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Italian Network of permanent GNSS sites

UNIVERSITÀ DEGLI STUDI DI PADOVA

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Introduction

The Italian GNSS Network attempts to densify the European Reference Frame:

- Must be compatible with the requirements of the National Cadastre, Geodetic and Mapping Agencies,
- Must serve to the geophysical community to monitor crustal deformations.

The processing of the Italian GNSS Network is done following the EUREF standards and the software used in Bernese 5.2 from GPS week 1784 included. The GNSS sites are subdivided into 13 regional clusters.

Two solutions are daily computed:

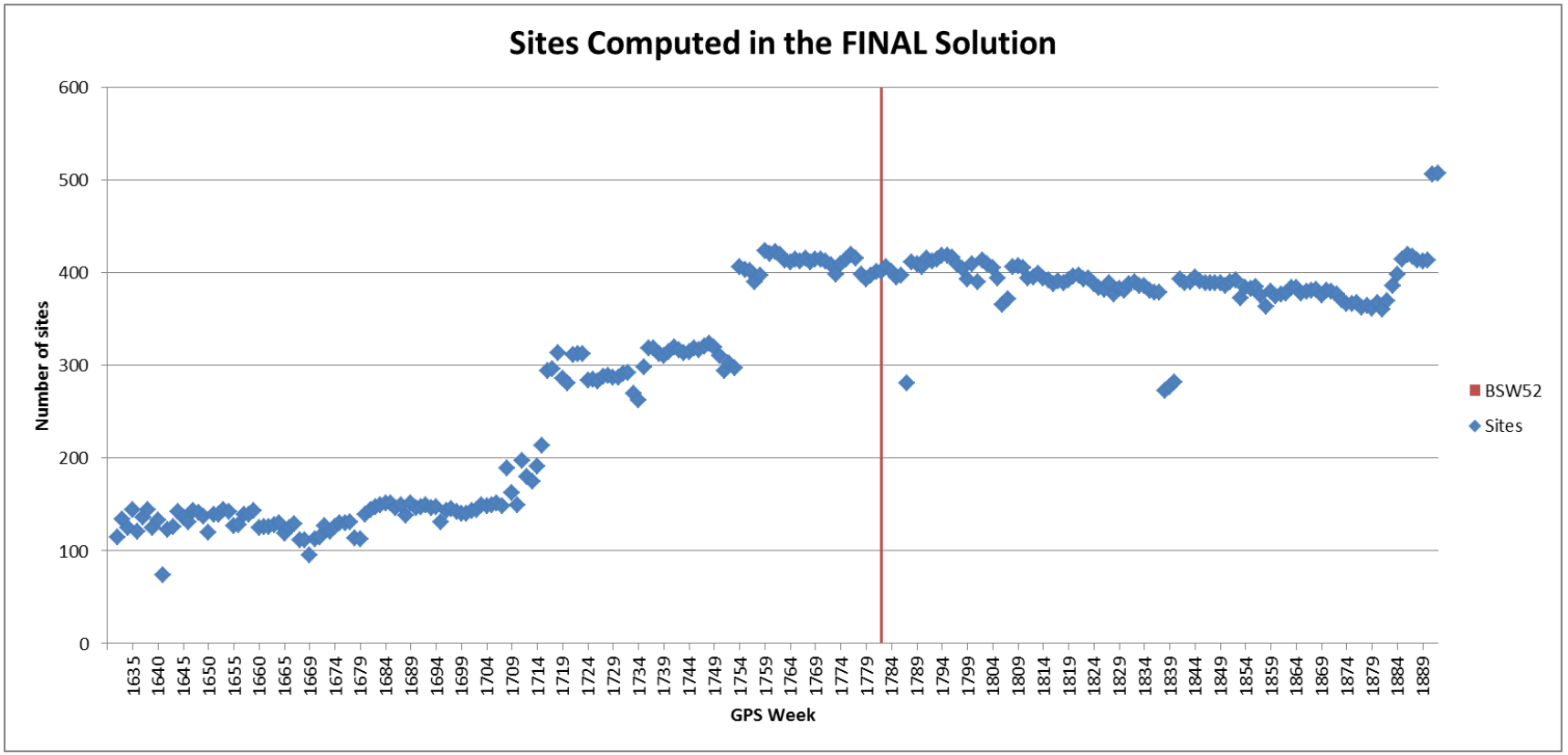
- RAPID solution, using rapid CODE products,
- FINAL solution (2 weeks later), using final CODE products

All the sites have a unique 4 char ID and DOMES number. An IGS logsheet tracking the history of each site is available on a web server and at the dedicated server at EPNCB.

Università degli Studi di Padova

Introduction

In such a large and steadily growing network, quality controls are a must.



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Introduction

The consistency of the Rinex metadata with the logsheet is checked routinely using the IGS/EPN software, and a warning is issued and sent to the station manager whenever a discrepancy between station logsheet and Rinex metadata is detected.

Quality of the weekly solution is assessed by Helmert transforming the weekly solution to the nominal values:

1. Datum alignment: by the residuals of the latest release of the EPN Class A solution.
2. All sites checking: high residuals (15 mm in all the three coordinates) are flagged and manual verification is requested to the LAC people.

A cumulative solution on all the normal equations since week 1632 (date at which the newest IGb08 standards were officially adopted) is run weekly, so that the coordinates and velocities are updated.

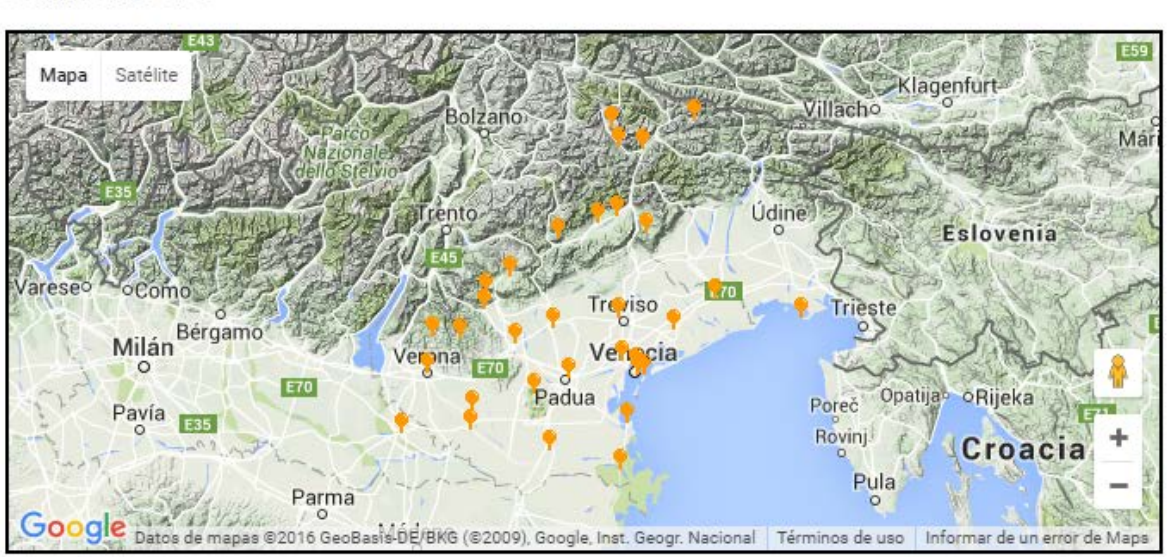
All the data are archived in a repository and a permanent checking of the inconsistencies, residuals, offsets,... is performed in a daily/weekly basis. Web visualization of the time series, and the introduced solution numbers is made with reference to the used STA file.

Products available on the website

The website consists of the most important products generated at UPA:

- Daily/weekly basis: coordinates, summaries of the solutions.
- Long term: cumulative time series
- Other products:
  - MGNSS results,
  - Italian GNSS receiver distribution

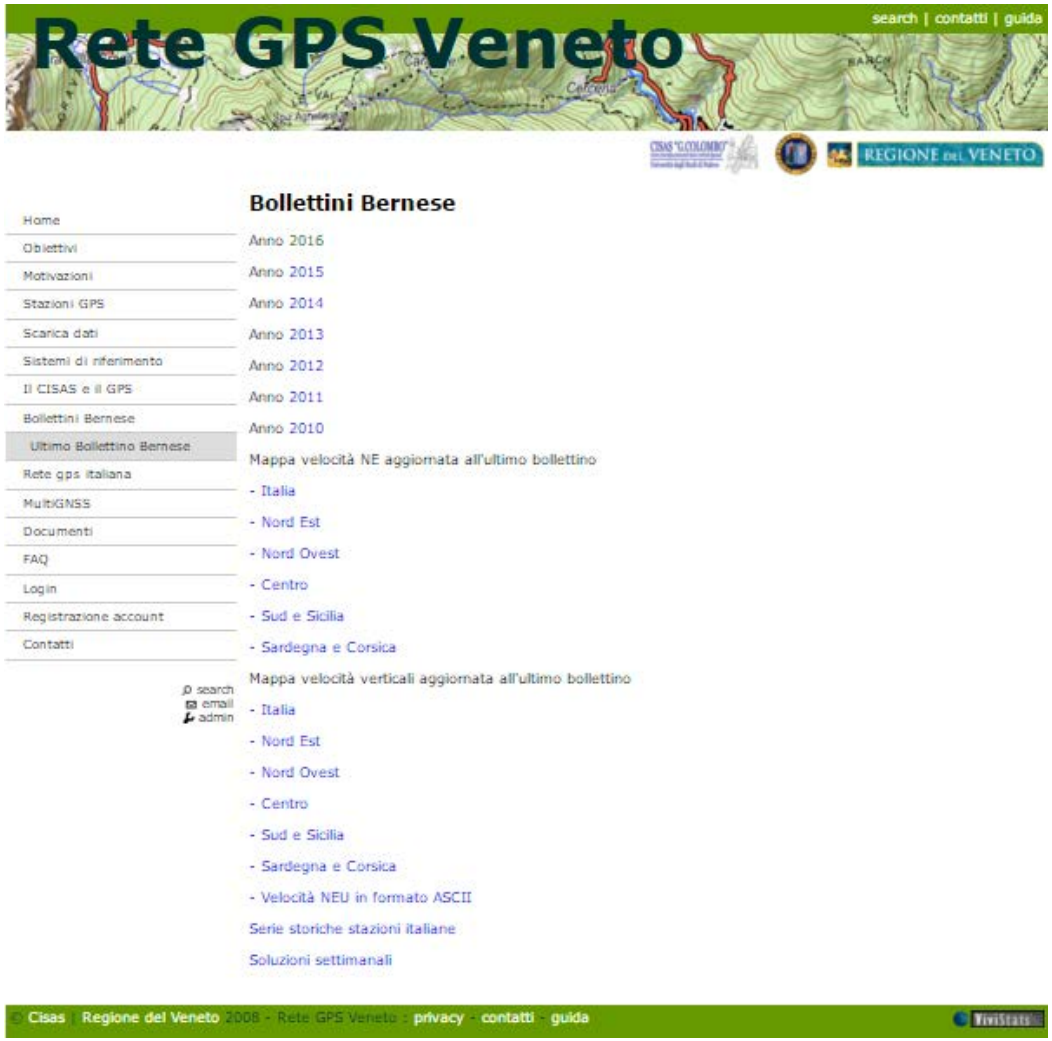
On the other hand, the website is used to spread the information to all the (RTK) users of the Rete GPS Veneto:



Daily/weekly products

The website consists of the most important products generated at UPA: http://retegnssveneto.cisas.unipd.it/Web/page.php?pid=db&n=15&link=Bollettini_Bernese&chain=10&smo=10

- Bolletini: summaries of the weekly stacking.
- Maps: general and regional maps are provided.
- Velocities: in ASCII format.

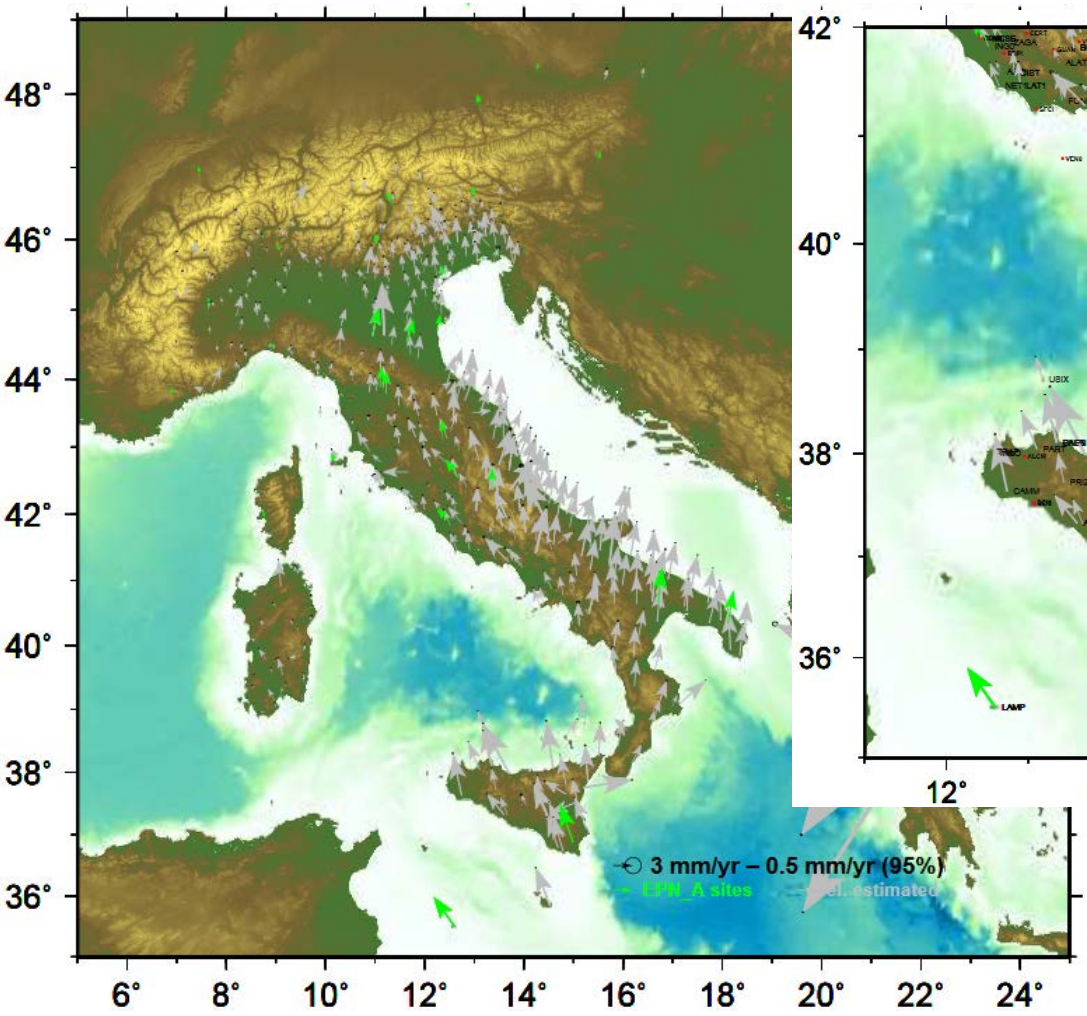


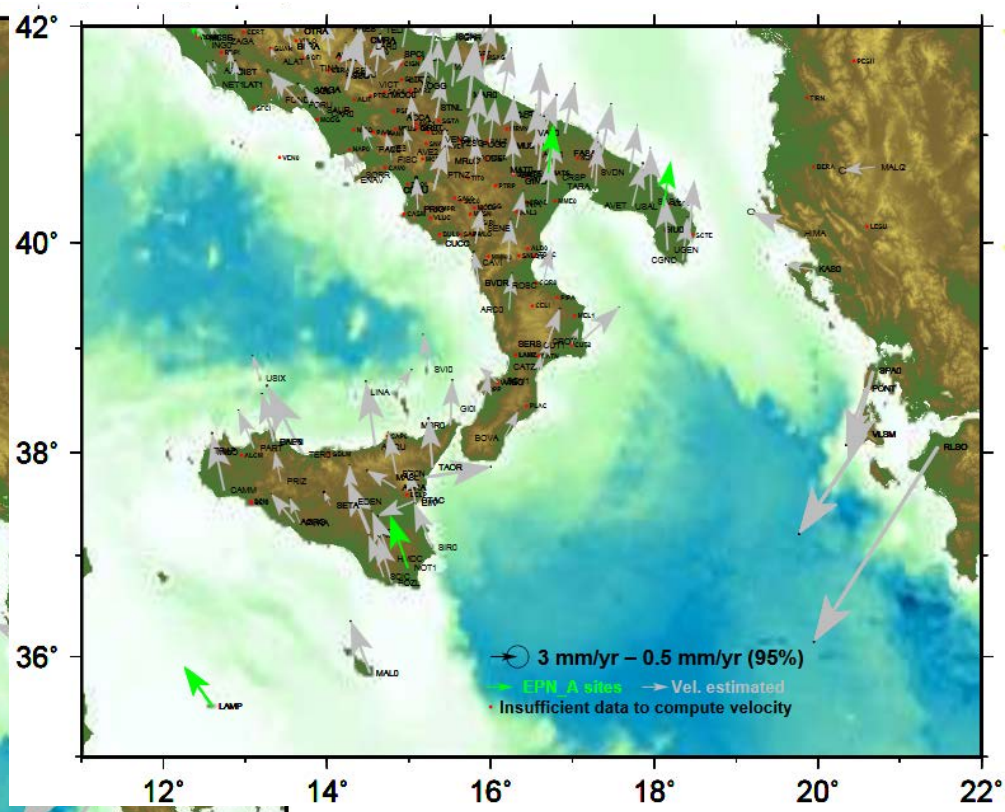
Long term products

Time series of all the stations, including the decommissioned ones, are shown in: http://147.162.229.63/scidata/

Plots are linked to the STA file

Long term products





Italian GNSS Network

All the information of the Italian sites is provided at:
http://147.162.229.63/gpsitn/

Italian GNSS Network.

Select a site clicking on the relative marker or from the select box.

Legenda:

Ashtech

Leica

Topcon

Trimble

Select a site or reset to reinitialize map : reset

About this Web Page

Google map of Italian gnss stations network.

A logsheet of every site is available.

Questions?
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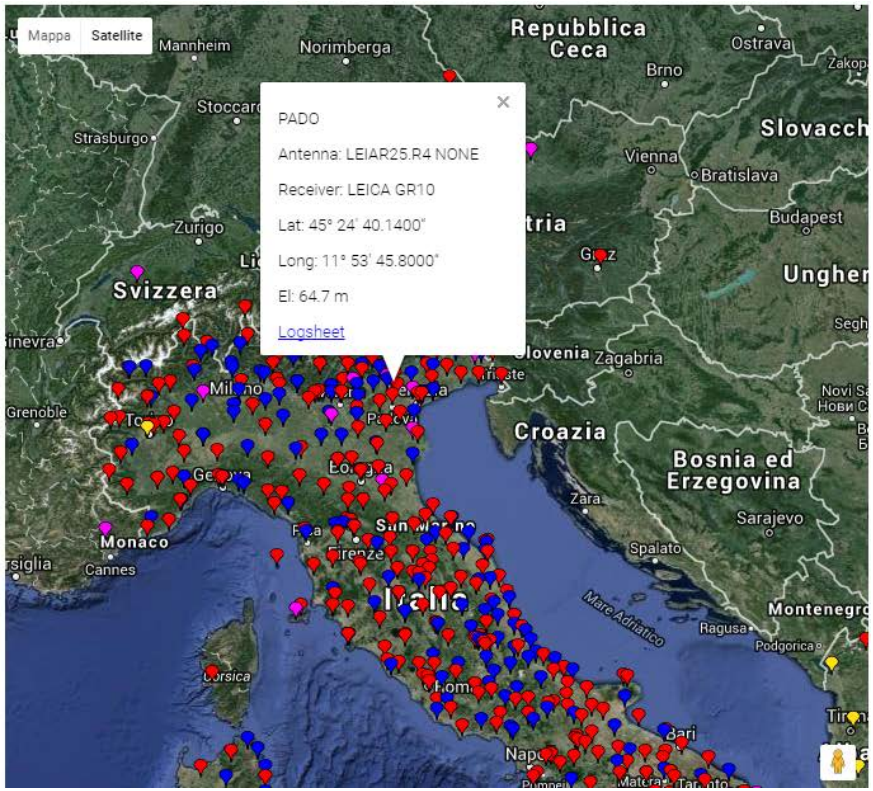


MultiGNSS research

Not in the scope of the Italian Network, but also in the website:
http://147.162.229.63/gnss/index.php

MultiGNSS european network.

Select a site clicking on the relative marker.

Javad Leica Septentrio Trimble Topcon

Daily estimates of clock offsets and drift relative to GPS.

View file 2014 View file 2015 View file 2016

View plot GLGP View plot GPGA View plot BDGP

About this Web Page

Background

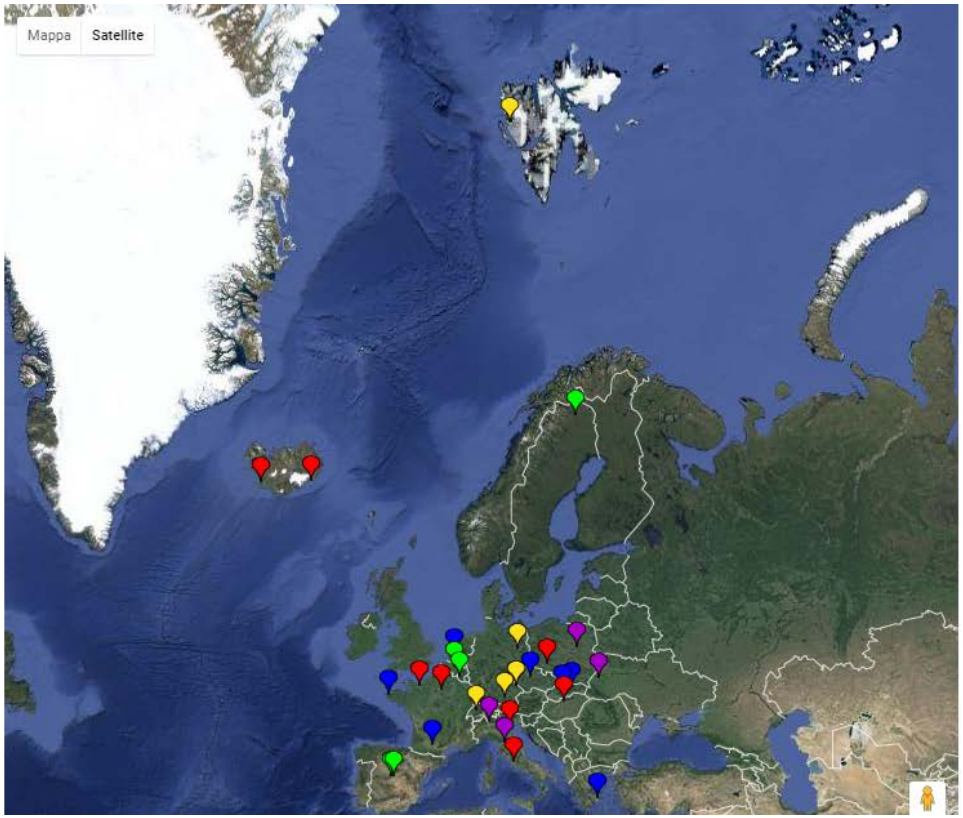
To investigate the interoperability of the various GNSS constellations we compute epochwise the positions of European permanent GNSS receivers by analyzing data simultaneously from different GNSS constellations.

Method

Use RINEX 3.02 data freely available within the MGEX data base. Process pseudoranges in ionofree combination, and broadcast ephemeris. Use as apriori coordinates official ITRF2008/IGb08 values.

Solve for 3 coordinates, 1 clock offset for each GNSS constellation, 1 Tropospheric Zenith Delay (ZTD) at each computation epoch.

The computation is made daily for a sample of European GNSS sites, and different receiver types. This Web site is updated on a weekly basis,



Conclusions

In this presentation the procedures and the published products of the Italian GNSS Network have been introduced.

We think that interactive feedback between the AC and the data providers/Agencies is of utmost importance in large networks.

All the products are made available through a website where not only the Italian Network is dealt, but other research like the Multi-GNSS carried out at UPA.