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Status on Chinese Space Geodesy Networks and their Applications

Xiaoya Wang, Zhongping Zhang, Fengchun Shu, Guangli Wang, and Kewei Xi

Shanghai Astronomical Observatory, Chinese Academy of Sciences, Shanghai, China (wxy@shao.ac.cn)

Chinese space geodetic networks were established in 1990s. The first SLR station in china was setup by Shanghai Astronomical Observatory (SHAO) in 1975 and now there are 7 SLR stations on operation in china. The observation accuracy has been improved from 1m to 8mm and the observation range has been extended from 1000km to 3600km for artificial satellites, 385000km for Lunar Range. The orbit determination accuracy has also been enhanced from several hectometer to 1-2 cm. And the products of SLR Terrestrial Reference Frame (TRF) and EOP is similar with that of other ILRS ACs and CCs. Currently 4 VLBI stations, including Seshan25, Kunming, Urumqi and Tianma65, participate in the IVS observing program. The total number of observing days was increased significantly in the past years. Shanghai VLBI correlator has been operational for the IVS data correlation since 2015. In addition to regular geodesy, we are also actively involved in the UT1 measurements and densification of the ICRF. We obtained first fringes between the two VGOS antennas at Shanghai in July 2019. A few more VGOS antennas will be built by collaborating with our partners in China or abroad. SHAO has provided the VLBI products such as POS+EOP to IVS. The first GPS station in China was setup in 1992 by JPL under the agreement between CAS and NASA, and now there are over 2000 GNSS stations running by CAS, China Earthquake Administration, Chinese Academy of Surveying & Mapping, China Meteorological Administration, Ministry of Education of the people's Republic of China, Company and their subdivisions. From the ownership of Chinese GNSS network, we could see the comprehensive applications such as regional TRF densification, EOP measurement, meteorological service, earthquake displacement, ionospheric modelling, crustal movement monitoring, PNT and so on. The first DORIS station was set up in Wuhan in 2003 and now there are 2 DORIS sites in China. Chinese space geodetic networks and their application will be further developed in future.