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Assessment of Global Change by Geodetic Techniques

Abstract

Recent investigations show that Global Change and disaster research suffers from a severe lack of observational data. During the past decade geodetic measurement techniques have matured so much in terms of accuracy and reliability as to make them an important tool for the detection, monitoring and quantification of Earth processes. This is particular true for geodetic satellite techniques which provide global and uniform data with a rather high repetition rate. Measurement of ocean and ice surfaces, Earth topography and tectonic motion is the geometric dimension of the current geodetic capability. It relates to processes such as sea level change, ocean circulation, de-glaciation, surface loading, regional and global tectonics, as well as to pre- and post- seismic and volcanic deformation. In combination with satellite and airborne gravimetry the door is open for an assessment of global mass transport in atmosphere, oceans, ice shields and solid Earth. In particular changes in the global water cycle are of key interest to Global Change research. The measurement of temporal variations of Earth rotation and sounding of the atmosphere and ionosphere using propagation delay of GNSS rays complete the arsenal of geodetic methods. If, in a coordinated effort, geodesy succeeds to establish a global system combining these techniques with highest precision, reliability and continuity these methods will be pivotal to Global Change research. The planned Global Geodetic Observing System (GGOS) is intended to take this role.



Short biographical notes

1966-1970	Geodetic engineering, Techn Univ München
1970-1974	Ph.D.(engineering), Techn Univ Darmstadt
1974-1976	Post-Doc, Ohio State Univ, Columbus/Ohio
1976-1980	German Geodetic Research Institute, München
1980-1993	Professor Physical Geodesy, Techn Univ Delft, Netherlands
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