

Kinematics of the Suez-Sinai area from combined GPS velocity field

A combined GPS velocity solution covering a wide area from Egypt to Middle East allowed us to infer the current rates across the main tectonic features. We have estimated 126 velocities from time series of 90 permanent and 36 non-permanent GPS sites located in Africa (Egypt), Eurasia and Arabia plates in the time span 1996–2015. We combined our velocity solution in a least-squares sense with two other recent velocity solutions of networks located around the eastern Mediterranean, obtaining a final IGB08 velocity field of about 450 sites. Then, we have estimated the IGB08 Euler poles of Africa, Sinai and Arabia, analyzing the kinematics of the Sinai area, particular velocity profiles, and estimating the 2D strain rate field. The estimated relative motion with respect to Africa is of the order of 2–3 mm/yr, however there is a clear mismatch between the modeled and the observed velocities in the southern Sinai sites. We have also assessed the NNE left shear motion along the Dead Sea Transform Fault, estimating a relative motion between Arabia and Africa of about 6 mm/yr in the direction of the Red Sea opening.

Primary author: MAHMOUD, Salah (National Research Institute of Astronomy and Geophysics (NRIAG))

Presenter: MAHMOUD, Salah (National Research Institute of Astronomy and Geophysics (NRIAG))

Track Classification: Theme 1. The Earth as a Complex System