INTERACTIVE SYSTEM OF GPS DATA DISTRIBUTION USING JAVA RMI INTERFACE

Alexei Gorbatov[1]; Seiji Tsuboi[2]; Teruyuki Kato[3]; Shingo Watada[4]; Toshiyuki Nakashima[5]; Takuya Arai[5]

[1] IFREE,JAMSTEC; [2] IFREE; [3] Earthq. Res. Inst., Univ. Tokyo; [4] Earthquake Research Insititute, U. of Tokyo; [5] Fujitsu Limited

Network of Global Positioning System (GPS) stations is functioning in the western Pacific region, as a part of the Ocean Hemisphere Project, to precise the plate motion and detect intraplate deformations. These stations cover the area from the Kamchatka peninsula to Melanesia and are operational since 1996. Recompiled data can be accessed through the network using FTP connection. However, this approach to distribute the data implies difficulties in the data selection and inability to analyze the data prior to the downloading. To overcome these problems, system for archiving and distribution of the GPS data has been developed in collaboration between Data Managment Center, IFREE, and Ocean Hemisphere Project, ERI. New Java enabled interface can provide the data through the internet using standard web-page viewers such as Microsoft Explorer or Netscape navigator. This system is called NINJA - New Interface for Networked JAVA Applications. Currently, DMC IFREE and OHP ERI are distributing the data from 8 GPS stations located in the western Pacific region using GPS NINJA system. GPS NINJA can use RINEX or Hatanaka formats to archive the data. However, only Hatanaka format is used for data distribution. Following information facilities also can be accessed from the web-browser: data availability or station changes in graphical representation, station log, station photograph, data quality check as an output of the TEQC tool, and the data header. Data can be selected on time basis, station name or station location. Users can quickly analyze the data availability and quality without previous downloading of the data. Finally selected, the data can be downloaded in background while users can further analyze the desired information or select more data for downloading.

Advanced features of GPS NINJA includes possibilities of functioning when firewall protection is enabled on the computers. This feature is very important to protect the data against unauthorized modifications and damages. The data server and the dispatcher system both can be protected by personal firewalls. Firewall of the dispatcher system has relaxed security measures to satisfy the functionality of the HTTP protocol between client and dispatcher meanwhile strict separate firewall protection of the data server increases the security of the data and uses tunneling algorithm for Java RMI to transmit the data between data server and the dispatcher.