Birbal Sahni Institute of Palaeosciences
Monthly Summaryof Research Activities
(November 2023)

1. **Areas of Focus:**

The institute carries out research on fundamental as well as applied aspects of Palaeosciences that includes Evolutionary history of biota, Paleoclimate, studies of past civilization, Human history and contemporary Climate Change issues, following an integrated and multi-disciplinary approach.

2. **Important Highlights of Major Research Programmes**

a. Key Scientific Findings of the Month (November 2023)

i) The Bengal Fan covers the entire floor of the Bay of Bengal (BoB) and has accumulated erosional material from the Himalayas since the Early Eocene. In the present study, the fan development, sedimentation history, and depositional processes in the lower Bengal Fan have been documented and a site-to-site comparison of stratigraphy and channel migration since the Late Tortonian (ca. 7.5 Ma) from sedimentological and physical property records at Site U1451 of IODP Expedition 354 to 8°N in the lower Bengal Fan (Fig.1) have been presented. Fine sediment (Sortable Silt, SS) textural and sorting records are used to reconstruct the current skinfriction shear stress in the Benthic Boundary Layer (BBL) of the BoB. Also, a distinction in shear stress environment between turbidity dominated active fan and background hemipelagic fan growth is presented. A criterion is set in the following paper to validate the use of SS records in hemipelagic deposits in the BoB to decipher the shear stress regimes of depositing flows on the basis of sand weight percentage and mean SS sizes ($\overline{SS}$) variation. This study will enhance our understanding of the Bengal Fan deposition dynamics and fan development with the reconstructed shear stress regimes associated with various depositing flows (turbidity current and/or deep water circulation). It will provide a strong base to model fan internal processes and material flux to the BoB. This is among the first studies of its kind to come out of the Bengal Fan region. ***(Kawsar et al.).***

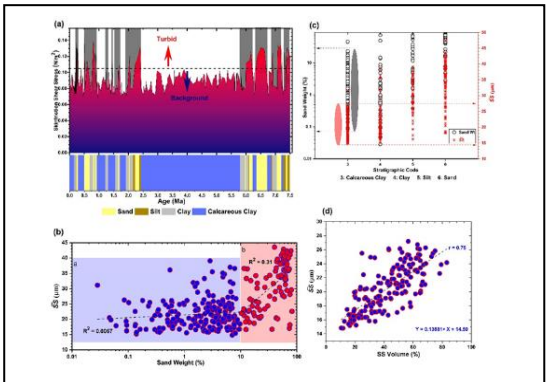

Fig. Calculation and correlations of various size parameters of marine silt grains for the discrimination of shearstress regimes.

ii) The mean April-July vegetation index (NDVI) from 1738 to 2018 CE has been reconstructed based on the tree rings of Deodar (*Cedrus deodara*) from Uttarakhand and Himachal Pradesh in the western Himalayan region. There has been a correlation between the region's NDVI browning (reduction) and past droughts and famines. This NDVI reconstruction provides valuable input for modeling vegetation dynamics to predict changes due to climate variations in the western Himalayan region (***Singh et al.***).

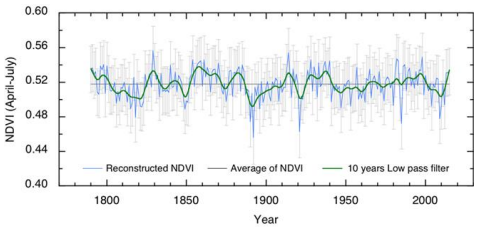

Fig. Reconstructed NDVI for mean April-July from 1790 to 2018 CE along with ten years low pass filter

b. Vigilance Awareness Week was observed during October 30- November 5, 2023

c. Special Cleanliness Campaign 3.0wasconducted throughout the month of November 2023.

d. Founder's day was celebration on November 14, 2023 - Floral tributes were paid to the visionary founder Prof. Birbal Sahni. On this occasion,53rd Birbal Sahni Memorial Lecture was delivered by Prof Ashok Sahni& 65th Albert Seward Memorial Lecture was delivered by Prof Dhruv Sen Singh.

In all 7 Research Papers were published in high impact factor Journals during the month.

Photographs showing important highlights of major programs/research activities organized duringNovember, 2023: