

# 2021

## THE CLIMATE CHALLENGE

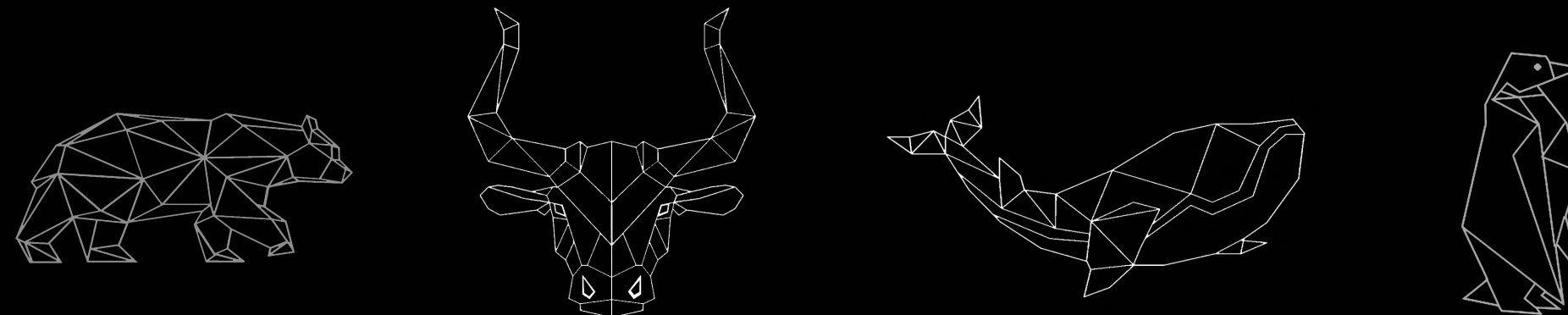


[www.climatechallenge.in](http://www.climatechallenge.in)

*“What you do makes a difference, and you have to decide what kind of difference you want to make.”*

*- Dr Jane Goodall*

The year 2020 made us realize how fragile our very existence on this planet is. The Covid-19 Pandemic took away a lot of things, but also ended up teaching us that we do have the means to fight a crisis. It's time for us to accept another bigger challenge that is currently staring at our face, **Climate Change**. As the climate crisis that we are currently facing is threatening our very own survival, and putting our resilience to the test, it is evident that we can only overcome this by working together for a better future. The **2021 “The Climate Challenge”** calendar is a documentation of the cryospheric regions that are delicately dispositioned in respect of the climate crisis that we all are in. The photographs here were taken during several scientific expeditions to the cryospheric polar regions of the Antarctic, Arctic, Himalayas, and the Southern Ocean. I hope that this calendar influences a change and reminds us of our responsibilities towards building a healthier, sustainable future and also a better planet.



[www.climatechallenge.in](http://www.climatechallenge.in)



Photo: Rakesh Rao



# JANUARY

S	M	T	W	T	F	S
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31						

20 January: Penguin Awareness Day  
24 January: International Day of Education.  
26 January: Republic Day of India



## DECLINING ARCTIC SEA ICE

Sea Ice plays an important role in maintaining the Earth's energy balance by reflecting more sunlight back to Space. Increasing atmospheric temperature and warming sea waters has rapidly declined the Sea Ice Extent in the Arctic. Data suggests that the September extent of Arctic Sea Ice is presently declining at a rate of 12.8% each decade.



Photo: Rakesh Rao



# FEBRUARY

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<b><u>28</u></b>						

2 February: World Wetlands Day  
13 February: World Radio Day  
28 February: National Science Day



## RETREATING ARCTIC GLACIERS

*Accelerated glacial retreat and receding ice and snow cover are perhaps the most visible signs of Climate Change in the Arctic. Projections suggest that many glaciers in the Arctic region would disappear altogether within the next few centuries.*





# MARCH

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<u>28</u>	29	30	31			

- 3 March: World Wildlife Day
- 8 March: International Women's Day
- 20 March: Equinox
- 21 March: International Day of Forests
- 22 March: World Water Day
- 23 March: World Meteorological Day
- 28 March: Earth Hour (Don't forget to turn off your lights for one hour from 20:30 to 21:30 local time)



## WARMING ARCTIC AIR TEMPERATURE

The average global temperatures have increased by about 0.8°C, while much of the Arctic has already warmed by more than 2°C and a large part of the Arctic ocean by over 4°C. These warming air temperatures are driving changes to the landscape as also threatening Arctic wildlife.





Photo: Rakesh Rao



# APRIL

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7 April: World Health Day  
 22 April: Earth Day

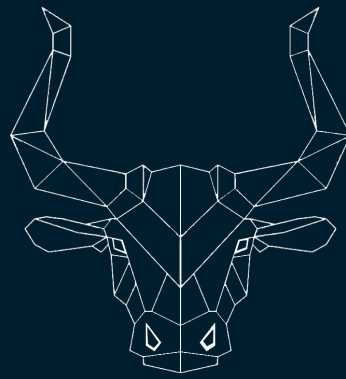


## THAWING ARCTIC PERMAFROST

One of the greatest threats that the Arctic Region is facing, is the threat due to thawing Permafrost. An increase in temperature has accelerated the thawing process that can potentially accelerate the emission of up to 1600 gigaton of carbon, that is trapped in this frozen soil, which is almost twice the amount of carbon in the atmosphere. Thawing Permafrost has a huge impact on the ecosystem, economy, landscape, and growing infrastructure.



Photo: Rakesh Rao



# MAY

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<u>23</u>	24	25	26	27	28	29
<u>30</u>	31					

- 2 May: World Tuna Day
- 3 May: World Press Freedom Day
- 9 May: World Migratory Bird Day
- 20 May: World Bee Day
- 22 May: International Day for Biological Diversity

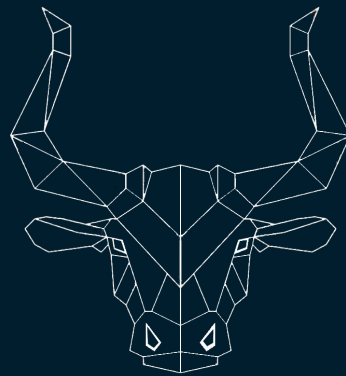


## HIMALAYA - THE WATER TOWER OF ASIA

With over 56,000 glaciers in the Hindu Kush- Himalayan region and close to 9500 glaciers spread across the Indian section of the Himalayas, these glaciers serve as a source of water to over 10 major rivers that directly or indirectly support over 2 billion people that live alongside these rivers.



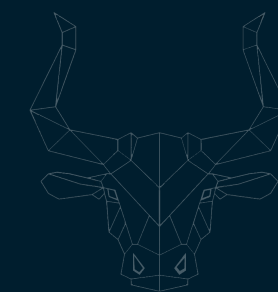




# JUNE

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<b>27</b>	28	29	30			

- 5 June: World Environment Day
- 8 June: World Oceans Day
- 20 June: World Refugee Day
- 21 June: International Day of Yoga
- 21 June: Solstice



## MELTING HIMALAYAN GLACIERS

Almost 35 Percent of glaciers in the Hindu Kush- Himalayan could retreat by 2100, even if global temperature rises by 1.5 °C, destabilizing the hydrology of a large part of South Asia, China, and Myanmar. The changes here are predicted to intensify in coming years, with extreme consequences on food, water, energy, biodiversity, and even the livelihood of people living in this region.





# JULY

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## THE DYNAMIC SOUTHERN OCEAN

Oceans have an immense influence on the Earth's climatic system. More than 50% of oxygen comes from the Oceans, with a majority of this production coming from oceanic planktons. Over the last several decades the Southern Ocean has undergone some drastic changes. This ocean has warmed and freshened. This has led to an effect on the physical, biological, and biogeochemical parameters of the ocean affecting the marine ecosystem.



11 July: World Population Day







# AUGUST

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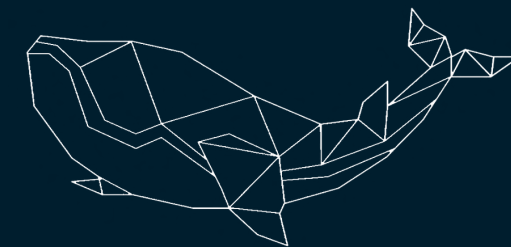
## ACIDIFICATION OF THE SOUTHERN OCEAN

The Southern Ocean holds a key position in the climate system. It stores and transports more heat and carbon dioxide than any other latitudinal band on Earth. With increasing CO<sub>2</sub> values, the oceans are absorbing, even more, making it more acidic and thereby changing the ocean's chemistry. This has further led to altering the delicate ocean pH balance that millions of organisms rely on.



12 August: International Youth Day  
15 August: Indian Independence Day  
19 August: World Humanitarian Day





# SEPTEMBER

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<b>26</b>	<b><u>27</u></b>	28	29	30		

7 September: International Day of Clean Air for Blue Skies

16 September: International Day for Preservation of the Ozone Layer

21 September: International Day of Peace

23 September: Equinox

24 September: World Maritime Day

27 September: World Tourism Day



## **FRACTURING ANTARCTIC ICE SHELF**

Warming oceans and declining sea ice are resulting in glaciers and ice sheets calving off producing these humongous icebergs. In the past couple of years, several huge icebergs have broken off from the Antarctic ice shelf. Icebergs can survive for years and are carried by winds and currents through the Southern Ocean until they reach warmer waters and ultimately melt.





# OCTOBER

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2 October: International Day of Non-Violence / Gandhi Jayanti  
 5 October: World Habitat Day  
 10 October: World Mental Health Day



## VANISHING ANTARCTIC ICE

Increasing global temperatures have led to an increase in the melting of the Antarctic Ice sheets. Antarctica is losing ice almost three times faster than it was a decade ago. The continent has lost about 3.3 trillion tons of ice in the last 2 decades. The water that is currently stored in the form of ice on the continent, which is about 27 million km<sup>3</sup>, has a potential contribution of raising the global sea level by 58 meters.



Photo: Rakesh Rao



# NOVEMBER

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<b>28</b>	29	30				

## RISING ANTARCTIC TEMPERATURES

Antarctica is extremely sensitive even to a small rise in the air temperature. The mean annual air temperature of the Antarctic peninsular region has seen an increase by nearly 3°C in the last 50 years, with recorded highest temperatures of 18.3°C at Argentina's Esperanza research station. While the rest of Antarctica are showing signs of increasing temperature, though at a slower rate.



- 5 November: World Tsunami Awareness Day
- 10 November: World Science Day for Peace and Development
- 14 November: National Children's Day
- 19 November: World Toilet Day
- 20 November: World Children's Day







# DECEMBER

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## THREATENED ANTARCTIC WILDLIFE

*Rising temperatures and melting Antarctic sea ice has increased the pressure on wildlife to adapt to changing habitats. According to a report the Penguins population could be reduced by a third by the end of the century, which ultimately makes them vulnerable to extinction.*



1 December: Antarctica Day / World AIDS day  
4 December: Wildlife Conservation Day  
11 December: International Mountain Day  
21 December: Solstice

# THE CLIMATE CHALLENGE

Click on the image, to watch the film



## THE CLIMATE CHALLENGE

a film by RAKESH RAO

[WWW.CLIMATECHALLENGE.IN](http://WWW.CLIMATECHALLENGE.IN)

DIRECTED, PRODUCED & EDITED BY: RAKESH RAO, NARRATED BY: SAVANNA EVANS, DOP: RAKESH RAO & SHUBHANKAR KUNDAIKAR  
SUPPORTED BY: NATIONAL CENTRE FOR POLAR AND OCEAN RESEARCH, GOVT. OF INDIA



*We are on the brink of Climate Crisis. There is empirical evidence of changing climate across the Planet. Concerns about climate change and its impact on land and the environment have been growing lately. Scientists today are using the latest technology and braving some of the harshest conditions on this planet only to investigate these effects of changing climate. Conducting any scientific research in the Antarctic, Arctic, Himalayas and the Southern Ocean are extremely difficult, due to its hostile climatic conditions, undulating and inaccessible terrain, and the remoteness of field sites. Watch this film that takes you on an exciting journey to these extreme places, documenting Scientists conducting research and experiencing some life-threatening situations, in order to get the scientific data.*



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