

A Report on the GGOS Working Group on Ground Networks and Communication

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The Ground Networks and Communication Working Group is working toward the implementation of properly designed and structured ground-based geodetic networks to materialize the reference systems to support sub-mm global change measurements over space, time and evolving technologies. The WG is working with the IAG measurement services (the IGS, ILRS, IVS, IDS, IGFS, and IERS) to develop a strategy for building, integrating, and maintaining the fundamental network of instruments and supporting infrastructure in a sustainable way to satisfy the long-term (10-20 year) requirements in the terrestrial reference frame, Earth orientation and gravity field monitoring, precision orbit determination, local deformation monitoring, and other geodetic and gravimetric applications required for the long-term observation of global change. As a starting point, the Working Group is examining options for 1 mm and 0.1 mm/yr stabilities of the reference frame, since its influences all of the other geodetic products.

Early steps in the process are: definition of the critical contributions that each technique provides to the TRF, POD, EOP, etc; characterize the improvements that could be anticipated over the next ten years with each technique; understand the present error sources for each technique (instrument and modelling) and how these errors sources propagate into the analysis products; and using simulation techniques, quantify the improvement in the reference frame as stations are added and station capabilities (co-location, data quantity and quality) are improved.

The Working Group assumes that the GNSS and the DORIS Networks will be at least as robust as they are presently and that planned upgrades in the ground systems and the satellites will come to fruition. Some augmentation is also assumed where the present networks would be significantly enhanced with additional stations.

We will review the progress to date in organizing the Working Group and the studies currently underway.