

# FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

Presented by the FIG Working Week 2019,  
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life  
and Environmental Resilience"



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## UN-GGIM - Organizational approaches to a smarter life and environmental resilience

Gary Johnston, Andy Barnicoat, John Dawson  
Geoscience Australia

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- UN-GGIM addressing policy challenges at the Global, Regional and National levels
- Three tiers of organizational activity:
  - UN GGIM Committee of Experts
  - UN GGIM expert / working groups + thematic groups
  - UN GGIM Regional Entities
- Case Study – Global Geodetic Reference Frame

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# Policy Challenges

## 2030 Agenda: Goals, targets, indicators... and data!!



“By 2020, enhance capacity-building support to developing countries, including for LDCs and SIDS, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics...”



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## The *Sendai Framework* for Disaster Risk Reduction 2015-2030

### • Four Priorities for Action

- Priority 1. Understanding disaster risk (hazard, vulnerability, exposure)
- Priority 2. Strengthening disaster risk governance to manage disaster risk
- Priority 3. Investing in disaster risk reduction for resilience
- Priority 4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

Geospatial has an role to play in disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation

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## Policy Challenges

- Digital Economy – spatial as a facilitator
- The future of work – the role of automation
- Environmental protection – protecting our planet for future generations
- Social licence – approval to undertake business
- Smart Cities – planning for our future
- National Security – keeping communities safe

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# CSIRO Mega Trends report

- **More from less** - The earth has limited supplies of natural mineral, energy, water and food resources essential for human survival and maintaining lifestyles.
- **Going, going ... Gone** - Many of the world's natural habitats, plant species and animal species are in decline or at risk of extinction.
- **The silk highway** - Coming decades will see the world economy shift from west to east and north to south.
- **Forever young** - The ageing population is an asset. Many countries that make up the Organisation for Economic Cooperation and Development (OECD) have an ageing population.
- **Virtually here** – Imagine a world of increased connectivity where individuals, communities, governments and businesses are immersed into the virtual world to a much greater extent than ever before.
- **Great expectations** - This is a consumer, societal, demographic and cultural megatrend. It explores the rising demand for experiences over products and the rising importance of social relationships.



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## Who are UN GGIM?

- Global Geospatial Information Management Committee of Experts
- Part of the Statistics Division, UN Department of Economic & Social Affairs
- The apex intergovernmental mechanism for making joint decisions and setting directions with regard to the production, availability and use of geospatial information within national, regional and global policy frameworks
- Led by UN member States, UN-GGIM aims to address global challenges regarding the use of geospatial information, and to serve as a body for global policymaking in the field of geospatial information management

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# UN-GGIM: Aims and objectives

*Positioning geospatial information to address global challenges*



Established in 2011, reports annually to ECOSOC, an intergovernmental United Nations Committee of Experts to:

- Discuss, enhance and coordinate Global Geospatial Information Management activities by involving Member States at the highest level.
- Work with Governments to make joint decisions and set directions on the use of geospatial information within national and global policy frameworks.
- Address global issues and contribute collective knowledge as a community with shared interests and concerns.
- Develop effective strategies to build geospatial capacity in developing countries.
- To make accurate, reliable and authoritative geospatial information readily available to support national, regional and global development.



## United Nations Statistics Division

### Substantive Programme

Environment Statistics and Geospatial Information Management Branch

Data Development and Outreach Branch

Demographic and Social Statistics Branch

Data Innovation Branch

Economic Statistics Branch

### UNSD

United Nations Statistical Commission

United Nations Committee of Experts on Global Geospatial Information Management

United Nations Group of Experts on Geographical Names (UN-GEGN)

## United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)

### UN-GGIM Committee of Experts

Co Chairs:

Mr. Li Pengde (China)

Ms. Dorine Burmanje (Netherlands)

Mr. Fernand Isseri (Cameroon)

Rapporteur:

Macarena Pérez García (Chile)

### Regional Committees

UN-GGIM Americas

UN-GGIM Asia Pacific

UN-GGIM Arab States

UN-GGIM Africa

UN-GGIM Europe

### Subcommittees

Subcommittee on Geodesy

### Working Groups

Geospatial Information and Services for Disasters

Global Fundamental Geospatial Data Themes

Legal and Policy Frameworks for Geospatial Information Management

Marine Geospatial Information

Trends in National Institutional Arrangements in Geospatial Information Management

Development of Shared Principles for the Management of Geospatial Information

### Thematic Groups

Geospatial Societies

Academic Network

Private Sector Network

UN System Network (under formation)

Joint Group on Standards (IHO, ISO, OGC)

Reports to Statistical Commission and UN-GGIM

Reports to Statistical Commission via the Inter-Agency and Expert Group on SDG Indicators and UN-GGIM



This diagram presents an overview of the composition of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and its regional entities. It is a constantly living document, #/when amendments are needed, please email mark.liffe@un.org.

Drafted: 18<sup>th</sup> April 2019



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## Thematic Groups

- Academic Network
- Private Sector Network
- Geospatial Societies
  - IEEE Geoscience and Remote Sensing Society (GRSS)
  - International Association of Geodesy (IAG)
  - International Cartographic Association (ICA)
  - International Federation of Surveyors (FIG)
  - International Geographical Union (IGU)
  - International Map Industry Association (IMIA)
  - International Society of Photogrammetry and Remote Sensing (ISPRS)

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## Regional Committees

- Facilitate regional development and discussion, and formally feed into the Committee of Experts
- UN GGIM Asia-Pacific
  - President: Australia
  - Vice Presidents: China, Japan, Mongolia
  - Executive Board: Fiji, India, Indonesia, Iran, Republic of Korea, Malaysia, Singapore, Kingdom of Tonga
- UN GGIM Americas
- UN GGIM Arab States
- UN GGIM Europe
- UN GGIM Africa

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UN GGIM



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# 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



# UN-GGIM-Asia Pacific

## **Vital Role in**

- Resolving regional issues relating to geospatial information management
- Facilitating regional capacity building
- Promoting globally the unique needs and interests of the Asia Pacific region
- Contributing to the discussions in UN-GGIM Committee of Experts
- Undertake a targeted work program through working groups

## **Current WGs**

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



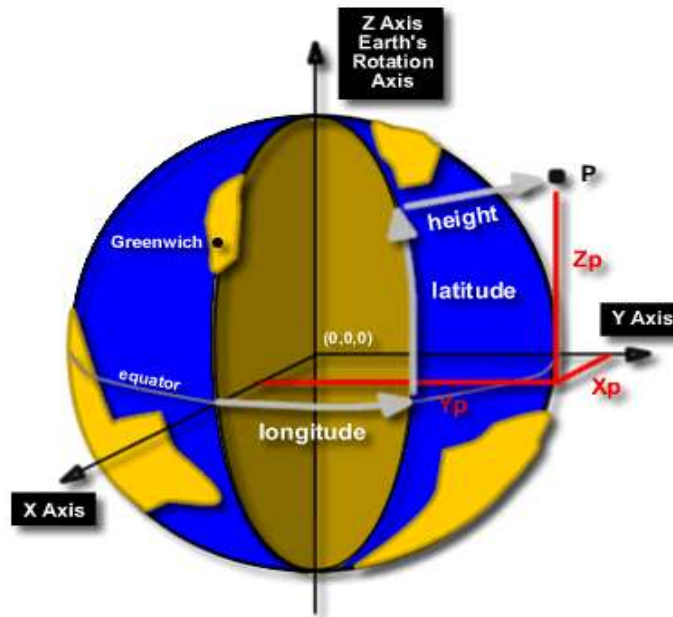
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## Case Study Global Geodetic Reference Frame



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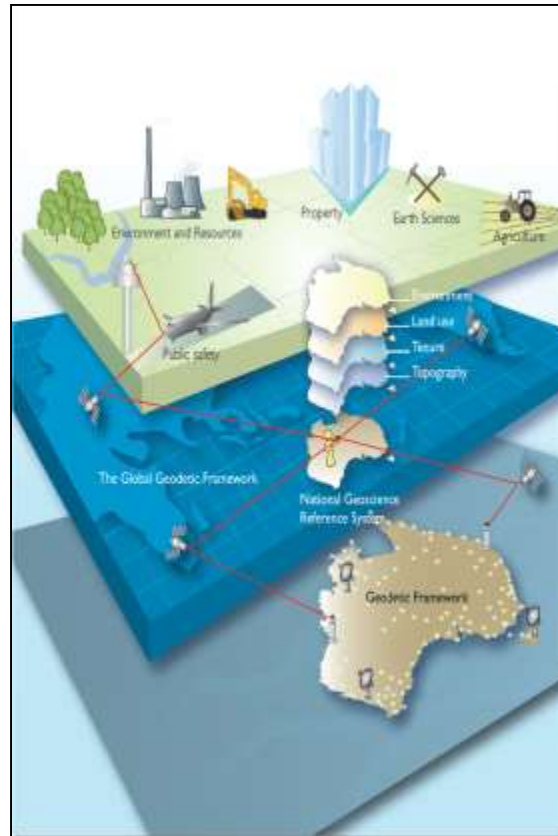


# Global Geodetic Reference Frame

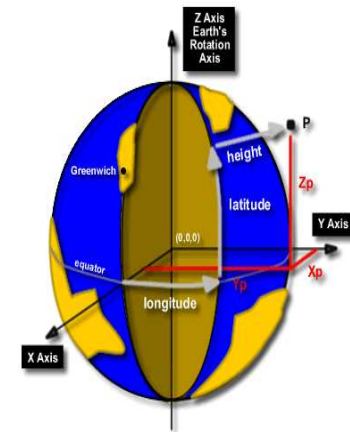
## Earth System Science



## Location Information



## Societal Applications







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## Why is it important ?

- 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

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## What did we do

- UN-GGIM recognised the growing demand for more precise positioning services, the economic importance of a global geodetic reference frame and the need to improve the global cooperation within geodesy
- The UN-GGIM decided in July 2013 to formulate and facilitate a resolution for a global geodetic reference frame (GGRF)
- The UN-GGIM decided in August 2014 to endorse the resolution drafted by the Working Group on the GGRF through decision 4/101 and recommended it for adoption by ECOSOC and for subsequent referral to the General Assembly, where it was later (February 2015) adopted as a UN General Assembly Resolution

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# 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



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## GGRF Resolution: Key Objectives

- Develop a global geodetic roadmap for the GGRF
- Global cooperation in providing technical assistance in geodesy for those countries in need to ensure the development, sustainability and advancement of a GGRF
- Implement open geodetic data sharing
- Improve and maintain national geodetic infrastructure
- Enhanced multilateral cooperation that addresses infrastructure gaps and duplications globally
- Improved Outreach to make the GGRF more visible to society

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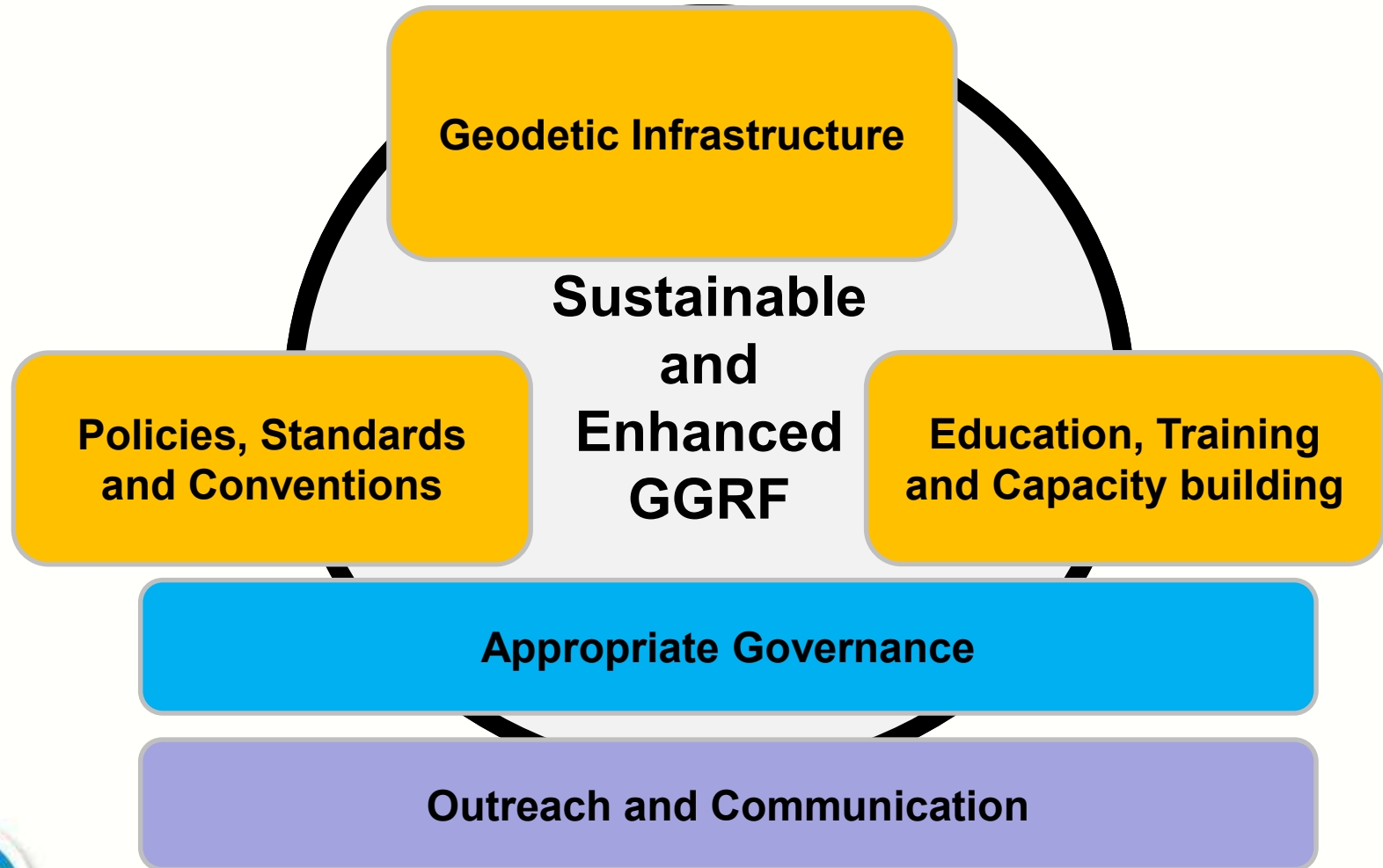
# Road Map for the GGRF

- Recognises two components of the GGRF issue:
  - 1) The sustainability and further enhancement of the global geodetic reference frame
  - 2) Ease of access to the GGRF
- Describes the current situation across the five focus areas
- Describes measures of success for each of the focus areas
- Provide Recommendations for future action
- Calls for an Implementation plan to be developed



# VISION

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



# Implementation Plan

- Implementation plan further develops the focus groups
- Reviews the Measures of Success and Recommendations which were included in the Road Map
- Develops action for each of the recommendations detailed in the Road Map
- Provides additional background and reference material in the annexes

## Highlights

- Compilation of geodetic standards
- Case Studies of data sharing policies
- Questionnaire on Reference Frame Competency as input to planning for education, Training and Capacity Building
- Plan to create of a Geospatial Communication network





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## UN GGIM Sub-Committee on Geodesy

- Work Continues on the five focus areas
- Beginning to develop a GGRF thematic plan using the IGIF as a resource for member states wanting to develop National Implementation plans
- Continuing to work closely with IAG and FIG across all areas
- Developing a concept for improved governance, including mechanisms for enhance coordination and capacity building

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## UN GGIM AP WG 1 on Geodesy

- Regional Geodetic Committee more focused on solving regional issues
- Successfully providing operational product generation based on open data sharing
- Allows for a forum for cross border discussions on sharing and cooperation
- Current work program includes:
  - Regional Reference Frame projects (APREF & APRGP)
  - Regional Height System Unification
  - Regionally focused capacity building

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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)

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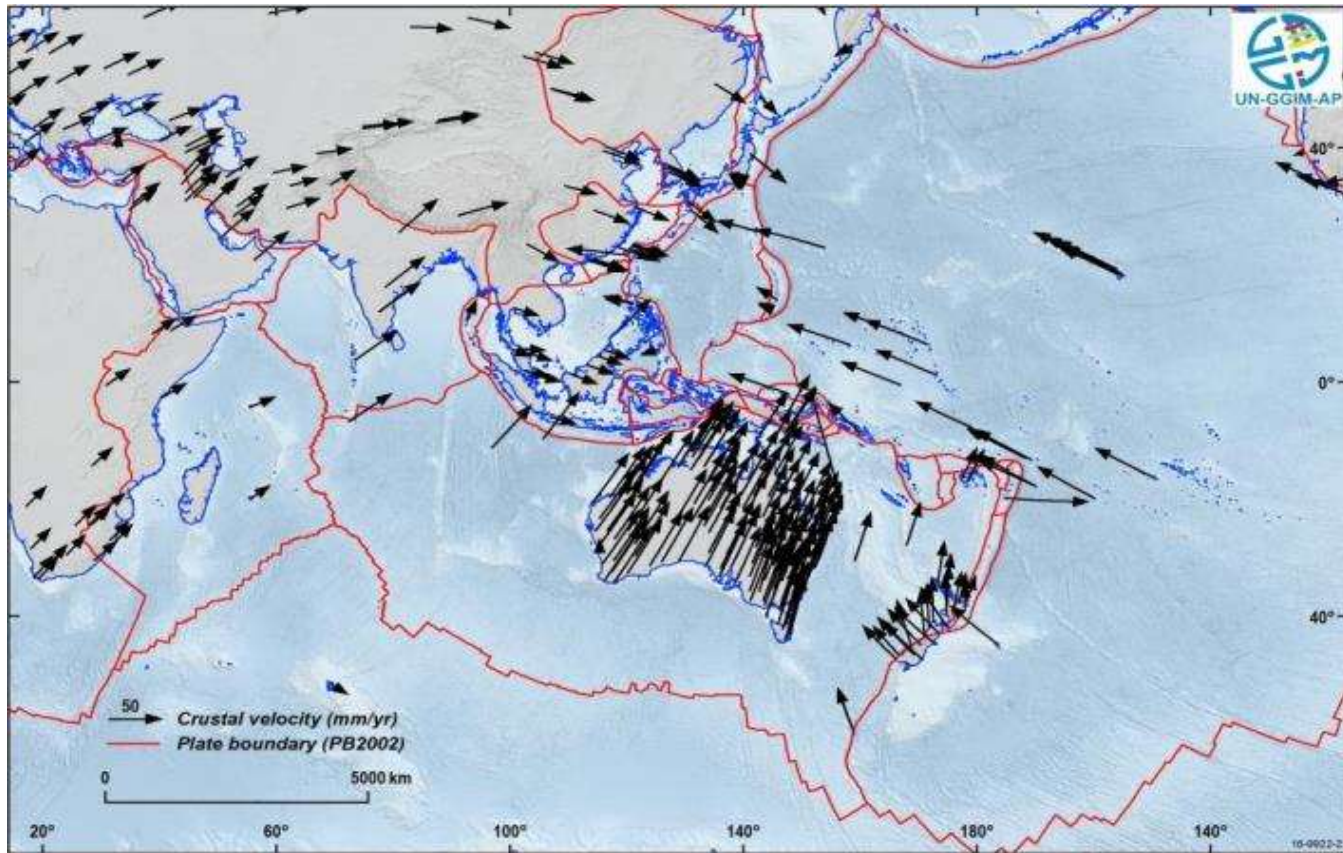
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## Asia Pacific Reference Frame (APREF)



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## 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

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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 (IGC), Geospatial Information Authority of Japan (GSI) on geodetic reference frame, July, 2017, Kobe, Japan

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## Conclusion

- Geospatial information is key to supporting many current and emerging policy challenges
- UN GGIM is functioning very effectively as an intergovernmental mechanism for the coordination of Geospatial Information Management
- The Committee of experts provides a Global forum to address policy issues of global nature, with regional issues more effectively managed in the regional entities
- The GGRF case study demonstrates the different roles each organisational element of UN GGIM plays in resolving issues

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