

## Report on the '65<sup>th</sup> Foundation Day' Celebrations of the Geological Society of India, Bengaluru on 29<sup>th</sup> May, 2023

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The 65<sup>th</sup> Foundation Day of the Geological Society of India, Bangalore (28th May, 1958) was celebrated in hybrid mode at 'Radhakrishna Bhavan' on the 29<sup>th</sup> May, 2023 with a release of a book and two endowment lectures. Shri N. Rajendran, Secretary General welcomed the senior Fellows, guests from the Geological Survey of India, Bangalore and AMD, Southern Region, Bangalore and former Vice-President Dr. M. Ramakrishnan, Vice Presidents Prof. K.V. Subbarao and Prof. Mahabaleswar, besides the distinguished speakers of the day Prof. K.R. Subrahmanya and Dr. Prakash Kumar, Director, NGRI (Fig.1). He briefly elicited the sterling role of the founders namely, Dr. D.N. Wadia, President, B. Rama Rao, Vice President, Prof. L. Rama Rao, Editor, Dr. B.P. Radhakrishna, Secretary and Prof. M.R. Srinivasa Rao, Treasurer. He recalled as how the Society's publication of the Journal evolved from annual (1959) to half yearly (1968), quarterly (1970) and finally as a monthly Journal (since 1977), so promptly printed and posted so as to reach Fellows by the first few days of the month.

This was followed by the release of the book titled "Basics of Geological Maps and Interpretation (A Practical Undergraduate Guide)" authored by Prof. Dilip Saha of the Indian Statistical Institute, Kolkata, by Dr. M. Ramakrishnan. He complimented the author for bringing out such a book in structural geology for mapping. A text that is simple and easy to understand and handle compared to many advanced texts in structural geology and mapping. It would be very useful for students at the undergraduate and post-graduate and even at research- levels besides the teaching faculty from numerous universities in India and abroad. The author, Prof. Saha, briefly highlighted the contents of the book and complimented the Society's reviewers

This was followed by the first Endowment lecture (EL) in honour



Left to right: Prof. K. V. Subbarao, Dr. M. Ramakrishnan, Prof. B. Mahabaleswar, Prof. K. R. Subrahmanya and Dr. Prakash Kumar.

of late Shri T. M. Mahadevan (TMM) by Dr. Prakash Kumar, Director, NGRI. Dr. P. Krishnamurthy, formerly Regional Director, Atomic Minerals Division and currently a Council Member from Bangalore, briefly narrated the genesis of the EL and as how TMM had excelled in the fields of geology (petrology, mineral exploration for sand-bodies fit for Coal Washeries, rare metals in the Bihar Mica Belt, gold in Wynad, Kerala and uranium in the Singhbhum Copper belt, Siwaliks of Himalaya and other areas) when he was in active service with GSI and AMD. His outstanding contributions for over two decades on the 'Deep continental studies in India', after his retirement as Director, AMD in 1987, as part of a major project of the DST programme was a land mark contribution to both Geology and Geophysics in India. His two grandchildren, awe-struck by their grandpa's energy to work even at the advanced age of late 90s, influenced their mother Mrs. Sumathi Krishnan, TMMs second daughter, settled in Australia, to donate a sum of Rs. 15 lakhs to the Society to organise lectures in their grandfather's name. The matter was discussed in the Council in August 2022 and with Shri T.M. Mahadevan during November, 2022, before his demise on 18<sup>th</sup> March, 2023. The 'modus operandi' as part of the Society's Endowment Lecture Series, with lectures on Deep Continental Studies, and Atomic Minerals was agreed upon besides the existing EL on Prof. T.N. Muthuswamy, sponsored by TMM in honor of his Professor of the Madras University in 1996.

Dr. Krishnamurthy, formally introduced the speaker Dr. Prakash Kumar, currently Director of the CSIR-NGRI, Hyderabad. Dr. Prakash had his B.Sc (Honours) from Calcutta University in 1994, followed by his M.Sc in Applied Geophysics from Indian School of Mines (now an IIT), Dhanbad. He joined NGRI in November, 1999 in the Seismology section and rose to become NGRI's Director in 2022. Dr. Prakash Kumar is the recipient of various awards and recognitions such as CSIR-Young scientist award (2006), Krishnan Gold medal from Indian Geophysical Union (2010), National Geoscience Award (2011), Anni Talwani Memorial Prize – Indian Geophysical Union (2016). He was a Visiting Researcher at GeoForschungsZentrum, Germany (2003) and Earthquake Research Institute, University of Tokyo, Japan (2007). Dr. Prakash Kumar's outstanding contributions include the Lithosphere-Asthenosphere Boundary (LAB) using converted waves (P- and S- receiver functions) in diverse geological domains, estimation of the thickness of plates of various Gondwana fragments and ocean islands and mapping of the oceanic plates using the land-based stations. Dr. Kumar has over 42 publications besides one book on 'Structure and Tectonics of the Indian Continental Crust and Its Adjoining Region: Deep Seismic Studies' coauthored with B. Rajendra Prasad and Harish C Tewari in 2018.

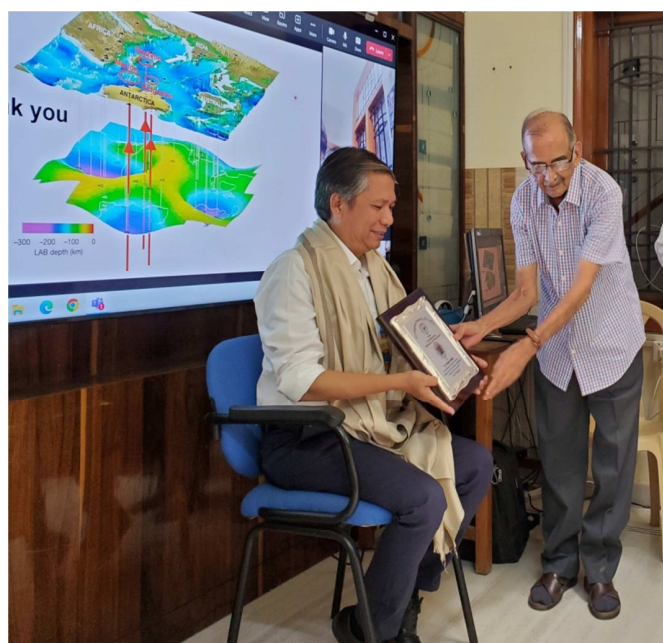
This was followed by the lecture by Dr. Prakash Kumar on

**'Imaging the Seismic Lithosphere-Asthenosphere Boundary (LAB) of the Indian Plate'**. He briefly recalled his meeting with TMM at NGRI in the early part of 2000s, when TMM and others were working on the Society's Memoir No. 53 on *'The Indian Continental Lithosphere: Emerging Research Trends'* (2003), Edited by T.M. Mahadevan, B.R. Arora and K.R. Gupta'. He recalled as how TMM was ahead in thinking on using the 'teleseismic method' to study the lithosphere and the LAB. Dr. Prakash Kumar recalled as how the DSS studies began in the early 1970s with the Russian collaboration and since then some 22 transects have been completed by NGRI which provided data on the LAB in part. He recalled as how the first DSS from Kavalli to Udipi gave interesting details on crustal structure with deep seated faults, variation in basement depths (4 km) and changes in crustal depths (34-41 km) in the EDC and WDC. He highlighted the salient features of the lithosphere from a number of studies which indicate its unique features such as the stable cratons without major deformation for long geological periods, hosting diamonds in kimberlites emplaced within cratons and their margins, depletion in lithosphere due to melt extraction, preserves intriguing geological structures, variable lithospheric thickness (c. over 300 km depth) from tomography and between 180-240 km from Anisotropy studies and partial melts at 8 degree and others.

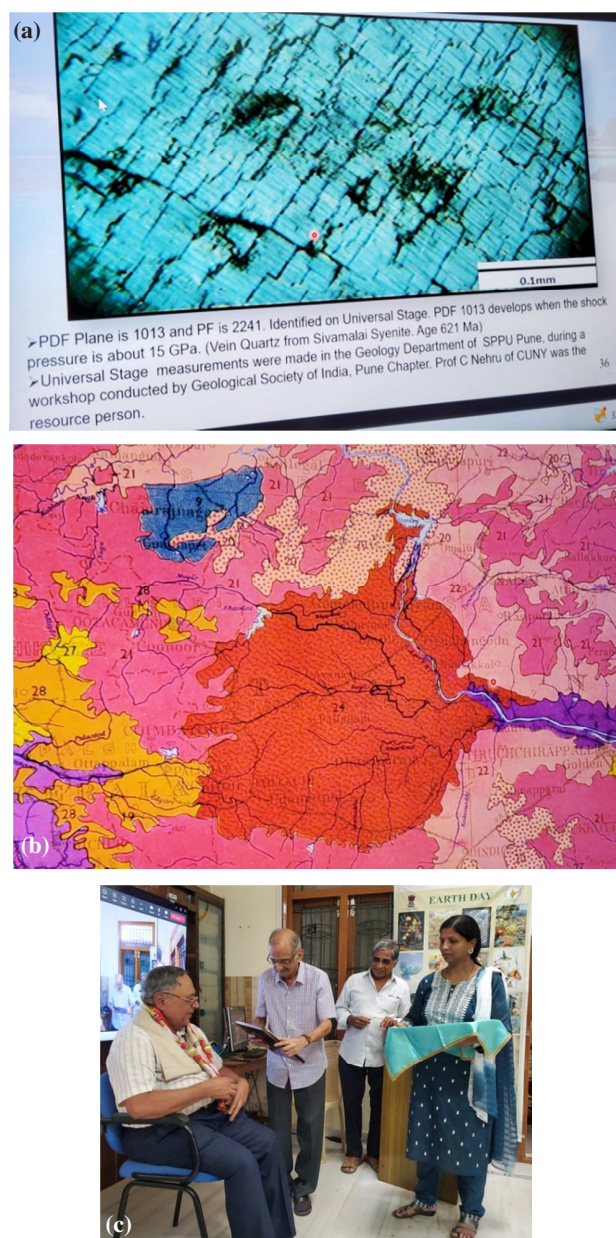
He concluded highlighting the possible causes of the attrition and degeneration of the thicker Indian lithosphere from c. 100 km at c. 1100 Ma, (inferred from Kimberlites of that age) which thinned since its breakup from the Gondwana land around 136 Ma with further degeneracy during Cretaceous when greater India passed over the Reunion plume, which possibly lubricated the LAB and imparted a speed of c. 20 cm/year for the Indian plate. Geothermo-barometry studies have further indicated the degeneration of the Indian lithosphere (c. 24 km) from the EDC. This was followed by the felicitation of Dr. Prakash Kumar by Prof. Mahabaleswar (Fig.2).

The second Endowment lecture, namely Prof. R. Vaidyanadhan Gold medal award lecture on the "Geomorphic Evolution of the Western Continental Margin, Peninsular India" was presented by Prof. K.R. Subrahmanya, Retired professor, Mangalore University. Prof. K.V. Subbarao introduced the speaker Prof. Subrahmanya who had graduated and got his Ph. D from the Central College, Bangalore.

Prof. Subrahmanya traced the evolution of the coastal lines of southern India and the evolution of the region north and south of the



**Fig.2.** Felicitation of Dr. Prakash Kumar



**Fig.3.** (a) Slide showing Planar Deformation Features (PDF) in quartz due to the impact of Meteorite, (b) possible areal extent of the impact structure (red colour) and (c) Felicitation of Prof. K. R. Subrahmanya by Prof. B. Mahabaleswar.

Fermor line. He demonstrated with excellent slides as to how the coast lines of Konkan, Malabar and Kerala evolved through time. He also traced the evolution of the Palghat gap and provided compelling evidences for a major meteor (asteroid) impact. Some of the slides given in Fig. 3 appear fairly convincing of Prof. Subrahmanya's challenging views on existing models of shear and mobile belts in the south Indian craton. He also shared the development of the distinct cleavage fractures in the plagioclases from the Sivanmalai quartz-feldspar veins. Prof. Subrahmanya was felicitated by Prof. B. Mahabaleswar, Vice President.

Dr K. V. Krishnamurthy, Secretary of the Society, anchored the whole programme and finally thanked each and everyone who participated both in the live and remote mode, especially the students from Bangalore University, Officers of GSI, AMD, DGM and very senior Fellows stationed at Bangalore. He also thanked the staff and other members of the Society for their help and assistance in making the function a grand success.