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GGOS Global Geodetic Networks: Their Impact on WEGENER

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The Global Geodetic Observing System—GGOS, is rapidly approaching maturity, with leading scientific themes (a) the establishment of a global unified height system, (b) natural hazards, and (c) seal level change, variability and forecasting. It was recognized early on that to achieve our scientific goals we will need to first improve the quality and stability of the reference frame which underlies all Earth Observation techniques, geodetic and others: the International Terrestrial Reference Frame (ITRF). The goal of GGOS is to define the ITRF origin at 1 mm or better, with a temporal stability on the order of 0.1 mm/y, with similar numbers for the scale (0.1 ppb) and orientation components. These goals are based on extensive deliberations within the Earth science community and are primarily driven by the most demanding of the three themes: sea level change. None of the IAG positioning techniques can achieve this goal alone due to the non-observability of certain attributes, the limitations of the tracking networks and/or the limited availability of targets. GGOS therefore has embarked on a very ambitious task, to improve all of the global geodetic networks and modernize the systems deployed at each of the sites. Part of this effort is the standardization of the equipment at the core ITRF sites, the continuous and accurate monitoring of the reference points from each technique, and the synergistic use of multiple techniques for more robust end products. The results will impact Earth science globally, however, we will focus here on the impact of these improvements on regional projects and in particular on WEGENER. With thirty years of observations in the Mediterranean and surrounding areas, WEGENER has tapped all of geodetic techniques to achieve its goals. The changes coming to the global geodetic infrastructure will lead to corresponding changes in regional networks and improved global products which provide the basis for the regional observations' interpretation. It is thus expected that such efforts will benefit in two ways once GGOS reaches its full operational status.