ACTIVE TECTONICS & GEOCHRONOLOGY

This research group has developed a unique facility to undertake Active Fault Mapping, Paleoseismology and Paleo-tsunami studies in seismically active regions of India. This facility includes – GPR, UAVs, high end integrated Total Station with 3D scanner, Geoslicer and OSL dating lab. This group's research is focused on NW□Central Himalaya, Kachchh and Andaman-Nicobar. In the past seven years, the team has identified several new active faults viz. the Kangra Valley Fault; Taksal Fault; Pinjore Garden Fault; Khetpurali Fault and Hajipur Fault in Himalayan region. For the first time, the team has reported active faults along the Kachchh Mainland and South Wagad from Gujarat. Paleoseismic investigations helped to identify geological-evidence of several large magnitude paleo-earthquakes that occurred in Himalaya during the historic period. Additionally, the group has identified signatures of several megathrust earthquakes and associated transoceanic tsunamis from Andaman and provided evidence for seven tsunamis in the last 8000 years from shallow coastal stratigraphic records using Geoslicer. The data generated are crucial for Seismic/Tsunami Hazard Assessment. In parallel, the team carried out several projects with Archaeological Survey of India (ASI) towards mapping buried ancient structures using Ground Penetrating Radar (GPR). The group has contributed to several engineering projects of national importance – Oil Pipelines in Rajasthan & Gujarat for seismic hazard estimation.

Another major and new direction of this research group is focused on quantitative understanding of various geological processes in the Quaternary period, using different experimental techniques, mainly luminescence, and numerical (inverse) modeling. Research is ongoing to understand the temporal variation of erosion in Central Himalaya using Luminescence Thermochronology