



**DEPARTMENT OF DISASTER MANAGEMENT
KARGIL CAMPUS
UNIVERSITY OF LADAKH**
Saliskote Khumbathang Kargil (Ladakh)



Zanskar Field Tour from 25- 28 September 2023

Zanskar Field tour Report

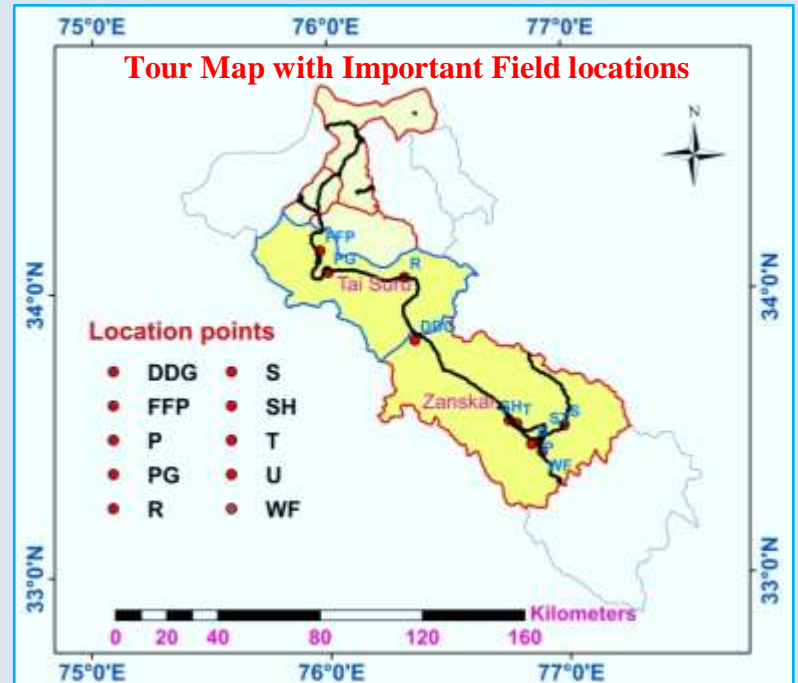
Prepared by Department of Disaster Management, Kargil Campus, University of Ladakh

Main Objective of Tour

Hazard profiling, documentation, disaster site visits and vulnerability analysis of selected villages of Zanskar Region to natural hazards

Important Field locations

DDG= Drang-Drung Glacier; **FFP**= Flash Flood Point; **P**= Padum town; **PG**= Parkachik Glacier; **R**= Rangdum; **S**=Stongea Village; **WF**= Sheela Waterfall; **T**= Tungri Village; **SH**= Shagar Village; **U**= Uberrak village; **S**= Sani Village



Day 1 (25-09-2023): Enroute Journey from Kargil to Padum Zanskar

We commenced our field tour journey from Kargil town at approximately 6 am in the morning. The cloudy weather and cold winds imbued the morning with a mix of worry and excitement. The last pickup point for students was the hostel at Kargil campus, where our journey to Zanskar Valley began at around 7 am. The students received a final briefing on the significance of the field tour and were provided with essential instructions to maximize their learning from the experience. They were tasked with analyzing the enroute locations thoroughly to comprehend their close relationship of geophysical environment to the occurrence of multiple hazards.

After more than an hour of travel, we made our first important stop for breakfast at Damsna, Panikhar, a renowned picnic spot in Kargil. Following breakfast, we resumed our journey, and the next significant locations for the students were Parkachik and Drang-Drung Glacier. The students received information about the glacier's status from 1970 to the 2020s. They were made aware of the importance of glaciers, their retreat rates, and the related implications in the context of disasters such as droughts and GLOFs (Glacial Lake Outburst Floods).

During our journey, a brief spell of snowfall at Penzilla Pass heightened our concern for the next three days of the tour. The enroute from Kargil to Rangdum covered numerous locations with the potential for hazards like flash floods, landslides, and snow avalanches. The students were regularly briefed about the

influential factors like slope, aspect, elevation, and land cover that significantly contribute to the occurrence of these hazards.

We reached Rangdum at approximately 12:30 pm and paused for lunch. After lunch, we continued our journey and arrived at our stay destination, Padum, around 5 pm. The dinner was served around 8pm. The first day of the tour concluded with a comprehensive briefing for the next day.



Group Photograph



Field Photograph of Drang-Drung Glacier



Weather on Day First

Day 2 (26-09-2023): Hazard Profiling and Documentation

The second day of the tour covered three villages, namely Shila village, Padum village, and Stongdae village (Fig. 1). The main focus of the day was to collect hazard data and their GPS documentation. Before visiting these villages, the faculty provided the students with a detailed overview of data collection and documentation procedures.

A questionnaire survey was conducted, covering various hazard components such as Hazard Knowledge, Hazard Magnitude, Hazard Frequency, Hazard History, and Hazard Damage. This survey served as the primary tool for collecting hazard information. Additionally, students were asked to analyze geophysical factors contributing to the hazard occurrences in the region.

The students and faculty diligently engaged in data collection from Padum (the main town) until lunch. Visits to the SDM and Tehsil office in Padum were also conducted to gather recorded data available with the respective officials. After lunch, two more villages, namely Shela and Stongdae Village, were covered. Upon completing the field survey in Sheela village, the students were given an opportunity to visit the Shela waterfall for one hour.

Main outcome of the day: The students successfully collected detailed hazard data from the three villages. Preliminary results from the small sample data indicate that majority of the Padum area had lower vulnerability to hazards such as flash floods, landslides, and snow avalanches. In contrast, the other two villages, Sheela and Stongdae Village, exhibited comparatively higher vulnerability to hazards like snow avalanches, flash floods, and landslides. A significant amount of historical hazard information was gathered from locals, including details about the heavy snowfall-induced avalanche of 1988-89. This event resulted in numerous deaths and the temporary displacement of around 4000 people from different villages in Zaskar.



Field Photograph of Flood Prone Nallah



Field Photograph of Flash flood affected locations



Field photographs of landslide locations



Field photographs- Hazard documentation

Day 3 (27-09-2023): Vulnerability Analysis of Buildings to Natural Hazards:

The third day of the field tour focused on the vulnerability analysis of buildings to the identified hazards in the region. The faculty provided a detailed overview to the students about the different components of buildings and their related vulnerabilities to natural hazards. The students were also made aware of vulnerability as a dynamic phenomenon that evolves over time, encompassing social, economic, and environmental dimensions.

The survey used a wide range of indicators to identify, measure, and analyze the influence of individuals and community vulnerability. The survey specifically focused on the structural vulnerability of buildings, utilizing a composite set of indicators such as Construction Material (CM), Construction Type (CT), Number of Stories (NS), Number of Rooms (NR), Retrofitted Building (RB), Vertical Configuration (VC), Horizontal Configuration (HC), Proximity to the Slope (PS), Presence of Large Windows on Slope Side (LW), Presence of Basement (B), Foundation Depth (FD), Roof Supporting Connection (RC), Age of the Building (AB), Surrounding Wall/Vegetation (SW), Emergency Exits (EE), Roof Material (RM), Wall Material (WM), Floor Material (FM), Ownership Status (OS), Number of Dwelling Rooms (DR), Building Location (BL), and Roof Pitch (RP).

The survey villages selected for vulnerability assessment included Sani Village, Tungri Village, and Shagar Village. Data on the physical vulnerability of buildings was collected from three villages using the Rapid Visual Screening method, a widely used tool for the rapid assessment of structural vulnerability. The pre-lunch survey was conducted in Sani village, while Tungri and Shagar villages were covered after lunch at one of the famous spots of Zaskar known as Sani Lake.

The vulnerability analysis provided students with the opportunity to understand the role of building structures in the impact of hazards. It also gave them an understanding of appropriate building constructions to enhance disaster mitigation in the region. The main highlight of the day was the disaster

site visit to Shagar village, where the avalanche of 1988-89 occurred. The avalanche resulted in damage to the whole village, accounting for 70 deaths. We were fortunate enough to interview one of the survivors of this event, who gave a detailed description of the avalanche location site and avalanche impacts.

Main Outcome of the Day: The 1988-89 avalanche site visit to Shagar and vulnerability analysis. The vulnerability analyses of selected villages reveal that are mostly dominated by old kutchha non-engineered constructions with flat roofs. The sample survey results indicate that these buildings have a high vulnerability to natural hazards such as flash floods, snow avalanches, earthquakes, and landslides. Moreover, people are of the opinion that limited road connectivity and extreme winters further enhance their vulnerability to these hazards.



Field photographs collected during structural Vulnerability Analysis

Day 4 (28-09-2023)- Return Journey

The day marked the commencement of our return journey to Kargil. The weather was pleasant, allowing us to start our journey around 8 am from Padum Zanskar. The main highlight of the day was the visit to the flash flood site in Khawos Village, Panikhar, en route to Kargil. The faculty briefed the students about the flash flood damage in the region during 2021-2022. The students were also made aware of the potential future damages in similar geographical locations in the area. Furthermore, the students had the opportunity to interact with local respondents for detailed documentation of the event. Unfortunately, the planned flash flood site visit to Stakpa Sankoo had to be canceled due to time constraints, and we safely reached our destination, Kargil town, by 8 pm.



Field visit to flash flood hit area; Khawos Panikhar

Acknowledgment: The Department of Disaster Management expresses gratitude to the University of Ladakh, Rector of Kargil Campus, and the Coordinator of Disaster Management for providing this opportunity to conduct the much-needed field visit for the students of Disaster Management. The faculty extends thanks for the cooperation and support received from the students throughout the field tour. Special appreciation is also extended to the bus driver and office staff for their essential support and service during the entire tour. We hope for more such fields for students to enhance their field knowledge and research interests. Thank You.

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