Field Transect: *NR005, Pre-Himalayan metamorphism - magmatism in the Kumaun Lesser Himalayan nappe and klippes and thrust tectonics.*

Geological Significance:

- *The diverse pre-Himalayan, igneous, sedimentary and metamorphic rocks, covering a wide range of geological history from Precambrian to Tertiary are exposed to the south of Indus Tsangpo suture. Imprints of Precambrian, Pan African and Himalayan magmatism, metamorphism, sedimentation are replete throughout the complex orogen.*
- *The section between Kathgodam to Garbadhar is one of the fascinating segment which preserves a complete section of rocks from Quaternary sequences in the south to Proterozoic sequences in the North. The vast autochthnous metasediments of Garhwal Group are exposed in this section below the tectonically overlying thrust masses of different metamorphic sheets, viz. Almora, Baijnath, Dharamgarh, Askot and Chhiplakot Crystallines. The study of rocks along selected traverse line addresses tectono- lithostratigraphy, metamorphic complexities and nature and extent of different tectonic contacts viz. Himalayan Frontal Thrust (HFT), Main Boundary Thrust (MBT), Ramgarh Thrust (RT), South Almora Thrust (SAT), North Almora Thrust (NAT), Baijnath Thrust (BT), smaller klippes of Dharamghar and Askot and Main Central Thrust (MCT)*

International Attraction:

- ✓ *An opportunity to study tectonics and metamorphism in Lesser Himalayan sequence with special reference to nappe/klippes of Almora, Baijanath, Dharamghar, Askot and Chhiplakot for their metamorphism, anatexis, acid and basic intursives along with tectonics of their emplacement.*
- ✓ *Demonstrate the Paleoproterozoic-Neoproterozoic elements in Kumaun Himalyan nappe/klippes and nappe/klippes in Higher Himalaya, viz the Central Crystallines, for appreciations of their relationship with their root zone.*
- ✓ *Showcase numerous neotectonic features; extrusive igneous rocks, viz. Bhimatal –Bhowali Volcanics; Siwaliks along with some Plant Fossils near Kathgodam; Field evidence of lake tectonics at Nainital; field evidence of Glacial activity in north of Kausani, and some geotechnical inputs from engineering projects in Ramgad microhydel project, Gola Barrage site and Jamrani Dam site..*

Duration: 7 Days

Date of excursion: Post-Congress

Max.Participants: 15-20

GEOTOURIST SITES

Trishul Parwat from Kausani

Unpaired terraces, Triangular Facet at Kakrikhat showing geomorphological evidences of South Almora Thrust

Baijnath Temple, Bageshwar District , Uttarakhand

Geological Field Photographs

A Textbook Example of Isoclinal Recumbent Fold from Almora Crystalline near Kthiyari Village , Lessar Himalaya, India

Ramgarh Ultra-Mylonite/ Phyllonite near both South and North Ramgarh Thrust

F1 fold of Almora Crystalline showing good relationship of Folding Shearing and metamorphism

Clock wise simple shear (rotational)movement showing sheath folds along MBT

GEOTOURIST SITES

Trishul Parwat, *is a group of three Himalayan mountain peaks of western Kumaun, with the highest (Trisul I) reaching 7120m. The three peaks resemble a trident - in Hindi/Sanskrit, Trishula, trident, is the weapon of Shiva. The Trishul group forms the southwest corner of the ring of peaks enclosing the Nanda Devi Sanctuary, about 15 kilometres (9 mi) west-southwest of Nanda Devi itself.*

Baijnath Temple, *made in granitic gneiss of Baijnath Crystalline. The cracks in the main temple and the tilting may have developed due to the effect of past EQ related activities or simply due to the differential settlement of the unconsolidated river terrace sediments*

OTHER ATTRACTION:

- ✓ *Extrusive igneous rocks, viz. the Bhimatal –Bhowali Volcanics, dated at 2.51±0.08 Ga (an initial eNd=5.1±0.5, Sm-Nd Bhat et al. 1998)*
- ✓ *Field evidence of lake tectonics at NainitalField evidence of Glacial activity in north of Kausani.*
- ✓ *Some geotechnical inputs from engineering projects in Ramgad microhydel project, Gola Barrage site and Jamrani Dam site.*