

Institut für Geophysik  
Geophysikalisches Kolloquium  
Sommersemester 2022

Montag, 09. Mai 2022

**Dr. Ayoub Kaviani**

**Institut für Geophysik, Goethe-Universität Frankfurt am Main**

**Lithosphere structure of the Arabia-Eurasia collision zone in the  
Middle East: A seismic imaging overview**

The current tectonic setting of the Middle East is the result of a long-lasting tectonic history of continental rifting, oceanic crust development, subduction, and collision. The most pervasive effects are from the latest collisional stage of the Alpine tectonic cycle associated with the Arabia-Eurasia collision in the Cenozoic. As the result, the modern tectonic framework of the region is defined by an assembly of different plate boundary types including 1) active subduction zones along the Hellenic and Cyprus trenches in the west and Makran in the east, 2) continental collision zones: Zagros-Bitlis, Alborz, Kopeh Dagh and Lesser and Greater Caucasus, 3) lithosphere-scale strike-slip faults such as the Northern and Eastern Anatolian Fault zones and the Dead-Sea continental transform fault, and systems of strike-slip faults in eastern Iran, and 4) spreading centers in the Red Sea and the Gulf of Aden. Therefore, this relatively unique tectonic framework offers a natural laboratory to study the processes common to continental collisions in their early stages. Seismic images have recently yielded important insights into the deep structure of this framework, which has important implications for the evolution and geodynamics of a continental plateau and young mountain belt. Some of these new results include evidence for the diachronous nature of tectonic events along this complex orogen.

However, there still remain many essential questions unanswered, including 1) the stage of slab-detachment along the Tethyan suture line and 2) the cause-and-effect relationships between the surface tectonics and the distribution of lithospheric deformation and mantle flow.

In this talk, I aim at presenting the latest geophysical findings of the deep structure of the Arabia-Eurasia collision over the broader region of the Middle East and how these findings have helped to better understand the dynamics of this collision zone. A brief view of the prospective for further research requirements and opportunities will also be discussed.

Das Kolloquium findet um **16Uhr.t.** als Zoom- ideokonferenz statt. Der Link dazu wird auf der Homepage und per eMail rechtzeitig mitgeteilt.

Alle an dem Thema Interessierten sind hierzu herzlich eingeladen.

Die Dozenten des Instituts für  
Geophysik