

## Unveiling the Chaura Thrust: Insights into a Blind Out-of-Sequence Thrust in Himachal Pradesh, India

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**Abstract :** The Chaura Thrust, located in Himachal Pradesh, India, is a prominent geological feature that exhibits characteristics of an out-of-sequence thrust fault. This paper explores the geological setting of Himachal Pradesh, focusing on the Chaura Thrust's unique characteristics, its classification as an out-of-sequence thrust, and the implications of its presence in the region. The introduction provides background information on thrust faults and out-of-sequence thrusts, emphasizing their significance in understanding the tectonic history and deformation patterns of an area. It also outlines the objectives of the paper, which include examining the Chaura Thrust's geological features, discussing its classification as an out-of-sequence thrust, and assessing its implications for the region. The paper delves into the geological setting of Himachal Pradesh, describing the tectonic framework and providing insights into the formation of thrust faults in the region. Special attention is given to the Chaura Thrust, including its location, extent, and geometry, along with an overview of the associated rock formations and structural characteristics. The concept of out-of-sequence thrusts is introduced, defining their distinctive behavior and highlighting their importance in the understanding of geological processes. The Chaura Thrust is then analyzed in the context of an out-of-sequence thrust, examining the evidence and characteristics that support this classification. Factors contributing to the out-of-sequence behavior of the Chaura Thrust, such as stress interactions and fault interactions, are discussed. The geological implications and significance of the Chaura Thrust are explored, addressing its impact on the regional geology, tectonic evolution, and seismic hazard assessment. The paper also discusses the potential geological hazards associated with the Chaura Thrust and the need for effective mitigation strategies in the region. Future research directions and recommendations are provided, highlighting areas that warrant further investigation, such as detailed structural analyses, geodetic measurements, and geophysical surveys. The importance of continued research in understanding and managing geological hazards related to the Chaura Thrust is emphasized. In conclusion, the Chaura Thrust in Himachal Pradesh represents an out-of-sequence thrust fault that has significant implications for the region's geology and tectonic evolution. By studying the unique characteristics and behavior of the Chaura Thrust, researchers can gain valuable insights into the geological processes occurring in Himachal Pradesh and contribute to a better understanding and mitigation of seismic hazards in the area.

**Keywords :** chaura thrust, out-of-sequence thrust, himachal pradesh, geological setting, tectonic framework, rock formations, structural characteristics, stress interactions, fault interactions, geological implications, seismic hazard assessment, geological hazards, future research, mitigation strategies.

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