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Global absolut gravity reference system as replacement of IGSN 71

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The determination of precise gravity field parameters is of great importance in a period in which earth sciences are achieving the necessary accuracy to monitor and document global change processes. This is the reason why experts from geodesy and metrology joined in a successful cooperation to make absolute gravity observations traceable to SI quantities, to improve the metrological kilogram definition and to monitor mass movements and smallest height changes for geodetic and geophysical applications.
The international gravity datum is still defined by the International Gravity Standardization Net adopted in 1971 (IGSN 71). The network is based upon pendulum and spring gravimeter observations taken in the 1950s and 60s supported by the early free fall absolute gravimeters. Its gravity values agreed in every case to better than 0.1 mGal. Today, more than 100 absolute gravimeters are in use worldwide. The series of repeated international comparisons confirms the traceability of absolute gravity measurements to SI quantities and confirm the degree of equivalence of the gravimeters in the order of a few μGal. For applications in geosciences where e.g. gravity changes over time need to be analyzed, the temporal stability of an absolute gravimeter is most important.
Therefore, the proposition is made to replace the IGSN 71 by an up-to-date gravity reference system which is based upon repeated absolute gravimeter comparisons and a global network of well controlled gravity reference stations.