

# GPS 連続観測システム “GEONET” とその展望\*

国土地理院 GEONET グループ\*\*

(2004年3月5日受付, 2004年4月7日改訂, 2004年4月15日受理)

## GEONET (GPS Earth Observation Network System) and its Prospect

The GEONET Group, Geographical Survey Institute

(Received March 5, 2004; Revised April 7, 2004; Accepted April 15, 2004)

### Abstract

GEONET (GPS Earth Observation Network System), which is a nationwide GPS array and data analysis system of the Geographical Survey Institute, started in 1994. Since then, it has been expanded and improved to monitor crustal deformation of Japanese islands quickly and accurately. Today, it is the densest GPS observation network in the world with 1,200 GPS-based control stations and some other stations.

GEONET has contributed its continuous data to various fields of earth science. In seismotectonics study, it provided the features of coseismic crustal deformation as well as the steady state crustal deformations by plate motion. Five interplate slow slip events were also found by GEONET and has been playing important role to the recent plate coupling studies. In volcanological study, it provided the sequence of magma activity utilized for the estimation of eruption. GEONET also provided a new measure to detect ionospheric and meteorological signals and have been contributing to atmospheric science.

The observed 1 Hz data of almost all stations are now provided to commercial users for positioning services in real time. GEONET is becoming a kind of infrastructure of the location-based information society.

The major present research subjects are improvement of the detectability, development of real-time analysis of crustal deformation, etc. It is also important for the future use of GEONET to maintain observation circumstances properly and to be adapted to the GPS modernization and new GNSSs.

### 1. はじめに

国土地理院が全国に設置した電子基準点（地上に固定された設備により GPS 衛星からの電波を連続的に観測し, GPS を用いた測量の基準として利用される施設）と, 各電子基準点の観測データからその位置を算出する解析計算装置とからなる GPS 連続観測システム GEONET (GPS Earth Observation Network System) は, 1994 年に運用を開始した。これにより, わが国の地殻変動の時空間分布が従来に比べきわめて迅速かつ詳細に把握されるようになり, 地震現象の解明をはじめ地

\* 本論文は, 2003年5月28日の日本測地学会総会において授与された第3回「日本測地学会 坪井賞 団体賞」の受賞記念講演から起草された論文である。

\*\* 代表: 熊木洋太・国土地理院測地観測センター長, 本論文の執筆者: 今給黎哲郎・大瀧 茂・熊木洋太・畑中雄樹・松村正一・村上 亮・山際敦史 (五十音順)。

Fax: 029-864-6864, E-mail: kumaki@gsi.go.jp