



DEPARTMENT OF GEOGRAPHY  
GOVERNMENT DEGREE COLLEGE KULGAM

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Date: - 1<sup>st</sup> September, 2023

FIELD STUDIES REPORT

On September 1st, 2023, the Department of Geography organised a field trip for **B.Sc./B.A. 6<sup>th</sup> Semester** students to the Verinag- Achabal Area. The eastern portion of Pir-Panjal includes the region from *Verinag to Achabal Via Lisser Mount*, which is located at an elevation of **1800–1910 metres** amsl. The students first had the opportunity to see the Vitasta Spring, which is situated at an elevation of **1840 metres**. Verinag spring and unconfined aquifer, which provide sources of clean water and areas of recreational, ecological, and cultural importance, as well as giving students the chance to assess water quality because their discharge integrates water from significant portions of an aquifer both spatially and temporally. Springs are a clear example of the transition from groundwater to surface water and the condition of the groundwater in the aquifers that support them. The notion of aquifers and the state of rock properties that allow for the ground water flow that may be economically gathered were explained to the pupils in terms of geology. Additionally, investigating springs might reveal a region's susceptibility to potential changes in its groundwater resources.



The pupils also had the chance to see the geomorphological and biological richness of the area they visited. The purpose of the subject visit was specifically to draw attention to landslides as the most terrifying danger in the precarious mountainous environment along the **NH-44**. Therefore, a landslide-related disruption poses a serious risk to both the economy and human life.

The in-charge instructors, **Dr. Jahangeer Afzal, Dr. Aadil M. Nanda, Dr. Masoon Ahmad Beig, Dr. Suhail Ahmad Bhat**, and others, helped the students identify the regions along NH 44 from Lower Munda to upper portions of Jawahar Tunnel that are most prone to landslides. In addition, hotspots on and near the **NH-44** belt were identified and mapped to aid the student in developing numerous skills that are crucial not just to the neighbourhood but to the entire region.



Throughout the history of the planet, landslides have taken place, and they have significantly shaped the terrain we see today. *The man's ingenuity has transformed the landscape for their needs and through prowess of technological breakthrough to increase their comfort and prosperity.* This quest to alter sensitive landscapes upset the balance and unintentionally transformed landslides from a very important physical process to a dangerous threat. The purpose of this field excursion was to teach the students about the conditions that have a substantial impact on landslip occurrence. Slope angle, lithology, precipitation, land use and cover, soil type and depth, distance to roads, distance to faults, distance to rivers and streams, altitude, aspect, drainage density, lineament density, and geomorphology are some of these.

The exposed rock structures and outcrops that are prone to mass movements were demonstrated to the students. These features also regulate the angle of response, which is a key element in setting off landslides and other types of movement downslope. The students had a thorough understanding of the relationship between earthquakes, rainfall, and landslides as emerging trigger variables in mountainous regions, particularly the Himalayas.



The vegetation in the area has responded effectively to the local climatic circumstances because the visited location is in the Himalayas' alpine mountainous zone. Evergreen coniferous woods with temperate origins are supported by the humid climate regime. Students were instructed to carefully study the adret and ubac sides of mountain ranges in order to understand the role that aspect plays in the development of micro-climates, which interact with other physical characteristics to create distinct ecological zones. The pupils were also shown J-shaped conifers, which are a result of steep slopes, to illustrate the importance of slope. The function of minor streams and the resulting drainage pattern helped pupils comprehend water-shed-level hydrological regimes.

Through hands-on investigation, the students were given a thorough explanation of concepts including drainage basin, water divide, levees, piedmonts, gorges, stream ordering, potholes,

river meandering, waterfalls, and others. They were able to better conceptualise things and leave lasting impressions by closely studying such procedures. We encouraged a few pupils to participate in angling as a pastime in order to make the field trip memorable. Students were able to recognise rivers as important natural resources because to this. Rock samples were then collected and classified as sedimentary, igneous, and metamorphic rocks.

Global demand for water for drinking, sanitation, agriculture, and environmental protection is rising sharply as a result of population expansion, urbanisation, uncontrolled application of agrochemicals and discharge of untreated sewage water into surface and subsurface water. Additionally, the number of springs is declining at a frightening rate, and the majority of that loss is generally unrecognised. Our valley, which is endowed with thousands of freshwater springs, is no longer an exception to this trend.



Many current concerns that directly affect the quantity and quality of water supplies in vulnerable natural zones like the Himalayas have piqued students' interest. We demonstrated to them the importance of the Bringi watershed in the growth of agriculture and other related enterprises in the lower catchment of the wealthy as we travelled back home. The detrimental effects of human activity, such as the 2014 flood, the decline in river flow, the channel shift, and water-borne illnesses, were also emphasised.

## **SUMMARY:**

The Geography field study Report on the landslide and avalanche-prone area of NH44, Qazigund-Verinag and the Dooru–Kokernag Road, unveils the complex interplay of geological, meteorological, and human factors that make this region vulnerable to natural disasters. Through field visits, surveys, and data analysis, some key findings include.

The region's geological composition, characterized by loose soils, unstable rock formations, and steep slopes, significantly contributes to the frequent occurrence of landslides and avalanches. Climatic Factors Heavy rainfall, intense snowfall, and temperature fluctuations play a pivotal role in triggering these natural disasters, making the area susceptible during specific seasons. Local communities in the Qazigund-Verinag area face substantial risks, with damage to homes, loss of livelihoods, and threats to their safety being recurrent issues. Social and economic aspects of life are affected, and resilience is tested time and again. Critical infrastructure, notably National Highway 44, faces frequent disruptions, leading to economic losses and hampering transportation between vital regions. Existing mitigation measures, while commendable, require further enhancement. Community-based preparedness initiatives and early warning systems are essential for reducing the vulnerability of the area.

## **CONCLUSION:**

The region's susceptibility to landslides and avalanches is an intricate result of both natural and human factors. This report underscores the need for a multi-faceted approach to address this vulnerability effectively. Improved understanding of the geological conditions, coupled with meteorological monitoring, is essential for early warning and preparedness. Furthermore, community engagement and investment in resilient infrastructure are critical to mitigating the impacts of these natural disasters.

## **RECOMMENDATIONS**

***Geological Studies:*** Conduct comprehensive geological surveys to better understand the region's geological vulnerabilities and identify high-risk zones.

***Metrological Monitoring:*** Enhance meteorological monitoring systems to provide timely warnings of adverse weather conditions that may trigger landslides and avalanches.

***Community Awareness:*** Implement community-based education and awareness programs to educate residents on disaster preparedness and response measures.

***Infrastructure Resilience:*** Invest in the reinforcement and improvement of critical infrastructure, including National Highway 44, to withstand the impacts of landslides and avalanches.

**Early Warning System:** Develop and maintain effective early warning systems that can alert residents and authorities about imminent disaster events, allowing for timely evacuation and response.

**Research and Innovation:** Encourage research and innovation in disaster risk reduction, including the development of sustainable construction techniques and land-use planning that considers geological vulnerabilities.



The Qazigund-Verinag and Dooru- Kokernag region's vulnerability to landslides and avalanches demands a proactive and multi-dimensional approach. By addressing geological, climatic, and community factors while investing in resilient infrastructure, this region can reduce its susceptibility and build a more secure and sustainable future for its residents and infrastructure networks.

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**Dr. Jahangeer Afzal**