

Applications for externally funded PhD positions in Department of Earth Sciences (DES)

The Department of Earth Sciences (DES), IISER Kolkata is looking for bright and motivated students, who have completed their M.Sc./MS/M.Sc. Tech/M. Tech (with **minimum of 55% marks**) in: 1) Geology/Applied Geology/Geophysics /Earth Sciences/Marine geology/Environmental Sciences/Environmental Studies/Atmospheric Science or any other branch of Geological sciences.

Or

2) Physics/Chemistry/Mathematics/Biological Sciences/Computational Seismology/interested to pursue research with the DES faculty member in the matching specialization.

Final year post-graduate students who are yet to obtain their degree may also apply; however, they must have completed their degree at the time of admission. Some of the important information about this program is provided below.

Eligibility for externally funded students: Candidates having valid **CSIR-NET JRF / UGC-NET JRF / DST-INSPIRE / other equivalent fellowship** would be eligible to apply. Candidates must have **physics, chemistry and mathematics at 10+2 level**, and at least one of these subjects at their bachelor level. They can work with any faculty member in DES based on mutual research interest. The research areas in which department is looking for young and bright minds are listed below-

Stable Isotope Geology- Prof. Prasanta Sanyal is leading this group and looking for a student having interest in working towards the following problems using stable isotopes.

1. Past climate and its impact on ecology: Involves reconstruction of rainfall using oxygen isotopes of soil carbonate and hydrogen isotopes of plant molecules; carbon isotopes of soil carbonate and plant molecules. Fluvial and lake sediments will be used for this purpose.
2. Temperature reconstruction of past: Lipid components such as brGDGT, IsoGDGT and 3 OH Fatty acids will be used for this purpose.
3. Understanding the Nitrogen Cycle: Nitrogen and oxygen isotopes of dissolved nitrate will be used for this purpose.

For more details, please visit the webpage: <http://www.iiserkol.ac.in/~silika>

Paleobiology – Dr. Subhronil Mondal is looking for a motivated PhD candidate to work on a problem related to paleobiogeographic patterns of marine invertebrates across space and time.

Metamorphic Petrology- The group led by *Dr. Tapabrato Sarkar* is interested in understanding the processes involved in the formation and evolution of continental crust through geological time by studying the high-grade metamorphic rocks in orogenic belts. The group is currently working on the different problems related to the Southern Granulite Terrane and Eastern Ghats Belt. The goal of these studies is to combine state-of-the-art petrological, geochemical and geochronological analyses on the studied rocks to understand crustal evolution. Highly motivated candidates interested in field excursions are encouraged to apply.

For more information visit the group website: <https://www.iiserkol.ac.in/~tapabrato/>

Earth Surface Dynamics- THE group led by Dr. Sanjay Kumar Mandal studies the diverse processes that operate together to create the surface geology of the Earth. The focus of the group is on tectonic processes that deform the near-surface of the Earth and erosional processes that sculpt the surface, thereby forming the topography and creating sediment. Himalaya is the best example of this linked system, with orogenic processes occurring due to the ongoing collision between the two continental plates, raising the high mountains that erode rapidly under the influence of monsoon climate. This produces sediments that are deposited in the river valleys, intermontane basins, Indo-Gangetic foreland basin, and ultimately in the Bengal and Indus fans. These sedimentary records chronicle the orogenic evolution of the Himalayas.

The processes of continental collision, tectonic mountain building, erosion, sediment production, and transport in the Himalayan system are all of interest to the Earth Surface Dynamics group. The researchers employ a variety of techniques to study this system. These include fieldwork, geochemical, and isotopic analysis, cosmogenic nuclide analysis, GIS, remote sensing, and computer modelling. Fieldwork is an important component of our research.

The Ph.D. students will have the opportunity to design and conduct research in one or more of the following broad areas: (1) Tectonics & Landscape Evolution; (2) Cosmogenic Nuclides, Thermochronometry, and Isotope Studies; (3) Sedimentology.

For more details, please visit the ESD group website: <https://esd-iiserkol.in/>

The following figures show our fieldworks in the northwestern Indian Himalaya:



Figure 1. Researchers are mapping the Siwalik section at the foothills of Himachal Himalaya.



Figure 2 . Researchers are collecting samples from the fill terrace deposits for OSL dating and cosmogenic nuclide analysis.

Please note that fulfilling the minimum essential criteria does not ensure that a candidate will be called for the interview. Additional criteria for shortlisting might be set by the department based on academic records, experience and research interest of the candidates. Selection of various reserved category candidates will be as per the norms of the Government of India. The departmental faculty profiles can be found at the URL: <http://www.iiserkol.ac.in>.

DES Spring 2023 PhD Timeline:

- PhD application portal opens: 16.10.2022
- Application portal closes: 13.11.2022
- Publication of shortlist for the Interview: 18.11.2022
- Selection Interview window: 23-26 November 2022
- Publication of PhD interview results: 9.12.2022
- Pre-registration portal opens: 22.12.2022
- Pre-registration deadline: 27.12.2022
- PhD Registration: 28 Dec 2022
- Orientation: Jan 02 2023