Impact of Very Early Afterslip on Faults Slip Budget

Cedric Twardzik*[1], Mathilde Vergnolle , and Yuji Itoh[2]

[1]Géoazur (GEOAZUR) – Université Nice Sophia Antipolis, Institut national des sciences de lÚnivers, Observatoire de la Cote d'Azur, Université Côte d'Azur, Centre National de la Recherche Scientifique : UMR7329, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers, Institut national des sciences de lÚnivers – Bât 1, 250 rue Albert Einstein Les Lucioles 1, Sophia Antipolis 06560 VALBONNE, France

[2]Earthquake Research Institute, the University of Tokyo – Japon

Résumé

Accurately assessing the slip budget of a fault is crucial for studying earthquake behaviour and forecasting seismic events, as this involves understanding how stress is released during and after an earthquake. Postseismic slip, which can last for weeks or months, is a key factor in this assessment. However, traditional methods using daily GNSS position time series often fail to capture the first 12 hours after an earthquake, resulting in an underestimation of the slip budget up to around 30%, shown for some major earthquakes. To address this issue, we use high-rate GNSS data from the Nevada Geodetic Laboratory to capture the very early postseismic (VEP) phase, offering insights into the first 12 hours following an earthquake. Systematically comparing coseismic offsets from daily and high-rate time series across multiple earthquakes of wide range of magnitudes yields statistically significant estimates of the VEP phase's impact on the overall slip budget.

*Intervenant