

**GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA**

UNSTARRED QUESTION NO:1365
ANSWERED ON:03.03.2011
EXPEDITION TO ARCTIC
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Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the first Indian expedition to Arctic has been launched;
- (b) if so, the composition of the expedition team and its objectives;
- (c) whether the team is likely to work in cooperation with other countries;
- (d) if so, the details thereof;
- (e) whether the Government proposes to set up a permanent station for research in Arctic;
- (f) if not, the reasons therefor; and
- (g) the time by which the results achieved by the expedition are likely to be known?

Answer

MINISTER OF STATE IN THE MINISTRY OF PLANNING, MINISTER OF STATE IN THE MINISTRY OF PARLIAMENTARY AFFAIRS,
MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE IN THE MINISTRY OF
EARTH SCIENCES(SHRI ASHWANI KUMAR)

(a) Yes, Madam.

(b) India launched its first scientific expedition to Ny-Alesund on the Spitsbergen island of Norway in August, 2007 to mark the beginning of long-term scientific research by Indian scientists through global scientific endeavor in the Arctic region. The five member inter-disciplinary and inter-institutional team of scientists of the first Arctic Expedition were drawn from National Center for Antarctic & Ocean Research (NCAOR), Goa; Centre for Cellular & Molecular Biology (CCMB), Hyderabad; Indian Institute of Tropical Meteorology (IITM), Pune; and Lucknow University.

The objectives of the Indian Arctic programme during XI plan period are:

- (i) The characterization of sea ice in Arctic using satellite data from Indian/foreign satellites to estimate the effects of global warming in the northern polar region;
- (ii) Comprehensive glaciological studies of the Arctic that will involve not only satellite data but also ground truth measurements;
- (iii) Research on the dynamics and mass budget of Arctic glaciers. The focus would be on the effect of glaciers on sea-level change and on the fresh water input into fjords and embayments;
- (iv) Comprehensive assessment of the flora & fauna of the Arctic vis-a-vis their response to anthropogenic activities and a comparative study of the life forms from both the Polar Regions in terms of environment;
- (v) Study of sea ice microbial communities;
- (vi) To carry out detailed isotopic, chemical and micropaleontological studies on the sediments from the Arctic Ocean to decipher their response and feedback to past climate changes;
- (vii) Measurement of atmospheric aerosols and ions;
- (viii) Snowpack production of carbon monoxide and its variabilities
- (ix) Carbon cycling in the near shore environments;
- (x) To ensure a perceptible and influential presence of India in Arctic and to uphold the country's strategic interests in the Polar Regions and the surrounding oceans.

(c)&(d) Yes, Madam. An MoU has been signed on 1st July 2008 between National Centre of Antarctic & Ocean Research (NCAOR), an autonomous agency of the Ministry and Norwegian Polar Institute (NPI) on Cooperation in Polar Research.

(e)&(f) A research station at Arctic namely 'Himadri' was launched at Ny-Alesund in Svalbard region on 1st July 2008. Research in various disciplines i.e. glaciology, Palaeoclimate, microbiology, atmospheric science, etc. during different seasons in a year have since been undertaken in the region around the Ny-Alesund. The nature of research, which is in phases, does not necessitate all-year-round-presence presently. Since 2007, four expeditions (inter-disciplinary and comprising of multi-institutional team of scientists) to Arctic have been undertaken.

(g) The results of the first Arctic expedition to the Ny-Alesund region indicate the following:

(i) The total number, concentration and size distributions of aerosols in the Ny-Alesund show good correlation with wind speed and wind direction;

(ii) The electrical conductivity does not show any diurnal variation as the ionization due to cosmic radiation is abundant during the arctic summer period;

(iii) Sediment and water samples from the Midtre Lov'enbreen glacier have bacteria from four phyla namely Actinobacteria, Bacilli, Flavobacteria and Proteobacteria and bacterial abundance is more at the convergence point of glacial melt and the sea.

The studies at Arctic are aimed at understanding the processes and phenomena in such cold climate and their link, if any and importance in the overall understanding of the litho, hydro and atmosphere.