Karlsruher Institut für Technologie

KIT-Fakultät für Physik

Einladung zum Physikalischen Kolloquium

17.01.2025 **Henriette Sudhaus, Karlsruher Institut für Technologie**

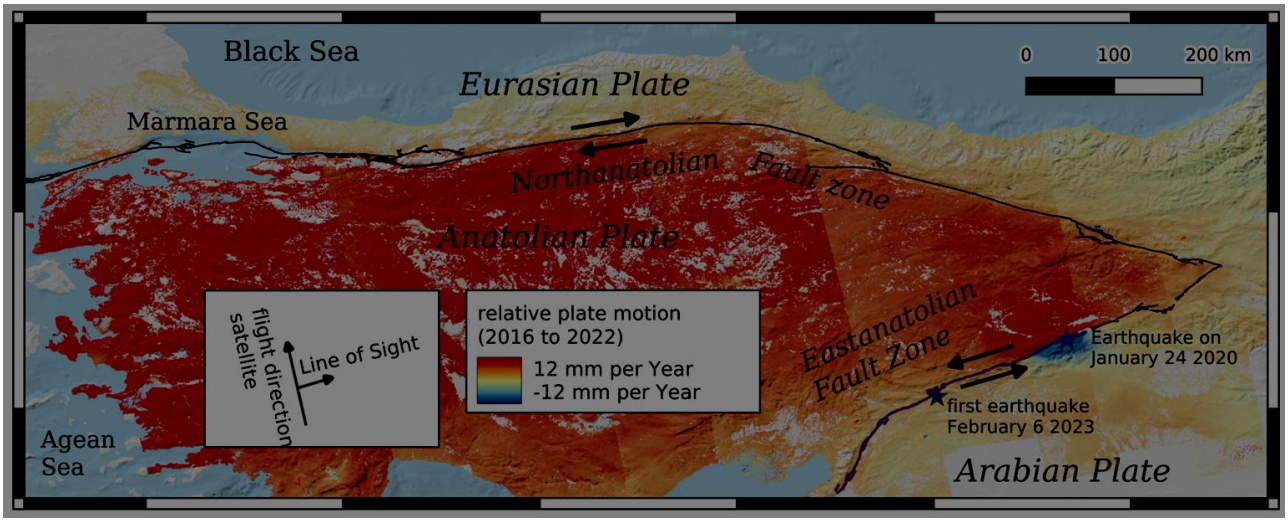
»How geodetic techniques revolutionize the observation and understanding of tectonic processes«

Einführung: Der Dekan der KIT-Fakultät für Physik

Earthquakes occur when rocks break and/or locked fault zones fail, e.g. at tectonic plate boundaries. Significant earthquakes make themselves known through the radiation of seismic waves that travel far from the source. And we study earthquakes and the corresponding processes based on these waves in seismology since a long time very successfully. Since recently modern space-geodetic techniques allow to measure precisely the persisting displacement of the earth surface near the source of larger crustal earthquakes. These measurements are mostly based on space-borne radar images and global navigation satellite systems, like GPS.

Monitoring the surface motion in seismically active regions allows studying earthquakes to more detail. Furthermore, it allows to observe the strain build-up in between earthquakes, which vastly complements our picture of the earthquake deformation cycle. Surprisingly, we discover more than expected slow and therefore silent faulting processes that realize release of tectonic stress, apart from harmful seismic ruptures.

In my presentation I will show how and where I use the combination of seismological and geodetic observations to better quantify and understand the tectonic processes beneath our feet.



The figure shows the mean surface velocities relative to a satellite in and around the Anatolian tectonic plate relative to Eurasia. This continental data set is part of the SAR4Tectonics data that have been derived from six years of Sentinel-1 satellite data by G. Gomba from the German Aerospace Center DLR, my project partner. Spatial gradients in the mean velocity point to strain in the crust. If elastic, strain also means stress and earthquake energy build-up, as visible along the very active Northanatolian Fault zone.

Der Vortrag findet **am Freitag, den 17. Januar 2025 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.

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