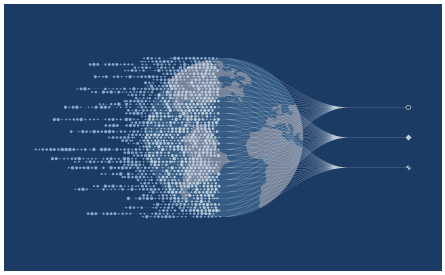

ID: **O1.2-305** Type: **Oral**

and Stress Field Changes in the Afar and its surroundings

The Afar Region, located in East Africa, is characterized by significant geological dynamism due to its distinctive tectonic setting. This complexity presents both challenges and opportunities for scientific research and sustainable development. A deep understanding of the region's tectonic processes is crucial for mitigating hazards and maximizing its potential. The primary goal of this study is to re-evaluate and understand the seismotectonic framework of the Afar Region and its surrounding areas. The study focuses on three specific objectives. First, it examines seismicity and the b-value parameter to understand earthquake behavior, based on a comprehensive catalog of seismic events from 1900 to 2024, sourced from the IDC, ISC, IRIS, and ORFUES databases. Second, the study constructs focal mechanism solutions using digital waveform data extracted from the IDC and IRIS, enriching the catalog of solutions. Third, it conducts a stress tensor inversion based on the available focal mechanism solutions to better understand the regional tectonic stress. Additionally, the study investigates Coulomb stress changes for significant earthquakes in the region to explore their interrelationships. This research is vital for enhancing our understanding of seismic hazards and the complex tectonics of the Afar Region.

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