

Geodetic observations at Syowa Station in the framework of GGOS

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Many acronyms are born in relation to a science theme and observation plan of global scale for the sustainable development of human beings and impact of environmental change. The originating upstream of the acronyms may be the Global Earth Observation System of Systems (GEOSS) endorsed by the Group of Earth Observation (GEO) at the Earth Observation Summit II in February 2005, or the International Scientific Data and Information Forum (SciDIF) by the International Council for Science (ICSU). The Global Geodetic Observing System (GGOS) seems to be a realization of the upstream concept by the International Association of Geodesy (IAG), and four level of high-quality geodetic data are to be produced and serviced (Ch. Reigber, M. Rothacher; Dynamic Planet 2005 at Cairns). Among them are IERS, ITRF, EOP, IGFS products, and 12 services are to support these data flows, but here in the midstream their mutual relations already become complex and vague.

Anyway the IAG will guide how to construct the GGOS framework. When we consider the role of Syowa Station/Japanese Antarctic Research Expedition (JARE), i.e. downstream role in view of the Earth's environment change, water mass transport/variation and monitoring of Antarctica, we should not be bothered by the debates for the sake of debates but be concerned with what are realized, what are lacking, and what should be proceeded in our research area.

Syowa Station has been upgraded from early 1990s as the fundamental precise geodesy observatory. There are 8 geodetic sensors/monuments (GPS, VLBI, DORIS, SG, AG point etc) within the international network, and each sensor/monument is cataloged in a sheet form with the description of definition of the reference point, photographs, coordinate values, local-tie vectors, history of observation and references (Shibuya et al., 2005); their outline is presented. There are no such comprehensive catalogs of 1 mm - 1 cm accuracy from other SCAR participating Antarctic stations. When we are concerned with the water mass variation, background non-timevariable short-wavelength gravity and ice thickness fields have to be known. The JARE had weak point in the determination of these fields, but it has been solved by an international cooperation such as Japan-Germany airborne geophysics in Eastern Dronning Maud Land, and some related programs are introduced.