

# UN-GGIM-AP and Working Group on Geodetic Reference Frame

**Basara Miyahara**

(Chari UN-GGIM-AP WG1: Geodetic Reference Frame)

# Outline

- UN-GGIM-AP
- Working Group on Geodetic Reference Frame
  - UN-GGIM Geodesy
  - Regional Reference Frame
    - > APREF (Asia Pacific Reference Frame)
    - > APGRP (Asia Pacific Regional Geodetic Project)
  - Regional Height System Unification
  - Regional Capacity Building

# UN-GGIM-AP (Regional Committee of United Nations Global Geospatial Information Management for Asia and the Pacific)

- Regional Committee of UN-GGIM.
- Established :1 November 2012
- Member:  
National Geospatial Information Authorities of 56 countries and regions in Asia and the Pacific
- Chair: Dr. Andy Barnicoat (Australia)
- Vice Chair: China, Japan, Mongolia
- Secretariat: UN-ESCAP

	Afghanistan		American Samoa		Armenia		Australia
	Azerbaijan		Bangladesh		Bhutan		Brunei Darussalam
	Cambodia		China		Cook Islands		Democratic People's Republic of Korea
	Fiji		French Polynesia		Guam		Hong Kong, China
	India		Indonesia		Islamic Republic of Iran		Japan
	Kazakhstan		Kiribati		Kyrgyzstan		Lao People's Democratic Republic
	Macao, China		Malaysia		Maldives		Marshall Islands
	Micronesia		Mongolia		Myanmar		Nauru
	Nepal		New Caledonia		New Zealand		Niue
	Northern Marianas		Pakistan		Palau		Papua New Guinea
	Philippines		Republic of Korea		Russian Federation		Samoa
	Singapore		Solomon Islands		Sri Lanka		Tajikistan
	Thailand		Timor-Leste		Tonga		Turkmenistan
	Tuvalu		Uzbekistan		Vanuatu		Viet Nam

## UN-GGIM-AP

### Vital Role in

(Relevant to geospatial information management)

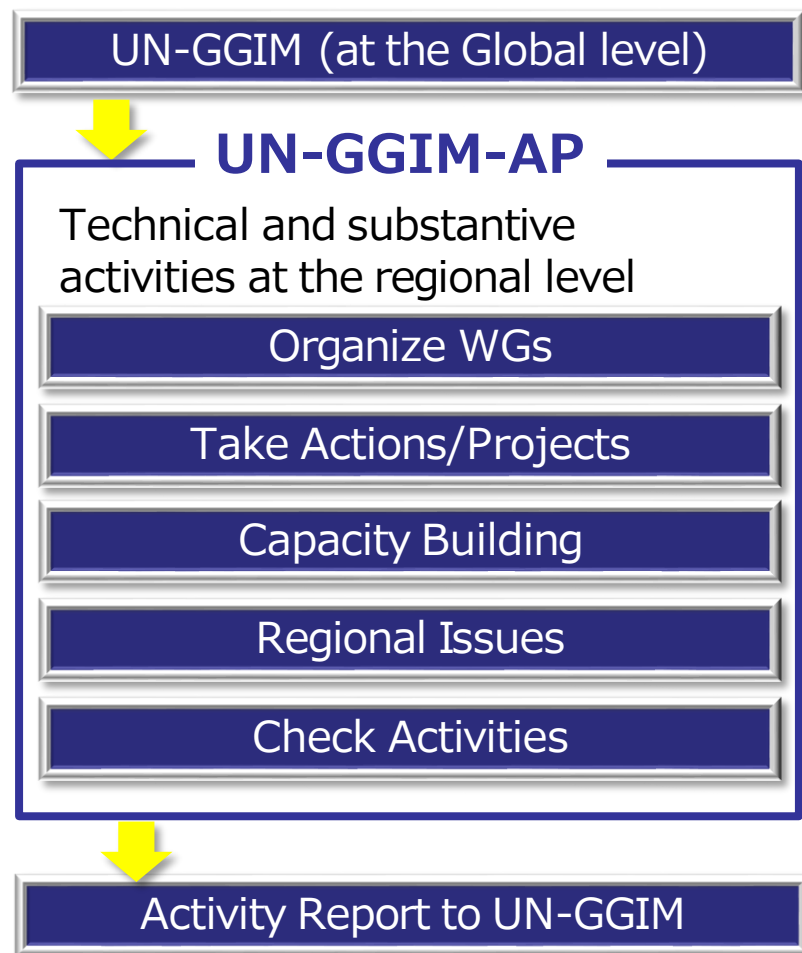
- Resolves regional issues
- Facilitate regional capacity building
- Promote globally the unique needs and interests of the region
- Contribute to the discussions in UN-GGIM

### WGs

- WG1: Geodetic Reference Frame
- WG2: Cadastre and Land Management
- TBD

(Reference)

ECOSOC Resolution entitled ***“Strengthening institutional arrangements on geospatial information management”***, E/RES/2016/27



# UN-GGIM-AP WG1 (Geodetic Reference Frame)

## Chair

Mr. Basara Miyahara, Japan

## Vice Chairs

Dr. John Dawson, Australia

Dr. Yamin Dang, China

Mr. Lt Gen Girish Kumar, India

Mr. Yi Sang Oh, Republic of Korea

Mrs. Dalkhaa Munkhtsetseg, Mongolia

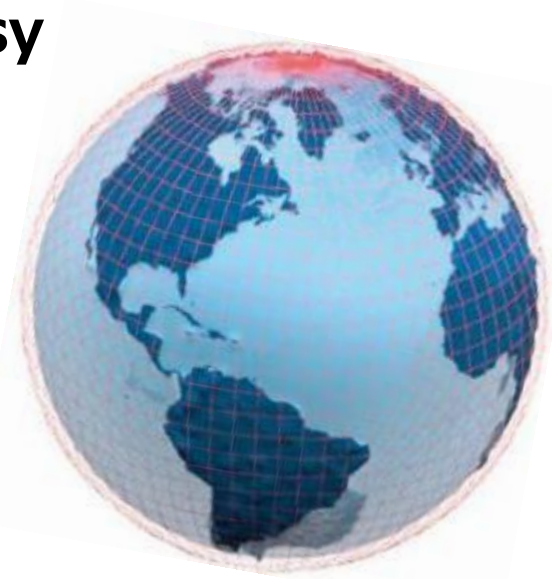
Mr. Graeme Blick, New Zealand



## UN-GGIM-AP WG1 – Focus 2019 -2021

**UN-GGIM Geodesy**

**Regional  
Reference Frame  
(APREF, APRGP)**



**Regional Height  
System Unification**

**Regional  
Capacity Building**

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## UN Global Geodetic Reference Frame



- An authoritative, reliable, high accuracy and global spatial referencing infrastructure
- Includes products, the infrastructure used to create it, and the data, analysis and product generation systems



## Global Geodetic Reference Frame



- Includes a sparse global infrastructure of core observatories



## Global Geodetic Reference Frame

- The GGRF is the foundation of virtually every aspect of the collection, management and use of national geospatial information and global monitoring of the Earth
- The GGRF underpins:
  - Earth and Climate science
  - Economic Development and Sustainability
  - Public Safety and Disaster Management
  - Land and Water Administration, and Environmental Management

## Global Geodetic Reference Frame

- Recognising its importance the UN General Assembly adopted resolution 69/266 in February 2015, entitled 'A Global Geodetic Reference Frame for Sustainable Development'

*United Nations General Assembly*



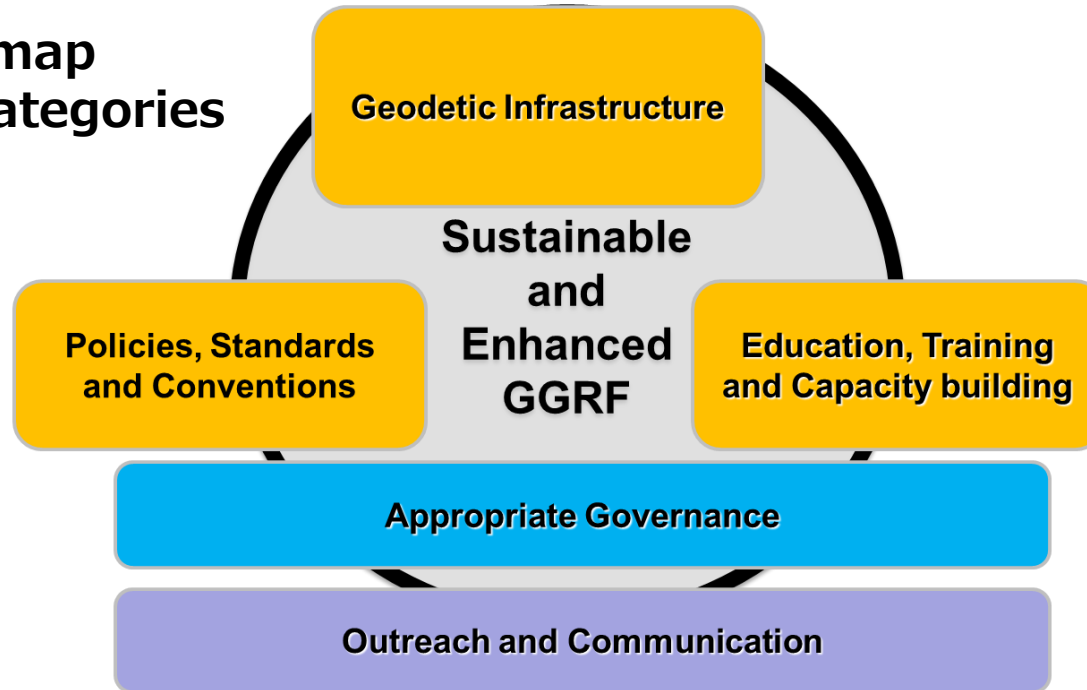
- The resolution called for UN GGIM to develop a Roadmap that addresses key elements relating to the development and sustainability of the GGRF



## VISION

An accurate, sustainable and accessible Global Geodetic Reference Frame to support science and society

## GGRF roadmap key issue categories



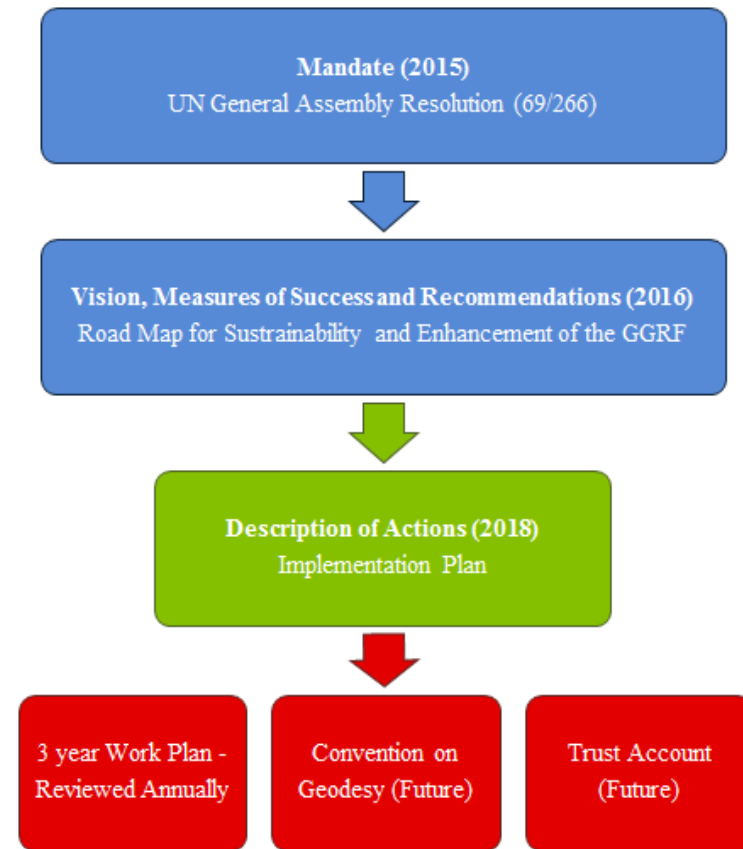
- August 2016: The Roadmap was endorsed by the UN-GGIM.
- It addresses each of the key areas of action in the UN GA Resolution.



## GGRF Roadmap Implementation Plan

- Aim: actions to achieve the recommendations in the Roadmap
- Five focus groups
  - ✓ Infrastructure
  - ✓ Data Sharing, Policies, Standards and Procedures
  - ✓ Education, Training and Capacity Building
  - ✓ Communications and Outreach
  - ✓ Governance
- Tabled and adopted in August 2018

<http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/Road-Map-Implementation-Plan.pdf>



The strategic progression of activities  
(GGRF Roadmap implementation plan)

## UN Sub-committee on Geodesy

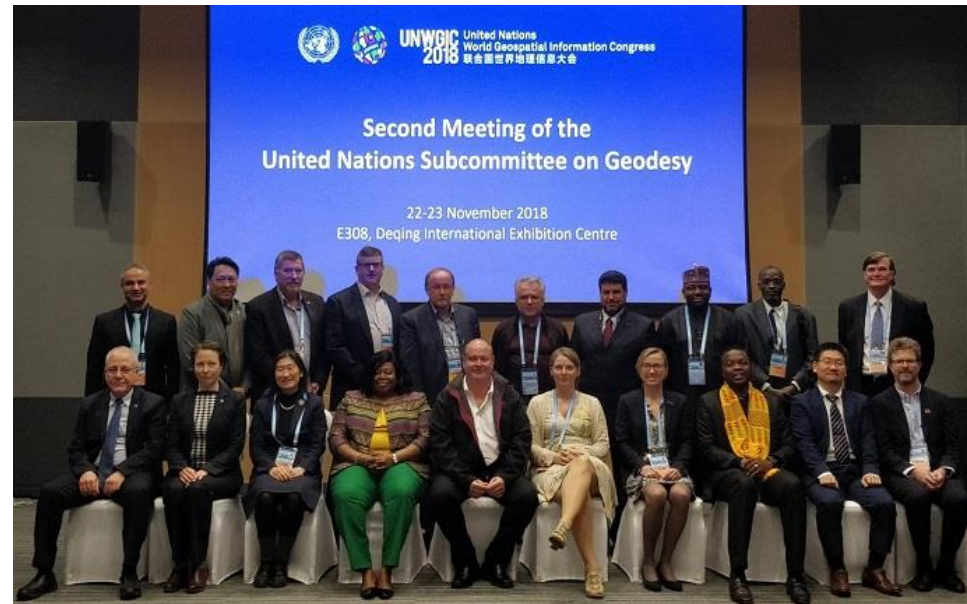
- August 2016: the UN-GGIM Committee of Experts decided to transition the **Global Geodetic Reference Frame (GGRF)** Working Group into a permanent UN-GGIM Subcommittee on Geodesy
- The Subcommittee membership includes:
  - 40 voting members nominated by the regional UN-GGIM Executives, ensuring geographically distributed membership
  - Associate Members (non-voting) including IAG, FIG and other Member States not included in the 40 above
  - Observers (non-voting)

## UN Sub-committee on Geodesy

- While 40 countries are the official members, **all other Member States are invited and encouraged to participate in committee activities as associate members or observers.**
- Five WGs
  - ✓ Infrastructure
  - ✓ Data sharing, Policies, Standards and Procedures
  - ✓ Education, Training and Capacity Building
  - ✓ Communications and Outreach
  - ✓ Governance

## UN Sub-committee on Geodesy

- The 1st inaugural meeting of the Subcommittee on Geodesy was held in Mexco City, November 2017
- The 2nd meeting was held in Deqing, China, November 2018 in conjunction with UNWGIC 2018.





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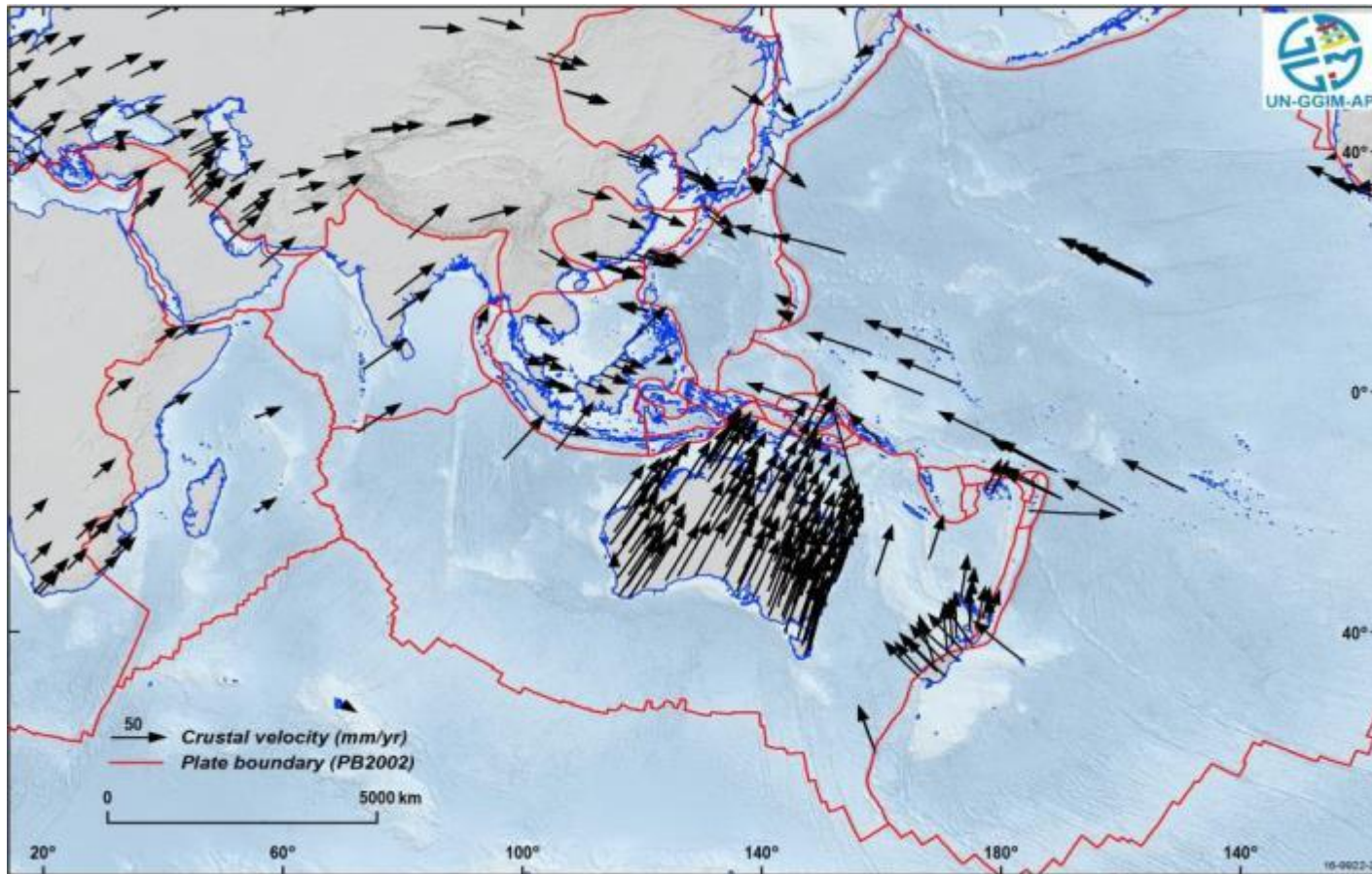
**Regional Height  
System Unification**

**Regional  
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## Asia Pacific Reference Frame (APREF)

- Regional geodetic reference frame
- Realized by continuous GNSS observation of over 600 stations
- 28 countries
- Densify ITRF and improve access to ITRF
- Data are routinely processed by three Analysis Centres and station coordinates made available publically
- Analysis aligned the IGS14 reference frame, the IGS realization of ITRF2014
- A report on all APREF results is under preparation by Australia (Dr. Guorong Hu & Dr. John Dawson)

# Asia Pacific Reference Frame (APREF)



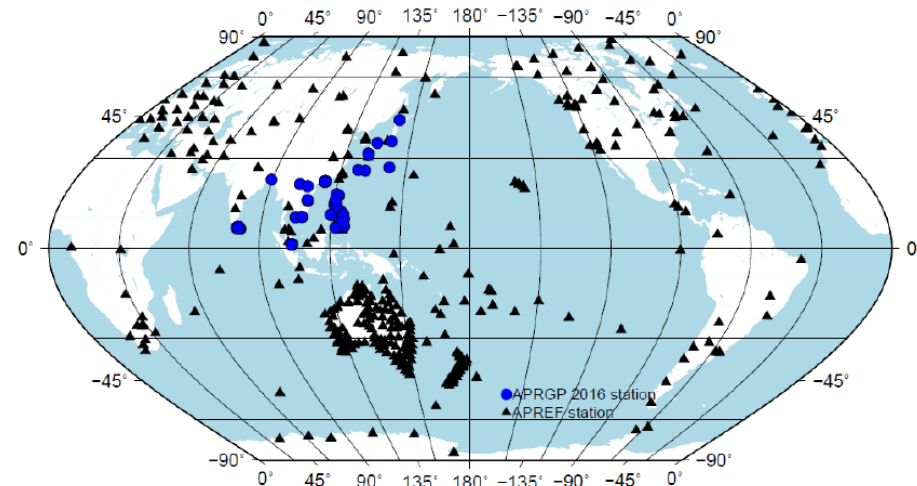
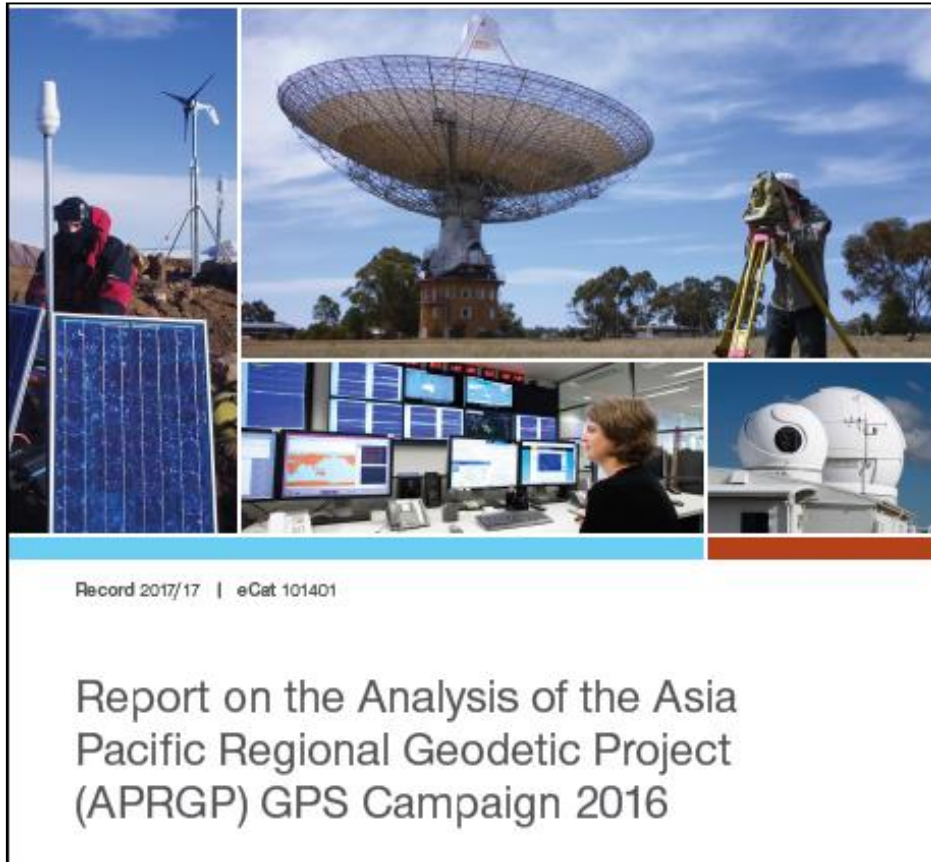


## Asia Pacific Regional Geodetic Project (APRGP)

- Annual GNSS campaign starting in 1997
  - Densify ITRF and improve access to ITRF
  - Data are analyzed by Geoscience Australia
  - Analysis report is distributed each year
  - APRGP 2016 were collected from eight member countries, including **Bangladesh, Hong Kong (China), Japan, Malaysia, Philippines, Singapore, Sri Lanka and Vietnam**
  - APRGP2018: 16 to 22 September 2018
  - APGRP2019: TBD
- Call for participation will be from UN-GGIM-AP Secretariat



# Asia Pacific Regional Geodetic Project 2016



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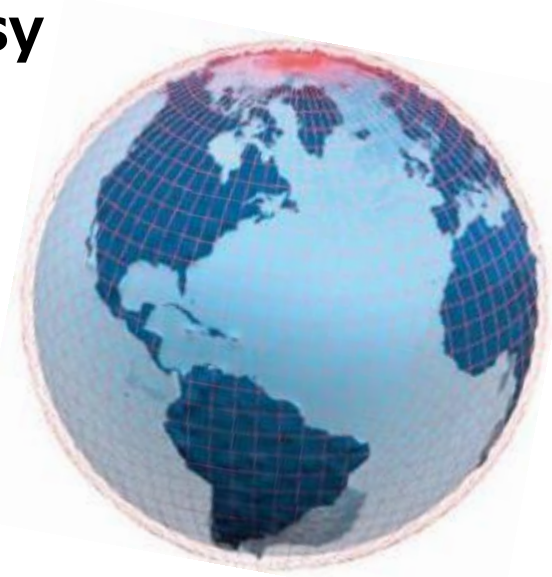
## Regional Height System Unification (APRHSU)

- Questionnaires on current height system of each member countries
- Analyze the answers to understand current situation
- Planning next actions based on analysis
  - Ex. Evaluate difference in height system among AP counties
  - Compute averaged height reference surface among AP countries
- Further capacity building for vertical reference frame

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## Capacity Building Workshops

- Hosting and participating in geodetic capacity building workshops in AP in conjunction with FIG, IAG and other organizations
- Pacific Geospatial and Surveying Council (PGSC)
- Technical seminar of the UN-GGIM-AP, FIG, IAG, Japan Federation of Surveyors, International Committee for GNSS (ICG), Geospatial Information Authority of Japan (GSI) on geodetic reference frame, July, 2017, Kobe, Japan

## Capacity Building Workshops

- A joint workshop of the GSI, FIG and UN-GGIM-AP entitled “Regional Challenges, Benefits and Opportunities of Exchanging Geodetic Data” Kumamoto, Japan in 2017



## Capacity Building Workshops Plan

- Special sessions on “Developing Capacity for Geodetic Infrastructure and Systems” at FIG WW 2019
  - ✓ **TS06I 25 April, 11:00–12:30 249bc ("SOUTH ROOM")**
  - ✓ **TS07I 25 April, 14:00–15:30 249bc ("SOUTH ROOM")**



- Workshop at UN-GGIM-AP 7<sup>th</sup> Plenary at Canberra Nov 2019 (TBD)



# Summary

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