Ganga

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Sea ice covers the ocean at Yalour Islands in Antarctica, Nov. 24, 2025. (AP Photo/Mark Baker, File)

Commentary

The accelerating pace of global warming by human activities, especially the large-scale burning of fossil fuels, have driven greenhouse gas concentrations to levels not seen in millions of years. This has led to a measurable rise in global average temperatures — already surpassing 1.37°C above pre-industrial levels by 2025, with projections suggesting it may cross the critical 1.5°C threshold as per the Paris Agreement within the next few years if emissions continue unchecked. From that time, "1.50 C" goal has become a critical benchmark, the North Star for Climate action proposing thousands of policies and measures.
2024 has been labelled as the first single year with global surface temperature crossing 1.50 C above pre-industrial levels though the Paris Agreement goal talks about a long-term average. Crossing that threshold is significant because it increases the risk of irreversible impacts on ecosystems, weather patterns, and human societies. The oceans, in particular, act as massive heat sinks, storing excess energy that later drives stronger storms and disrupts weather systems globally.
A large part of the cryosphere — encompassing glaciers, ice sheets, ice shelves, and sea ice in the Arctic and Antarctic — is being severely damaged by human-driven fossil fuel combustion. These changes accelerate global warming and climate change, disrupting marine and terrestrial ecosystems, raising sea levels, altering ocean and atmospheric circulation, and reducing the

ability to reflect solar radiation with less ice cover.

The past decade has been the hottest on record, with extreme weather events such as storms, cloudbursts, floods, and landslides becoming more frequent and intense. The urgency now lies in reducing emissions rapidly, safeguarding vegetation and natural carbon sinks, transitioning to renewable energy, implementing measures to keep future warming within manageable limits and scaling up climate adaptation measures to protect vulnerable communities.

NEWS

New Watershed Restoration and Water Security Work in Western Odisha by IRBMS

The *Integrated River Basin Management Society (IRBMS)* recently undertook a three-day technical field study across the drought-prone districts of *Nuapada, Balangir, and Bargarh* in western Odisha. Conducted during 5–7 March 2026, the mission aimed to assess watershed interventions, drinking water availability, groundwater conditions, and opportunities for strengthening community livelihoods through integrated watershed management. The team visited villages in the Sundar River catchment in collaboration with local NGO Chale Chalo, Chetana Shramik Sangha officials, and local communities.

Western Odisha experiences recurrent droughts, seasonal water scarcity, and declining agricultural productivity despite significant investments in watershed development. The IRBMS mission focused on evaluating existing water conservation structures and identifying practical measures to improve water security and build climate resilience.

From Water Scarcity to Integrated Livelihoods

The first phase of the visit covered *Kirejhola, Karlakote, Tangripara, Kotamal, and Dargaon* villages in the Sundar River catchment of Boden Block in Nuapada district. Discussions with villagers revealed severe shortages of drinking and irrigation water, particularly during summer months. The team encouraged communities to adopt integrated farming systems combining agriculture,

Discussion on Gully Plugging with community people

fisheries, and diversified livelihoods. Farm ponds and fisheries were highlighted as viable options to increase farm income while improving water use efficiency.

The team examined a poorly functioning check dam near Kirejhola and provided technical recommendations, supported by field observations and GPS surveys, to restore its functionality and improve water retention. Groundwater levels and basic water quality were assessed in Tangripara, Kotamal, and Dargaon. Shallow groundwater near Kotamal reflected the influence of the nearby Lower Indra Reservoir, while villagers in Dargaon raised concerns about fluoride contamination in drinking water. IRBMS emphasized regular water quality testing and the use of treated surface water for safe drinking purposes.

Improving Watershed Structures

During the second day at **Ranisilet village** in Bolangir district, the team inspected farm ponds, drinking water sources, rocky slopes, and existing check dams. Water quality testing at the village primary school indicated satisfactory pH and TDS levels. The assessment demonstrated how targeted engineering improvements can enhance watershed performance.

IRBMS recommended constructing a trench below a rocky outcrop to improve infiltration and soil moisture in adjacent agricultural fields. Existing check dams were reviewed, and modifications such as shallow overflow passages and diversion channels were proposed to safely manage excess monsoon flows and enhance groundwater recharge. Soil moisture observations in waterlogged areas helped identify opportunities for improved drainage and irrigation management.

Towards Climate-Resilient Agriculture

The final day's visit covered Lukapali and Lergaon villages in Bargarh district. Three farm ponds were inspected to evaluate their contribution to soil moisture conservation and agricultural productivity. IRBMS recommended reassessing the design and water distribution of a newly constructed check dam to ensure more equitable benefits for downstream farmers. Community discussions highlighted the long-term benefits of integrated farming systems in strengthening rural livelihoods.

The Akali Nala; Origin – The Gandhamardan Hills

At Lergaon, the team investigated the Akali Nala originating from the Gandhamardan Hills. Despite the presence of a dam, the reservoir remained dry as streamflow appeared to dissipate into subsurface channels. IRBMS proposed diverting water through pipelines to nearby agricultural fields and measured a stream discharge of approximately 124 litres per second, demonstrating that considerable water resources remain available if scientifically managed.

The Way Forward

The field study reaffirmed that sustainable water management requires more than constructing physical infrastructure. Scientific planning, community participation, periodic technical evaluation, groundwater monitoring, and integrated livelihood strategies are essential for long-term water security.

Through field assessments and community engagement, IRBMS demonstrated that improvements in watershed design, farm pond management, groundwater recharge, and integrated farming can strengthen rural resilience to climate variability. These initiatives reflect IRBMS's commitment to promoting *Integrated River Basin Management* as a holistic approach linking water conservation, ecosystem restoration, sustainable agriculture, and community well-being. As climate change intensifies water stress across India, such interventions will play a critical role in securing livelihoods and sustaining river basins for future generations.

Climate Change Drives Bears into Villages, Forcing Uttarakhand to Order Shoot-at-Sight

In Uttarakhand the Forest Department has issued shoot-at-sight orders for Himalayan black bears in Pauri district due increasing human–bear conflict.

In just past three months, 71 bear attacks have been reported across the state, resulting in six human deaths and the killing of 60 livestock, Paithani village in the Thalisain block is the

worst-affected. The authorities imposed a virtual curfew due to frequent visit of bears injuring villagers and killing 40 cattle from the cattle pens one or two km away from the village. Trapped cameras took snaps of four to five bears in that area but difficult to pin point the killer one. Beside the shoot order, the Forest Department has been using tranquilizer, traps, cages and pepper spray to capture or restrain the bears.

Bears are also sighted in Rudraprayag district injuring seven women and near towns such as Gopeshwar, Nainital, Pithoragarh, Bhawali, Almora, and Joshimath.

The habitats of the Himalayan black bears are mostly concentrated in Uttarakhand, Himachal Pradesh, Kashmir, and a small parts of Arunachal Pradesh in India and also in Nepal.

According to Forest Department data, over the past 25 years bears have injured 1,972 people and killed 68, while only in 2025, it increased to 71 attacks and 7 deaths.

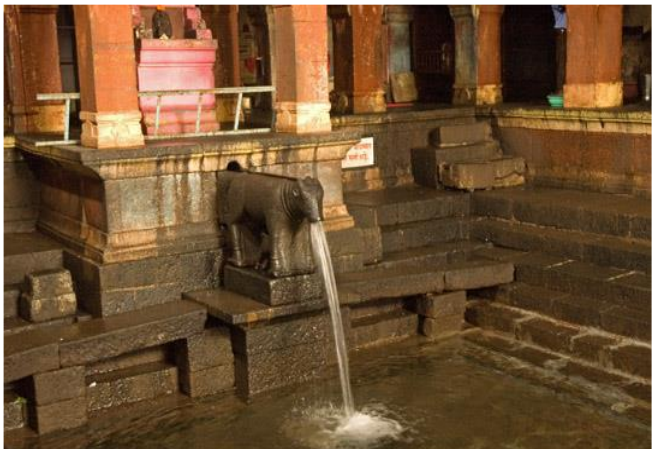
According to the Wildlife experts rising temperatures, reduced snowfall and shortened winter due to climate change, hibernation cycles are highly disturbed and keep bears active to move closer to human settlements due to shortage of food feeding on garbage dumps and livestock.

Declining availability of traditional food sources such as bhamor fruit in oak forests, increasing habitat pressure near reserve forests, and a possible rise in bear populations are further intensifying conflicts. Scientists note that similar patterns of increased bear attacks linked to warming temperatures have been observed in countries like Japan and Canada. Wildlife biologists say shoot-at-sight orders for bears have rarely, if ever, been issued in India, making Uttarakhand's decision a stark and controversial indicator of how climate change is reshaping human–wildlife interactions in the Himalayas.

RIVERS OF INDIA

Krishna River

The Krishna River, also known as Krishnaveni, is the third-longest river in India after the Ganga and Godavari. The Krishna River Basin, one of the major river basins of India, covers an area of about 258,948 sq.km, accounting for nearly 8% of the country's total geographical area. The basin extends across four states—Maharashtra, Karnataka, Telangana, and Andhra Pradesh, and plays a vital role in irrigation, drinking water supply, industries, fisheries, hydroelectric power generation, and regional water resource planning.



Krishnabai temple, the origin of Krishna River at Mahabaleshwar

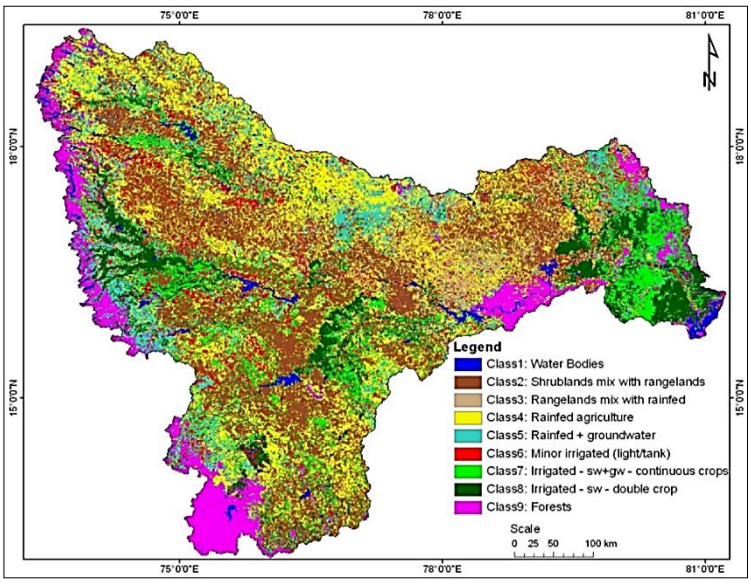
Originating from the Krishnabai Temple at Mahabaleshwar in the Western Ghats of Maharashtra, the Krishna River flows eastward for about 1,400 km before draining into the Bay of Bengal. Historically, the river supported great civilizations and kingdoms, including the Satavahana and the Vijayanagara Empire.

The climate of the Krishna Basin varies significantly from the high-rainfall Western Ghats to the semi-arid interior and eastern coastal plains. Annual rainfall ranges from 450 mm to 3,200 mm, with the highest precipitation occurring in the Western Ghats under the influence of the southwest monsoon. The average maximum temperature ranges between 29.5°C and 37°C, while the average minimum temperature varies from 18°C to 28°C. These climatic conditions strongly influence river flow, groundwater recharge, biodiversity, and agricultural productivity.

The basin contains diverse soil types, including fertile deltaic alluvial soils, which are highly productive and suitable for intensive agriculture, and coastal sandy soils, which have comparatively lower fertility and require efficient irrigation practices. Agriculture is the dominant occupation in the basin, with major crops including paddy, sugarcane, cotton, maize, pulses, oilseeds, chilli, groundnut, and horticultural crops.

Land use within the basin is predominantly agricultural, with approximately 75.6% under cropland, 10.04% under forests, 4.07% occupied by water bodies, 4% covered by rangelands, and nearly 5% comprising built-up areas. This land-use pattern supports food production, biodiversity conservation, fisheries, livestock grazing, industrial development, and urban expansion.

The Krishna Basin contains a well-developed



Major Landuse of Krishna Basin, Source - MDPI

water resources infrastructure comprising 14 major dams and approximately 660 medium and minor dams. These structures support irrigation, hydropower generation, industrial activities, and domestic water supply. Irrigation accounts for the major water-consumption sector in the basin, while rapid urbanization has substantially increased domestic and industrial water demand. Water availability depends largely on the southwest monsoon and exhibits considerable spatial and seasonal variation, creating challenges for equitable distribution of water resources among different regions.

Sources:

- *Water Action Hub*
- *Indian Journal of Science and Technology*
- *Central Ground Water Board (CGWB)*

(to be continued)

Special Feature

Earth's Poles are affected by extreme heat events due to global warming and climate change.

Both Arctic and Antarctica are undergoing wacky extreme heat events –the temperature in areas of the Arctic becomes more than 30 degrees Celsius warmer than average and areas in Antarctica more than 40 degrees Celsius warmer than average.

In other parts of the earth, in March 2026, the temperature crosses the March heat records in the USA, Mexico, Australia, Northern Africa and parts of Northern Europe. Maximiliano Herrera, Climatologist and weather historian tracking extreme temperatures, labelled this extreme March heat as "the most extreme heat event in world climatic history". He again said, many monthly records of heat have been surpassed in many parts of Asia.

Winter growth of ice in Arctic region this year is reduced to its lowest measured level due to earth's warming process which the continents are already familiar with. The ice level of Arctic Sea, particularly in summer, plays pivotal role to cool down earth's climate as the reflecting sunlight from ice scatters heat energy

Pieces of ice move through the sea in Qoornoq Island, near Nuuk, Greenland, Feb. 17, 2025. (AP Photo/Emilio Morenatti, File)

efficiently instead of accumulating it in the oceans. Polar Bears, seals, and other sea animals depend on the sea ice who will be in danger with shrinking of ice.

Apart from the danger of flora and fauna, insufficient ice in Arctic Sea will open up new shipping route creating geopolitical imbalances to make neglected places more attractive as happened in case of Greenland.

In Arctic, sea ice increases in winter and melts in summer. In 2026 the peak of ice growth was very small measured only 14.29 million sq.km which is more or less same as 14.31 million sq. km of last year as considered by the National Snow and Ice Data Centre. The area of sea ice has been around 1.36 million sq.km this year which is lower than 1981 to 2010 period of winter average peak. According to Walt Meier, senior scientist of the data centre, the scope of ice formation specially in the polar region in present warm temperature associated with its upward trend is less. It is not the regime shift of climate but a stable fall of ice growing in winter. As a result, melting in summer starts with lower level of ice. He again explained that summer melting season is critical indeed as less white ice in sea reflects strong summer sun less thus the ocean absorbs more heat energy making Arctic temperature close to the south areas with changes in atmospheric pressures. He again added that these changes may influence the circulation and shape of the jet stream causing movement of weather from west to east and also the extreme weather phenomenon though this theory is controversial.

Penguins walk on the shore of Bahia Almirantazgo in Antarctica on Jan. 27, 2015.

In Antarctica also, the other end of the globe, scientists recorded temperature of climate extremes and increasing frequency of quirky weather events.

Antarctica, the southernmost ice continent is also affected by the human induced climate change phenomena, though it is far off yet it is not isolated from the world climate. A paper in the journal, Frontiers of Environmental Science, expressed that the western end part of Antarctica, particularly in its peninsula part, huge melting of ice sheet found which may contribute to massive sea level rise in future centuries. Strikingly, in its eastern part gaining of ice has been noticed. The melting of one western glacier is so fast that the scientists all around the world labeled it the Doomsday Glacier and is under scientific investigation.

Sea ice in Antarctica swung from record high to very low than ever seen. If the emission is not curbed and this continues, there will be series of disasters consequence of which will be changed coastlines, dramatic losses of sunlight reflecting ice masses with more global warming.

In 2023, in a new study Prof. Martin Sieger, a glaciologist and geoscientist, University of Exeter and Anna Hog and their team investigated the extreme events occurred in Antarctica and their frequency in future as a consequence of burning fossil fuels. They studied many parameters like atmosphere and weather, heat waves, sea ice, land ice, collapse of ice shelves and their impact on marine and land biology. The study illustrated the complex interconnected changes among ice, ocean and air. The study found that climate change is sporadical and unpredictable as many areas which were less affected are now under direct influence.

Siegert said that the heat wave of the previous year, the thermometer of research station in Antarctica soared up to 38-degree Celsius above normal temperatures. According to Hogg, the occurrence of all time low sea ice is a matter of grave concern as the ice in 2023 is lower than the previous year's low. Ice shelves as big as many large buildings are also melting and caving in. Sea ice and ice shelves play very strong role to hold the glaciers like a cork in a bottle absence of which expedite the collapsing of glaciers in ocean. The appearance of land or water in place of large area of ice will absorb the sun's energy than reflecting it.

The study concluded that Antarctica is already subject to many frequent and critical weather events and will continue to be affected in the future.

So, the situation is worsening and alarming. The climate scientists explained that reduction of earth's greenhouse gas emission is as important as the introduction of adaptation measures for rise of sea level and extreme weather challenges.

Source:

Frozen Antarctica is being walloped by climate extremes, scientists find | AP News

Arctic sea ice shrinks to tie lowest level for winter | AP News

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