



Vertical land motion observed with GNSS in Iberia

Machiel Bos, Rui Fernandes, and João Apolinário

University of Beira Interior, Instituto D. Luis, Covilhã, Portugal.

The network of GNSS stations in Iberia have been densified in the last decade and at the moment sufficient data has been gathered to produce a homogeneous field of vertical land motion. Such a field has recently been produced by Serpelloni et al. (2013). We have extended their study with more stations, especially from Portugal and near the Pyrenees which are missing in their study. The result is a significantly better coverage with over 200 stations of the whole Iberia peninsula. To see the secular trend more clearly, atmospheric and hydrological loading have been subtracted from the time-series. Afterwards the time-series were analysed using the HECTOR software (Bos et al. 2013) that takes into account the temporal correlation that exist in the data. At the same time a yearly and twice yearly signal were estimated to remove the remaining seasonal signal from the data.

We find a new area of significant negative land motion from the Tagus valley towards the central Spanish system. The lithospheric folding model of Cloetingh et al. (2002) can explain the existence of these areas with negative land motion. Such a folding of the lithosphere will also create a distinctive pattern in the Earth's gravity field. We will also correlate the pattern of observed vertical land motion with the gravity anomalies in EIGEN-6C4 (Förste et al., 2014), corrected for topographic generated features.