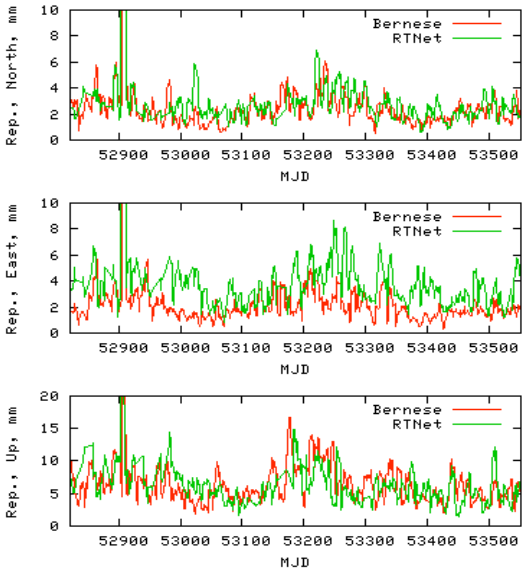
RTNET SOFTWARE

RTNet is primarily designed for real-time applications, but post-processing is also easily accomplished.

RTNet is versatile to meet a wide range of science, and engineering demands.

RTNet processes zero-differenced observations. Satellite and receiver clock corrections are estimated at every epoch independently.

RTNet is designed for processing GNSS networks with the highest possible accuracy with ambiguity resolution or in PPP mode.



3-year comparison of daily 7-day north/east/up repeatability of Rtnet PPP vs. Bernese network solution (GSI/Japan). Network is best in the east component – otherwise the solutions are similar.

GEODETIC AND SEISMOLOGICAL APPLICATIONS

Crustal deformation monitoring

Earthquake surface displacement

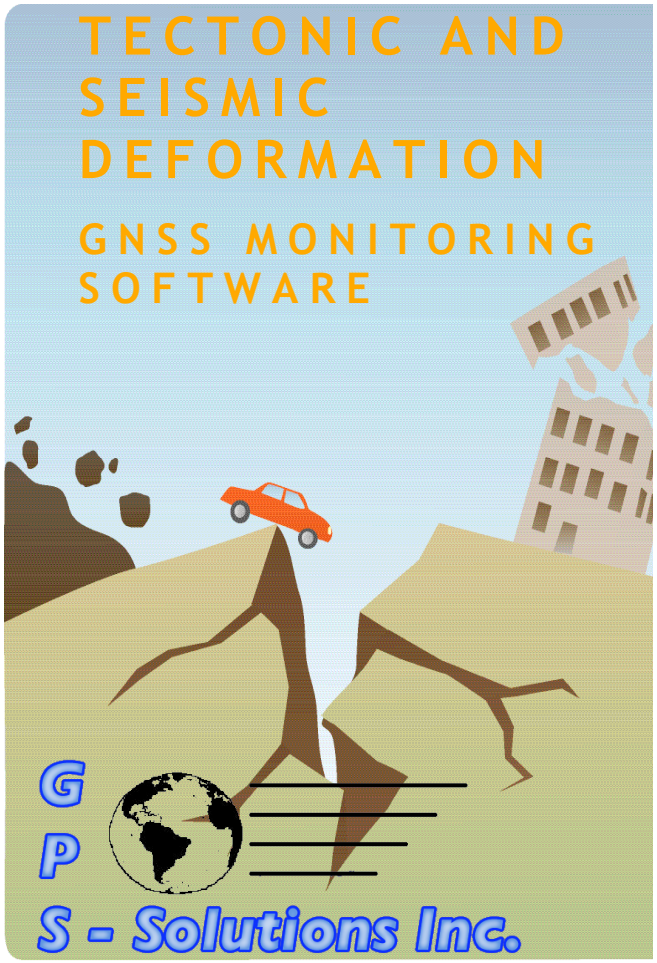
Civil engineering

Network processing with ambiguity resolution or precise point positioning (PPP) are both possible.

PPP estimates are computationally much more efficient than network solutions. Network solutions are more precise in the East-West horizontal component.

Detection of co-seismic surface displacements of 1 cm horizontal and 2.5 vertical are achievable in real time with RTNet in PPP mode.

Additional Information:
www.gps-solutions.com
1320 Pearl St. Suite 310
Boulder, CO 80301
Tel. 303 402 9150



RTNet

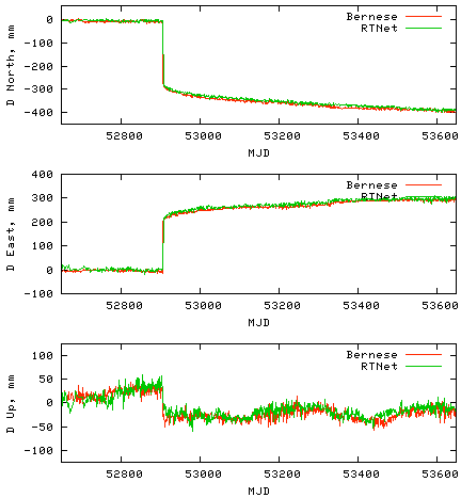
Deformation Monitoring

- Real Time
- Positioning
- Seismology
- Engineering

CRUSTAL DEFORMATION

Although RTNet focuses on real-time with forwarding filtering, it can also be used for post-processing purposes.

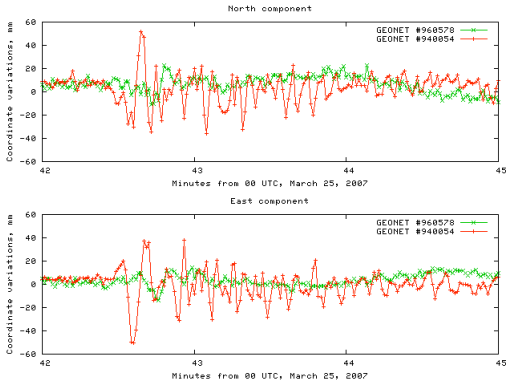
Post-processed daily 24-hour coordinate solutions with final IGS products can be used for geodynamics research and to define the geodetic reference frame.



This figure shows relative coordinate variations for the north east and up components of Japan's GEONET station 960518 (Shintoku). Red and green curves show Bernese network (GSI-F2 operational processing) and RTNet PPP solutions, respectively.
The coordinate jumps on day MJD 52907 (Sep. 26, 2003) are caused by the Tokachi-oki earthquake (M7.1). RTNet PPP detects the coordinate changes due to the earthquake similar to the Bernese solution.

GNSS SEISMOMETER

Real-time detection of high frequency (1Hz and higher) motion as small as of 1 cm (horizontal) and 2.5 cm (vertical) is feasible with RTNet in PPP or network mode.



This figure shows the seismic wave detected with RTNet PPP for the Noto Hanto from March 25, 2007. Real-time satellite clock errors, common to all PPP sites, are removed from the time-series. The station 940054 (red) is closer to the epicenter (M7.1) than the station 960578 (green), Thus the former station shows sooner arrival of the seismic wave and larger motion than the latter station.

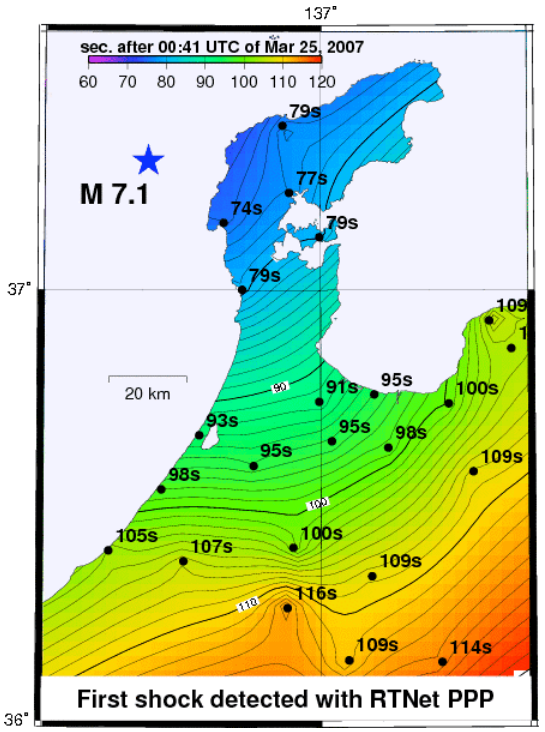
GPS seismic observations have several advantages over standard strong motion detectors. The GPS data do not require double integration to obtain position and they do not saturate in strong earthquakes.

GPS coordinate solutions with high sampling can thus be considered as complementary data for strong motion instruments, and RTNet can be used for this purpose.

EARTHQUAKE ENGINEERING

Precise point positioning solutions, when available iin real-time, can be applied by first responders to hazard prevention. High frequency broadband surface and building deformation records, unsaturated even during the largest earthquakes, are useful for civil engineering purposes:

- Monitoring volcanic activities
- Land slide monitoring
- Building, bridge motion monitoring



This figure shows the color-coded difference of the GPS detected arrival of the first shock from the Noto Hanto earthquake.