National report of France

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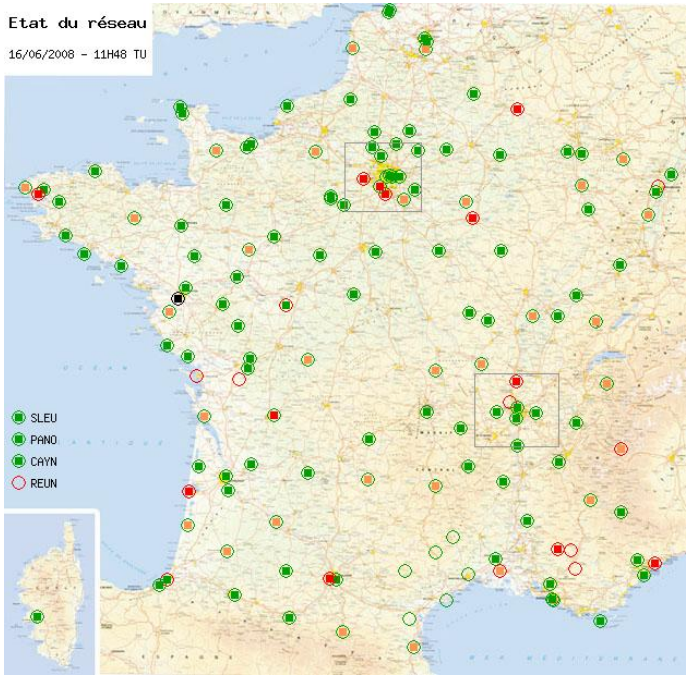
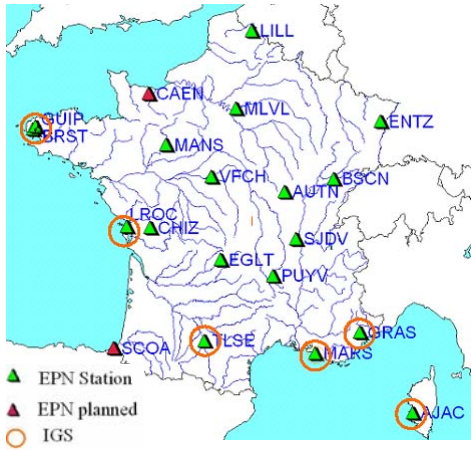
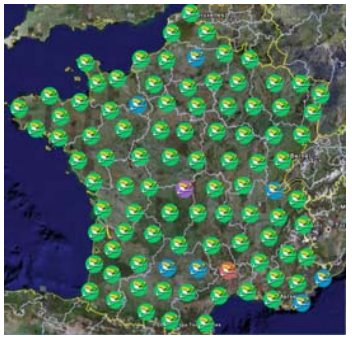
The GNSS permanent network : RGP



Data availability of the RGP stations is updated each minute and related status is available at http://rgp.ign.fr web site

156 stations among which 146 stations freely deliver hourly, 1s rate RINEX files online.
42 stations have been added since last EUREF symposium . This increase is mainly due to the development of the TERIA RTK network.



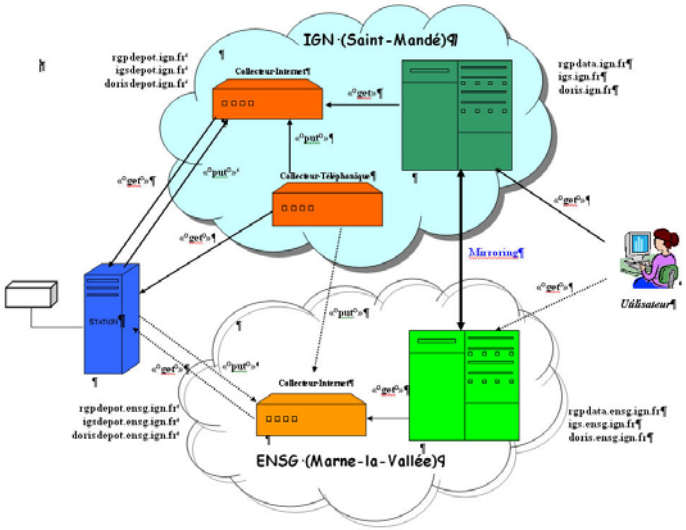


18 RGP stations are part of the EPN network, 6 of the IGS network.

All, at least most of the IGN stations should be part of the EPN network.

GPS receivers/antennas should be replaced by GPS/GLONASS ones (BRST and VFCH were recently replaced)

Data / products delivery at RGP network



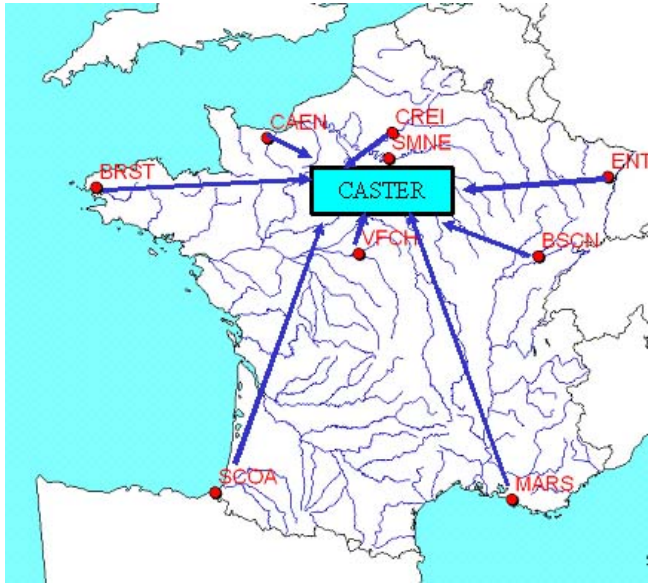
RGP data for post-processing are equally available at the 2 RGP data centres located in Saint-Mandé and Marne-la-vallée.

Mirror between the 2 sites is performed through dedicated internet links.

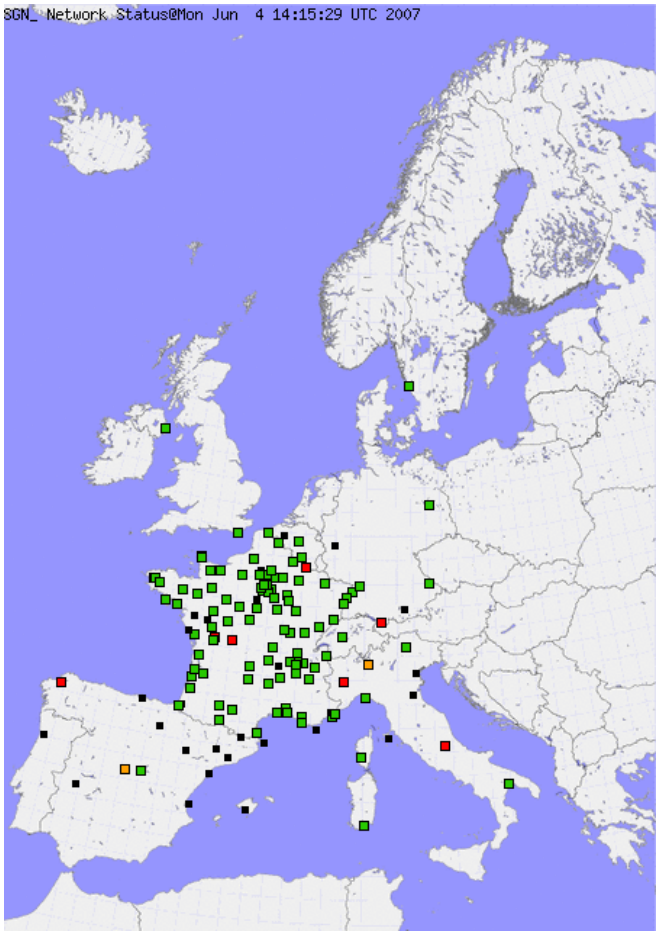
This infrastructure is common with the IGS and IDS data centres.

Real-time distribution

A NTRIP caster was installed at the SMNE station and NTRIP servers were installed at 8 RGP/EPN stations.



RGP network hourly data analysis



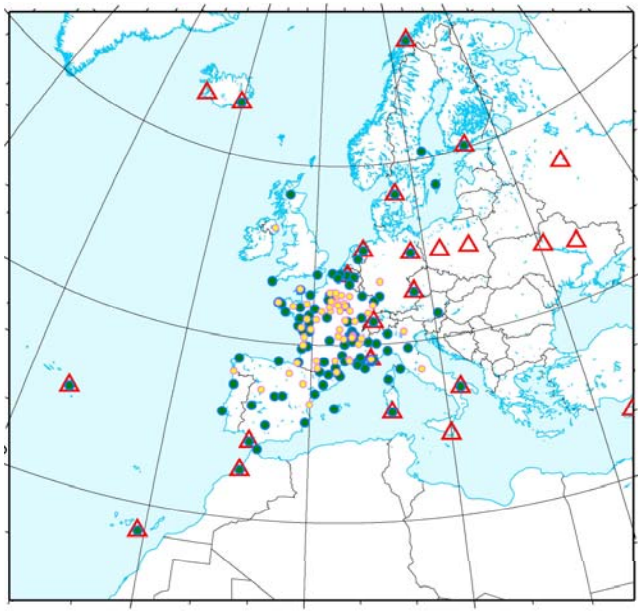
IGN is an E-GVAP processing centre. The tropospheric delays of 120 stations are sent hourly with two solutions: SGN and SGN1. The SGN1 solution uses the SGU ultra-rapid orbits produced at IGN (2 hours update)

A new french ETRS89 realization for the RGP stations

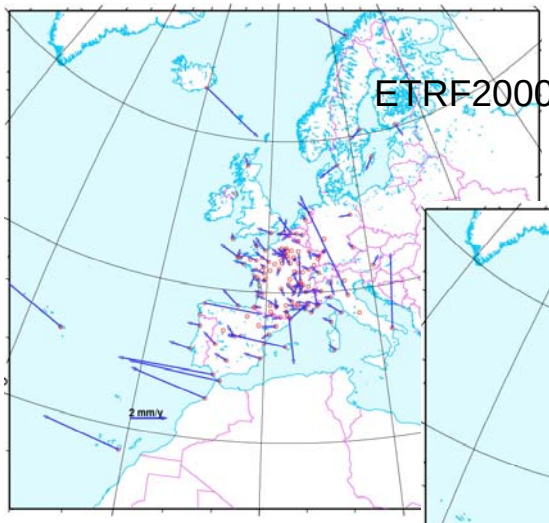
161 stations from the **IGS/EPN, EPN and RGP** networks

- more than 2 years of data
- less than 2 years of data
- ITRF2005/IGS05 reference stations

Period of observations : GPS data only from GPS week 0938 to 1462

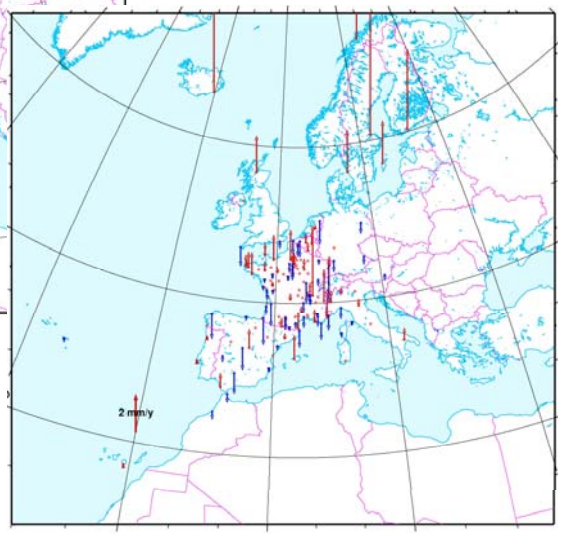


ETRF2000(R05)-F velocities



Horizontal

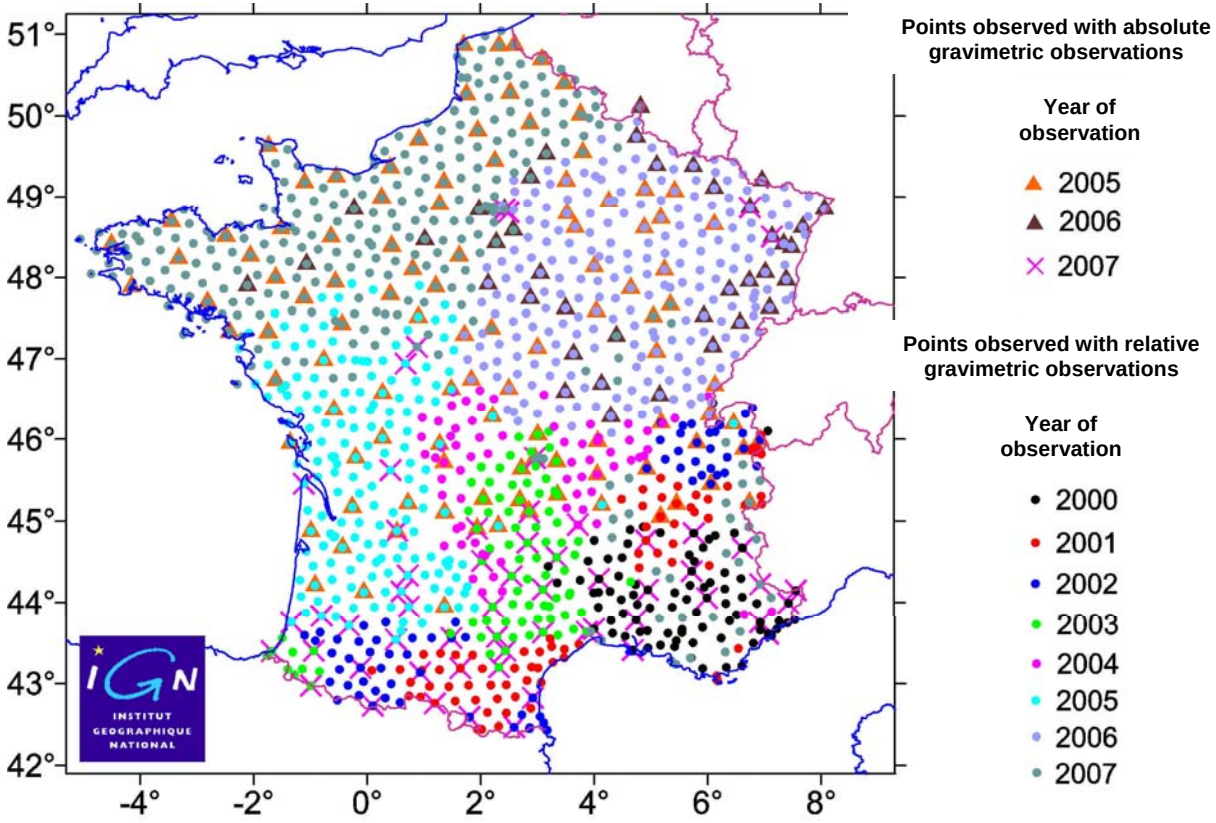
Vertical



The aim of this work was not to change the french ETRS89 realization "RGF93" definition which has a legal status, but to propose:

- **A monitoring process of the french GNSS permanent network (RGP)**
- **A cumulative solution expressed in IGS05 for velocity and coordinates estimation**
- **A set of coordinates expressed in ETRF2000 for the stations of the RGP (called ETRF2000(R05)-F) and a grid model based on collocation method from/to the RGF93 reference frame**

Gravimetric observations

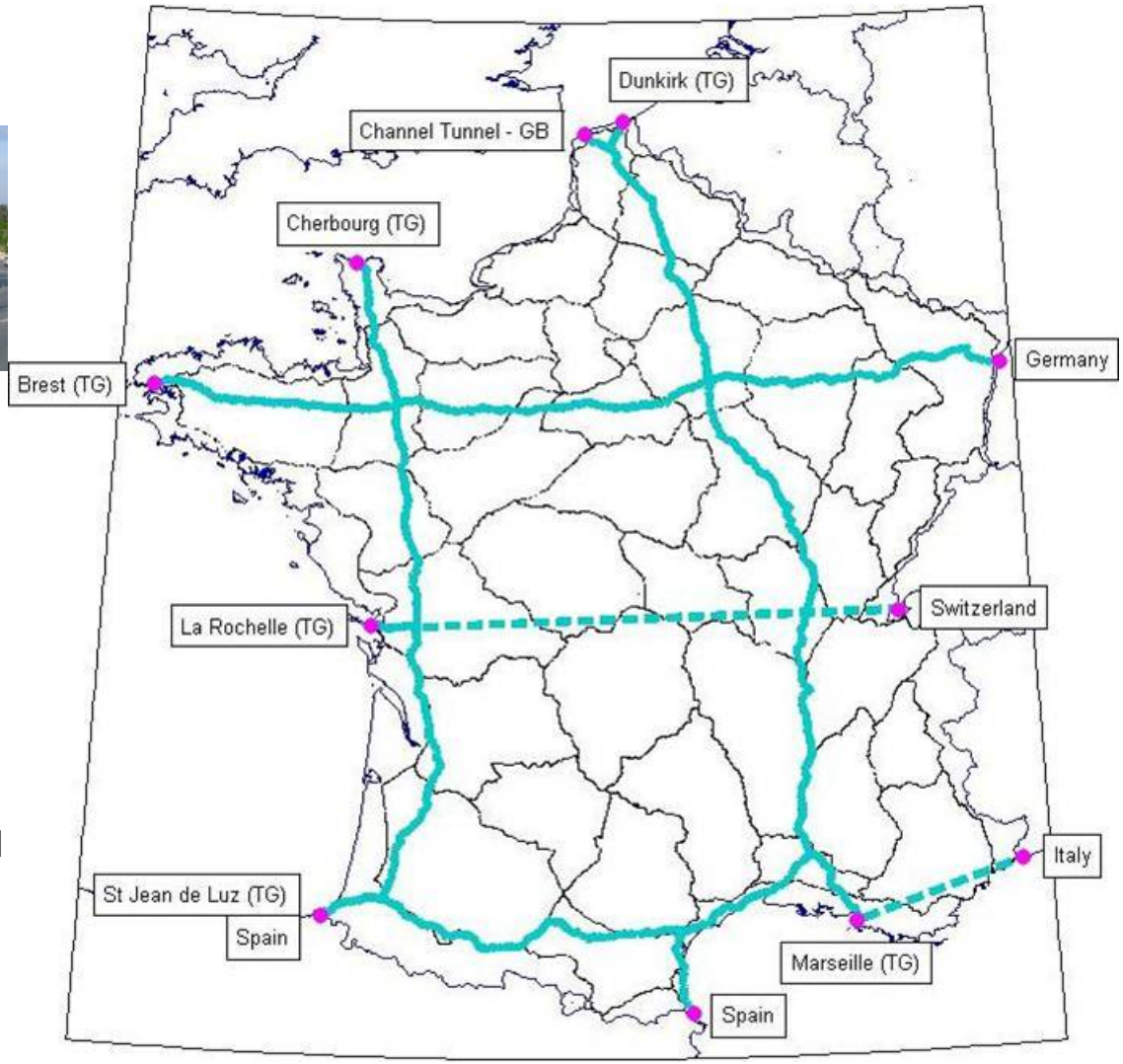


Since 2000, IGN is performing absolute/relative gravimetric measuring on the non permanent geodetic network benchmarks.

In 2007, 56 geodetic points were observed with absolute (A10) gravimetric observations, and 236 with relative (CG3, CG5) ones.

A first global adjustment was performed with a 25µgal standard deviation.

Scientific levelling



Observation progress

- Marseille-Dunkerque traverse observed in 1983
- Augmented with new traverses during 2000-2006
- Junction with Italy being observed now
- Traverse La Rochelle -Geneva planned for 2009/2010