

Adopting Global Geodetic Reference Frame in the Pacific

**Seventh Session of the United Nations Committee of Experts on
Global Geospatial Information Management (UN-GGIM) -
31 July - 4 August 2017**

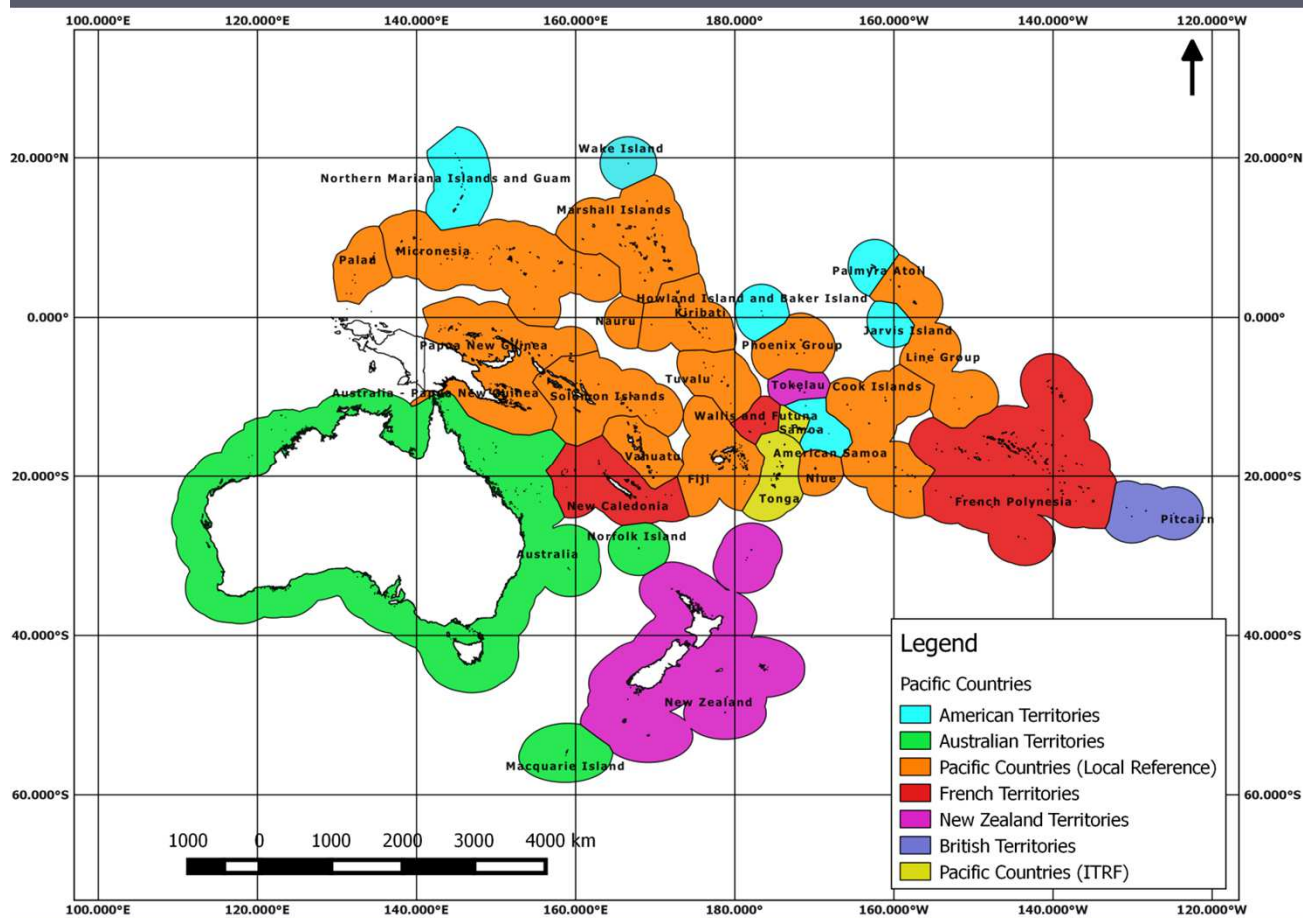
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Geodetic Reference Frame - Pacific



- 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

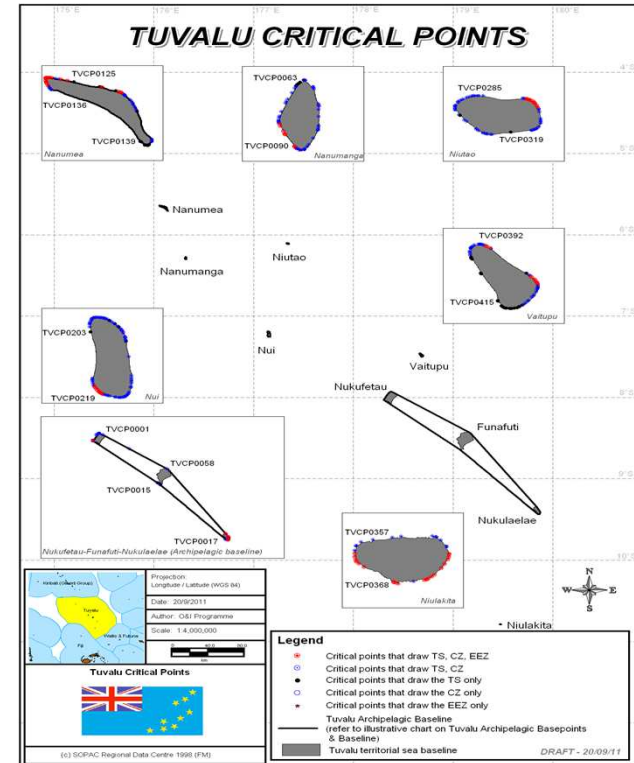
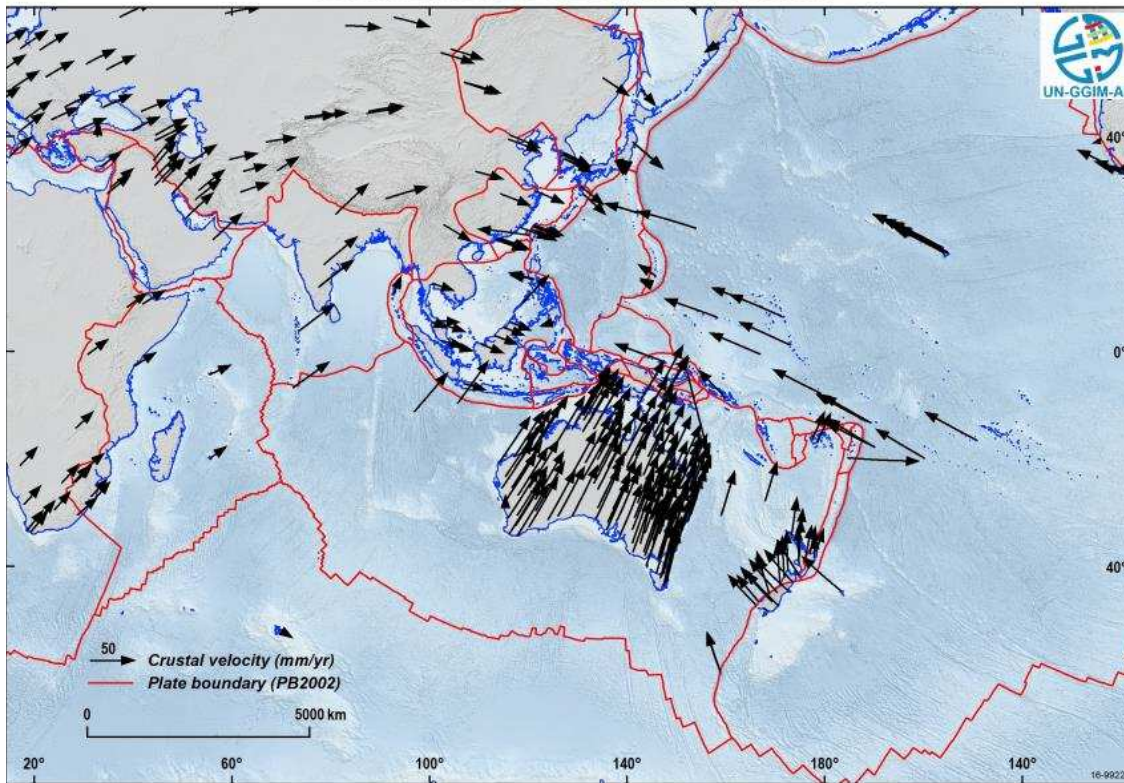
- Upgrade of national geodetic reference frame using GNSS
- Government support on Tuvalu Geodetic Survey Project funding Phase I
- Tuvalu Geodetic Survey Project 2016 – over 30% GGRF covered
- Phase II Tuvalu Geodetic Survey 2017 – 70% GGRF coverage
- Phase III 2018 – seek donor support to complete
- Technical & Equipment support – SPC
- Invite regional & international support on policy and legislative matters on adopting GGRF



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Global Geodetic Monitoring of Crustal Velocities : Understanding Local Impacts of Sea Level Rise & Climate Change through GGRF

Crustal velocities of Asia and the Pacific



- 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)

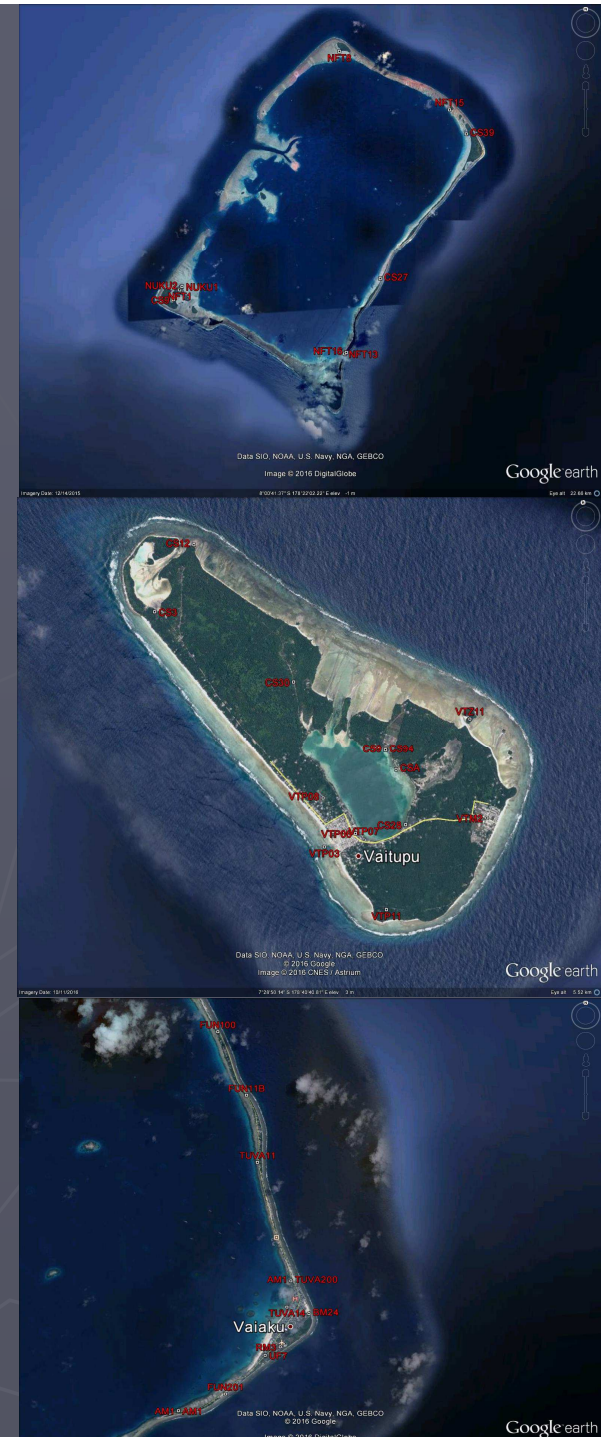


Tuvalu Geodetic Survey Project 2016 – Phase I

- 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)



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GNSS Survey 2016

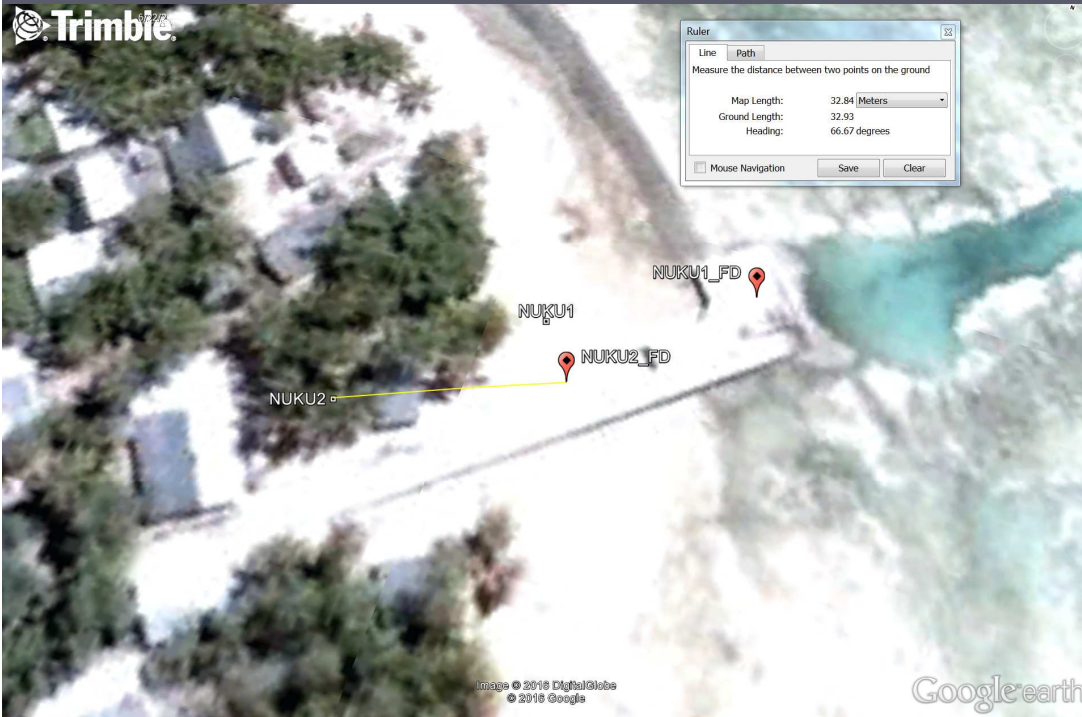


- Maintenance of existing Survey Control BMs
- Establish one GNSS Primary Control on each island – 4 days observation; used as base for survey
- Training & technology transfer to local staff on GNSS by SPC experts



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Photo Control GNSS Survey

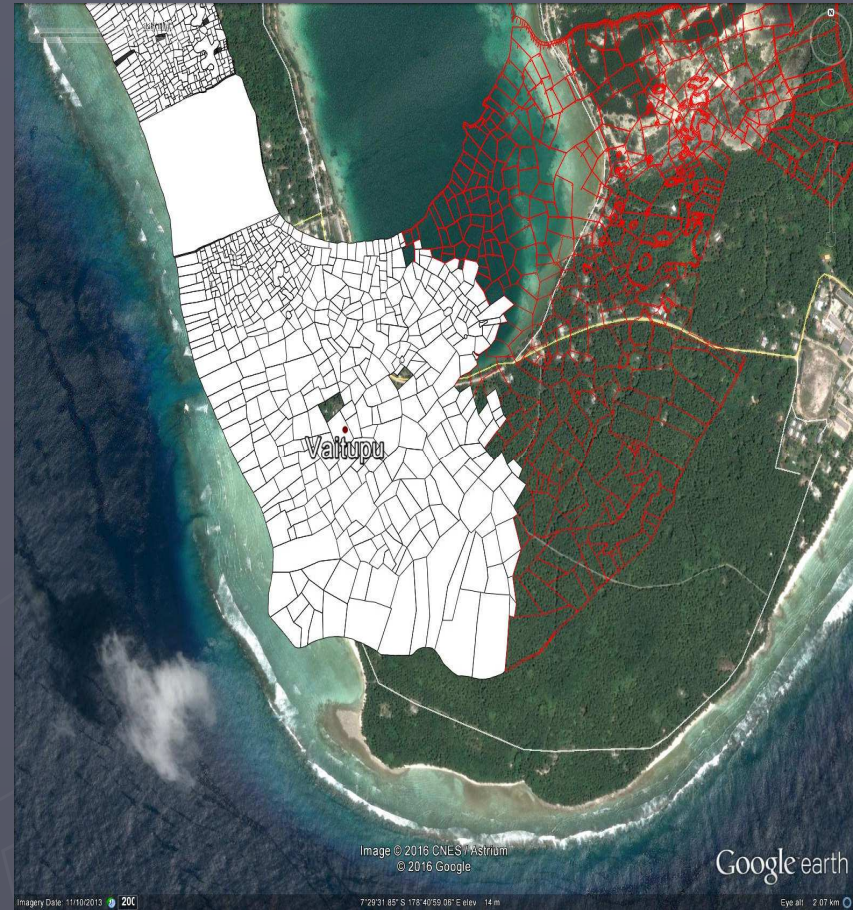


- Google Map position error – 32 metres
- RTK GNSS Surveys – Reference Image Points



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Cadastral Survey using GNSS



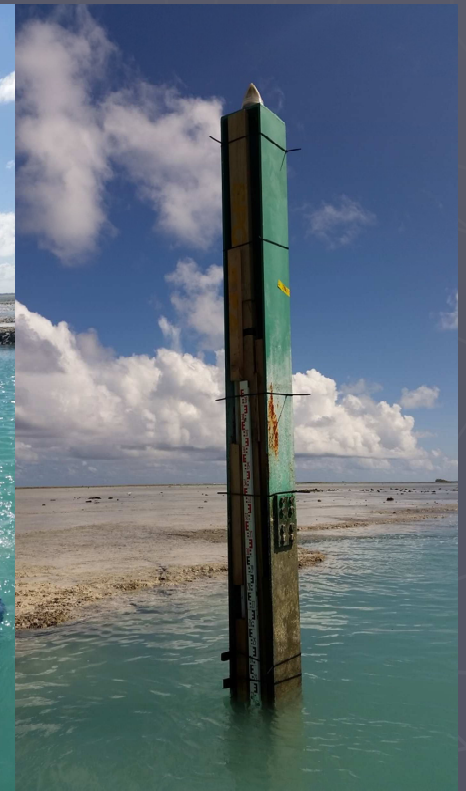
- RTK GNSS Surveys – Boundary Definition
- Shift of Local Grid (digitized cadastre vs GNSS (satellite image))



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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



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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)

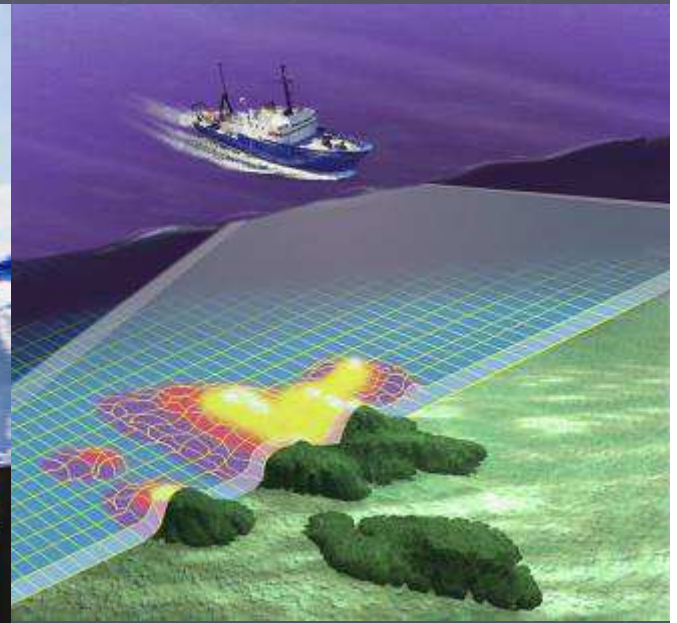
For more info, visit:

<http://gsd.spc.int/pgsc/>



PGSC Vision

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



PGSC Strategy

PACIFIC ISLANDS
GEOSPATIAL AND SURVEYING STRATEGY
2017-2027

POSITIONING PACIFIC ISLAND COUNTRIES AND TERRITORIES FOR THE FUTURE



- ▶ 10-year regional plan for developing geospatial and surveying capacity
- ▶ Collaborative process
- ▶ Member ownership



Purpose

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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.

PGSC Strategy Goals



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



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Thank You

