Title: Comparison of Geodetic and Late Pleistocene Slip Rates for the Southern Dead Sea Fault System

Authors: Cochran, W. J. ; Gomez, F. ; Abu Rajab, J. S. ; Al-Tarazi, E.

Affiliation: AA(Geological Sciences, University of Missouri, Columbia, MO, USA; wjcwf9@mail.missouri.edu), AB(Geological Sciences, University of Missouri, Columbia, MO, USA; fgomez@missouri.edu), AC(Department of Natural Resources and Environment, Hashemite University, Zarqa, Jordan; jafars@hu.edu.jo), AD(Department of Natural Resources and Environment, Hashemite University, Zarqa, Jordan; ealtarazi@yahoo.com)

Publication: American Geophysical Union, Fall Meeting 2012, abstract #G53A-1123

Publication Date: 12/2012

Origin: AGU

Keywords: 1209 GEODESY AND GRAVITY / Tectonic deformation, 8107 TECTONOPHYSICS / Continental neotectonics

Bibliographic

Code: 2012AGUFM.G53A1123C

Abstract

Comparisons of short-term (geodetic) and Late Quaternary slip rates have been used to assess time-variable fault kinematics along various active faults, globally. Differences between such types slip rates may have implications for crustal rheology and/or temporal variations in plate motion. This research aims to compare the geodetically-derived slip rates with slip rates based on Late Pleistocene landforms along the southern Dead Sea fault system (DSFS). The DSFS is an active, left-lateral transform that accommodates differential movement between the Arabian and Sinai plates. A number of slip rates have been previously reported ranging from 2 to 6mm/yr. However, comparison of various slip rates requires ensuring that associated uncertainties are assessed using a standard. New GPS velocities from Jordan are combined with other available GPS data, and are used to model slip rates using elastic block models. Resulting slip rates are 4.3 to 5.3 mm/yr with fault locking depths of 8 - 15 km. Late Pleistocene rates are assessed from published observations, as well as new data. New mapping of offset alluvial fans in the southern Wadi Araba was facilitated by multi-spectral imagery and high-resolution digital elevation model. These fans correlate with regional aggradation events, with the resulting Late Pleistocene slip rates ranging from 4.2 to 5.1 mm/yr. Statistically, the geodetic and neotectonic slip rates are identical. Additionally, a 3-dimensional slip vector for the last earthquake in the northern Wadi Araba is constructed using close-range photogrammetry of a faulted Byzantine aqueduct that indicates both horizontal and vertical displacements. Previous studies suggested characteristic earthquake slip, so slip rates and this slip vector provide a means of assessing mean EQ recurrence interval, as well as the role of earthquakes in constructing the long-term topography along this part of the transform.

Remove from private library

Submit corrections to this record

View record in ADS Bumblebee NEW!

Find Similar Abstracts:

Use:
- ☐ Authors
- ☑ Title
- ☑ Keywords (in text query field)
- ☑ Abstract Text

Return:
- ◉ Query Results
- ○ Query Form

Return 100 items starting with number 1

Database:
- ☐ Astronomy
- ☑ Physics
- ☐ arXiv e-prints

Send Query Reset
