



2025-47

Satellite Navigation Science and Technology for Africa

23 March - 9 April, 2009

Introductory remarks

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ICTP, Trieste, Italy



Africa's Science and Technology Plan of Action
(1) clearly states Africa's commitment to develop and use science and technology for socio-economic transformation and full integration into the world economy.



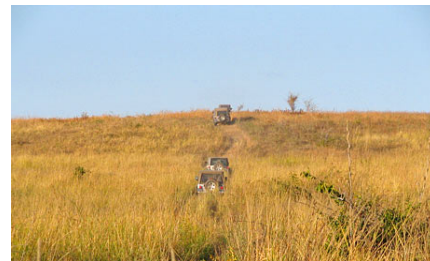
Global Navigation Satellite Systems (GNSS) are a space technology that can help meet that goal.

GNSS Applications

- Increase food security; manage natural resources; wildlife conservation
- Provide efficient emergency location services; disaster relief
- Improve mapping and surveying
- Provide greater precision and safety in land, sea and air navigation
- Scientific research and exploration



Wildlife Conservation



Land Navigation



Precision Farming



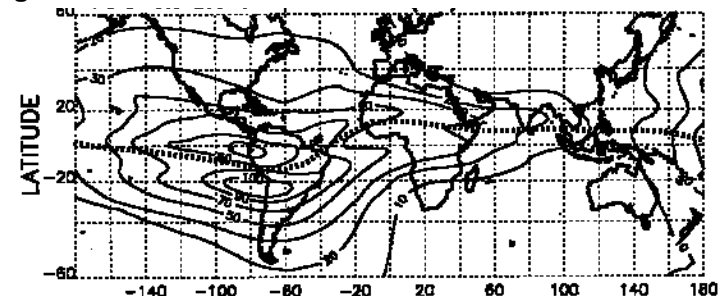
Water Navigation



Air Navigation

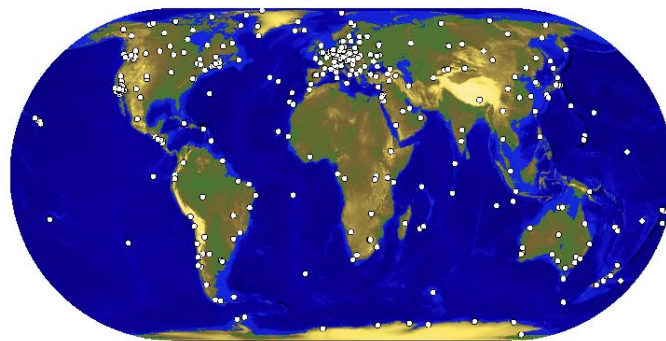
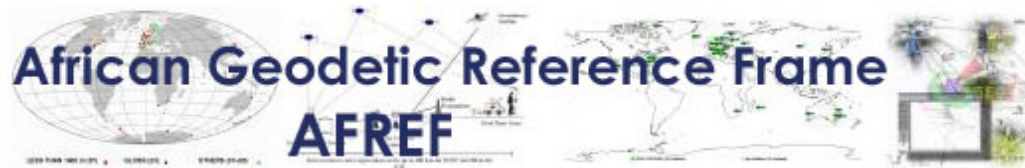


Disaster Relief



Scientific Exploration

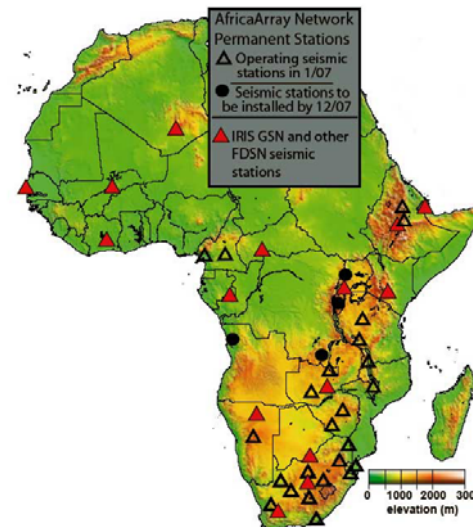
Benefits of GNSS for Africa have been recognized!



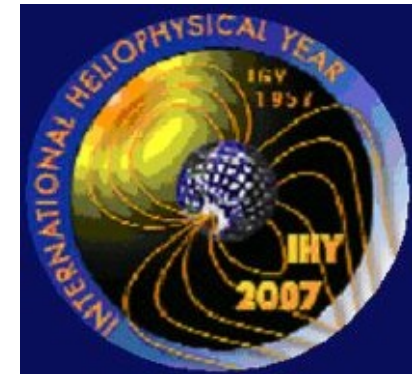
GNSS 2009 Mar 21 16:34:46

<http://igsweb.jpl.nasa.gov>

International GNSS Service



Africa Array – Seismic Stations



IHY-UNBSSI

Africa 2007, 2009

Workshop Goals

- To provide GNSS education at the University level
- To help build a knowledgeable GNSS African workforce
- To encourage the use of GNSS for societal and economic development and environmental protection
- To build GNSS infrastructure
- To establish Space Weather studies in Africa
- To establish international scientific collaborations



Program Overview

Instructors – Worldwide Experts in GNSS from the US, Canada, Europe, Africa

- Week 1: Basics of GPS
 - System architecture, signal structures
 - Measurements and Error sources
 - Solving for position and time, Kalman filtering
 - Receiver and antenna technology
- Week 2: State of the art GPS Technologies:
 - Autonomous navigation
 - Mapping and surveying
 - Disaster monitoring/relief
 - Precision agriculture
 - Aviation
- Week 3: Scientific Exploration
 - Atmospheric monitoring and mitigation
 - Ionospheric sensing
 - Space weather studies



LEGO Robots



Geocaching



Data processing/analysis

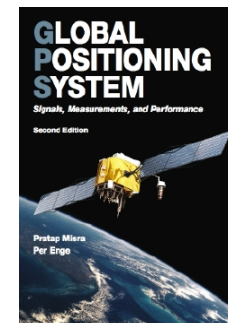
We sincerely thank our sponsors for their generosity



International Committee on
Global Navigation Satellite Systems



Dr. Pratap Misra, MITRE Corporation
Dr. Per Enge, Stanford University



GNSS is an enabling technology that can make major contributions to economic growth and societal betterment. It is also a key to scientific exploration.



This is our dream!