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Automated analysis system by Bernese GPS Software ver. 5.0 for Kyushu GPS network and GEONET in Kyushu

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Beppu-Shimabara Graben is located in the central Kyushu. EW component of crustal deformation changed westward to eastward around latitude 38 degree. Due to study the tectonics in Kyushu, which is source of the graben and characteristic deformation, GPS sites are installed. As data in new GPS sites are transferred by mobile phone (Matsushima, 2010), an automated GPS analysis system of newly GPS sites and GEONET of GSI is designed. In this paper, analysis design is presented.
Bernese GPS Software with BPE is used for automated analysis system (Dach et al., 2007). PCF files, which include process procedure and option files of each process are prepared. Perl module startBPE.pm is executed automatically from cron on Linux system.
In this analysis system, there are two kind of analysis. One is a rapid analysis with IGS ultra rapid precise ephemeris after two days. The other is a precise analysis with IGS precise orbit after three weeks.
Kyushu GPS network and GEONET in Kyushu are divided three sub-network, northern, central and southern parts. Back-born network is made up by three or four GEONET sites in each sub-network and IGS sites. At first back-born network is analyzed with constrained fiducial sites. Next sub-network is analyzed with back-born network. In sub-network analysis coordinates of back-born sites and troposphere parameters are fixed to the result of first analysis of back-born network. Zenith delays and horizontal gradient of troposphere are estimated every hour and every six hours, respectively. Mapping function of troposphere parameter is used GMF (Boem et al., 200 6) implemented by Nakao (2008).
In the rapid analysis, IGS sites which is TSKB, USUD, SHAO, BJFS, GUAM, TWTF, DAEJ, PIMO, AIRA and CCJM are used. The fiducial sites, BJFS, GUAM, DAEJ and DAEJ are constrained. TSKB is not constrained because of larger seasonal variation. In the precise analysis, IGS sites, YSSK, WUHN, PETP, MCIL and GMSD are added and YSSK and PETP are added to fiducial sites.
Repeatabilities of Back-born network in August 2009 are from 3.2 to 3.8 mm in NS, from 4.4 to 5. 3 mm in EW and from 7.8 to 10.6 mm in UD component, respectively

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