on the planet. Even though they contain 600 times less water than oceans, rivers and lakes collectively support more fish species, and freshwater fisheries provide the main source of protein for more than 500 million people worldwide.

The master key unlocking these healthy aquatic environments is "flow". Well-connected river ecosystems allow an essential exchange of water, nutrients, sediments, and species that not only foster enormous biodiversity but also regulate sediment levels, flooding, pollution, and water purification.




INDUS RIVER
GANGES RIVER
INDIA
BANGLADESH
MEKONG RIVER
MYANMAR
VIETNAM
LAOS
THAILAND
CAMBODIA
YANGTZE RIVER





LEFT
A three-dimensional view, in false colour, of the underwater Black Sea channel. Adapted from Parsons et al., Geology 38, 1063–66 (2010)

Beneath the Black Sea: An Undersea River

In 2010, a tidal discovery was made: An impressive undersea river at the bottom of the Black Sea. This is a pinnacle in oceanic discovery as it could help explain how life can survive in the deep, away from nutrient-bound waters at a distance from land. Researchers have also said that it is the first time an underwater river had been glimpsed in such warm waters.

The discovery of the river, announced in August 2010, was made by scientists at the University of Leeds, UK, and is the first of its kind in the world. The undersea river stems from salty water spilling through the Bosphorus Strait from the Mediterranean Sea into the Black Sea, where the water has a lower salt content.

Underwater rivers are common near the poles, and are the result of ice formation. But this is the first time these processes have been discovered in subtropical regions. Various underwater rivers have been discovered in different spots around the globe, but this discovery was remarkable in that the river moves through warm waters. The discovery has laid the foundation to help scientists find out how underwater rivers function in a subtropical setting as previous studies have focused on underwater rivers in glacial environments – in much colder waters.

The Black Sea underwater river is fascinating because it cuts deep into the seafloor, much as rivers on dry ground wind through a landscape. As if that weren't enough, this mind-boggling undersea river comes with its own trees and leaves flowing on the seabed, and even waterfalls! The underwater river is so large that if it were on land, it would be the world's sixth largest in terms of the volume of water flowing through it. It is about 350 times greater than the River Thames and 10 times greater than Europe's biggest river, the Rhine. The river was found to be 60 kilometres long, 35 metres deep and a kilometre wide, flowing at a speed of 6 kilometres per hour.

It contains features typical of surface rivers, such as riverbanks, floodplains, waterfalls and rapids. However, the underwater river moves in currents spinning in the opposite direction from those on land when rounding a bend. The river carries sediments along the sea floor and has a higher salinity than the surrounding water.

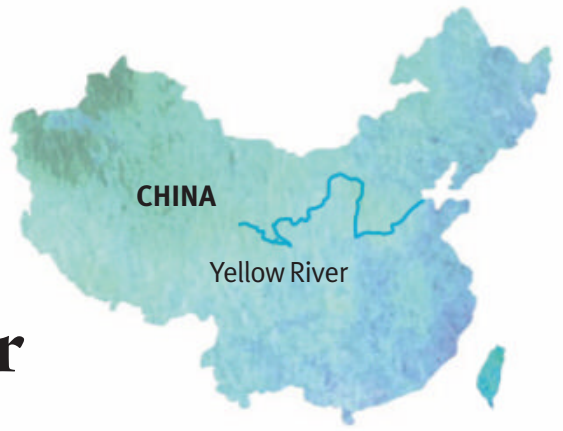
The discovery is expected to have significant implications for the study of marine biology, climate change, and geological formation. The ocean truly holds many fascinating mysteries! ◆ AG

River Pollution: The Dark Waters of Asia

The ancient Greeks believed that there were six main rivers that flow from the living world into the Underworld. Like the river Styx flowing from Feneos, Greece, into the dark bowels of Hades, some rivers that once provided food, water, transport and trade to all living creatures have now turned dark – transporting waste from the cities to the oceans, and with it, death and disease.

A recent study on the amount of plastic polluting our oceans revealed that close to 80 percent of the pollution comes from rivers in Asia. According to the 2017 study conducted by the Helmholtz Centre for Environmental Research (UFZ) in Leipzig, Germany, about eight million metric tonnes of plastic debris are carried into the sea by large rivers every year. According to the UFZ report, up to 95 percent of the plastic polluting the world's seas and oceans comes from just 10 river systems. Among these 10 rivers, eight are in Asia. Five of these filthiest rivers are in China alone: Yangtze River (ranking 1st), Yellow River (3rd), Hai River (4th), Pearl River and Amur River. In second place is the Indus River, while the holy Ganges River takes 6th place. The Mekong River, which runs through China and five countries in Southeast Asia, occupies the 10th spot.

According to Dr Christian Schmidt, a hydrogeologist at UFZ, a large proportion of marine plastic debris originates from land-based sources, with the rivers transporting these debris into the sea. Researchers are, however, hopeful that reducing the plastic waste by half can be achieved simply by collecting and recycling it.



CHINA

Yellow River 5,464km

- **Longest river** in China, **second longest river** in Asia after the Yangtze
- Gets its name from the yellow sediment, loess, that its water is filled with
- The **birthplace** of ancient Chinese civilisation
- **189 million people live** in the Yellow River basin alone

Pollution: How & Who

Approximately 4.4 billlion tonnes of wastewater flowed into the Yellow River in 2015. Due to the large area that the river flows through, agricultural waste from farms and industrial waste from heavy industries along its course are even harder to eradicate

Effects of Pollution

China's 2017 State of Ecology and Environment Report reported that 37.4% of the river system water was unusable for agriculture or for drinking. Approximately 30% of fish species have disappeared and the fish catch has declined by 40% due to water toxicity

Other Polluted Rivers in China

1 Hai River
70km

- Connects Tianjin and Beijing
- Flows into the busy Bohai Sea

2 Pearl River
2,400km

- Enters the South China Sea between Hong Kong and Macau
- Polluted with plastic, sewage and industrial waste

3 Amur River
2,824km

- Originates in northeastern China, forming a significant part of the border between Heilongjiang province (China) and Siberia (Russia)
- Flows into the Sea of Okhotsk



CHINA

Yangtze River 6,300km

- **Longest river** in Asia and the third longest in the world
- River basin is home to nearly 500 million people, nearly a third of the country's population
- **Longest** in the world to flow entirely **within one country**
- River basin accounts for **40%** of China's **freshwater resources**, more than 70% of **rice production** and more than 70% of **fishery production**

Pollution: How & Who
According to the Yangtze River Water Resources Commission's 2017 report, annual discharge of sewage and industrial waste was 35.3 billion tonnes (47% of China's total sewage discharge). The principal culprits are agricultural run-off from farms along the river's banks, as well as pollution from the surrounding industrial belts and high-tech development zones. Extensive loss of floodplains to agriculture has reduced basin's ability to detoxify pollutants

Effects of Pollution
Home to more than 350 species of fish and over 160 amphibian species. The Chinese alligator, in the lower reaches of the Yangtze, is the most threatened crocodilian species in the world. The Yangtze basin is the sole habitat of the critically endangered finless porpoise, which is seriously threatened by extreme pollution. Another species native to the river basin, the Chinese paddlefish, has not been seen alive since 2003, while the Chinese river dolphin, or baiji, has long been considered to be functionally extinct despite occasional unconfirmed sightings





SOUTHEAST ASIA

Mekong River 4,350km

- Twelfth longest river and **seventh longest in Asia**
- Runs through **six countries**
- Lower Mekong basin fisheries have an estimated annual yield of 4.4 million tonnes, a value of USD17 billion

Pollution: How & Who
Sources of pollution include heavy metals mines and industrial waste from heavy industries, agricultural waste and sewage, rubbish and sewage from people living along the river's banks



Effects of Pollution
Pollution and illegal fishing are threatening the Mekong's 1,200 species of freshwater fish and 800 species of reptiles and amphibians. Dolphins are being caught in illegal fishing nets and hunted for blubber for lubrication and fuel. Toxic levels of pesticides, mercury (from gold mining) and other pollutants have been found in dead Irrawaddy dolphins (Orcaella brevirostris). Eleven dams planned along the lower Mekong in Laos and Cambodia are endangering fish populations and ruining fisheries

PAKISTAN

Indus River 3,610km

- One of **Asia's largest rivers**
- Flows through **parts of India** and **Pakistan** into the Arabian Sea

Pollution: How & Who
Like many of Asia's great rivers, the Indus is a dumping ground for untreated industrial waste, sewage and waste from farms and fisheries, and sewage and rubbish from the millions of people living on its banks. This despite the hundreds of thousands of people bathing, fishing and taking part in religious ceremonies daily along the river's banks

Effects of Pollution
Pollution is contaminating the main supply of Pakistan's portable water and imperiling the 150 species of fish and 25 amphibian species (22 of which are found nowhere else in the world) that call the Indus home.



Over the last few decades, both the diversity and abundance of aquatic life have been severely depleted. Toxic waste, heavy metals, barrages and irrigation canals have wiped out the Indus river dolphin in the upper reaches of the Indus. According to a 2017 WWF survey, the dolphins have recovered thanks to community-based conservation efforts, with an estimated population of 1,800 dolphins, up from just 1,200 estimated in 2001



INDIA AND BANGLADESH

Ganges River 2,525km

- One of the most sacred rivers to Hindus
- Ranked sixth on the list of top plastic polluting rivers
- It's a lifeline to the 400 million people who live close to it

Pollution: How & Who

While the water is used for bathing, drinking, and cooking, the river is also a dumping ground for sewage and industrial waste from the many cities and factories along its course. Famously, Hindu devotees dispose of corpses after cremation along the river's banks, with religious offerings wrapped in non-biodegradable plastics

Effects of Pollution

According to the Indian Council of Medical Research, people staying along the Ganges in Uttar Pradesh, Bihar and Bengal are more prone to cancer than anywhere else in India. Gallbladder cancer cases along the Ganges are the second highest in the world, with prostate cancer cases the highest in India. Aquatic life found here comprise more than 140 fish species and 90 amphibian species, including the Ganges river dolphin (Platanista gangetica gangetica), which is listed as "Endangered" by the IUCN. Only about 2,000 individuals exist in the water catchment of the Ganges and Brahmaputra river systems, according to a recent study led by WWF-India. The Ganges shark (*Glyphis gangeticus*), which is listed as "Critically Endangered" on the IUCN Red List, is found in various rivers including the Ganges. Sightings are incredibly rare: Following a sighting in 2006, a whole decade passed before another individual was found in 2016 – at Mumbai fish market

MAIN
Omadal Island, Sabah, Malaysia: A Bajau boy does his stretching workout before making a dive to collect sea urchins

PHOTO: ZON HISHAM BIN ZAINAL ABIDIN, FINALIST FOR IMAGES OF ASIA 2019

The Water People

Powerful, purifying, and mysterious, water bodies play a vital role in many cultures and religions. Some live and die by the waters, and some believe the deep blue is home to gods and goddesses. Others look to the waves in search of the spirits of their deceased loved ones. The waters bring people together to pray to higher beings, and the high seas.

VIETNAM

The Mighty Mekong River

Around the Mekong River, 70 million people throughout Southeast Asia live and thrive – more than the population of France. Thais and Laotians who share the Mekong River have similar cultural traditions and have maintained close exchanges. Fishermen on the riverbanks even make a short stay at the opposite shore without a passport or visa. Whether from the Thai side or the Lao side, the fishermen all know each other, and greet each other warmly every day when a boat passes. Dragon boat racing, which originated in China, has also spread to the middle and lower reaches of the Mekong.

The Greater Mekong has been called Asia's "fish basket" and "rice bowl". It produces 4.5 million metric tonnes of fish every year, contributing about 80 percent of the protein consumed in the region's households. The freshwater system is also critical for growing rice, which provides more than half of the daily caloric intake in countries across the region. From its source in the Tibetan Plateau to its end in Vietnam, the Mekong River is also a critical source of drinking water for the millions of people who live in its watershed. Four-fifths of the population of the Greater Mekong relies on forestry, agriculture or fishing for their livelihoods, all relating to the Mekong's waters. In Laos, for example, more than two-thirds of the population is employed in the agricultural sector.

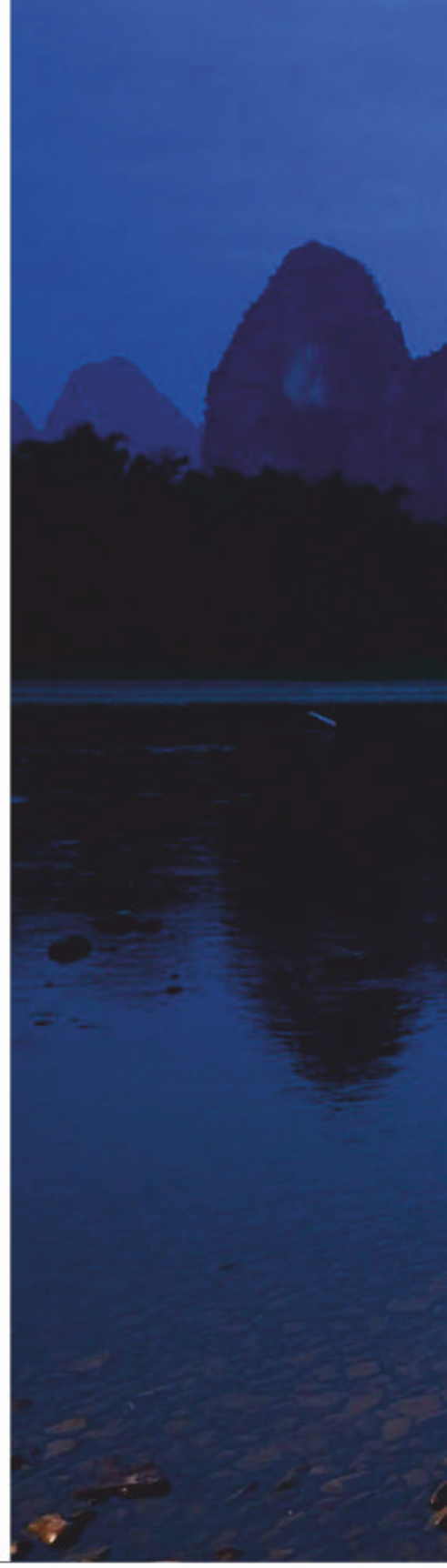
FACTS AND FIGURES

70 MILLION
People

4.5 MILLION
Fish catch (tonnes)

164
Languages

FORESTRY AND FISHING
Regional population dependent on the river



2020 Water Festivals in Asia

INDIA

01/01–29/02/2020

KUMBH MELA

The largest of the water festivals are India's various Kumbh Melas, which take place alternately in Haridwar, Ujjain, Nashik and Allahabad, and celebrated in each place every twelve years. This festival, which dates back to Vedic times, is one of the most sacred of all pilgrimages for Hindus, and literally tens of millions of *sadhus* and saints come from all over the country to participate in the festival.

The story behind the Kumbh Mela is found in several of the Hindu texts. According to the story, the *devas* (gods) desired to churn the primordial ocean of milk in order to procure the pot (the *kumbha*) of the nectar of immortality (*amrita*) which lay at the bottom. In order to do this, the *devas* enlisted the help of the *asuras* (demons), promising to share the nectar. Together they churned the ocean for 1,000 years, yet when the *amrita* began to surface, the *asuras* desired to steal the pot and not share any of the nectar with the *devas*. For 12 days and 12 nights, the *asuras* and *devas* fought for the pot of *amrita*.

After the pot of nectar emerged from the sea, Jayant, the son of Indra, ran away with the *kumbha* in order to prevent the demons from absconding with it. As he ran, he stopped to rest four times. In each place, drops of *amrita* fell to the *earth*, landing in the four locations where the Kumbh Mela is celebrated.

PHOTO: KYAW BO BO HAN,
FINALIST FOR IMAGES OF ASIA 2018

PHOTO: SHUTTERSTOCK

The Kumbh Mela holds great importance for Hindus everywhere. The main event of the Kumbh Mela is bathing in the river Ganga, which is believed to contain the drops of the nectar of immortality. It is believed that by bathing in the Ganga, and particularly by bathing during the Kumbh Mela, people are freed of all past karma they have committed, and the way for the attainment of *moksha* (liberation) is cleared. It is said in the scriptures that taking one single bath in the Ganga during the Kumbh Mela has the same effect as performing millions of other rituals.

The Kumbh Mela is considered to be the world's largest peaceful gathering and is featured on UNESCO's list of Intangible Cultural Heritage.



PHOTOS: SHUTTERSTOCK

INDONESIA

25/03/2020

MELASTI

The new year is celebrated in silence and stillness in Bali. On this holy day, known as Nyepi, all activity on the island stops to encourage quiet introspection. Shops are closed, cars are parked, and lights are turned off. In preparation, Balinese Hindus practise a series of rituals to rid their towns and villages of evil spirits that have taken up residence throughout the year. A few days before Nyepi, locals carry small statues that embody gods and deified ancestors from temples and homes to the sea for a symbolic washing ceremony called Melasti. To the beat of traditional music, large processions of devotees, dressed in their best temple attire and bearing offerings, dip the holy idols into the water to purify them and recharge their supernatural powers.



18+

WHAT IS AVAXHOME?

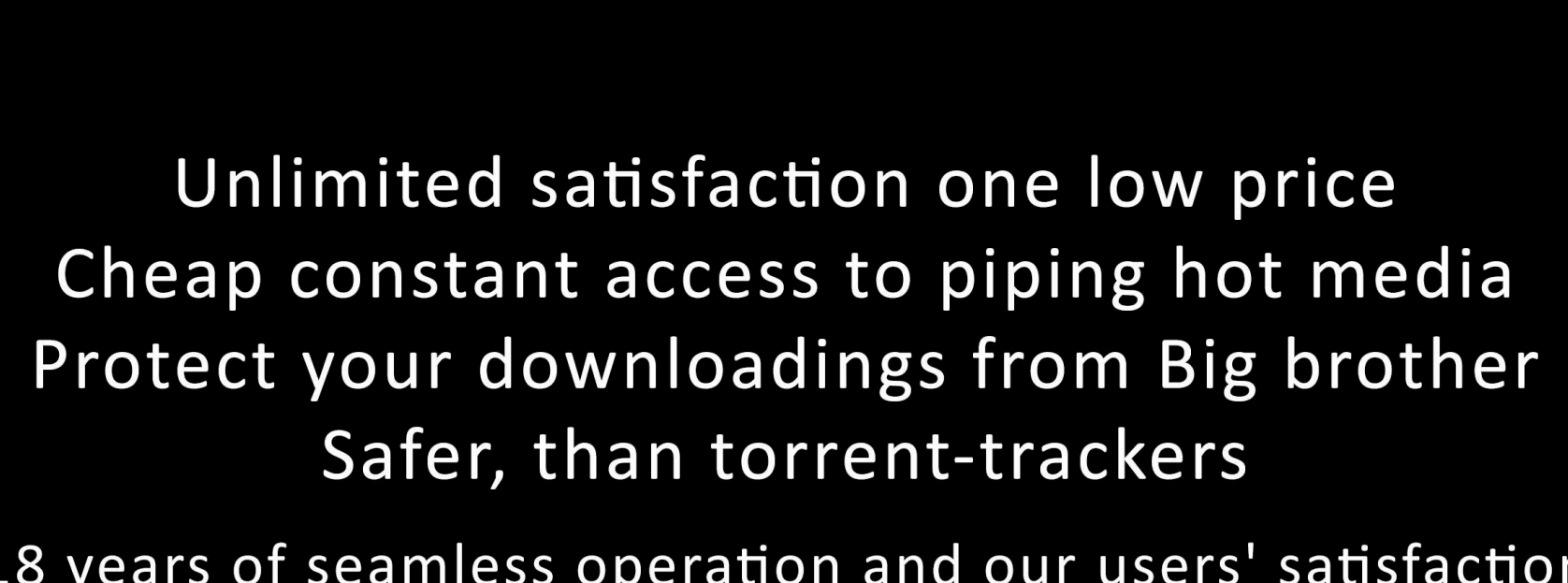
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CHINA

The Bustling Life on the Yangtze River

More than 400 million people live around the world's third largest river, with many dependent on it for their livelihoods. This represents 35 percent of all Chinese, or nearly 8 percent of all the people in the world. More than half people live along or near the Yangtze itself – the Yangtze River is the longest and busiest river in Asia. The Chinese call it *Chang Liang* ("Long River") and use the name "Yangtze" only to describe the section of the river near the mouth. Yangtze means "child of the ocean".

Many of these people get around on one of the 250 different kinds of river craft that ply the Yangtze's waters, including *sampans* (three-planker), *wubans* (five-planker) and junks. In the old days, floating restaurants and hotels and luxury junks outfitted with stages offered acrobatic and opera performances in towns along the river. Sichuan boatmen used to travel downriver in disposable boats that were dismantled and sold as building material, making the treacherous journey upriver unnecessary.

FACTS AND FIGURES

400 MILLION
People

35 PERCENT
Chinese

250
River Crafts

150
Languages

"Our crude boat, chugging, points to Chongqing. As someone I now forget once said, 'Journeying is hard.'"

Yangtze
Sarah Howe

INDIA
01/06/2020

GANGA DUSSEHRA

Ganga Dussehra celebrates the descent of the sacred river to Earth from heaven. On this day, a dip in the holy river while invoking the Goddess Ganga is said to purify sins and cure physical ailments. It is celebrated in the first 10 days of the month of Jyesththa (late May to early June in 2020). On this day, devotees worship Ganga as the mother and goddess, and special *pujas* and *aarti* (rituals) are performed to Ganga. One special ceremony that takes place on Ganga Dussehra is Ganga Chunari, where the *murti* (statue) of Ganga is wrapped in 108 colourful saris. During Ganga Dussehra, pilgrims also gather clay and water from the Ganga to take home for use in their daily worship.

INDIA
21/06/2020

GANGA MAHOTSAV

The Ganga Mahotsav is a special five-day festival that is observed in Varanasi, created to celebrate the various facets of Ganga. This festival celebrates the spirituality, purity and power of Ma Ganga, the identity and pride Ma Ganga gives the people of India, as well as the nourishment the river provides.

On this day, the gods themselves are believed to come down from heaven to bathe in the Ganga. Hundreds of people celebrate Ganga Mahotsav by lighting *dias* (oil lamps), chanting Vedic mantras, and bathing in the river.

INDONESIA, MALAYSIA, PHILIPPINES

The Bajau and Moken People – Sea Nomads

The Bajau have lived at sea for more than 1,000 years, on small houseboats that float in the waters off Indonesia, Malaysia, and the Philippines. Traditionally, they came ashore only to trade for supplies or to shelter from storms. They collect their food by freediving, with no wetsuits or flippers, only using wooden goggles and spearguns of their own making. Sometimes, they rupture their eardrums at an early age to make diving easier. They are known to stay underwater for up to 13 minutes, down to depths of 60 metres. Research has found that the median size of a Bajau person's spleen is 50 percent bigger than the same organ in a Saluan (a neighbouring group that have almost no contact with the sea) – just like in seals and marine mammals that spend much of their lives underwater, whose spleens are disproportionately large.

Likewise, in the island archipelagos on the Andaman Sea, and along the west coast of Thailand live small tribes called the Moken people, also known as sea nomads. Their children spend much of their day in the sea, diving for food. They are uniquely adapted to this job – because they can open their eyes underwater and are able to make their pupils smaller and change their lens shape to adapt on land and in the water – seals and dolphins have a similar adaptation!

FACTS AND FIGURES

1,000 YEARS
At sea

60
Metres deep

13 MINUTES
Underwater

50 PERCENT
Bigger Spleens



PHOTOS: SHUTTERSTOCK

JAPAN

01/08/2020

TORO NAGASHI

This is a ceremony in which participants float paper lanterns down a river. *Toro* is the Japanese word for "lantern", while *nagashi* means "cruise" or "flow". This activity is traditionally performed on the final evening of the Bon Festival in the belief that it will help to guide the souls of the departed to the spirit world. The ceremony may take place on other days of the year for other commemorations, such as for those lost in the bombing of Hiroshima, and those who died on Japan Airlines Flight 123.

Traditional Japanese beliefs state that humans come from water, so the lanterns represent their bodies returning to water and in particular to the sea. White paper lanterns are used to represent those who died in the past year.

INDIA

22/08/2020

GANESH CHATURTHI

At the start of this festival, idols of Ganesha are placed on raised platforms in homes or in elaborately decorated outdoor tents. The worship begins with the *pranapratishtha*, a ritual to invoke life in the idols, followed by *shhodashopachara*, or the 16 ways of paying tribute. Amidst the chanting of Vedic hymns from religious texts like the Ganapati Upanishad, the idols are anointed with red sandalwood paste and yellow and red flowers. Ganesha is also offered coconut, jaggery, and 21 *modaks* (sweet dumplings), considered to be Ganesha's favourite food.

At the conclusion of the festival, the idols are carried to local rivers in huge processions accompanied by drumming, devotional singing, and dancing. There they are immersed, a ritual symbolising Ganesha's homeward journey to Mount Kailash – the home of his parents, Shiva and Parvati.

CHINA

02/09/2020

ZHONGYUAN FESTIVAL

In ancient Chinese philosophy, human beings and land belong to *yang*, or the positive. Ghosts and water belong to *yin*, or the negative. The dark and mysterious underworld reminds people of a sepulchral hell where spirits suffer, and lanterns are set afloat to honour the dead.

The Ghost Festival, also known as Zhongyuan Festival, falls on the fifteenth day of the seventh lunar month. Since ancient times, Chinese people have believed that the gates of hell open up on the day of the festival, and so people hold various activities to honour the spirits of the deceased.

The Naxi people have their own unique ethnic customs, including article offerings and floating water lanterns. The water lantern, or lotus lantern,



is made by pasting paper into a lotus shape with a candle or lamp inside. Naxi people, wearing traditional ethnic clothing, always release lanterns downstream on the night of the Ghost Festival.



PHOTOS: SHUTTERSTOCK

SINGAPORE, MALAYSIA, THAILAND, INDONESIA, MYANMAR

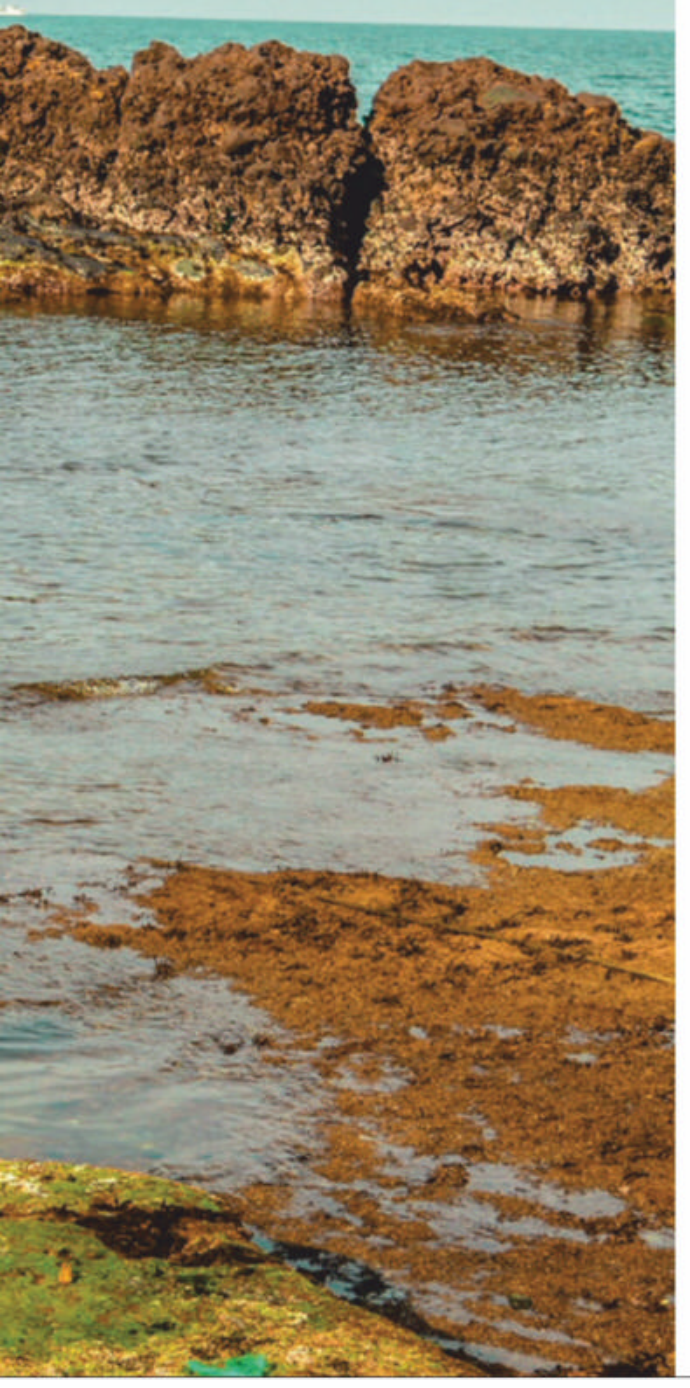
16/10–25/10/2020

NINE EMPEROR GODS FESTIVAL

On the eve of the ninth moon, Taoist temples hold a ceremony to invoke and welcome the nine emperors. Since the arrival of the gods is believed to be through the waterways, processions are held from temples to the sea shore or river to symbolise this belief. Devotees dressed in traditional white, carrying incense and candles, await the arrival of their excellencies.

A carnival-like atmosphere pervades the temple throughout the nine-day festival. During this period, the constant tinkling of a prayer bell and chants from the temple priests are heard. Most devotees stay at the temple, eat vegetarian meals, and recite continuous chanting of prayer. It is believed that there will be rain throughout the nine days of celebration.

The ninth day of the festival is its climax – a procession that sends the deities back home. Many devotees turn up for the final prayer and journey together to the beach or waterway for the prayers. Along this entourage is a dragon boat made of paper that will be lit and set adrift, symbolising the sending away of bad luck and misfortune.



JAPAN

The Haenyeo and Ama – The Original Freedivers

Some of the oldest freedivers originate from Japan and are known as *ama* (also known as *uminchu* in Okinawa and *kaito* on the Izu Peninsula). Over 2,000 years old, the practice of the *ama* continues to this day. The *ama* are primarily pearl divers, but also scour the ocean floor for seafood such as sea urchins and abalone. Traditionally, and even as recently as the 1960s, the *ama* dived wearing only a loincloth. Even in modern times, the *ama* dive without scuba gear or air tanks. The *ama*, the vast majority of which are women, begin diving as early as 12 and 13 years old, taught by elder *ama*. Despite their early start, divers are known to be active well into their 70s and are rumoured to live longer due to their diving training and disciplines.

Female traditional divers can also be found in Korea's Jeju region. By the 18th century, female divers, at this point commonly referred to as *haenyeo*, outnumbered male divers. Many of the *haenyeo* subsequently replaced their husbands as the primary labourer. Like the *ama*, they rely solely on breathing techniques that have been passed down from their ancestors.

FACTS AND FIGURES

2,000 YEARS

DIVING
For food, such as sea urchins and abalone

LONGER LIVES
These divers generally live longer

PRIMARY LABOURERS
Women

INDIA

22/10–26/10/2020

DURGA PUJA

This festival is particularly popular in the Indian states of West Bengal, Assam, Bihar, Tripura, and Odisha, Bangladesh, and the diaspora from this region, and also in Nepal, where it is celebrated as Dashain. Paying homage to the Hindu goddess Durga, the festival marks the victory of the goddess in her battle against the shape-shifting demon, Mahishasura. Thus, the festival epitomises the victory of good over evil.

Durga Puja is celebrated in a similar manner to the Ganesh Chaturthi festival. The festival starts with huge, elaborately crafted statues of Goddess Durga being installed in homes and beautifully decorated podiums all over the city. At the end of the festival, the idols are paraded through the streets, accompanied by music and dancing, and then immersed in the water.



MYANMAR

The Intha People of Inle Lake

In the unique watery world of Inle Lake, Intha fishermen row canoes with one leg, gardens float, and wooden homes perch above the water on rickety stilts. The speciality of the Inle Lake doesn't only lie in the charming beauty of mountains and sea, but in the living style of the Intha, an ethnic group in Myanmar. In Burmese, Intha translates to "people living on the lake". For thousands of years, Inle Lake has become the place where all the living activities of the Intha group take place.

Intha people live completely on the lake – they build houses and other constructions in the water body, including growing plants. They create the floating platforms from water-fern and seaweed bodies and fix them via bamboo trees plugged into the lake. As a result, these floating fields bob up and down together with the water level.

Transporting around the lake is done traditionally using small boats. Local fishermen are known for practising a distinctive rowing style, which involves standing at the stern on one leg and wrapping the other leg around the oar. This unique style is used because the lake is covered by reeds and floating plants, making it difficult to see above them while sitting; standing provides the rower with a proper view.



PHOTOS: SHUTTERSTOCK

"I see you go from house to house, homes like cranes wading in the shallows, visiting the infirm and the ill in a boat rowed by the boatman with his leg, one of the famous leg-rower breed."

On Inle Lake
Win Pe, Burmese poet

CAMBODIA

30/10–01/11/2020

BON OM TOUK

Bon Om Touk, literally "Water Festival", takes place over three days in November all over Cambodia, with the biggest celebrations along the Tonle Sap River in front of the Royal Palace in Phnom Penh. The Water Festival was first celebrated in the 12th century, around the time of Angkorian King Jayavarman VII. The King's Navy helped usher in the Cambodian fishing season, and the festivities made the gods happy and secured good harvests of rice and fish in the upcoming year. The ceremony consists of three main ceremonies: The illuminated float (*Loy Pratip*), moon salutation (*Sampeas Preah Khe*) and by eating fresh agricultural products (*Ork Ambok*). The last day is the most exciting activity of the festival: boat racing. In the evenings, the river is lit by hundreds of boats slowly floating on the water surface with thousands of neon lights and hundreds of different colours.

INDIA

20/11/2020

CHHAT PUJA

This Hindu festival is dedicated to honouring the sun god, Surya, and giving thanks for sustaining life on Earth. However, this festival also directly involves Ganga. The rituals of this festival take place over four days and include bathing, fasting, standing in water for long periods of time, and giving arghya (offerings) to the sun.

On the first day of Chhat Puja, worshippers take a bath in the Ganga and bring her water home to prepare offerings for the sun. After a day of fasting, worshippers return to the banks of the river on the third day to make prayers and offerings to the setting sun. On the final day, devotees return to Ganga at dawn to make offerings to the rising sun, thanking it for the eternal energy it provides.





The Ultimate Liberation:

Death in Varanasi

Scattering ashes on water is widely practised, especially in Asia. In India, a bone-throwing ceremony concludes the Hindu death observances. Within a year after death, the remains are taken to the Ganges and thrown into the sacred water; if it is not possible to do that, they are thrown into another river or stream with the hope that they will eventually make their way to the Ganges.

Text and Photos **Amardeep Singh**



"What we have done for ourselves alone dies with us; what we have done for others and the world remains and is immortal."

Albert Pike
American author, poet, and orator

In the ancient Hindu scripture *Matsya Purana,* Lord Shiva says, "Varanasi is my most sacred place, the cause of liberation. All sins, which may have accumulated in thousands of previous lives, disappear if one dies here." Varanasi is a city of contrasts. Death and life, asceticism and hedonism, learning and ignorance – all exist side by side here.

Following age-old traditions, many people move to Varanasi towards the end of their lives. It's strange, but only here can you find hotels that are targeted at dying enthusiasts. Such establishments have a unique policy, which typically reads: "Welcome to check-in at no cost, but should you not die in a few days, we will ask you to leave."

Then there are the *sadhus,* the ascetic holy men that, having given up material attachment to life, are seen contemplating on the banks of river Ganges. It's hard to read their thoughts, but some apparently have religious suicide on their minds. While Hinduism considers the act of suicide a crime, leading to a miserable rebirth, in Varanasi, this is an act of supreme liberation.

Varanasi is located on the banks of the river Ganges, in the state of Uttar Pradesh, about 800 kilometres east of New Delhi. The entire city is built along the western banks of the river. Here, the Ganges has a width of about 200 metres in the pre-monsoon period, but can easily swell to twice that size during the monsoons, expanding entirely on the eastern bank.

Along the western bank of the river, the ghats, areas defined for religious and social gatherings, number in the hundreds. Manikarnika Ghat, one of the oldest, is a prime cremation site. About 300 bodies are cremated in the open air here, every day of the year. At any given time, there are somewhere between 10 to 15 pyres burning in the cremation pits. An arresting sight to the casual observer, it leads others to enter into deep contemplation. Fixated on the burning pyres, some may be wondering if there is any meaning to life.

The cremation process at Manikarnika Ghat runs smoothly and efficiently. The constant burning of pyres – nothing short of a production line – requires a regular supply of wood. Logs are ferried in on boats and then stacked all around the bank in piles several metres high. Draped in bright red and gold fabrics, bodies are brought in on wooden stretchers by relatives, and are placed in a queue for their turn to be moved to the cremation pits. Corpses are simply left on the ground, with dogs and cows sniffing the bodies being a common sight.

Hired *doms* – men from the "untouchable" caste – move each body, in turn, to the pits and cover it with about 300 kilograms of wood.

In the small temples along the streets above the cremation area, a senior male member of the family of the deceased changes into white clothing to perform the last rites. After praying, he lights a pile of reeds from a fire pit at the entrance to one of the temples just behind the cremation area. It is believed this fire has been burning here for thousands of years and was started by Lord Shiva himself.

With the burning reed, the man circles the body a few times and then lights the pyre. As the body starts to burn, he fills a clay pot with water from the Ganges and throws it on the pyre, over his shoulders. Having performed this act, he breaks the pot by throwing it to the ground. The breaking of the pot signifies the end of the relationship with the deceased. A body must generally be left on a pyre for about 12 hours in order to burn fully. At Manikarnika Ghat,

RIGHT
A "dying enthusiast" at Varanasi





however, the queues are long, allowing a maximum of three hours per body.

When the time has passed, a man from the *dom* community clears the pit, but first searches the ashes for any gold or silver ornaments with which the body had been adorned before being cremated. Having collected any valuable metals, the remains of the semi-burnt body are simply shovelled into the river. Suddenly, the dogs that have been lazing around the area become active; it is common to see them fighting over the bones.

The practice of burning the dead does not apply to all Hindus, however. Since cremation is a way of cleansing the soul, holy men, children below the age of 12 and women that were pregnant at the time of death are not cremated, because they are associated with purity. Such a body is wrapped in white cloth, tied to a huge rock, rowed to the middle of the Ganges and dumped overboard to be devoured by river fish.

It is also not uncommon to see the bodies of *sadhus*, who may have committed religious suicide in pursuit of salvation, floating in the gentle currents of the river. Birds can be seen feasting on these floating islands of partially decomposed flesh. Dogs, too, can be seen waiting patiently on the eastern banks for the bodies that drift ashore. The phenomenon of death in Varanasi can be deeply unsettling for the faint-hearted. I stood at the banks of Manikarnika Ghat, listening to the voice

inside me ask, "Is dying in Varanasi a fast track to attaining liberation? Can one's entire life's doings be undone by making this last stop in Varanasi and inviting death with open arms?" I was reminded of Saint Kabir, born 1398 AD, who, having spent his entire life in Varanasi, decided to leave in his final days, heading to Maghar, a barren village.

That tradition put a stigma on Maghar – it is said that if one dies there, one will surely be stuck in the wheels of reincarnation, with a chance of being born a donkey. But Kabir's message was bold and clear: "A hardened sinner will not escape the fires of hell, even if he dies in Varanasi. However, a man of virtue, even if he dies in Maghar, will be emancipated."

My experience of Varanasi taught me that it's not physical death, but the death of the conscience that should be feared. As I stood on the eastern bank of the Ganges, a marriage procession suddenly emerged. In front of me was Manikarnika Ghat; on my right, dogs waited patiently for the next body to surface from the river; on my left, a group celebrated the joy of marriage. Truly, Varanasi is a city of contrasts, where death is just a passing event. ◆ AG

LEFT
It is common to see dogs and cows sniffing the bodies queued for cremation

BELOW
Around 300 bodies are cremated daily at Manikarnika Ghat

"The day which we fear as our last is but the birthday of eternity."

Seneca
Roman Stoic philosopher, statesman and dramatist



MAIN
Togian Islands,
Indonesia



Island Nations of Asia

An island country is a nation that is made up of one or more islands, or land that is surrounded completely by water. Around one-fifth of Asia is made up of island nations, and while island countries are typically small with low populations, some, like Indonesia and Japan are notable exceptions.



The unique geography of island nations enable them to bank lucratively on tourism. These places have stretches of coastlines, tropical climates, and historical and cultural significance – some of the factors that drive tourism. These nations are also strategically located for maritime trade as their economies mostly rely on imports and exports. Some of these nations boast natural resources such as fisheries, arable land, minerals, and forestry.

However, many island countries are more affected than other nations by climate change, which produces problems such as reduced land usage, water scarcity, and sometimes even resettlement issues. Some low-lying island countries are slowly being submerged by steadily rising sea levels. Other adverse effects linked to global warming that have been witnessed in these countries include typhoons, cyclones, tides, floods and droughts, which have had a devastating effect on people's lives, infrastructure, and agriculture.

TOP
The Pura Ulun Danu Bratan temple in Bali, Indonesia



Indonesia

Size: 1.9 million square kilometres
Population: 270.6 million

Situated in Southeast Asia, Indonesia lies strategically between the Pacific Ocean and the Indian Ocean. The island country stretches for 1,760 kilometres from north to south and 5,120 kilometres from east to west. The number of islands making up the archipelago has been estimated to be over 18,000. There are five major islands, namely Sulawesi, Borneo, Java, New Guinea, and Sumatra, and two primary archipelagos, the Maluku Islands and Nusa Tenggara, as well as 60 smaller archipelagos. Some of the islands are shared with other countries including Borneo (Brunei and Malaysia), Timor (East Timor), and New Guinea (Papua New Guinea). Java is the most densely populated island in the archipelago, and in the world.



Japan

Size: 377,915 square kilometres
Population: 126.9 million

Japan is located in the Pacific Ocean off the eastern coast of mainland Asia. The islands of Japan are located between the Sea of Okhotsk and the East China Sea to the north and south, respectively. The country includes about 6,852 islands, with its four main islands, or the "Home Islands", being Hokkaido, Honshu, Shikoku, and Kyushu. Large parts of Japan are heavily forested and mountainous, and its densely populated settlements are mainly located in the coastal regions.



Philippines

Size: 300,000 square kilometres
Population: 108.1 million

The Philippines, an archipelago east of Vietnam, between the Philippine Sea and the South China Sea, boasts the highest portions of a partly submerged mountain chain. It is made up of more than 7,000 islands; the three main island groups are Luzon, Visayas, and Mindanao. It is the fifth largest island country in the world, and its 36,289 kilometres of coastline makes it the country with the fifth-longest coastline in the world. At 10,540 metres deep, the Galathea Depth in the Philippine Trench, located in the Philippine Sea, is the deepest point in the country and the third deepest in the world.



Sri Lanka

Size: 65,610 square kilometres
Population: 21.4 million

Sri Lanka, formerly called "Ceylon", is an island nation in the Indian Ocean, southeast of the Indian subcontinent, in a strategic location near major Indian Ocean sea lanes. It is the 25th largest island in the world by area. There was once a land connection to the Indian mainland, which is now mostly submerged.



Taiwan

Size: 36,197 square kilometres
Population: 23.8 million

An island state in East Asia, known historically as Formosa, Taiwan makes up 99 percent of the area controlled by the Republic of China, and lies just 180 kilometres across the Taiwan Strait from the southeastern coast of mainland China. The East China Sea lies to its north, the Philippine Sea to its east, the Luzon Strait directly to its south and the South China Sea to its southwest. Smaller islands include a number in the Taiwan Strait such as the Penghu archipelago, the Kinmen and Matsu Islands near the Chinese coast, and some of the South China Sea islands.



Timor-Leste

Size: 15,007 square kilometres
Population: 1.3 million

East Timor, or Timor-Leste, is a sovereign nation occupying the eastern half of the island of Timor in Maritime Southeast Asia. To the north of the island are the Ombai Strait, Wetar Strait, and the greater Banda Sea. The Timor Sea separates the island from Australia to the south. Much of the country is mountainous.



Brunei

Size: 5,765 square kilometres
Population: 433,285

The Nation of Brunei, Abode of Peace – as it's officially named – is a rich unitary Islamic absolute monarchy on the north coast of Borneo in Maritime Southeast Asia. It has 161 kilometres of coastline next to the South China Sea, and it shares a 381-kilometre border with Malaysia. It also has 500 square kilometres of territorial waters. Most of Brunei is within the Borneo lowland rainforests ecoregion, which covers most of the island.



Bahrain

Size: 780 square kilometres
Population: 1.6 million

Bahrain is a generally flat and dry archipelago in the Persian Gulf. Often described as an archipelago of 33 islands, extensive land reclamation projects have changed this, and the number of islands and island groups increased to 84. Bahrain does not share a land boundary with another country but does have 161 kilometres of coastline. The country also claims a further 22 kilometres of territorial sea and a 44-kilometre contiguous zone. Bahrain's largest islands are Bahrain Island, the Hawar Islands, Muharraq Island, Umm an Nasan, and Sitra. Bahrain is also connected to Saudi Arabia by the 25-kilometre-long King Fahd Causeway.





Singapore

Size: 718 square kilometres
Population: 5,8 million

Singapore consists of 63 islands, including the main island, Pulau Ujong, or Singapore Island. Pulau Ujong is the 20th most populous island in the world and the 31st most densely populated island. There are two man-made connections to Johor, Malaysia: the Woodlands 1st Link in the north and the Tuas 2nd Link in the west. Jurong Island, Pulau Tekong, Pulau Ubin and Sentosa are the largest of Singapore's smaller islands. Since 1822, Singapore has continued to increase the area of the island through land reclamation, from 580 square kilometres in the 1960s to 718 square kilometres today.





Maldives

Size: 298 square kilometres
Population: 530,953

As the smallest Asian country, the Maldives is an archipelago of far-flung, low-lying islands and atolls located in the Indian Ocean. This is a tropical archipelago comprises 1,190 coral islands, grouped into 26 atolls straddling the equator in the Indian Ocean, about 900 kilometres southwest of Sri Lanka. Climate change is severely threatening the existence of the Maldives as well as diminishing existing human capabilities on these islands. According to the World Bank, with future sea levels projected to increase in the range of 10 to 100 centimetres by the year 2100, the entire country could eventually be submerged.

DID YOU KNOW

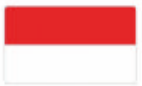
Malé

Size: 6.8 square kilometres
Population: 142,909

Malé, the capital of the Maldives, is especially threatened by climate change as it is on a small, flat, extremely densely populated atoll that is surrounded by sea walls and other barriers to protect against storms. This means the Malé atoll cannot change shape in response to rising sea levels and is increasingly reliant on expensive engineering solutions. To prepare against climate change and the resulting sea-level rise, the government has prepared a comprehensive National Adaptation Programme of Action, which attempts to critically consider and alleviate many of the serious threats the Maldives faces. The country has already implemented several measures to combat sea-level rise, including building a wall around the capital and refurbishing local infrastructure, particularly ports. In 2009, the Maldives' then-president Mohamed Nasheed unveiled an ambitious plan for the country to go carbon-neutral within a decade. Today, we know that goal is far from being achieved, with more pressing issues such as water, waste, and sanitation taking political precedence. Moreover, a 2018 study estimated that tourism accounts for as much as eight percent of global carbon dioxide emissions, with the Maldives topping the list of the countries with the highest per-capita destination-based footprints: Some 95 percent of the island's tourism-related emissions come from international visitors. For a nation that relies so heavily on tourism, the dream of carbon neutrality seems a long way off.

East and West: Sinking Cities

Temperatures and sea levels are rising worldwide, threatening many of world's low-lying cities. For some, the sea is slowly encroaching on their coasts. For others, excessive groundwater extraction is the cause of significant subsidence. Faced with increasing risks of flooding, city authorities are working to come up with creative solutions to combat rising tides.





Jakarta, Indonesia

Average elevation: 7 metres above sea level
Population: 10.1 million
Sink rate: Up to 25cm per year

Jakarta has been dubbed the fastest sinking city in the world with 40 percent of its land lying below sea level. The loss of land, while made worse by rising sea levels, has been primarily caused by unregulated groundwater extraction and the sheer weight of the megacity's infrastructure, resulting in the sinking of the city by four metres over the past three decades. If this goes unchecked, models predict that one-third of the city could be entirely submerged by 2050.

The fastest-growing megacity on the planet faces extreme land subsidence and overflowing rivers. Jakarta sits on swampy land, the Java Sea lapping against it, and 13 rivers running through it. Although Central and South Jakarta is sinking at a rate of just one or two centimetres per year, western parts of the city are subsiding by as much as 15cm annually, while eastern parts are sinking by around 10cm a year. The dramatic rate at which Jakarta is sinking is partly down to the excessive extraction of groundwater for use as drinking water, for bathing and other everyday purposes by city dwellers. Piped water is either unreliable or unavailable in most areas, so people have no choice but to resort to pumping water from aquifers deep underground. But when groundwater is pumped out, the land above it sinks as if it is sitting on a deflating balloon – and this leads to land subsidence.

A USD42 billion plan to save Jakarta by building giant sea walls on the eastern and western sides of the bay has been plagued by delays and financial problems. Now the government is taking radical action: In September 2019, it announced plans to move the capital to the island of Borneo, more than 1000 kilometres away. The mind-boggling project, which has a price tag of USD33 billion, is due to begin in two years' time and be completed by 2024.







Mexico City, Mexico

Average elevation: 2,240m above sea level
Population: 21.6 million
Sink rate: Up to 1m per year

The magnitude of Mexico City's problems is alarming. While Venice is sinking into its lagoon at a leisurely centimetre or so a year, Mexico is in relative freefall, having plunged some 10 metres in the past century. The population consumes nearly 287 billion gallons of water each year, more than two-thirds of which is extracted from aquifers below the city.

The Aztecs' unusual choice of location for their fine city was just the start of the problems. When the Spaniards took over in 1519, they filled in the lake and sank deep wells to bring water up from underground aquifers. Everywhere they pumped up groundwater from the boreholes, the ground sank. Without the presence of the water, the sediments that the city was built on could be compressed considerably more.

The sinking caused by the exploitation of the aquifers has been a constant since the mid-19th century. The aquifers are replenished with water at an average rate of 25 cubic metres per second, about half the rate at which water is extracted. Uneven subsidence is causing broken pipes and buildings leaning to one side. And as the city population grows and water demand increases, the problem will only get worse.

Drastic action – likely costing as much as 20 billion pesos (USD1 billion) a year for the next 15 years – needs to be taken to address the issue. Such action could include finding alternative sources of water, artificially replenishing aquifers or rebuilding the city's waterworks, parts of which are as much as 100 years old. The main aquifer beneath the city is now believed to be in danger of collapsing.

To house the steady influx of people seeking work in the city, high-rise buildings, often using shallow foundations, have been going up at a furious rate, further exacerbating the problem. For a city that sprawls around 40 kilometres east to west and 60 kilometres north to south, finding workable solutions is immensely difficult. Climate change, political inaction, and poor infrastructure are making this an almost impossible challenge.



PHOTO FOR ILLUSTRATION PURPOSES ONLY

That Sinking Feeling

Asia's most at-risk cities



Dhaka, Bangladesh

Average elevation: 4 metres above sea level
Population: 17.6 million
Sink rate: 1.4cm per year

In the capital of Bangladesh, rising sea levels have already displaced people living in the lowest-lying regions. This has resulted in an increase in the number of slum dwellers in the densely populated city.

Besides the sea level rise, much like Jakarta, Dhaka also suffers from unsustainable groundwater extraction, exacerbating the city's subsidence. Another phenomenon, plate tectonics – the movement of the Burman sub-plate and the Indian plate – is also contributing to subsidence. In comparison to water extraction, however, plate tectonics only has a very minor role to play as its effects result in the sinking of only about 3 to 5 millimetres per year.

Solutions
The country has invested in early warning systems and storm shelters in order to be prepared for storm-related emergencies, but despite the efforts, sea level rise due to climate change could potentially prove to be an almost impossible challenge to overcome.



Bangkok, Thailand

Average elevation: 1.5m above sea level
Population: 9.7 million
Sink rate: 1cm per year

Flooding is a common and recurring phenomenon in Bangkok. This is partly due to the city's geographic location at the southern end of the Chao Phraya River Basin, as well as its low-lying terrain. The city also experiences six months of rainy season every year from May to October. The city was developed on a marshy stretch of land in the Chao Phraya delta to accommodate a new capital after the fall of Ayutthaya to the Burmese Empire in the 18th century. It is built on highly compressible layers of soft clay. The sinking of the city is mostly driven by the sheer weight of the built-up urbanisation, as well as uncontrolled groundwater extraction.

Solutions
In 2019, the National Water Resource Commission (NWRC) approved a USD412 million plan to combat drought and floods as well as improve drainage and water quality in Thailand's main interprovincial canal – the Klong Prem Prachakorn.







Manila, Philippines

Average elevation: 5m above sea level
Population: 12.8 million
Sink rate: 0.8cm per year

The Philippines is vulnerable to rising sea levels because the islands are mostly flat and the bays reach far inland. According to a UN world climate report, higher levels in the bays mean that typhoons will do more damage. Sea level rise could disrupt crop growth, and flood rice and corn fields, which could spread dengue fever through standing water. Along Manila Bay, the provinces of Pampanga and Bulacan have sunk between four and six centimetres annually since 2003. A 2019 study concluded that cities in the Metro Manila region will be underwater three decades from now, if nothing is done to mitigate the problem. As with other cities in developing nations, another cause for the rise in water levels is the volume of groundwater being pumped out from below, often via unregulated wells for homes, factories, and farms catering to a booming population and growing economy.

Solutions

The Philippines has failed to come up with a strategy to save its sinking capital. A 2018 proposal by lawmakers to move the seat of government to Davao City in Mindanao was put forward to relieve pressure on Manila, although there was no specific mention of the threats from rising sea levels. It likely had more to do with the fact that Davao City is the hometown of current controversial strongman President Rodrigo Duterte.





Mumbai, India

Average elevation: 14m above sea level
Population: Over 20 million
Sink rate: 0.25cm per year

Research by science organisation Climate Central published in 2019 found that land elevations calculated using satellite readings were much too optimistic, and as a result, rising seas could affect far more people than previously thought. Mumbai is one city that will be imperiled considerably more than its average elevation figures would suggest. As population expansion and infrastructure development continue to amplify the problem, the research suggests most of India's financial capital could become completely submerged by mid-century. Mumbai's historic downtown is particularly vulnerable, as it was built on what was once a series of islands. Even more worryingly, the new projections don't even account for land lost to coastal erosion.

Solutions

Efforts have been made to address the issue by building sea walls along the city's shoreline, planting more trees, investing in beach nourishment and building artificial reefs.



Hikes Before the Volcano Strikes
Facing Volcanic Waters

Volcanoes are typically associated with the colours black for cold lava or volcanic "glass", and white for steam rising from craters or "tropical hot snow". Some volcanic places have an abundance of rainbow colours in the water or close by.

Text and Photos **Carl-Bernd Kaehlig**



Dolok Tinggi Raja
Average elevation: 450 metres

One such colourful site is Dolok Tinggi Raja (freely translated as the King's High Ground). It is situated halfway between Medan and Lake Toba in Indonesia's North Sumatra province, in the limestone hills and close to the "spine" of Sumatra, in the chain of volcanoes named "Barisan Range". Since 1924, it has been designated a 167-hectare Nature reserve.

It is well-known for its sinter formations, such as terraces on a mound in orange and red, as well as black and snow-white on fine grained column-like forms from which hot water steadily flows or trickles down if the terrace is close to the water pool on top of the volcanic mound. The snow-white terraces and other flatter parts of the mound are the "tropical hot snow". Rock walls of up to 15 metres in a jungle ravine fairly close to the biggest mound with terraces show all their splendour in white, green, orange and brown. Nearby conical cones spout hot water into the river creating colourful "mini-volcanoes".

A sinter is a mineral deposit, in the case of Dolok Tinggi Raja, a calcareous sinter. The water containing calcium carbonite is likely to come from a deep-down cavern where hot rocks heat it up. Such rocks will typically be close to a magma chamber, the



source of the generated heat. Water may reach the surface as steam or up to 100°C hot thermal water in the case of the White Crater, the biggest active sinter in this area. Upon cooling, the water's minerals attach themselves to the surface. The porous sinter with tiny cavities is partly caused by the decay of mosses, algae and other small forms of vegetation and sulphur-loving microorganisms resulting in a clear demarcation of the sinter's colours.

Large mounds next to the White Crater show that a sinter deposit can petrify, when there is no feeding water source anymore. However, in the closest mound to the White Crater there is a gurgling and partially visible water stream underneath, which probably feeds the White Crater.

A legend gives another explanation of how Dolok Tinggi Raja came into existence. This area was once a region of wealthy kingdoms. One king who had very old parents decided one day to send delicious food to them. A farmer who lived near the king's old parents was ordered to bring the food. On his way he could not control his hunger and devoured the delicacies. Only bones were delivered. The king's mother was outraged and called her present children to hold a dance session with a medium of a cat. During this performance heated salt water spilled out and the whole area of Dolok Tinggi Raja was flooded.

Hiking in this Nature reserve starts with the Blue Crater, which is a mound next to the access road and has on top an encrusted azure pool that is about 80 metres deep. This water creates light blue, shallow water terraces. The next hiking destination is the White Crater with similar, but bigger features in a lowland jungle setting with pandan trees on one side. But dangers lurk: By trying to do a short cut at the White Crater, one of my feet sank half a metre into fortunately cold mud, although the surface looked solid. Lesson learned: Ask your guide where it is safe to put your feet!

The hike's second part is trickier: You descend into a jungle ravine, which at the end is close to vertical, and end up at a small river. The view from below is one to behold: A 15-metre-high colourful sinter wall with porous textures. As these sinter walls are brittle and when these vertical deposits become too heavy, they collapse. And the whole sintering process starts anew, provided the water channel does not dry up as a result of this collapse or move to another nearby place.

The last interesting part of the hike is particularly unusual. For the first of two kilometres or so you will walk in the river, which may be up to 1 metre deep in some places during the dry season. Along this river there are more active and petrified sinter sites. Another word of caution: This river has water-based leeches in addition to land-based ones in the lowland jungle. Good hiking shoes are a must!



Gunung Papandayan

Average elevation: 2,615 metres

Gunung (Mount) Papandayan is near Garut, southeast of Bandung in Indonesia's West Java province, and easily accessible by car, as the parking lot is right at the entrance of the main crater at about 2,000 metres.

Papandayan is an active stratovolcano, conical with many layers of lava, ash and pumice. The latter material is also good for scrubbing off dead skin! This volcano has four craters of which the main crater is the Golden Crater, so-named, probably, because of its yellow fumarole fields.

This volcano has been quite active in the past: In 1772 a devastating eruption blew away the northeastern flank, resulting in a debris avalanche destroying 40 villages and killing about 3,000 people. Then there are periods of relative calm with occasional phreatic explosions caused by magma heating and expanding ground water. In 2002 another major eruption occurred, creating a crater lake with changing colours and a lava stream of a mainly light brown colour with a length of about 1.5 kilometres towards the large gap in the volcano's northeastern side. Immediately after this eruption red ponds appeared, their colour most likely caused by a solution in the hot water such as arsenic and antimony compounds and heat-loving microorganisms. The later change to the ponds' brown colour may come from other minerals and microorganisms. The types of waters after this 2002 eruption are acid sulphate-chloride water and acid sulphate water, certainly not palatable.

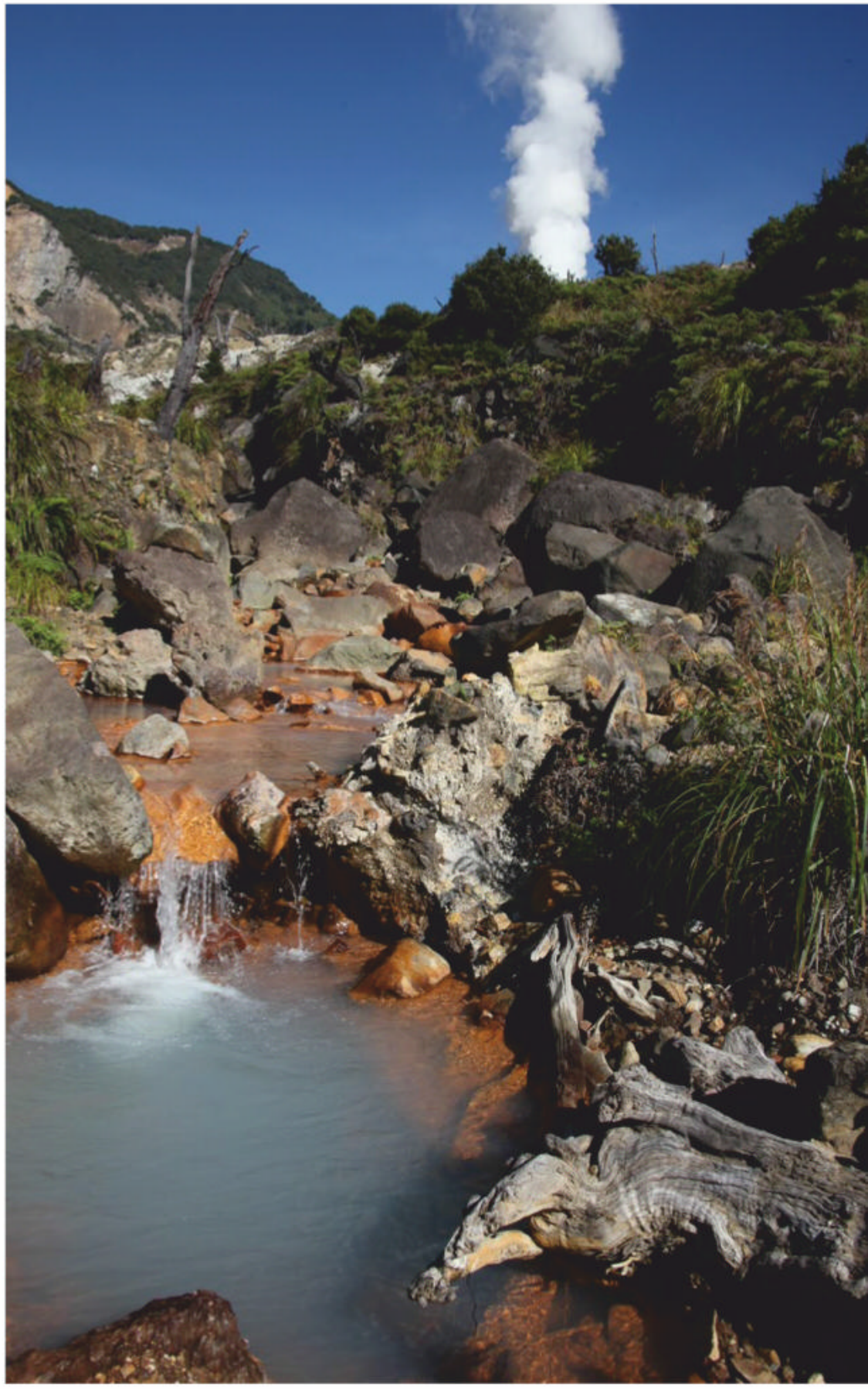
A stunning feature of the Golden Crater is a large field of fumaroles. A fumarole is a volcanic steam vent often dominated by sulphur gases along with hot water vapour. If the gases from these fumaroles are above 300°C, they will be devoid of water. The sulphur deposits around the fumaroles derived from condensation are usually bright yellow, almost pure (99.9%), and show delicate snowflake-like crystalline forms growing around the vent's mouth. This vapour often comes from ground water heated up by a magma chamber, which is quite close to the surface.

The dangerous gases from these fumaroles are typically carbon dioxide, sulphur dioxide and hydrogen sulphide. The latter is very poisonous, corrosive and flammable. The rock wall above the recently formed crater lake emits hydrogen sulphide. If whitish gas clouds emitted from this rock wall come towards you, you had better run for life, as it can kill a person in seconds. In small quantities it stinks like rotten eggs. In big quantities it numbs your sensors in the nose, and then it is probably too late…

Bubbling mud pools, usually in all shades of grey, can also be found near fumaroles. Their grey colour may be deceptive, as their sulphur content is also around 95%. Interestingly the mud's acid- and heat-resistant microorganisms break down the mud pool's rock wall into clay and mud. Some of the Golden Crater's springs are contributors to small creeks leaving the crater through the northeastern gap in the crater wall. Along them algae and microorganisms "paint" the nearby rocks white, red, brown and green.

Hiking off the trodden tourist path without an experienced guide in this crater is definitely not recommended because of potential hazards. On the way higher up in the crater to an alpine meadow with Javanese edelweiss and a fairy forest, which was miraculously not severely affected by the 2002 eruption, there is a beautiful grove of gnarled trees, charred by the 2002 eruption, in a shallow pool of water. With a guide you may decide to go up to a lookout point on the western side and then down a narrow and very steep ravine including crouching through a tunnel of dense bush. Closer to the crater's entrance you may look out for black obsidian, the volcanic "glass" which is also used as a gemstone. It is a magnetic rock formed by rapidly cooling molten rock material, in the case of Gunung Papandayan at the edge of the 2002 or older lava flow.

This lustrous black rock regarded by some to have metaphysical properties and referred to as "dragonglass" in the epic "Game of Thrones" is a beautiful reminder of the amazing colours caused by volcanic activities in Indonesia.



By hiking Indonesian volcanoes for over 33 years, Jakarta-based German Carl-Bernd Kaehlig combines his love for hiking and outdoor photography. The result is his photo book: *Volcanoes of Indonesia: Creators and Destroyers*. Together with his writer-wife, Carl-Bernd has published three photo books on Indonesian truck paintings, Singapore's Chinatown, and Little India and Kampong Glam. They are also regular contributors to *ASIAN Geographic* and Garuda's inflight magazine.



MAIN
A boy dresses up and paints his face like the Hindu god Lord Krishna during the Gajan festival

PHOTO: SANDIPANI CHATTOPADHYAY, FINALIST FOR STREET/PEOPLE CATEGORY, IMAGES OF ASIA

The Blue God

Vishnu is one of the most important gods in the Hindu pantheon and, along with Brahma and Shiva, is considered a member of the holy trinity of Hinduism. As the most important god of Vaishnaism, the largest Hindu sect, he is involved in a number of colourful stories which illustrate his virtues as the protector of cosmic order.

Text **Shreya Acharya**

Vishnu's Balancing Act

Picture a country. For it to run smoothly and successfully, there are establishments and departments in order, in which most people have a designated role to fulfil. These could be in the military, police, or even the teaching sector. In the chain, there are thousands of individuals that carry out these responsibilities at different levels– and each person or group of people in charge has powers that enable them to lead. Now multiply this number of people by a continent. That's well into the millions. Multiply this by the entire world – tens of millions of people are employed to keep the planet running.

Now take this strategy into the spiritual realm, and even the vast number of deities in Hinduism start to look like an understaffed nirvana. The celestial beings of Hinduism have evolved from the Vedic era (2nd millennium BC) through the medieval era (1st millennium AD) all across Hinduism's diverse traditions. The Hindu deity concept varies from a personal god as per the yoga school of Hindu philosophy, to 33 Vedic deities, or to hundreds in the mythologies and lores (or puranics) of Hinduism.

Hinduism is the dominant and native religion of the Indian subcontinent. It encompasses four major traditions: Vaishnavism, Brahmanism, Shaktism, and Saivism, whose followers consider Vishnu, Brahma, Shakti (or Devi) and Shiva to be the supreme deity, respectively. Most of the other deities are related to or incarnations of them. It is often considered one of the oldest religions in the world, and many practitioners refer to Hinduism as "the eternal law", or Sanātana Dharma.

Vaishnavism is the sect within Hinduism that worships Vishnu, the preserver god of the Hindu Trimurti (the Trinity), and his many incarnations. The adherents of this sect are generally non-ascetic, monastic and devoted to meditative practice and ecstatic chanting. The Trimurti consists of three gods who are responsible for the creation, upkeep, and destruction of the world: Vishnu, the protector and enabler of the universe, Brahma, the creator of the universe, and Shiva, the destroyer.

Vishnu's role is to return to the Earth in troubled times and restore the balance of good and evil. So far, he has been incarnated nine times, but Hindus believe that he will be reincarnated one last time close to the end of the world. Two of Vishnu's incarnations, Rama and Krishna, are also the subject of the epics *Ramayana* and *Mahabharata*, respectively.

The blue skinned-god represents the great ocean of consciousness – Lord Vishnu resides on the blue cosmic ocean and rests on the five-headed serpent, Sheshnag. He is believed to be the all-pervading, omniscient, omnipresent god, his blue hue signifying that he is infinite and immeasurable like the deep blue. Vishnu makes human life as flexible as water. It is for these reasons that Vishnu is shown in water and possesses its colour.

Vishnu is represented with a human body, with blue coloured skin and with four arms; standing upright on a lotus flower with Lakshmi, his consort, close by him; reclining on the coils of a serpent, with Lakshmi massaging his feet. They are surrounded by the "Milky Ocean".

The *Samudra Manthana:* Churning the Ocean

The *samudra manthana* is one of the best-known episodes in Hindu philosophy, narrated in the *Bhagavata Purana*, in the *Mahabharata* and in the *Vishnu Purana*. It is a story depicting how the gods defeated the demons and became immortal. The gods,

VISHNU ALWAYS CARRIES THESE FOUR OBJECTS:

The conch



The sound this produces, "Om", represents the primeval sound of Creation. The conch also represents the sea

The *chakra*, or discus



An example of glorious existence and liberation

The lotus flower



An example of glorious existence and liberation

The Mace



Representing mental and physical strength

PHOTO: SHUTTERSTOCK

who had become weakened as a result of a curse by the sage Durvasas, invited the *asuras* to help them recover the elixir of immortality, or the *amrita*, from the depths of the cosmic ocean.

In the story, Vishnu advised the other gods to churn the "ocean of milk" in order to recover a number of lost treasures, including the elixir of immortality and Lakshmi, the goddess of success and wealth. Both of these items would enable the gods to defeat the demons who had taken over the universe.

Knowing the gods would be unable to churn the great ocean themselves, Vishnu struck a deal with the demons by promising them they would get a share of the treasures, including the elixir of immortality, if they helped. They agreed, and Vishnu told the gods and demons they should use Mount Madura as a churning stick, and the giant serpent, Vasuki, as a rope.

Vishnu managed to persuade the demons to hold the head of the snake, which was spitting furiously, while the gods held the tail end. The serpent was then coiled around the mountain. Each side alternately pulled the rope then allowed it to relax, causing the mountain to rotate in the water.

However, as the gods and demons churned, the mountain began to sink into the soft sand bed of the sea. Then at the request of the gods, Vishnu incarnated as

BELOW
Women get ready for the ceremony in Budhanilkantha Temple in Kathmandu

RIGHT
A Hindu monk prepares for the ceremony of the statue of the sleeping Vishnu

a turtle. He placed the mountain on his back to act as a foundation stone, thus allowing the churning to continue. It is said that it was churned for 1,000 years before anything came up. When the elixir of immortality finally rose to the surface, the demons rushed to grab it.

But soon enough, Vishnu assumed the form of Mohini, a beautiful woman who captivated all the demons. She changed the elixir for alcohol and returned the precious liquid to the gods.

The churning also brought Lakshmi forth from the ocean. She came as a beautiful woman standing on a lotus flower. Seeing all the gods before her, she chose the god she felt was most worthy of her. Vishnu and Lakhmi have been inseparable since.

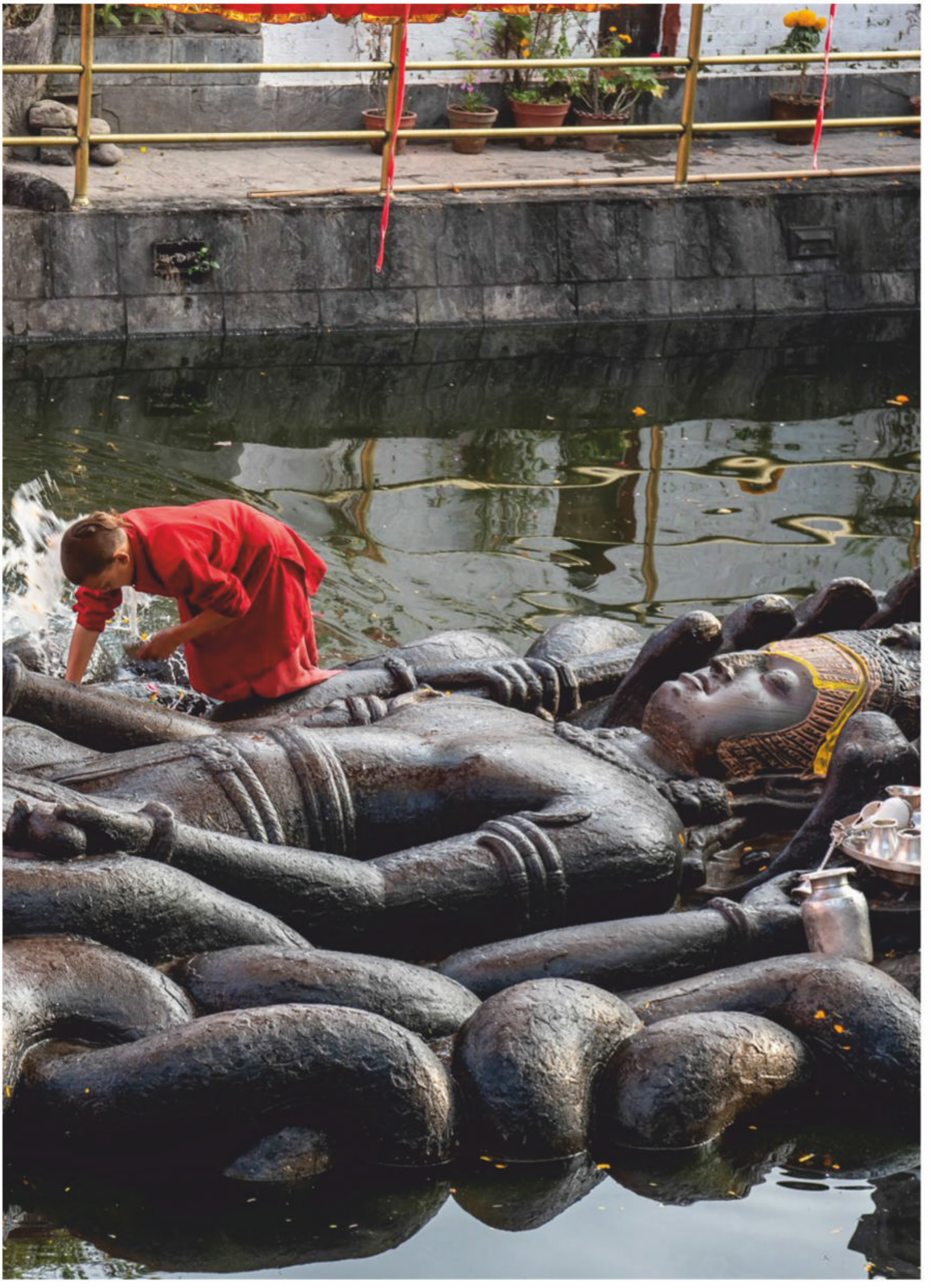
First He Creates, Then He Rests

At the temple of Budhanilkantha, just north of Kathmandu, lies an ancient statue of the creator Vishnu. Carved from black stone and half-submerged in the waters of a small lake, he reclines on the body of the cosmic serpent Anantasesh, coiled under him like a floating bed. His serene nine-metre-long form, constantly attended by priests and pilgrims, lies wrapped in mystic sleep. The creator and ultimate controller of the material realm, one who is described in the *Bhagavad Gita* as the source of all material and spiritual worlds and the origin of all living beings, this final source of life and power, has withdrawn himself from what he has set in motion, and is asleep.

Budhanilkantha portrays a sleeping Vishnu, floating on a bed of snakes in the middle of a big pool of water depicting the cosmic ocean. Literally meaning "blue throat disguised by mud", the peculiar name refers to two legends attached to the statue, one of them saying that a farmer found the long lost statue in the mud when working his field with a plough, and the other saying that Vishnu eventually sacrificed himself by drinking the poison of the cosmic ocean, which then turned his throat blue.

PHOTOS: SHUTTERSTOCK





"But why is Vishnu sleeping? Why is he not taking part in the world he has made?"

But why is Vishnu sleeping? Why is he not taking part in the world he has made? To understand this, we must hear the Hindu story of Creation, as told in the Puranas. Creation does not happen only once: As the cycle of seasons endlessly repeats itself, Vishnu creates the world of matter and withdraws it into his existence time after time.

And this is how he creates.

In one corner of the never-ending sky, Vishnu created a cloud. In its shadow he created a great ocean. The water of the ocean was quite unlike the water of this world – it is from that ocean that our world was made. In the coolness of these waters of Creation, Vishnu lay down to sleep. While he slept, submerged in the water, he began to breathe deep, regular breaths. Time came into being. Time passed.

Then came sound, and from there the sense of hearing. The combination of ether and the sense of hearing created texture, which in turn produced air and the sense of touch. The mixing of air and the sense of touch created form, from which came fire and the sense of sight. The combination of fire and the sense of sight created flavour, which in turn produced water and the sense of taste. By the mixture of water and the sense of taste, odour was created, and from it came the earth and the sense of smell. Together these elements made up the ingredients for Creation.

It is said that the oceans are Vishnu's waist, the hills and mountains are his bones, the clouds are the hairs on his head, and the air is his breath. The rivers are his veins, the trees are the hairs on his body, the sun and moon are his two eyes and the passage of day and night is the moving of his eyelids. In the words of the *Bhagavad Gita*:

"Everything rests on me as pearls are strung on a thread. I am the original fragrance of the earth. I am the taste in water. I am the heat in fire and the sound in space. I am the light of the sun and moon and the life of all that lives."

Once the world came to life, filled with countless living beings, Vishnu expanded himself into a third form and entered the hearts of all beings to sit alongside each individual soul, or the *atma*.

The *atma*, believed to be the basis of life, gives energy to the body. The world is, therefore, a combination of matter and spirit – innumerable life forms and the soul within them. When the soul leaves one body, that body dies. The soul then enters another body. Moving from body to body in search of happiness, it passes through all forms of life, from insect to demigod. So even if these life forms are not of the same importance physically, spiritually they are equal because they are all coverings for the same soul.

Hindus believe that the world is not a coincidence: Matter is not haphazardly placed onto Earth to be wasted and exploited for selfish ends. Vishnu comes to mind when the sun rises with scorching heat, when water is sipped, or in the distinct smell of earth during the monsoon rains. All is sacred, God-given and mystically created. It all came from Vishnu and it will all return to him in the end.

Although Vishnu is sleeping in the ocean of Creation, it is believed that he is not unaware of the actions taken by his souls. In their hearts, he is following them as they journey through the vastness of time and space. He is waiting. He is watching.

Today, the Budhanilkantha Temple has become the site where Haribondhini Ekadashi Mela takes place on the 11th day of the Hindu month of Kartika (October–November). Attended by thousands of pilgrims, it is the temple's principal festival in celebration of the awakening of Lord Vishnu from his long sleep. ◆ AG

RIGHT
At Budhanilkantha Temple, sleeping Vishnu is covered with flowers for the morning ceremonies



Reading by the Shore

Oceans, seas, and rivers are often used as literary devices and metaphors by authors. Here are some books built around bodies of water, either as routes of travel, markers, or symbols for other issues that are difficult to express.

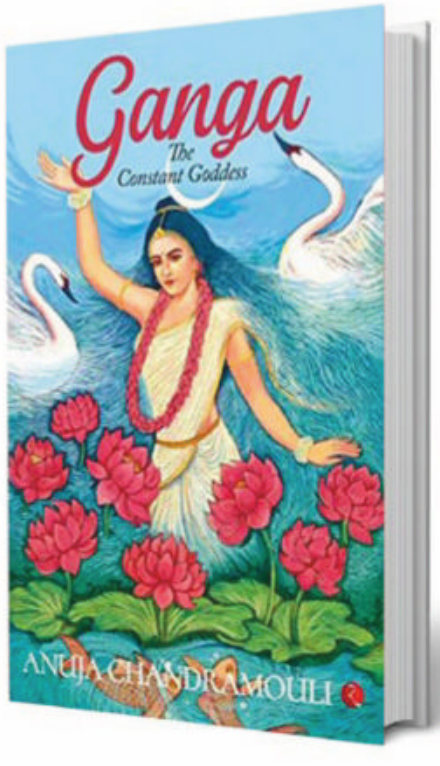
INDIA

Ganga: The Constant Goddess

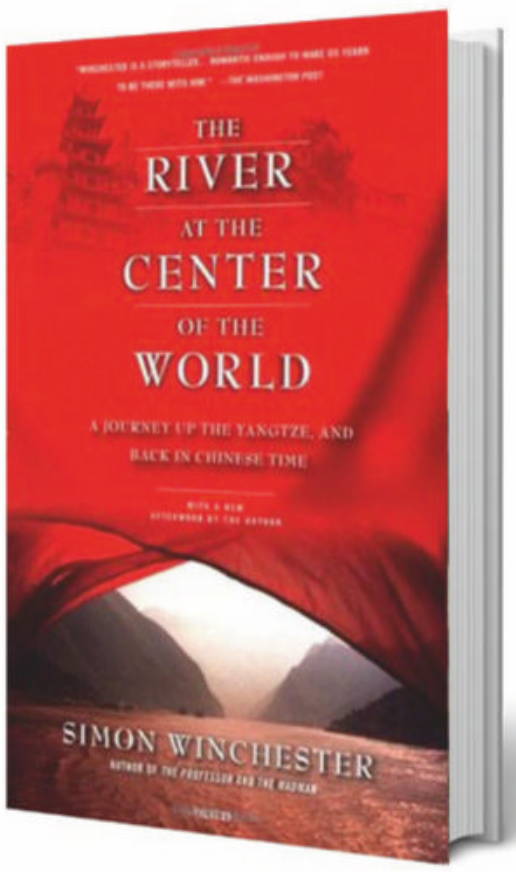
Believed to be the liquid manifestation of Shakti and the nurturer of the three worlds with her life-sustaining waters, Goddess Ganga is the epitome of beauty and purity, famous for her indomitable spirit and boundless charm. Renowned as a devoted daughter, a caring mother, a passionate lover, and a merciful saviour, she is here to absorb and absolve us of our sins. A constant goddess, she is part of the Indian ethos, revered, and loved across the ages.

The exquisite epic that is Ganga's story, from her miraculous origins, her sojourn in the heavens, her poignant relationships with the divine trinity, the birth of her sons – Bhishma and Kartikeya – and her descent into a wicked world that is not worthy of her, is dazzlingly told by Anuja Chandramouli. Without this goddess, life as we know it will be over, for her righteous retribution will be terrifying.

This book is a vibrant retelling of the story of Ganga, who has the power to save us all and bestow the precious gift of *moksha*, embracing saints and sinners alike with her all-encompassing compassion.



BY: ANUJA CHANDRAMOULI

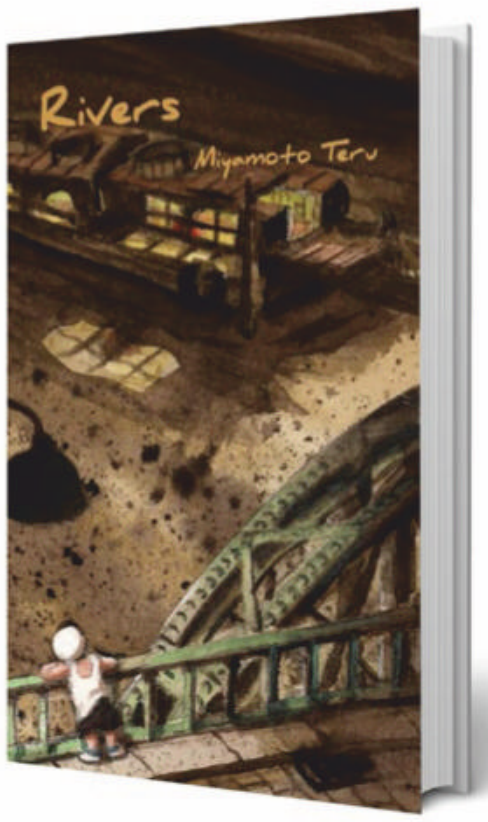


UNITED KINGDOM

The River at the Center of the World: A Journey Up the Yangtze and Back in Chinese Time

Rising in the mountains of the Tibetan border, the Yangtze River, the symbolic heart of China, pierces 6,300 kilometres of rugged country before debouching into the oily swells of the East China Sea. Connecting China's heartland cities with the volatile coastal giant, Shanghai, it has also historically connected China to the outside world through its nearly 1,600 kilometres of navigable waters. To travel those waters is to travel back in history, to sense the soul of China, and Simon Winchester takes us along with him as he encounters the essence of China – its history and politics, its geography and climate as well as engage in its culture, and its people in remote and almost inaccessible places. This is travel writing at its best: lively, informative, and enchanting.

BY: SIMON WINCHESTER



JAPAN

Rivers

Miyamoto has enjoyed huge popularity in Japan, and is now breaking the boundaries. Perhaps that is because his fiction, essentially autobiographical, portrays a Japan that does not sit well with the modern, romanticised version of a country recovering immediately after the war, quickly becoming a world powerhouse decorated with neon. This Japan is much less glamorous. These three stories – "Muddy River", Miyamoto's most famous work from 1977; "River of Fireflies," published the following year; and "River of Lights" also published in 1978 – show the daily struggles of a proletariat population, suffering not only from the squalor of poverty but also suffering psychologically with the legacy of defeat. Running through each story is a desperate desire from the older generation to pass on something more to their younger counterparts, to try and offer promise in an environment that drains it away.

Rivers and water are often used by an author as metaphors for purity and cleansing. One thing apparent from very early on in "Muddy River" – set in 1955, a decade after the war – is that while the river may be the lifeblood of the town, it is a stagnant and fetid flow, associated often with death and dissolution. This twisted symbolism is apt for *Rivers* as a whole, at once nostalgically reminiscent and traumatic.

BY: TERU MIYAMOTO

SINGAPORE

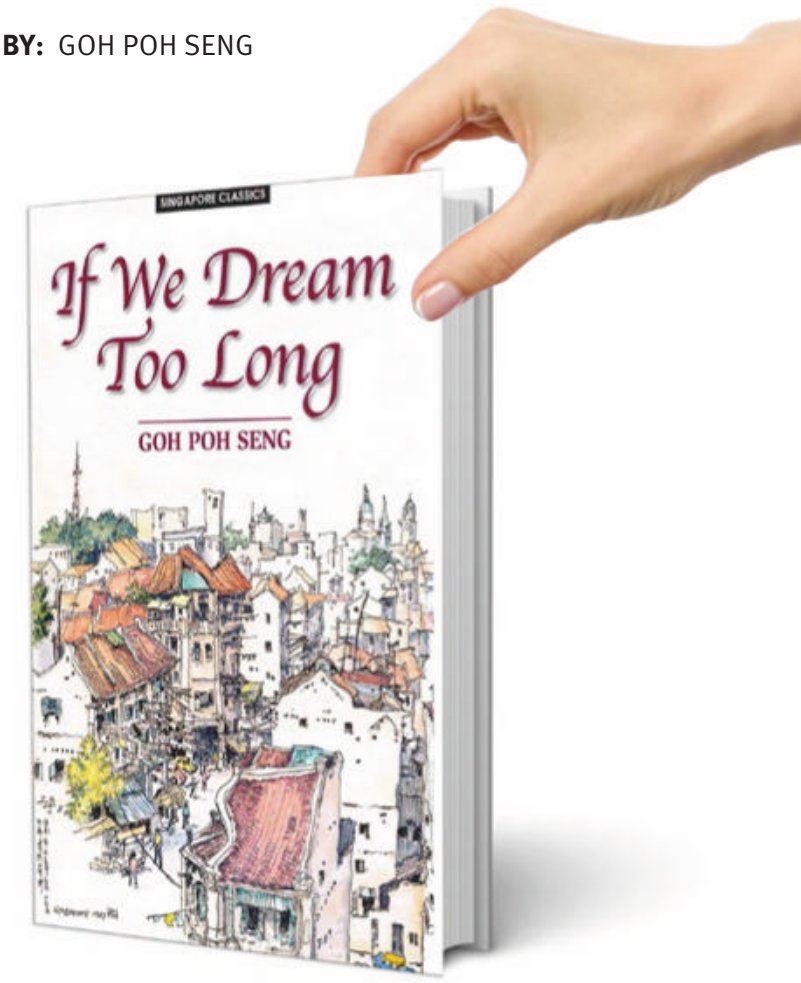
If We Dream Too Long

Widely regarded as the first Singapore novel, *If We Dream Too Long* explores the dilemmas and challenges faced by Kwang Meng as he navigates the difficult transitional period between youthful aspirations and the demands of society and family. Shy and sensitive, he feels detached from mainstream life and is unable to identify with the values that animate his friends. Kwang Meng takes refuge in dreams of exotic faraway places, and imagines merging with the sea, which he has an affinity for. Yet amidst this uncertainty, the reader feels that all is not lost, that the young dreamer will eventually find his way.

Kwang Meng's experiences reflect the author's fascination with the question of self amidst the dreariness and aimlessness of an increasingly urbanised and materialistic Asian society. This book also provides a fascinating portrait of Singapore as it was in the 1960s, a landscape and society that have undergone many changes but remain faintly visible in modern times.

Since its first publication in 1972, I*f We Dream Too Long* has moved and delighted generations of readers. This much-loved novel has been translated into Tagalog and Russian as well.

BY: GOH POH SENG



Clouds and Waves

By **Rabindranath Tagore**

Mother, the folk who live up in the clouds call out to me –
"We play from the time we wake till the day ends.
We play with the golden dawn, we play with the silver moon."
I ask, "But how am I to get up to you?"
They answer, "Come to the edge of the earth, lift up your
hands to the sky, and you will be taken up into the clouds."
"My mother is waiting for me at home," I say, "How can I leave
her and come?"
Then they smile and float away.
But I know a nicer game than that, mother.
I shall be the cloud and you the moon.
I shall cover you with both my hands, and our house-top will
be the blue sky.
The folk who live in the waves call out to me –
"We sing from morning till night; on and on we travel and know
not where we pass."
I ask, "But how am I to join you?"
They tell me, "Come to the edge of the shore and stand with
your eyes tight shut, and you will be carried out upon the waves."
I say, "My mother always wants me at home in the everything –
how can I leave her and go?"
They smile, dance and pass by.
But I know a better game than that.
I will be the waves and you will be a strange shore.
I shall roll on and on and on, and break upon your lap
with laughter.
And no one in the world will know where we both are.

RABINDRANATH TAGORE (1861–1941) was a Bengali poet, author, composer and painter. Best known for his poetry, he was awarded the Nobel Prize in Literature in 1913, becoming the first non-European to do so.

ASIAN Geographic

TRAVEL WITHOUT BORDERS

passport

Spectacular Islands of Southeast Asia

MAIN
Sabah, Malaysia: It is widely believed that Bajau Laut children learn to swim before they can walk and they are great freedivers

PHOTO: ZON HISHAM, FINALIST FOR IMAGES OF ASIA 2019

White sand, pristine waters, and the sun on your skin – this is what makes a perfect getaway. Southeast Asia boasts some of the greatest islands in the tropics, ideal for diving and snorkelling, lounging on the beach, and even hiking and trekking. These idyllic isles promise to cater to your every notion of a dream vacation spot.





INDONESIA, MALAYSIA, AND BRUNEI

Borneo

Borneo is an island located in the extreme southwestern part of the Pacific Ocean. It is the third-largest island in the world, after Greenland and New Guinea. It lies southeast of the Malay Peninsula in the Greater Sunda Islands group of the Malay Archipelago, bounded by the South China Sea to the northwest, the Sulu Sea to the northeast, the Celebes Sea to the east, and the Java Sea to the south.

The island is divided into three parts, administered by separate countries: Brunei, occupying two small portions of the northwestern coast; East Malaysia, occupying the northern third of the island; and Indonesia, occupying the central and southern regions, referred to as East Kalimantan.

Derawan Island
Derawan Island is a UNESCO World Heritage Site that lies off the coast of Kalimantan. It is part of its own small archipelago and known as one of the best places to dive in and around Kalimantan – the waters here are teeming with marine life. It is home to blue ring octopuses, scorpionfish, and seahorses.

Derawan Island also features a famous rock, the "Blue Trigger Wall", which is 18 metres long and sits at 10 metres below the surface of the water.

The Kinabatangan River
Home to over 10 different primate species, notably the proboscis monkey and the orangutan, as well as more than 50 mammals including the Borneo pygmy elephant, the Kinabatangan River in Sabah offers an opportunity to catch a glimpse of the stunning, and often unique, wildlife and rainforests of Borneo. As well as primates, you can expect to see crocodiles, hawks, eagles, hornbills, kingfishers and much more. River cruises, guided night walks through the jungle, and jungle treks are some of the ways to enjoy this location.

Kampong Ayer
Stand on the waterfront and admire the sprawling stilted buildings across the river. Ferries and speedboats zoom between the mainland and Kampong Ayer. Known as the "Venice of the East", this water village houses approximately 13,000 permanent residents. But the wow factor extends further: The settlement consists of around 40 separate villages with schools, mosques and restaurants. Take the ferry from the waterfront and stroll along the maze of boardwalks and neighbourhoods.

GETTING THERE
There are a number of major airports in Borneo, including Kota Kinabalu International Airport (Sabah) and Kuching International Airport (Sarawak) in Malaysian Borneo, Sultan Aji Muhammad Sulaiman Airport (Balikpapan) and Syamsudin Noor Airport (Banjarmasin) in East Kalimantan, and Brunei International Airport





INDONESIA

Komodo Island

Home to the Komodo dragon, the largest extant species of lizard, this island is located between the islands of Flores and Sumbawa in eastern Indonesia. Resembling Jurassic Park, this untamed island is also known as a paradise for Nature lovers, with numerous mountains to climb and amazing diving sites around the stunning coral reefs.

Visit the National Park

Of course, the iconic thing to do in Komodo Island is to visit its revered park, which is a UNESCO World Heritage Site. You can watch and photograph the park's famed Komodo dragons from a safe distance with guided tours, where an expert goes around with you making sure you are safe at all times. The park is one of the most prominent attractions of Indonesia's tourism.

Hike up Padar Island

Often rated to be one of the best things to do in Komodo island, this trek can be done as part of most boat tours around Komodo. Once you get to the top, you can spot the pink, black, and white beaches of the island with brown-black ridges in between and surrounded by the azure blue waters. The sunset is best viewed from here!

Explore the Seas

An entry on the Seven Wonders of Nature and UNESCO World Heritage Site lists, this beautiful diving spot sits in a narrow channel between Flores and Sumbawa. Though famous for its namesake monitor lizards, Komodo Island also boasts some of the country's best sightings of marine life, with over 50 dive sites and marine life such as dugongs, pygmy seahorses, gobies, nudibranchs, scorpionfish, and rare sunfish. On land, laid-back fishing villages, coral cays and deserted beaches of pale pink sand give the island its reputation as a backpacker's paradise.

As the equatorial spot where the Pacific and Indian oceans meet, the powerful, nutrient-rich currents near Komodo Island have blessed the area with amazing biodiversity and a range of underwater environments, including fringing and patch coral reefs, mangrove forests, seagrass beds, and seamounts. The currents make many of these dive sites suitable only for advanced divers, and as the water can be as cold as the high tens (Celcius), be sure to wear a thicker suit.

Eat Like a Local

After a chilly dip, tuck into spicy *nasi goreng* to heat yourself back up. This Indonesian-style fried rice, made in homes with leftover rice, contains either chicken or seafood and is flavoured with soy sauce, tomato sauce, tamarind and chilli, and then topped off with a fried egg or prawn crackers.

GETTING THERE
Fly from Bali Airport to Labuan Bajo located on Flores Island. Labuan Bajo is the best base to explore the Komodo National Park. From there you can go diving with one of the local dive centres



FAR LEFT
Cottages at Derawan Island Resort

LEFT
A pig-tailed macaque mother and its baby

ABOVE
The view of Padar Island from Komodo Island

CAMBODIA

Koh Rong Island



Located near the coast of Sihanoukville, Cambodia, Koh Rong is famous for its serene beauty. Often described as an island paradise by tourists, it boasts pristine white sandy beaches, warm crystal-clear ocean waters, and a hot tropical climate.

High Point Adventure Park
Channel your inner Indiana Jones at this amusement park made almost entirely of ropes. Placed within the tropical forest area of the island, you can swing between trees on zip lines, travel across the river on a rope bridge, and use platforms to navigate over the treacherous land below.

Navigate the rainforest
Most of the interior of Koh Rong is a very dense rainforest area, home to a large number of endangered plants and animals. You can follow the trails around the forest area and see the many exotic plants, animals, and insects, or join a guided tour.

Lounge on the lush beaches
There is over 23 kilometres of coastline, much of it quite secluded. As only a limited number of tourists are allowed on the island, to ensure the protection of endangered plants and creatures, it is not uncommon to find places on the beach where you may be the only person for hundreds of metres. Perfect for some peace and quiet!

GETTING THERE
For those travelling directly to Koh Rong from overseas, the nearest airport is Sihanoukville International Airport (KOS). You will then need to get to either the ferry terminal at Serendipity Pier or Sihanoukville Port. Tip: Before you book a boat ticket, it's important to know exactly where you are going – arriving at the wrong pier could mean either an expensive long-tail boat ride or a long overland trek to reach your resort





MYANMAR

Macleod Island

Located in the Mergui Archipelago off Myanmar's coast, Macleod Island is mostly untouched. There is only one resort on the island, the Myanmar Andaman Resort, ideal for those seeking tranquillity in a natural paradise. The isolated island is home to pristine beaches, incredible diving spots, and unspoiled Nature.

The indigenous culture

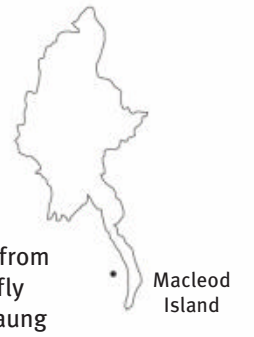
As Macleod Island currently only has one resort, the island still maintains its rich local culture. If you're lucky, you may also chance upon the nomadic "sea gypsies" of the Andaman Sea, a minority group of the northern branch of the Austronesian people who live on boats. Be enthralled by the colourful dances that welcome you onto the island and watch their fishing skills, which is an art on its own.

Great diving and snorkelling spots

The Andaman Sea is home to beautiful underwater scenes and marine life, and the weather is warm for most of the year. This makes Macleod Island a great diving spot with much to see underwater. With its own PADI Dive Center operated by an experienced team of instructors and divemasters, Myanmar Andaman Resort offers a convenient and comfortable way to dive the Mergui Archipelago. These waters, completely isolated until 1997, have one of the best-preserved reef systems in the region.

Island hopping

Macleod Island is a short boat ride to several uninhabited islands. Guided tours can be organised for guests to adventure through the surrounding islands.



GETTING THERE
If you are visiting from within Myanmar, fly directly to Kawthaung Airport. The shuttle boat leaves from Kawthaung Jetty (Myoma Jetty) at 2PM daily

LEFT
A traditional floating village on Koh Rong Island

TOP
Turquoise waters against the blue sky at the west side of Macleod Island

PHILIPPINES

Cebu

Cebu Island is long and narrow, stretching 196 kilometres from north to south and 32 kilometres across at its widest point. It has limestone plateaus and scenic coastal plains, as well as rolling hills and rugged mountain ranges. With beaches, coral atolls, islands, and rich fishing grounds surrounding the island, Cebu combines island life, historical sites and a bustling city seamlessly, making it the island to be at on your next vacation.

Explore waterfalls and bask in the Mainit Hot Springs
The hot springs in Malabuyoc are endowed with beautiful natural wonders and resources. The concealed yet well-known Mainit (translating to "hot") Spring is hidden mainly due to its accessibility and distance, and while it may take some effort to get there, the journey is well worth it. With their close proximity to a waterfall, the springs are filled from the interior of two mountains, and more than five waterfalls with various heights and waterfall intensity are also located closeby.

Dive Malapascua
Malapascua is the standout diving destination in Cebu, and arguably one of the best in the world. The highlight of this island are the thresher shark dives in Monad Shoal, which are easy to do and almost always rewarding. There are also encounters with huge manta rays, devil rays, and marble rays. Occasionally, turtles and whale sharks can be spotted as well.

Party at the Sinulog-Santo Niño Festival
Sinulog is Cebu's biggest festival in honour of the infact Jesus, or *Señor Santo Niño,* held every third Sunday in January. In a choreographed movement, tribes clad in dazzling costumes hold aloft images of their patron. The prayer-dance is synchronised to the beat of drums and shouts of *"Pit Señor! Viva Santo Niño!"* Besides the religious part of the celebration, Sinulog is also well-known for its street parties before the day of celebration and during the day of the festival.



GETTING THERE
Cebu is an international destination with flights from Singapore, Hong Kong, Malaysia, Japan, Taiwan and South Korea. Arrival is at Mactan International Airport almost daily. Alternatively, Cebu is just an hour away by plane from Manila





TOP MOST
Anemonefish are iconic residents of Malapascua's waters

RIGHT
Participants at the Sinulog Festival

THAILAND

Koh Samui

Thailand's second-largest island after Phuket and Koh Chang, Koh Samui provides a great balance of touristy spots and a hidden paradise – all you have to do is look. Ko Samui is perfect for travellers on a budget, offering affordable beachside bungalows, it's also ideal for those wishing to splurge, who can opt to stay at one of the many luxury resorts or villas on the many pristine beaches of the island.





Set sights on the iconic Big Buddha
Known locally as Wat Phra Yai, this golden, 12-metre seated Buddha statue was built in 1972 and remains one of the island's most popular attractions. Set on Koh Faan, Big Buddha temple is reached by a causeway that connects it to the main island. The Big Buddha can be seen at a distance of several kilometres and is often the first landmark people see when arriving in Samui by air.

Visit the Mummy Monk at Wat Khunaram
Wat Khunaram is a Buddhist temple on the island most notable for being the shrine of the "Mummy Monk", Luang Pho Daeng, who died in 1973 and directed that his body be put on display as a reminder of the transience of human existence. Far from being frightened by death, most Buddhist Thais are highly accepting of the end of life as the natural order of things and they view death as an opportunity to be reborn into a better place, one step closer to nirvana.

The suggestive Hin Ta and Hin Yai Rocks
One of the most famous attractions on Koh Samui is this pair of "grandpa and grandma rocks" (Hin Ta and Hin Yai). As inscribed on a signboard near the rocks, legend has it that the "folklore of Samui Island tells the story of an old couple by the name of Ta Kreng (Grandpa Kreng) and Yai Riem (Grandma Riem) who lived with their son in the southern province of Nakhon Si Thammarat. Since their son had come of age, they felt that it was time he got married. One day they decided to sail to the neighbouring province of Prachuap Khiri Khan to ask for the hand of the daughter of a man named Ta Monglai. During their sea journey, their boat was seized by a storm. The old man and his wife were unable to swim ashore. They died at sea, turning into rocks as proof to the would-be bride's parents of their true intentions. The rocks stand there to this day." The views from the rocks and vicinity are spectacular, stretching across the sea to nearby islands. Plus, these rocks are in the shape of male and female genitalia, which is a sight in itself!

GETTING THERE
Fly directly to Samui International Airport from Singapore, Hong Kong, Kuala Lumpur, and other cities. Alternatively, domestic flights run from Bangkok, Krabi, Pattaya, and Chiang Mai. Boat and train journeys are also available for the adventurous



TOP LEFT
Wat Plai Laem temple

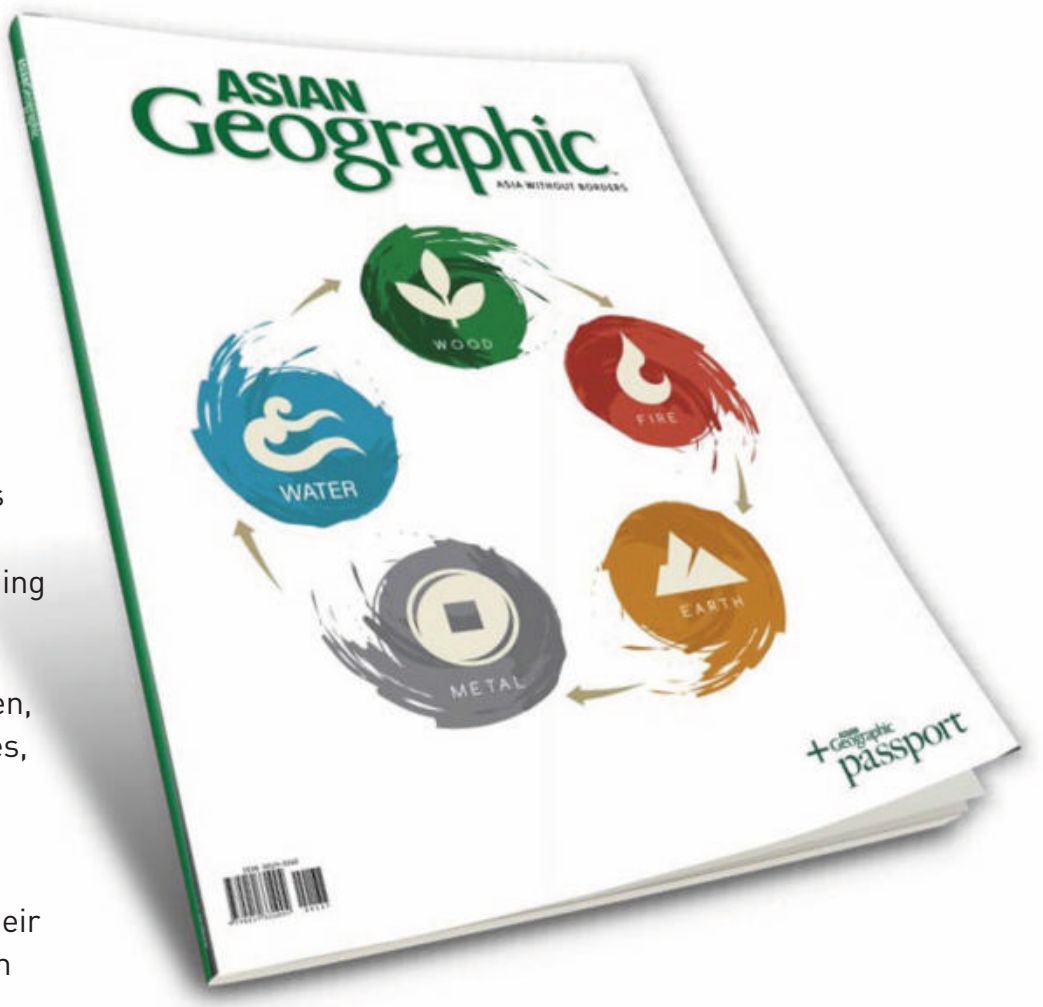
LEFT
Koh Samui's famous suggestive rock formations

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Digital

ASIAN Geographic magazine is going through a rehaul! Featuring 2020 editorial lineup

Elements of Life, Colours of Asia



In 2019, *ASIAN Geographic* celebrated 20 years of bringing Asia to the world, and we have an exciting lineup for 2020. Our editorial calendar is based on a philosophical approach to Wu Xing, or the five elements in Chinese philosophy – Water, Wood, Fire, Earth, and Metal – with our last issue of the year focusing on bringing these elements together, all through travel.

Our first five 2020 issues are colour-coded in blue, green, red, brown, and silver, to address our respective themes, and each issue includes a *PASSPORT* section that will focus on a specific region in Asia. The sixth and final issue of the year is an *ASIAN Geographic PASSPORT* special edition that combines all these elements and their associated colours, making the entire year's publication come together in a stunning, rich hue – making up the perfect collection!

NO. 140 ISSUE 1/2020

+ PASSPORT SECTION
FEATURED REGION:
SOUTHEAST ASIA

Water

An inherent part of our lives, the water element is downward and inward, and its energy is stillness and conserving. This issue covers everything blue, whether by taking a plunge into the waters – where we will swim amongst issues of ocean governance, conservation, sustainability, or diving – or even just by sipping on the Asian-native butterfly pea flower tea from the pods planted in your garden.

NO. 141 ISSUE 2/2020

+ PASSPORT SECTION
FEATURED REGION:
WEST ASIA

Wood

Wood, sometimes translated as Tree, symbolises growth and longevity, much like the bamboo stems that are strong, flexible, and some of the fastest growing plants in the world. As the first phase of Wu Xing, it also signifies the birth and beginning of life. This issue celebrates and navigates through the most important thing known to the living: Life itself.

NO. 142 ISSUE 3/2020

+ PASSPORT SECTION
FEATURED REGION:
EAST ASIA

Fire

The motion of fire is upward and its energy is expansive, representing dynamism, strength, persistence, and prosperity. This issue will look at brightness, warmth, heat and the full bloom of flowers, fruits, and creativity in the arts and culture of Asia.

NO. 143 ISSUE 4/2020

+ PASSPORT SECTION
FEATURED REGION:
CENTRAL ASIA

Earth

Earth is a balance of both yin and yang. Its motion is inward and centring, and its energy is stabilising and conserving. Earth is associated with practicality, hard work and stability. In this issue, we look at Asia balancing sustainability, conservation, and economic growth, as well as exciting solutions that can spur a new green economy while shining a spotlight on marine and wildlife conservation.

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NO. 144 ISSUE 5/2020

+ PASSPORT SECTION
FEATURED REGION:
SOUTH ASIA

Metal

Metal's motion is inwards, and its energy is contracting. Metal attributes are firmness, rigidity, persistence, strength, and determination. This issue of *ASIAN Geographic* looks at all the special festivals and remembrance days that are celebrated by different countries and cultures all across Asia, as we contract and combine the things that make this continent so vast, yet so unique.

NO. 145 ISSUE 6/2020

The Colour Edition: *Passport*

TRAVEL ISSUE

This *PASSPORT* special edition will bring all the five elements together into a full circle, as it is meant to be, and we will explore all the corners of Asia through Wu Xing. Water, Wood, Fire, Earth, and Metal will encompass the largest continent in the world, and all the regions in Asia will be seen through this exceptional lens.



ASIAN Geographic + passport

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What's Online?

China's Attempt at Mitigating Plastic Waste

Text **Sitaraah Joshi**

Imagine looking over an endless sea of overcrowded, cluttered waste. Such is the plight of the heaps of rubbish that have been accumulated and recklessly dumped in the landfills of China. The incessant uses of plastics by China's 1.4 billion citizens in the forms of bags, cutlery, and containers have plagued the environment. However, 2020 marks a significant change in China's attitude towards dealing with plastics.

https://bit.ly/316Oqbr



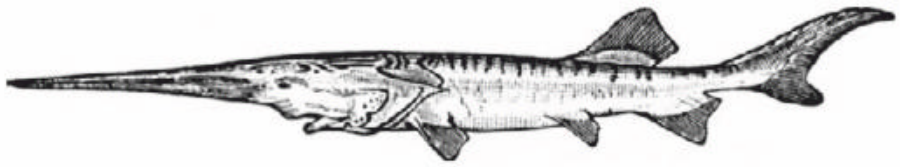


Eight Astonishing Asians that Hold Guinness World Records

Text **Shreya Acharya**

People all around the world have been fascinated by Guinness World Records. And why not? Each record category proves more interesting than the last. Here are some Asians who hold unique, extraordinary records around the globe.

https://bit.ly/2RBhLHU



Yangtze's Chinese Paddlefish: Declared Extinct

Text **Shreya Acharya**

China's Yangtze River was once teeming with Chinese paddlefish (*Psephurus gladius*). The largest specimen recorded was seven metres long and weighed 450 kilograms, making it one of the largest freshwater fish in the world – aptly referred to as "megafish" and the "king of freshwater fish". However, the Chinese Academy of Fishery Sciences and the International Union for Conservation of Nature (IUCN) has determined that the species no longer exists, updating its status to "Extinct". Beijing is now taking tougher action to protect the river's aquatic life.

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A YEAR

