
**ESTABLISHING MODELS OF SURFACE
DEFORMATION FROM GEODETIC TIME SERIES
GNSS IN THE SOUTHERN
REGION OF THE IBERIAN PENINSULA AND
NORTH AFRICA (SPINA)**

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Global Positioning System (GPS) technology provides a powerful tool for studying geodynamic processes. It is particularly important in tectonic plate boundary areas when looking for subduction zone limits. In this work, our main interest is to focus on the time series analysis obtained from observations of GNSS-GPS satellites. Each GPS observation session provides topocentric geodetic coordinates (east, north, elevation) of the permanent stations that constitute the geodetic network established for this purpose. Horizontal components (east, north) use to show linear behaviors if there are no other effect affecting the site. Anyway the height component (elevation) uses to show periodical but not linear effects.

This work shows a detailed topocentric coordinates time series study for sites belonging to what we call the SPINA network, which stands for South of the Iberian Peninsula, North of Africa Region. The series under study are processed by techniques of relative positioning with respect to the IGS reference station located in Villafranca. Solutions are obtained from network approach with the Bernese software. Then, a designed methodology, using filter processes, harmonic adjustments and wavelets will be applied. Wavelet transform applied on the CGPS position time series is used to separate the noise of the signal, in order to provide useful information to further geodynamic interpretations. As final product we expect to get horizontal displacement model to describe the regional geodynamic main characteristics.