

Preface

The past decade has seen substantive progress in the growth of research in Earth System Sciences in India, and can be considered truly a unprecedented decade of abundant resources being made available to the community. Several development that occurred in this period, encourage us to make this statement. The new initiatives that have implied a paradigm shift in the manner in which geosciences was done in this country, include :

1. The planetary explorations – the success of Indian Mission to the moon that was an unqualified success with several path-breaking results. A successor mission and a mission to Mars are at the advance stage of planning and thoughts on manned mission are also being articulated.
2. Success of Indian remote sensing missions, the Cartosat and dedicated space borne experiments such, the Meghatropiques and the like.
3. Initiation of studies in the Arctic, buttressed by excellent laboratory facilities, an ice core laboratory and renewed efforts and institutional framework for studies on glaciers.
4. Major modelling experiments, computational infrastructure and international collaboration in Monsoon modelling and forecasting applications,
5. Large scale funding of sophisticated experimental facilities that now enable high-end mass spectrometric, chemical and other geochemical analysis in a routine manner.
6. Establishment of new centers for geoscience of societal relevance such as the National Centre for Tsunami Early Warning, the Institute for Seismological Research, Centre for Glaciology, are to name a few. National level seismic micro-zonation studies are also underway in a mission mode.
7. Proactive participation in International programs such as the International Ocean Drilling program with Indian proposals for deep drill cores in the Arabian Sea and the Bay of Bengal. When realized, will imply a major input to the understanding of the Indian monsoon and Recent Earth History.
8. A major program on continental deep drilling at Koyna with shallow seismicity to drill through an earthquake fault zone to monitor and gain comprehensive geophysical observations of physical and chemical parameters in the “near-field zone”, typically before and after an earthquake to understand seismicity patterns; dedicated institutions for seismological research.
9. Acquisition of newer ocean going ship separately dedicated for research and mapping; newer facilities for analysis.
10. Synergistic integration of various disciplines to realize the true multidisciplinary Dimension of Geo-sciences, ranging from biology to remote sensing besides the laboratory data.
11. Major national programs on, aero-geophysical mapping, on geochemical base lines and geotracers and others.
12. New mineral finds of copper, updated coal inventory, results on coal bed methane, gas hydrates and shale gas deposits.
13. Initiative for training and capacity building efforts with numerous incentives and training schools.

The above list of initiatives is only indicative and not exhaustive, and shows that these, when vectorally aligned would imply a paradigm shift and acceleration in the Earth Science Research in the country. The next five years and the next decade hold exciting possibilities and a palpable enthusiasm in the Earth Science Community is visible. This is both appropriate and timely, given the large societal dimension of Geosciences that has implications for the food, energy, water and resource security for the region. The establishment of the Ministry of Earth Sciences and the expansion of its activities with a broad vision of providing Earth Science Services to the society in all of the Earth Science domains and in strengthening the basic research base; the continued support from the Department of Science and Technology; established activities of the Ministry of Mines and the associated Geological Survey of India with over 30+ dedicated geosciences institutions provide a good frame work for the growth of geosciences in the country.

The present volume presents an overview of the work done in India on set of selected themes. These cover the work done in India during the past 5 years and we hope serves as a window into the contemporary Indian geosciences. These articles are only indicative and by no means exhaustive. The topics range from the results from the Indian Mission to the moon to the studies on Kimberlites and from the geology of Himalaya to research on cryosphere in India. A total of 27 Status Reports and six Institutional Reports are included.

We thank the kind help of all the contributors to have agreed to collate and coordinate these status reports. The suggestion of Prof. S. Krishnaswami in making it a special, peer reviewed issue of Proc. Indian National Science Academy (PINSa) and its eventual acceptance by the Chief Editor, PINSa, Prof T.P. Singh is thankfully acknowledged. We thank the kind support and encouragement by Prof. Krishan Lal, President Indian National Science Academy, Prof. N. Sathyamurthy, Vice President, INSA and Prof. T.P. Singh for their enthusiastic support and help with all our needs. Our appreciation remains for Dr. Alok Moitra, Executive Secretary, Mr. Sunil Zokarkar and Dr. Brotati Chattopadhyay, who helped with all matters concerning INSA. Our particular thanks are due to Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences for his willing support and constant encouragement, and Dr B.K. Bansal, Advisor, Ministry of Earth Sciences, for processing all our requests, enthusiastically and expeditiously. We are obliged to the Director General, Geological Survey of India for deputing two Senior Directors of his organization, Dr.Satyabrata Guha and Dr.Amitava Bandopadhyay who made substantial contributions toward preparing an error-free publication. We appreciate and acknowledge their help in all sincerity. Dedicated help from Mr. M. Ranganathan and Mr. Sunil Kumar Tripathi from the Editorial Office, PINSa in interfacing with the press for speedy publication is thankfully acknowledged. We also thank Mr. V. K. Nair of M/s. Kamala Print-N-Publish for their help in speedy processing of the manuscripts.

D M Banerjee

Department of Geology, University of Delhi, Delhi

A K Singhvi

Physical Research Laboratory, Ahmedabad