Determination of the Earth's mathematical surface in Africa towards the realization of the International Height Reference System (IHRS)

The IUGG support will help in the acquisition of gravity data for Africa and therewith the determination of the Earth's mathematical surface for the International Height Reference System (IHRS) according to the IAG Resolution No.1 at the IUGG General Assembly 2015, and the attendance of international conferences to publicize the project and disseminate its results. This will foster cooperation and provide high-level training for African geoscientists.

The overall objective of the project is to determine the mathematical surface of the Earth for Africa for the realization of the International Height Reference System (IHRS), one of the focus areas of the Global Geodetic Observing System (GGOS). The specific aims include:

1. Establishing an accurate mathematical surface of the Earth for Africa (AFRMATH) in 2018 that will help to unify all the existing height systems within the African continent and refer them to the new IHRS to be established according to IAG Resolution No. 1 adopted at the IUGG General Assembly 2015. This mathematical surface will govern all the height measurements using global navigation satellite systems (GNSS).

2. Supporting global and regional applications of the IHRS, e.g., studies of geodynamics such as monitoring global change, variations of sea level and continental hydrology, geophysical hazards, vertical crustal deformations, tectonic or environmental motions.

3. Train experts who will spearhead the sustained realization of AFRMATH by future versions when more data become available. This will be achieved through enabling participation of younger scholars from African developing countries.

4. Enhance the corporation between the African geoscientists.

5. Utilization of the fast-improving GNSS technology, which is so far lacking in Africa due to the non-existence of an accurate mathematical surface of the Earth for Africa.