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Data Analysis of Permanent GPS networks in Italy

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Starting from 2004, the Istituto Nazionale di Geofisica e Vulcanologia (INGV) set up a dense GPS network, called RING (Rete Integrata Nazionale GPS) in Italy in order to improve the knowledge of the geodynamics and tectonic processes. Due to the complexity of the tectonic behaviour in the area, the INGV also arranged the data analysis of all the permanent sites available in the Italian region.

We will present time series and velocity fields obtained with two different processing software (GAMIT and BERNESE), analyzing the complete data set from 1998 to 2008 of over 300 sites. The processing is performed adopting a distributed session approach, with more than 10 clusters, sharing common stations, each of them consisting of about 40 stations. Daily loosely constrained solutions are routinely produced for each cluster and the velocity fields are obtained by stacking the daily normal equations rigorously. Residuals and differences between the two solutions will be presented and discussed.

The comparison of the two geodetic solutions is an important tool to validate the results and to isolate systematic errors induced by the analysts and it is the first step to obtain a consensus solution of the Italian region.