MEMBER COUNTRY: INDIA

National Report to SCAR for year: 2007-08

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Activity	Contact Name	Address	Telephone	Fax	Email	web site
Standing Scientific Groups						
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Geosciences **1)** **2)** **3)** **4)**	Dr. S. Mukherji	Director,Antarctic Divison, Geological Survey of India, NH5, NIT, Faridabad - 121 001;	0129-2417335	0129-2417341	mukherjeesharad@rediffmail.com	www.gsi.gov.in
Physical Sciences **1)** **2)** **3)** **4)**	Dr. S. L. Jain	Emeritus Scientist, National Physical Laboratory, Dr.K.S.krishnan Marg, New Delhi-110 012	91-11-45608584	91-11-45609310	sljain@mail.nplindia.ernet.in	

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Scientific Research Program						
ACE **1)** **2)** **3)** **4)**						
AGCS **1)** **2)** **3)** **4)**						
EBA **1)** **2)** **3)** **4)**						
ICESTAR **1)** **2)** **3)** **4)**						
SALE **1)** **2)** **3)** **4)**						

Activity	Contact Name	Address	Telephone	Fax	Email	web site
ACTION GROUPS						
1) **2)** **3)** **4)** **insert others as needed**						
EXPERT GROUPS						
1) **2)** **3)** **4)** **insert others as needed**						
JCADM						
1) **2)**	Shri. Mirza Javed Beg	Project Director, Inf.,& Comm. Tech. Div, NCAOR, vasco Ministry of Earth Sciences, Headland Sada, Goa - Pin-403804, INDIA.	91-832-2525521	91-832-2525520	mjbeg@ncaor.org	
NATIONAL ANTARCTIC DATA CENTRE						
SCAR DATABASE						
insert name of database for which your country has responsibility						

A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS:

Atmospheric Sciences & Meterology	41 projects from 15 different premier institutes / universities of India were taken up during the said period of 2008-09.Four students participated under the Student participation Scheme. Brief highlights have been provided under subheads:
	Study of VLF phenomenon through Direction Finding Techniques at Antarctica is aimed at the formation and deformation of layers of ionosphere and to observe its regularity by monitoring the VLF signal. India Meterological Department collects meterological paramters over Antarctica to understand the weather patterns as also its relationship if any with the Indian monsoon Continuous monitoring and recording of [a]atmospheric total ozone [b]ground UVB [c]concentration of SO2 and NO2, vertical profile of O3 and NO2 Brewer spectrophotometer An Automatic Weather Station was installed on the vessel and substantiated with hourly meteorological synoptic observations.. A new AWS with higher data acquisition capacity was installed at Larsemann Hills and the old one shifted to Maitri. Digital Ionosonde was installed near the Indian station Maitri.A GPS and an AWS is also operated throughout the year.In order to understand the heterogeneous chemistry among the ozone and its precursors with aerosols in the marine boundary layer (MBL) and Polar boundary layer (PBL) Ozone/NOx/CO analyzers, AWS, Grimm and HVS were installed on ship.For determining the physical and chemical properties of the aerosols, Sunphotometer, Ozone monitor, Aethalometer, Multi Stage Impactor, High Volume Sample and two Optical Spectrometer were operated throughout the voyage from Cape Town to Larsemann Hills especially on clear weather days.
	Magnetic observatory at "Maitri" for monitoring variation in Earth's magntic field, which aims to study the storm - substrom relationship. This also aims to identify signatures in atmospheric electrical paramters, study in decline of Total Magnetic field 'F' as observed in Southern hemisphere. This would also help to monitor the ionospheric Total Electron Count (TEC), scintillation and tropospheric water vapour content.Global Electric Circuit (GEC) Expt. At Maitri The diurnal variations of GEC potential gradient and atmospheric some of the interesting feature of this study.The GEC component shows similar diurnal trend to worldwide thunderstorm activity, minimum near 0300UT and maximum near 1900 UT.Digital Fluxgate Magentometer was installed at Larsemann Hills to record variations in three orthogonal components of Earth magnetic field. This would help us to understand the auroral current systems and this throw light on the auroral current system
Earth Sciences	Field observations on different shear zones adjoining Veetaiah Hills (Schirmacher area) was done to understand the correlation with Pan-African Orogeny. Geological mapping (1:2500 scale) of the porposed new station site of the Larsemann Hills area was carried out.Temporal and spatial variations of energy balance of different snow and ice media in Antarctica was carried out using Radio based Remote Telemetry System. This would help to measure daily variation of ambient temperature, maximum and minimum temperature, snow/ice temperature, incoming and outgoing radiation.Round the clock iceberg monitoring was carried out onboard vessel after crossing 40o S latitude. A total of 161 icebergs were documented from Cape Town to Larsemann Hills.Automatic Weather Stations (AWS) have been installed to calculate energy-budget at select locations and relate it to changing ice cover of the continent. Of late, Ground Penetration Radar (GPR) surveys have been taken up at a few locations to monitor the changing ice mass, which can be related to mass balance of the continent using satellite and AWS data.
	Sub-surface sediment samples from modern lakes both in Schirmacher as also in the Larsemann Hills.Collection of samples for diatom and algal spores were also carried out.

Biology & Environmental Science	Collection of surface water samples from water bodies of Schirmacher and Larsemann Hills were carried out for phyisco chemical and trace metal analysis.Diurnal variations in primary productivity and physico-chemical characteristics of Priyadarshani and some other important water bodies are also carried out.Land based anthropogenic impact of coarse particles on Antarctic shelf (IPY P.No.129) High volume sampler (HVS) was operated during the journey by ship as also at Maitri and Larsemann Hills, to understand the properties of aerosols and suspended particles and monitoring ambient air quality. Sun photometer was also operated.Ambient air quality was monitored at one of the huts. A total of 4 samples each of SPM, SO2, NO2 and CO etc. were collected from above site during the 7 days (24 hourly) monitoring.
	sampling of soil, moss, lake sediments and algae were carried out from 61 stations over Larseman Hills, which included 19 stations in Bharti, 18 stations in Fischer Island, 6 stations in MacLeod Island, 10 stations in Stornes Island and 8 stations in Broknes Peninsula. Lakes sediments were collected to understand the late quaternary history of Schirmacher and Larsemann Oasis, East Antarctica and surrounding waters
Human Physiology & Medicine	To understand the effect of harsh Antarctic environment like extreme cold, isolation and other stress factors (Cumulative stress) on the human immune system, study is being conducted on the Indian Expedition members both from summer and winter team members. The individuals were required to give saliva and blood for collection of serum and the same shall be analysed on the shore to decipher the changes if any.