Adopting Global Geodetic Reference Frame in the Pacific

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- Small steps in Pacific SIDs adopting **UN Resolution A/69/L.53** “A Global Geodetic Reference Frame for Sustainable Development”

- Transition from Local Grid to Global Reference Frame
Global Geodetic Reference Frame

The UN-GGIM Roadmap...

In February 2015 the UN General Assembly adopted the resolution “A Global Geodetic Reference Frame for Sustainable Development” - the first resolution recognizing the importance of a globally-coordinated approach to geodesy.

As per UN Resolution A/69/L.53

In the Pacific...Australia, Fiji, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu
Monitoring Sea Level Rise & Climate Change Impacts in Pacific Islands SIDs – Global Geodetic Reference Frame

- Upgrade of national geodetic reference frame using GNSS
- Government support on Tuvalu Geodetic Survey Project funding Phase I
- Tuvalu Geodetic Survey Project 2016 – over 30% GGRF covered
- Phase II Tuvalu Geodetic Survey 2017 – 70% GGRF coverage
- Phase III 2018 – seek donor support to complete
- Technical & Equipment support – SPC
- Invite regional & international support on policy and legislative matters on adopting GGRF
Global Geodetic Monitoring of Crustal Velocities: Understanding Local Impacts of Sea Level Rise & Climate Change through GGRF

- Mapping Tuvalu Baselines in GCRF to define present, and future sovereign rights
- Maritime boundary delimitation, Extended continental shelf (ECS) claim on global reference frame WGS84 (comply with UNCLOS and signed treaties with 3 states)
Tuvalu Geodetic Survey Project 2016 – Phase I

• Supported by Government funding

• Partnership with Geoscience Unit of SPC – technology transfer & survey infrastructure

• Phase I - 4 weeks field survey on 3 islands;
  - GNSS survey
  - Photo- control survey
  - Cadastral survey
  - Tide Observation (2 days obs & RBR installation 6 months – LAT, HAT, MSL)
  - Establish local datum – link to nearby Survey BM on land occupy by GNSS

• Scheduled Phase II Survey – (Aug – Sept 2017)
GNSS Survey 2016

- Maintenance of existing Survey Control BMs
- Establish one GNSS Primary Control on each island – 4 days observation; used as base for survey
- Training & technology transfer to local staff on GNSS by SPC experts
Photo Control GNSS Survey

- Google Map position error – 32 metres
- RTK GNSS Surveys – Reference Image Points
Cadastral Survey using GNSS

• RTK GNSS Surveys – Boundary Definition
• Shift of Local Grid (digitized cadastre vs GNSS (satellite image))
Tide Monitoring – defining vertical datum

- Tide watch to establish LAT, HAT and MSL
- Installation of RBR to monitor local sea level – 6 months
- Establish link of MSL to nearby BM on land occupied by GNSS
Pacific Geospatial & Surveying Council

- Independent regional body advancing geospatial and surveying standards and capacity
- Established in the margins of the GIS/RS User Conference in November 2014
- Governed by the PGSC Charter endorsed by 11 Pacific Island governments
- Supported by PGSC Partnership Desk (SPC)

For more info, visit: http://gsd.spc.int/pgsc/
PGSC Vision

Sustainable development in the Pacific enabled by world class geospatial information and surveying services
PGSC Strategy

- 10-year regional plan for developing geospatial and surveying capacity
- Collaborative process
- Member ownership
1. To demonstrate the critical nature of geospatial and surveying information and services and the development and maintenance of these services in the Pacific region;

2. To articulate the collaborative aspirations of the region’s geospatial and surveying professionals in advancing capacity;

3. To guide the development of sustainable geospatial and surveying information and services in Pacific Island Countries & Territories, and;

4. To serve as an entry point for engagement with internal and external partners.
1. Leadership and Visibility
• The PGSC enables regional leadership, guidance and support for members to engage stakeholders and the community on geospatial and surveying activities.

2. Standards and Technology
• Countries across the region adopt a modern Geodetic Reference Frame (GRF) and improved technology underpinning geospatial systems and applications.

3. Sustainability
• Geospatial and surveying activities at the national and regional level are supported by a diverse and sustainable resource base.

4. Capacity Building
• The geospatial and surveying community is self-reliant with a culture supportive of learning innovation and gender equity.
Challenges

• Lack funding on infrastructure upgrade (hardware & software)
• Lack standards & specification – “Fit- for – purpose” approach
• GCRF focus in urban area – outer islands and rural areas not cover
• Geospatial & Survey institution in Pacific region lacks funding support from global development partners
• Pacific Geospatial & Surveying Council (PGSC) – regional approach to support geospatial & surveying activities in Pacific region, link to international bodies – FIG, UN- GGIM
• Invite support from relevant UN bodies to assist PGSC and Geospatial & Surveying institutions in the region – promote and strengthen partnership on geospatial and surveying programs in Pacific region
• Mapping local impacts on sea level rise, coastal erosion, and climate change on a global geodetic reference frame – improve disaster and risk reduction planning
Thank You