

RESOLUTIONS OF THE GGOS-AFRICA WORKSHOP 2026

Nairobi, Kenya | 5–7 October 2026

Theme: Building the Foundation for Geodetic Excellence in Africa

Preamble

We, the participants of the inaugural **GGOS-Africa Workshop**, held in Nairobi, Kenya, from 5 to 7 October 2026, bringing together representatives of African national mapping and surveying authorities, universities and research institutions, space and astronomy institutions, geodetic and geospatial organisations, international organisations, professional bodies, and development partners;

Recognising the fundamental role of geodesy in providing accurate, reliable and sustainable reference systems and Earth observation information required for surveying and mapping, land administration, infrastructure development, navigation, disaster risk reduction, climate studies, Earth-system science and sustainable development;

Recognising further the importance of the Global Geodetic Observing System (GGOS) and the Global Geodetic Reference Frame (GGRF) in providing the international framework for coordinated geodetic observations and services;

Acknowledging the establishment of GGOS-Africa as a GGOS Affiliate, approved by the GGOS Governing Board on 21 September 2026, and its role as a continental platform for strengthening coordination, infrastructure, capacity development and African participation in global geodesy;

Having received the Assessment of the Geodetic Infrastructure and Human Capacity in Africa (DOI: 10.5281/zenodo.20551290), the first comprehensive continental documentation of African geodetic infrastructure and capacity, based on responses from 22 countries;

Noting the need to strengthen the African Reference Frame (AFREF), continuously operating reference station (CORS) networks, vertical reference systems, fundamental geodetic stations, data and analysis centres, and other components of Africa's geodetic infrastructure;

Recognising that sustainable advancement of African geodesy requires stronger human-resource capacity, computational infrastructure, institutional cooperation, data sharing and long-term financial support;

Acknowledging the importance of collaboration among GGOS-Africa, UN-GGIM: Africa, the UN Global Geodetic Centre of Excellence, the International Association of Geodesy (IAG), FIG, national institutions, universities, research organisations, private-sector partners and other relevant stakeholders;

Hereby adopt the following resolutions:

Resolution 1: Establishment and Strengthening of GGOS-Africa

The Workshop:

1. **Welcomes** the establishment of GGOS-Africa as a GGOS Affiliate and recognises it as an important continental mechanism for coordinating African participation in GGOS.
2. **Resolves** to support the development of GGOS-Africa as an Africa-led, inclusive and sustainable platform serving the geodetic needs of African countries.

3. **Supports** the development and implementation of a GGOS-Africa strategic plan covering infrastructure, observations, data, analysis, products, applications, education, capacity development, partnerships and resource mobilisation.
 4. **Encourages** all African countries and relevant institutions to participate actively in GGOS-Africa and contribute to its programmes and activities.
 5. **Calls for** close coordination between GGOS-Africa, UN-GGIM: Africa and other continental and regional geodetic initiatives to avoid duplication and maximise existing capabilities.
 6. **Thanks** the GGOS President and Governing Board; the Department of Science, Technology and Innovation of the Republic of South Africa for its long-term commitment to hosting the GGOS-Africa Secretariat; UK Research and Innovation and the Science and Technology Facilities Council, through the International Science Partnership Fund and the Africa-UK Physics Partnership, together with the University of Manchester, for the seed funding that enabled this foundation; and the Technical University of Kenya and the Survey of Kenya for hosting the Workshop.
 7. **Affirms** that GGOS-Africa operates within the IAG/GGOS scientific and technical framework and does not replace national geodetic authorities, UN-GGIM: Africa and its Working Group on the African Geodetic Reference Frame, or any existing continental or regional geodetic body; GGOS-Africa is not a legal entity or a funding agency, and does not collect or hold member countries' geodetic data.
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Resolution 2: Strengthening the African Reference Frame (AFREF)

The Workshop:

1. **Reaffirms** AFREF as a fundamental component of Africa's geodetic infrastructure and as an essential mechanism for improving access to a consistent continental reference frame.
 2. **Supports** continued efforts to implement, densify, maintain and improve AFREF across the continent.
 3. **Encourages** African Member States to contribute GNSS observations and relevant national geodetic data to continental AFREF activities, subject to national policies and applicable data-sharing arrangements.
 4. **Supports** the establishment and strengthening of African AFREF data and analysis centres.
 5. **Encourages** cooperation between national agencies, universities, research institutions and international services in the processing, analysis and validation of AFREF observations.
 6. **Calls for** regular continental AFREF computations and updates to ensure that the reference frame remains accurate, accessible and responsive to emerging user requirements.
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Resolution 3: Continuously Operating Reference Stations and Geodetic Infrastructure

The Workshop:

1. **Recognises** CORS networks as critical infrastructure for modern geodesy and high-precision positioning.
 2. **Calls for** coordinated expansion, modernisation and sustainable operation of CORS networks across Africa, with particular attention to areas currently underserved.
 3. **Encourages** interoperability and appropriate standardisation of observations, metadata, station operation and data dissemination.
 4. **Encourages** the integration of CORS and fundamental geodetic stations with other space-geodetic techniques, including SLR, VLBI and DORIS, and with gravimetric and tide gauge instruments, where technically and financially feasible.
 5. **Supports** the development of mechanisms for monitoring station quality, continuity, data availability and long-term stability.
 6. **Encourages** public-private partnerships where these can contribute to sustainable infrastructure while maintaining appropriate data quality, interoperability and accessibility.
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Resolution 4: Vertical Reference Systems

The Workshop:

1. **Recognises** that consistent and accurate heights are essential for engineering, water-resource management, flood risk and sea-level studies, and that harmonising national height systems across borders remains a continental priority.
 2. **Supports** the development of a modern, unified African vertical reference frame, in cooperation with AFREF, the African Geoid Project, national levelling networks and tide gauge operators.
 3. **Encourages** African countries to modernise national height systems and to share levelling, gravity and tide gauge data, subject to national policies, in support of continental geoid and vertical datum work.
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Resolution 5: Fundamental Geodetic Stations and Space Geodesy

The Workshop:

1. **Recognises** the strategic importance of fundamental geodetic stations to the realisation and maintenance of the global and regional reference frames.
2. **Supports** the identification, establishment, modernisation and long-term operation of suitable fundamental geodetic sites across Africa.
3. **Encourages** closer integration between geodesy, astronomy, space science, geophysics and related Earth-observation disciplines.

4. **Encourages** African institutions hosting space-geodetic infrastructure to develop sustainable operational and technical capacity and to contribute observations to relevant international services.
 5. **Supports** the use of geodetic observations for research into geodynamics, crustal deformation, sea-level change, Earth rotation and other Earth-system processes.
 6. **Notes** that Africa currently hosts only one functional geodetic VLBI station and one active International Laser Ranging Service station, both at Hartebeesthoek, South Africa, and that only three African countries host DORIS beacons; and calls on member states, IAG services and international partners to treat the expansion of Africa's space-geodetic infrastructure as a shared global interest, in support of UN General Assembly resolution 69/266 on a global geodetic reference frame for sustainable development.
 7. **Requests** that a prioritised continental infrastructure development plan, identifying candidate locations for new fundamental and core sites, be published open access and presented to the inaugural Extended Steering Committee.
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Resolution 6: African Geodetic Data and Analysis Centres

The Workshop:

1. **Recognises** that Africa's participation in global geodesy should extend beyond hosting observing infrastructure to include processing, analysis, product generation and scientific interpretation.
 2. **Supports** the establishment and strengthening of African analysis centres capable of contributing to AFREF and, where appropriate, relevant IAG/GGOS services.
 3. **Encourages** African institutions to develop shared computational infrastructure, software expertise and analytical capacity.
 4. **Calls for** collaboration among existing and emerging analysis centres to establish complementary areas of expertise and avoid unnecessary duplication.
 5. **Encourages** training programmes focused on GNSS analysis, time series, reference-frame realisation, geodetic modelling, quality control and scientific data analysis.
 6. **Resolves** to move the Distributed African Geodetic Analysis Node Network from concept to implementation, inviting expressions of interest from candidate host institutions by 30 November 2026 and proposing an initial cohort of nodes for endorsement at the inaugural Extended Steering Committee; nodes are hosted and resourced by their host institutions.
 7. **Sets** the goal that at least two African institutions gain formal recognition as analysis centres from an appropriate IAG service or AFREF by the end of 2028.
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Resolution 7: Human Capacity Development and Education

The Workshop:

1. **Recognises** human capacity as a fundamental requirement for sustainable development of geodesy in Africa.
 2. **Calls for** strengthened university and professional education in geodesy, including modern space-geodetic techniques, reference frames, gravity, height systems, Earth observation and geodetic data science.
 3. **Encourages** African universities, research institutions and professional organisations to develop joint courses, training schools, postgraduate programmes and exchange opportunities.
 4. **Supports** regular GGOS-Africa capacity-building workshops and technical schools addressing identified continental priorities.
 5. **Encourages** mentorship and collaboration between established African geodetic institutions and emerging programmes.
 6. **Supports** measures to improve opportunities for early-career scientists, engineers, surveyors and geospatial professionals to participate in continental and international geodetic programmes, and resolves that early-career participation and gender balance be standing objectives across GGOS-Africa Working Groups, training places and speaking roles, with participation statistics reported annually.
 7. **Resolves** that the GGOS-Africa training programme be built around the five priority needs identified in the continental assessment (reference station installation, maintenance and operation; GNSS network design, operation and data processing; geodetic reference systems; geoid modelling; and space-geodetic techniques), with RECTAS and RCMRD as anchor delivery partners and, subject to funding, the first school held by the end of 2027.
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Resolution 8: Data Sharing, Standards and Interoperability

The Workshop:

1. **Recognises** that reliable data sharing is essential for realising the benefits of continental and global geodetic infrastructure.
2. **Encourages** the adoption and use of appropriate international standards for geodetic observations, station metadata, data formats, quality control and dissemination.
3. **Encourages** participating institutions to facilitate access to appropriate geodetic observations and products while respecting national laws, institutional policies, security considerations and data restrictions.
4. **Supports** the development of continental or regional mechanisms for discovering available African geodetic data, infrastructure and services.
5. **Resolves** that the continental assessment be maintained as a living dataset, with National GGOS Focal Points validating and completing their country's entry and the Secretariat refreshing it periodically in coordination with UN-GGCE and AFREF surveys, so that countries are not asked for the same information twice.

6. **Affirms** open, FAIR-aligned sharing of geodetic data as a founding principle of GGOS-Africa, recognises that data sovereignty rests with member countries, and encourages open licensing of publicly funded geodetic data where national policy permits.
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Resolution 9: Geodesy for African Societal and Scientific Applications

The Workshop:

1. **Recognises** that geodesy provides essential information for a broad range of societal and scientific applications.
 2. **Encourages** the use of GGOS-Africa infrastructure and products in:
 - o climate and environmental monitoring;
 - o disaster risk reduction and hazard monitoring;
 - o land administration and cadastral systems;
 - o infrastructure development and engineering;
 - o precision agriculture;
 - o navigation and positioning;
 - o hydrology and water-resource management;
 - o coastal and sea-level studies; and
 - o Earth and space sciences.
 3. **Encourages** collaboration between geodesists and end-user communities to ensure that observations and products respond to clearly identified African needs.
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Resolution 10: Partnerships and Resource Mobilisation

The Workshop:

1. **Calls for** strengthened partnerships among African governments, national geodetic agencies, universities, research institutions, regional organisations, development partners, international scientific organisations and the private sector.
2. **Encourages** development of joint projects and programmes that leverage existing infrastructure and expertise.
3. **Supports** coordinated resource mobilisation for the sustainable operation and modernisation of African geodetic infrastructure.
4. **Encourages** African institutions to include geodetic infrastructure and services in relevant national and regional development, science, technology and geospatial strategies.
5. **Calls for** development of a sustainable funding model for GGOS-Africa coordination, capacity development and priority continental activities, and, noting that the current UKRI and STFC

seed funding concludes in 2027, requests a resource mobilisation strategy for presentation at the inaugural Extended Steering Committee.

6. **Requests** a formal working arrangement with the UN-GGIM: Africa Working Group on the African Geodetic Reference Frame, including regular joint meetings, mutual observer status and the Working Group's permanent voting seat on the GGOS-Africa Steering Committee.
 7. **Reaffirms** GGOS-Africa's commitment to supporting implementation of the UN-GGCE First Joint Development Plan across Africa.
 8. **Requests** strengthened engagement with North African countries and institutions, including cooperation with ARABREF in coordination with UN-GGIM: Africa.
 9. **Requests** conclusion of a Memorandum of Understanding with the African Astronomical Society and engagement with the African Space Agency, the radio astronomy community, and the Earth observation, space weather and geosciences communities, including for geodynamics and hazard monitoring along the East African Rift.
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Resolution 11: Governance, Coordination and Implementation

The Workshop:

1. **Endorses** the GGOS-Africa Founding Framework and Terms of Reference (Draft v1.7, 12 August 2026) as the basis for its governance, with South Africa as founding Chair and Secretariat host and Kenya as founding Vice-Chair, for formal adoption at the inaugural Extended Steering Committee.
2. **Invites** institutions active in geodesy in all African Union member states to nominate a National GGOS Focal Point by 31 December 2026, noting that formal adoption of the Terms of Reference requires at least one registered Focal Point in each of the five African regions.
3. **Encourages** representation from the different African regions, disciplines and stakeholder communities in GGOS-Africa activities.
4. **Calls for** the development of an implementation roadmap identifying priority actions, responsible institutions, timelines, expected outputs and potential sources of support.
5. **Requests** that progress on implementation be reviewed periodically and reported to the African geodetic community and relevant GGOS and UN-GGIM structures.
6. **Recommends** that the Steering Committee propose four Working Groups for approval at the inaugural Extended Steering Committee: Infrastructure Assessment, Simulation and Site Development; Analysis Nodes, Data Products and Standards; Capacity Development, Education and Training; and Outreach, Communication and Multi-Domain Partnerships.
7. **Welcomes** the intention to hold the official launch of GGOS-Africa in South Africa in early 2027, with the inaugural Extended Steering Committee convened in March 2027, and recommends a second continental GGOS-Africa workshop in 2028, hosted in a different African region.

8. **Requests** that the Secretariat publish the workshop report, incorporating these resolutions and an action register, open access with a DOI within eight weeks, and invites presenters to deposit their slides in the GGOS-Africa Zenodo community.
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Adoption

The participants of the **GGOS-Africa Workshop 2026** hereby adopt these resolutions as a framework for strengthening geodesy in Africa and advancing the continent's contribution to the Global Geodetic Observing System.

The Workshop calls upon African governments, institutions, scientific organisations, development partners and the international geodetic community to support their implementation.

Adopted in Nairobi, Kenya, on 7 October 2026.

For the GGOS-Africa Workshop

Chair: _____

Rapporteur: _____

Date: 7 October 2026

Venue: Nairobi, Kenya