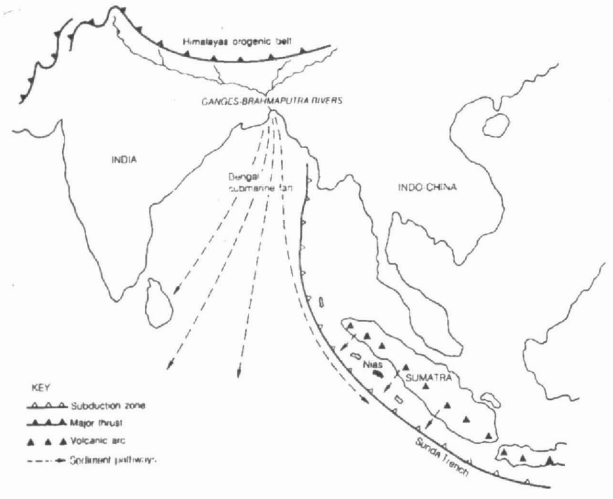
CORRESPONDENCE

THE SUNDA TRENCH AND THE ANDAMAN-NICOBAR ISLANDS

The accompanying figure (taken from Holmes' Principles of Physical Geology by D. Duff, 4th edition, 1993) shows the Sunda trench as skirting Sumatra, the Nicobar



and Andaman islands to their west. The map is interesting from two viewpoints. First, the extension of the subduction zone of the Sunda trench to the west of the Andaman-Nicobar islands. Second, the definition of an accretionary prism in the offshore of Sumatra.

The northerly continuation of the Sunda trench skirting the Andaman-Nicobar islands would suggest subduction of the Indian plate beneath the Burma plate. If so, several seismic tremors experienced in Andaman and Nicobar islands, including those with a magnitude of 6 and above, may be the outcome of active subduction of the Indian plate beneath the Burma plate and so may not be aftershocks following the horrendous earthquake of Sumatra.

Development of accretionary prism in the offshore of Sumatra is considered to be represented by a series of islands. One such island is Nias in which Miocene rocks are interpreted as uplifted trench deposits. It will interesting to know if such a feature is recognized in the offshore of Andaman-Nicobar islands.

Plot 283, 17th East Street K.S. SUBRAMANIAN
Kamraj Nagar
Tiruvanmiyur, Chennai - 41

SOME PERTINENT RESEARCH ISSUES ON THE EVOLUTION OF *SAHYADRIS*

The Geological Society of India organized a one-day workshop on *Sahyadri:* Evolution and Erosional Processes at Bangalore on the 9th May 2005. The event was co-sponsored by DST, DOD and the State Department of Mines and Geology. Several eminent earth scientists from India and abroad were present to share their knowledge and discuss on wide ranging issues and topics of geological and geophysical interest on the nature and evolution of the *Sahyadris*.

Sahyadri — the Western Ghat escarpment that cuts across varied lithologic and morpho-tectonic units is one of the mega-geomorphic features of peninsular India and represents the uplifted and denuded flank of the rift that took place in the late Cretaceous period (65 Ma ago). The classic two volume Memoir of the Geological Society of India (Memoir No. 43 - 1 & 2, 2001) offers comprehensive basic information on this feature. However, the Sahyadris seem to be offering a large number of research questions for detailed investigation in view of the availability of better field and laboratory techniques and our own changing perceptions and understanding as per the views of the experts assembled at the meeting. In this short note the author has attempted to capture the concerns of some of the experts and listed them in the form of research topics/questions for the benefit of younger and active researchers to pursue the same to attain a better understanding of the *Sahyadris,* in terms of rate of uplift, erosion and trends in evolution and the role of various natural processes in shaping this topographic feature and the adjoining basins:

1. Western Ghats evolution - is it uniform or has it taken place in phases?
2. Scarp - is it retreating or has been stationary?
3. What is the quantum of material that has been removed and deposited in the large basins in the Arabian Sea? Is it increasing or decreasing in the recent times?

4. How are the coastal processes working in distribution of the eroded material in the adjoining basins? What is the pattern of mixing?
5. What is the quantity of water/sediment load that is transported and its seasonal variation?
6. Whether the escarpment has stabilized or does it have a tendency to rise further and at what rate?
7. What are the rates of chemical weathering, river incision and rates of erosion?
8. What are the ageing trends of this approximately 64 M year feature?
9. Is the concept of upwarp and rifting well established?
10. What are the effects of past climate changes on the evolution of this mega feature?
11. What are the major cause of gaps in the Western Ghats?
12. What is the subsurface structure of the Western Ghats?
13. What is the extension of the Indian Continental Crust?
14. When did the plate tilt?

To answer some of the above mentioned questions, at least partially, the experts opined that groups having diverse expertise such as the understanding and analysis of tectonics, deep continental structure, landscape evolution, geomorphology, geochronology, geochemistry, geobotany, climate/paleo-climate, oceanography and marine geology have to come together to design and execute projects on a co-ordinated mode in a timely manner.

Earth System Science Division, M. PRITHVIRAJ
Dept. of Science & Technology
Technology Bhawan, New Delhi
Email: *prithvi@nic.in*

BOOK REVIEW

EARTH SYSTEM SCIENCE AND NATURAL RESOURCES MANAGEMENT: **Silver Jubilee Compendium.** G.R. Ravindra Kumar and N. Subhash (Editors), Centre for Earth Science Studies, Trivandrum, 2004, 453p.

The Silver Jubilee Compendium of the Centre for Earth Science Studies (CESS) highlights the major milestones crossed in the first twenty-five years of its existence. The late Prof. C. Karunakaran, former Director General of the prestigious Geological Survey of India, established the CESS in 1978 as the founder Director. He was a visionary who set the lofty goals of integrated research and development in the fields of geosciences, environmental science, marine science and atmospheric science, which form the core of today's Earth System Science.

The silver jubilee volume in well-designed hard cover begins with a Foreword by Prof. K.S. Valdiya, Chairman of CESS Research Council, commending the "academically exciting and socially relevant programmes" of CESS. The Editors present the road map of progress of CESS from its modest beginnings to the current status as an acclaimed national institute, through a well-chosen set of 28 articles. Dr. M. Baba, Director, traces the triumphant journey of CESS and provides a summary of articles in the volume. The printing, especially the photographs and coloured maps, is commendable, but some line drawings do not measure up to the standards. There is also a refreshing lack of editorial errors in the volume.

Palaeomagnetism of mafic dykes of south India is one of the major projects funded by the Dept. of Science and Technology, Govt. of India which also helped set up a palaeomagnetic laboratory in CESS. The first article by T. Radhakrishna and others on palaeomagnetism and dating of mafic dykes highlights the 1.65 Ga event as the most important, followed by 750-800 Ma alkaline dykes, 85-90 Ma dykes signifying separation of India-Seychelles from Madagascar by Marion plume and 70 Ma dykes related to Deccan volcanism. The authors also emphasize the role of subcontinental lithospheric mantle in dyke generation. M. Santosh describes Pan-African magmatism, role of CO_2 fluids from mantle in crustal evolution, and supercontinent development of Columbia and Gondwana with respect to the Kerala granulite terrain. G.R. Ravindra Kumar and S. Sukumaran show that the regional charnockites of Palghat Gap have formed by magmatic processes in deep crust, aided by pervasive flow of CO_2 fluids. In contrast, the arrested or patchy charnockites are thought to have developed on local scale by dehydration melting during exhumation or intrusion of younger granites. K.M.Nair and D. Padmalal describe the effects of transgressive-regressive cycles in South Kerala basin and relate its geomorphology to climatic