



Constraints on the strain field of Iberia using GNSS solutions

Rui Fernandes (1,2), Machiel Bos (3), Nuno Dias (4,5), Jorge Miranda (4,6)

(1) University of Beira Interior, Covilhã, Portugal (rmanuel@di.ubi.pt), (2) Delft University of Technology, Delft, The Netherlands, (3) CIIMAR, Porto, Portugal, (4) Univ. Lisboa, IDL, Lisbon, Portugal, (5) Inst. Sup. Eng. Lisboa - ISEL, Lisbon, Portugal, (6) IPMA, IDL, Lisbon, Portugal

The EPOS WG4 carried out recently a detailed survey of the existing CORS GNSS stations all over Europe. In Iberia, more than 150 stations distributed over several networks were identified providing data publicly available. Some of these stations were installed in order to provide support to surveying applications (RTK networks), where the required stability of the monument is lower than for geodynamic applications. However, we demonstrate, by investigating the level and type of noise, that many of these stations are still able to be used for geodynamic applications. In addition, the large number and relative uniform distribution over the entire Iberia, allows us to detect (and exclude) stations showing abnormal and unexplained artifacts in their time-series.

In this work, we present a uniform velocity field using the stations in the EPOS database with observations spanning 2.5 years or longer (~ 100 stations). Most of Iberia shows no relative motion with respect to Eurasia with smaller residuals (below the computed accuracy for each station). However, significant relative motions are obtained along the southern coast of Spain with respect to stable Eurasia that are distinctly larger than the computed associated uncertainties. This is also clearly observed in the derived strain rate field, which shows significant deformation rates in this region.

Finally, we correlate the observed strain field with the known regional (Nubian-Eurasian plate convergence) and local (e.g., Gibraltar slab) lithospheric processes acting in Iberia.

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