In this issue

Managing Mangroves

Forest or wetland?

From the 19th century, mangroves on the east coast of India were managed as if they were forests. Clear forests for fertile lands that can be brought under agriculture and use timber produce for infrastructure, industries and fuel needs... Economic purposes overrode ecological perspectives. The establishment of the Imperial Royal Forest Department in the latter part of the century brought scientific forestry in to balance the overexploitation. But, from the promulgation of the Indian Forest Act, 1878 to the Indian Forest (Conservation Act), 1980, many mangroves disappeared.

Mangroves are unlike terrestrial forests, points out V. Selvam, M.S. Swaminathan Research Foundation. Clear felling of mangroves increases evaporation and, along with water, soil that contains a large amount for water also subsides. Salty water that tides bring remains in the sunken area to evaporate, creating hypersaline conditions. Even mangroves adapted to marine water cannot regenerate in such saline blanks.

After reviewing the history of mangrove management practices in a General Article in this issue, V. Selvam recommends managing mangroves as wetlands to save the remaining ones on the east coast. Joint management of mangroves needs to be taken up urgently to restore the saline blanks in the midst of mangroves. Turn to **page 766** for more.

Synthetic Aperture Radars

To map flood inundation areas

15 August 2018. Torrential monsoon rains kept lashing Kerala for three days. Reservoirs became too full and water had to be released compounding the problem of the floods that had inundated most districts in Kerala. Much water has flown under the bridge since then. And life has gone back to normal for people there.

But not for researchers at IIT Bombay. By mapping the inundation accurately, we can have a clear idea of how future floods will behave. A Synthetic Aperture Radar in satellites that scans the area can help mark out water bodies. So they set to work.

The image from Sentinel-1 dual polarised SAR of 5 May provided the pre-flood situation. But during the floods, SAR data was available only from ALOS-2/PALSAR-2, acquired on 17 August 2018. The coverage of the swathes from different satellites meant restricting the area under study. It also meant resolving the differences in the resolution of the data. But combing the single date data from one satellite and multi-date data from the other, the researchers could map the inundation and ebbing. Ground-truthing from different sources confirmed the accuracy and sensitivity of the inundation map.

The evidence base to plan for structures to prevent inundation and to prepare for mitigation measures is now available for the study area. The strategy used can be repeated on other areas too, say the researchers. Read on from **page 915** for details.

Disappearing Antarctic Snow

Red blooms of green algae

Eagle Island is a part of the Antarctic Peninsula, separated from the mainland by less than two kilometres. The island is mostly snow covered, but is sensitive to climate change. Researchers from the Vellore Institute of Technology, Chennai and the Jyothy Institute of Technology, Bengaluru now report some extreme events happening there.

Between 4 and 13 February 2020, they find, snow disappeared from more than one-fifth of the snow-covered area of the island. Large snowmelt ponds that appeared will tend to absorb more heat since water has less albedo than snow. And what is more worrying is the emergence of red-coloured algal blooms. The green algae that looks red, due to the high amounts of carotene necessary as protection against UV rays, will also add to the positive feedback on snow melt in the area, they say.

Thanks to satellite technologies, researchers can now study snowmelt in the Antarctica without exposing themselves to the freezing temperatures there. To understand the techniques used, flip to the Research Communication on **page 932** in this issue.

Himalayan Studies

A national mission

The snow-covered mountains of the Himalayas sit like a crown on the Indian subcontinent. The recent burst of a glacier lake reminded us that, if we are not careful, the Himalayas can become a crown of thorns. The glaciers that provide life-sustaining drinking water for millions in the plains can become life-threatening; the incredible wealth of biodiversity in the region can disappear; the livelihoods of people in the Himalayas are on slippery slopes.

The National Mission on Himalayan Studies is a preparation for meeting such challenges, a step to convert threats into opportunities. In a Special Section starting on **page 772** in this issue, we present a series of articles that spell out methods and strategies to make life on the Himalayas sustainable in the era of climate change.

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