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Geodetic observations for a new geotectonic model of northern Victoria land, Antarctica

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GPS measurements are the core of the Italian geodetic activity in Antarctica. During the 1999-2000 expedition, Italian geodesist began the establishment of a large GPS network devoted to the detection and monitoring of crustal deformations in the Northern Victoria Land (NVL). Nowadays, 28 markers are monumented on rocky outcrops and form the VLNDEF (Victoria Land Network for DEFormation Control) network. VLNDEF extends over 500 km North-South and 300 km East-West, and its markers can be accessed by means of helicopter from MZS or, more conveniently, planning remote camps in the North and or South of NVL.
A permanent GPS station (TNB1) was installed in 1998 at MZS with DOMES N. 66036M001. In addition, to increase redundancy in the long term observations at MZS, an additional permanent GPS station TNB2 was installed in 2008 on a marker materialized a couple of years earlier and a few meters apart from TNB1. During 2008 three markers of the network were converted into semi-permanent remote stations, namely VL01 (Cape Hallett), VL05 (Cape Philips) and VL18 (Starr Nunatak). They are powered by a set of batteries and solar panels and provide a few months of data every year. Since its establishment, VLNDEF has been surveyed eleven times, of which four are surveys of the whole network.
A geotectonic control on the influence of local effects on the stability of the stations has been successfully completed and confirmed the neotectonic activity in NVL within the framework of East Antarctic Craton Tectonics.
Italian Geodetic Observatory is characterized even by Gravimetric observations and sea tidal measurements that have been used as a contribution for local geodynamical modelling of GIA.

We show the results obtained using the Bernese V.5.0 and the GIPSY-OASIS software, adopting a common analysis strategy, models and parameters.
A first model of surface kinematic has been published in 2010. O the basis of last VLNDEF measurements a new model is shown. Two sectors showed a rather intense tectonic activity, namely the Lanterman Range and the Notrthern Foothill Blocks. The detailed new geotectonic modelling is shown.