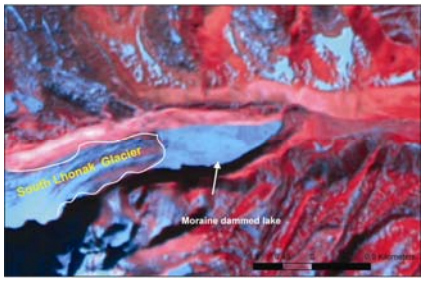
In this issue

Bad weather and aircraft accidents

Weather plays the most crucial role in each flight operation. While favourable winds along the flight route significantly reduce fuel and time to reach a destination, a fog or smogless day with higher visibility without much cross winds at runway helps the timely flight landing or take off. Similarly, among different severe weather events which have been remained as major cause for aircraft accidents and incidents are severe thunderstorms associated with tall cumulonimbus (CB) clouds, microburst, severe turbulence, high wind shear, very low visibility, etc. Though the growth of meteorology and aviation sector has shown mutual dependence right from the early days of gliders to jet and supersonic aircraft of the present era, aircraft accidents or incidents continue to occur. While early developments in Aviation Meteorology were in response to demands of military aviation and air mail services, its growth in the post Second World War period has been predominantly driven by phenomenal growth of commercial aviation. At this juncture of time, there is a need to understand the role of bad weather on aircraft accidents or incidents during recent years. R. K. Jenamani and Ashok Kumar (**page 316**) have reviewed various weather events, which affect the safe flights with data on various aircraft accidents or incidents as available in annual aircraft accident reports 1992–2008 of India. Results have been compared with those for USA from the National Transportation Safety Board (NTSB) and for the world covering select accidents from the Aircraft Crashes Record Office. They have further studied distribution of accidents/incidents to various severe weather types. Presently, when there is significant growth potential for the Indian civil aviation industry as economy grows, disposable incomes rise and the value of time becomes more precious, it is high time that civil flights include use of further modern detection technology of severe weather with a supporting fast communication systems for pilots and associated stake holders who now manage the aviation services.

Remote sensing-based hazard assessment of glacial lakes

Glacial lakes are water bodies formed by glacial dynamics. High-altitude glacial lakes are hazardous to humanity and infrastructure as they can drain instantaneous and create devastating floods in the downstream. The formation of moraine-dammed glacial lakes and glacial lake outburst flood (GLOF) is a



major concern in countries such as Bhutan, Tibet (China), Nepal and Pakistan. Remote sensing is one of the cost-effective methods for monitoring the dynamics of glacial lakes which are located at inaccessible areas. Babu Govindha Raj *et al.* (**page 359**) show the utility of temporal satellite data for monitoring the moraine-dammed glacial lake outburst probability and instantaneous peak discharge of South Lhonak glacial lake in Sikkim Himalaya. The declassified CORONA data of 1962 shows the moraine-dammed glacial lake originated from a supraglacial lake/pond by downwasting the glacier ice. The glacier receded 1.9 km from 1962 to 2008 and the lake growing its lateral extent. The probability model shows a very high probability and high discharge for the present glacial lake and ICIMOD data showing this glacial lake as one of the potential dangerous lakes in Sikkim Himalaya. They recommend establishing early warning systems for such disasters similar to those developed in the Punakha-Wangdi Valley GLOF Early Warning System, Bhutan.

Salinization of coastal aquifers of Sabarmati River Basin

Due to easy availability of water, high population density exists along the banks of major rivers and coastal areas in many parts of the world. The demand for fresh water has increased drastically over the years in coastal areas due to increasing urbanization and industrialization. Due to natural and human influences, withdrawal of groundwater is making coastal aquifers highly vulnerable to salinity problems, leading to serious consequences on environment and economy of the region. It is a common assumption that the salinization of coastal aquifers is caused only by seawater intrusion as a result of overpumping of groundwater. Besides seawater intrusion, alternative origins of groundwater salinization are also common from natural sources of mineral salts, evaporite dissolution, downward seepage from surficial saline water, return flows of irrigation with sewage effluent, deep brines or upward flow from deep saline water and fossil seawater. Highly saline water affects the soil fertility, thus affecting plant growth and its yield and ultimately soil becomes uncultivable. The $^{2}H(D)$ and ^{18}O stable isotopes are known to be a potential marker of the water origin. Isotopes offer a powerful tool to study the intermixing between water masses of different salinity and therefore help to trace back the salinity origin. Kumari Rina *et al.* (**page 335**) attempt to assess the processes governing the causes of groundwater salinity in the coastal alluvial aquifers of the lower reaches of the Sabarmati River Basin, Gujarat for sustainable development and management of groundwater resources.