



**UN-GGIM-AP**

REGIONAL COMMITTEE OF  
UNITED NATIONS  
GLOBAL GEOSPATIAL  
INFORMATION MANAGEMENT  
FOR ASIA & THE PACIFIC

# **UN-GGIM-AP WG1 Report - Geodetic Reference Frame –**

**Basara Miyahara**  
**Chair, UN-GGIM-AP WG on Geodetic Reference Frame**

**UN-GGIM-AP Executive Board Meeting**  
**Deqing, China**  
**June 3, 2025**

# UN-GGIM-AP Working Group 1

## - Geodetic reference frame -

### Chair

Mr. Basara Miyahara, Japan

### Vice Chairs

Dr. Guorong Hu, Australia

Dr. Yamin Dang, China

Mr. Asakaia Tabu, Fiji

Mr. Neeraj Gurjar, India

Mr. Sidik Tri Wibowo, Indonesia

Mr. Seyed Abdoreza Saadat Mirghadim, Islamic Republic of Iran

Mr. Ahmad Sanusi bin Che Cob, Malaysia

Ms. Dalkhaa Munkhtsetse, Mongolia

Dr. Nic Donnely, New Zealand

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### Members

Mr. Paulino Dacruz, Timor-Leste



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# UN-GGIM-AP Working Group 1 – Focus 2022 - 2025

**UN-GGIM  
Geodesy**

**Height System  
Modernization**



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

**Regional  
Capacity  
Building**



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# 3<sup>rd</sup> Meeting of the UN-GGCE International Advisory Committee

## 5<sup>th</sup> Plenary Meeting of the Subcommittee on Geodesy

- 10-14 March 2025 @ UN Campus Bonn
- Member States, IAG, FIG .. (Australia, China, Fiji, India, Japan, Mongolia, Singapore, New Zealand, Republic of Korea)
- ✓ Governance to make global geodesy supply chain more sustainable
  - Multilateral Memorandum of Understanding on Strengthening the Global Geodesy Supply Chain among UN-GGCE and 38 countries/organizations
- ✓ Evidences to show the value of geodesy to policy makers



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# UN-GGCE Geodesy Capacity Development Workshop

- Series of Geodesy Capacity Development Workshops organized by the UN-GGCE
- How to transition National Systems to a Modern Geospatial Reference System

## **“Geodesy Capacity Development Workshop for Asia-Pacific on Transitioning to a Modern Geospatial Reference System”**

- For Asia Pacific, **30 June - 4 July 2025, Thailand, Bangkok**  
For Europe, 17-21 February 2025, Bonn Germany  
For Africa, 19-23 May 2025, Nairobi, Kenya
- Topics
  - ✓ Geodetic techniques for Modern Geospatial Reference Systems
  - ✓ Capacity to explain the value of geodesy to policy makers
- Provide opportunities of **Interactive Sessions, Expert Discussions, Technical Assistance and Networking events**



Concept Note

<[https://ggim.un.org/UNGGCE/documents/2-ConceptNote\\_Asia%20Pacifc.pdf](https://ggim.un.org/UNGGCE/documents/2-ConceptNote_Asia%20Pacifc.pdf)>



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# Asia Pacific Reference Frame (APREF)

- Joint initiative between UN-GGIM-AP and IAG
  - Regional geodetic reference frame
  - Realized by continuous GNSS observation of over **1,000 stations in 28 countries**
  - Densify ITRF and improve access to ITRF
  - Data are routinely processed by 3 Local Analysis Centres\*
  - Station coordinates and long-term velocities made openly available
- 
- APREF solutions have been transitioned to **ITRF2020/IGB20** since 02 Feb. 2025 (GPS week 2352)
  - Report on APREF available at  
<https://www.un-ggim-ap.org/wg/working-group-1-geodetic-reference-frame>

\* Geoscience Australia  
Office of Surveyor-General Victoria, Australia  
Institute of Geodesy and Geophysics, Chinese Academy of Sciences  
Geospatial Information Authority of Japan (under evaluation)



APREF webpage



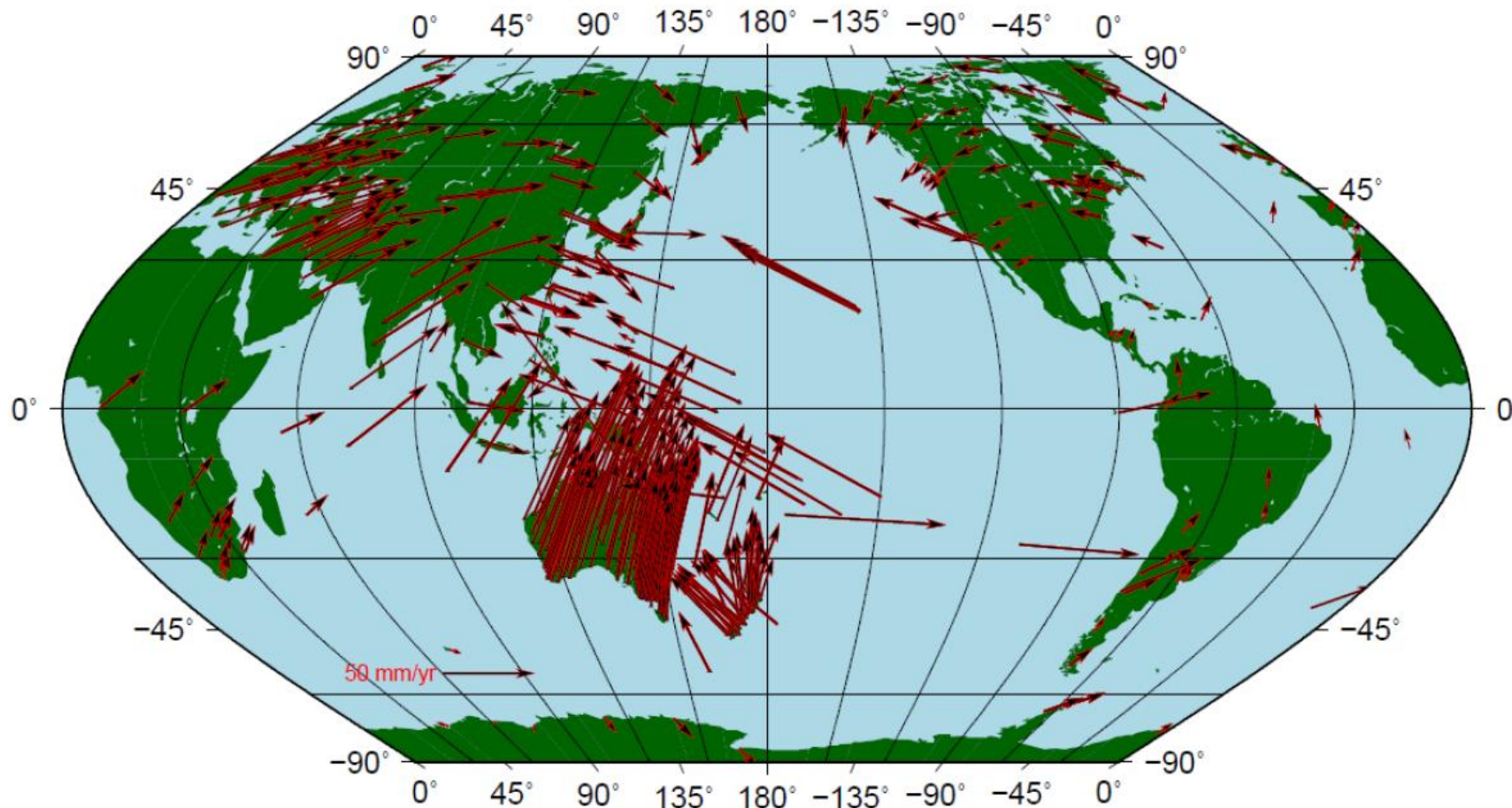
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# Asia Pacific Reference Frame (APREF)



**Figure 1.** The distribution of APREF CORS network along with the IGS core stations. The arrows represent the GPS-derived velocity field.

G. Hu, M. Moore and J. Dawson (2019): Report on the Asia Pacific Reference Frame (APREF) Project



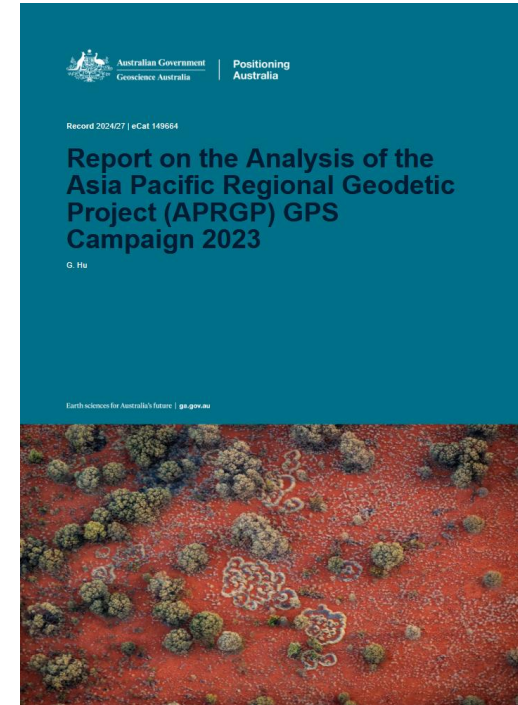
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# Asia Pacific Regional Geodetic Project (APRGP)

- Annual GNSS campaign
  - Densify ITRF and improve access to ITRF
  - Data are analysed by Geoscience Australia
  - Analysis report is distributed each year
- 
- **APRGP2023:** 10 to 16 September 2023
  - Processed by Guorong Hu, Geoscience Australia
  - Participation from Brunei, India, Korea (Republic of), Laos, Mongolia, Philippines, Singapore, Tonga and Vietnam
  - Final report is available at UN-GGIM-AP website
- 
- **APRGP2024:** 8 to 14 September 2024
  - Under processing by Guorong Hu, Geoscience Australia
- 
- **APRGP2025:** Planned in later this year (TBD)



APRGP2023



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# Asia Pacific Regional Geodetic Project (APRGP)

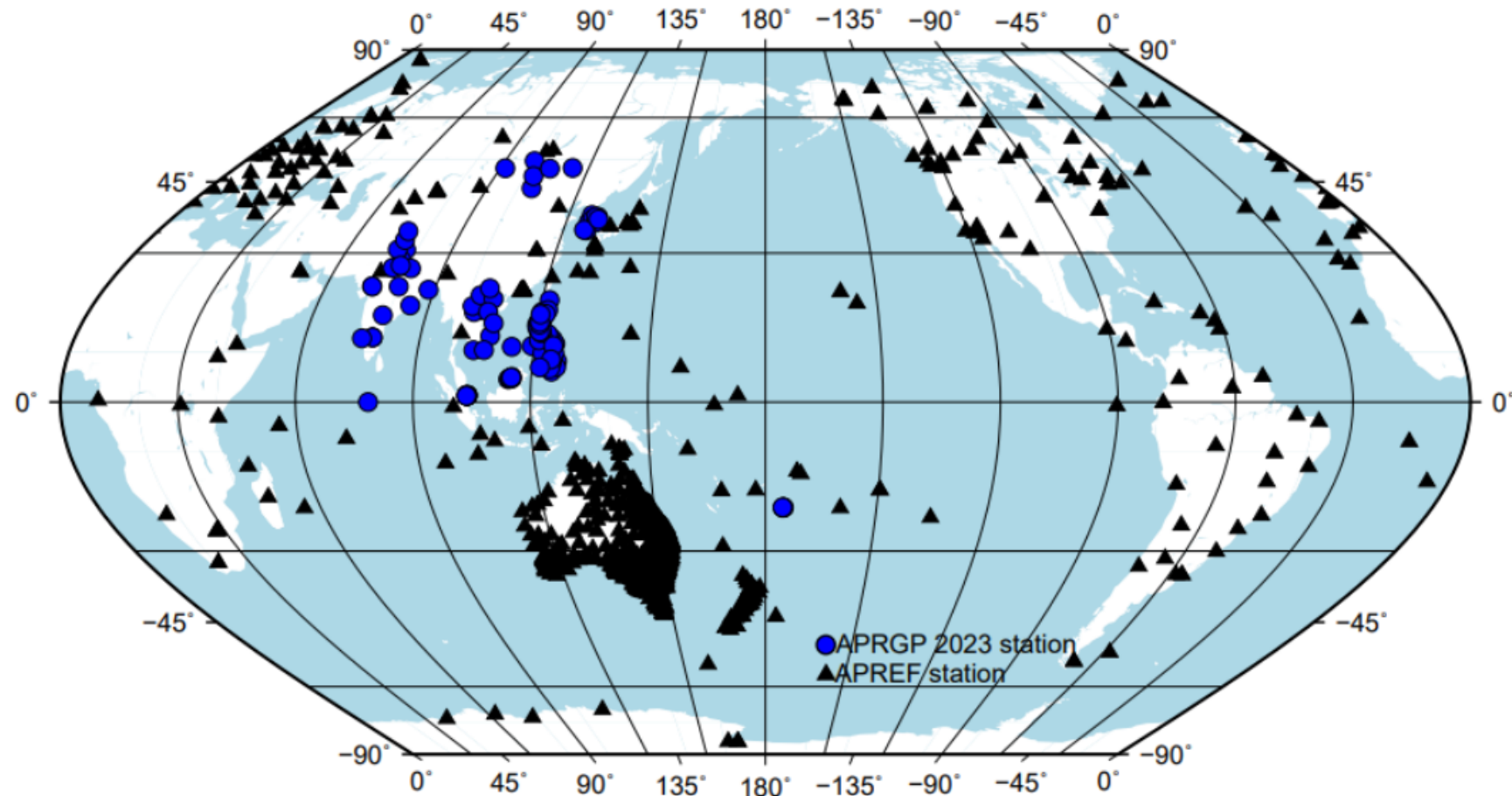


Figure 1 APRGP stations in the APRGP 2023 GPS campaign analysis along with the APREF stations and IGS stations, blue circles are APRGP campaign sites, and black triangles are APREF stations.

G. Hu: Report on the Analysis of the Asia Pacific Regional Geodetic Project (APRGP) GPS Campaign 2023



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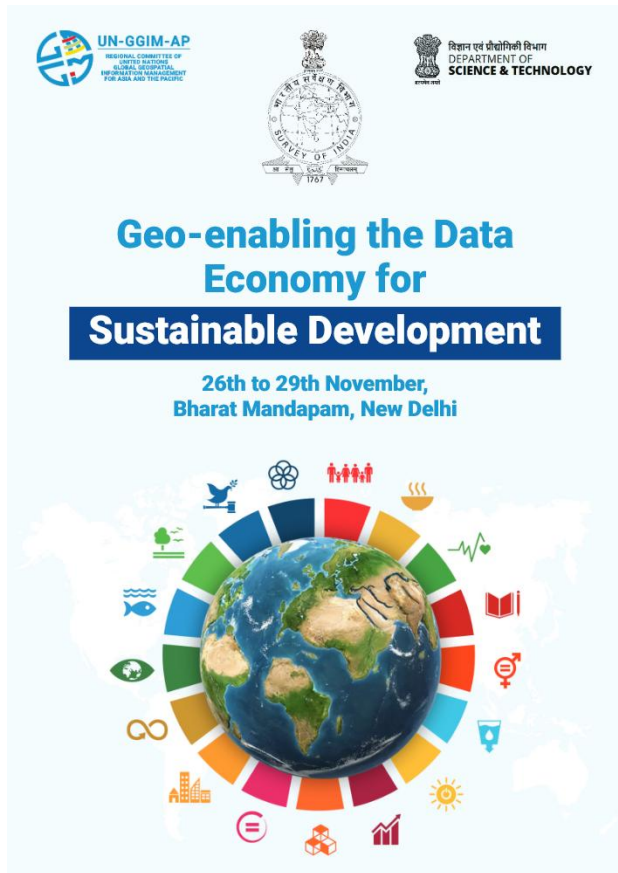
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# UN-GGIM-AP 13<sup>th</sup> Plenary – New Delhi, India



- Capacity Development Workshop on Sustainable Operation of GNSS CORS Network
- UN-GGIM-AP 13<sup>th</sup> Plenary Meeting
  - Annual Session of the UN-GGIM-AP Working Group on Geodetic Reference Frame



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# Capacity Development Workshop on Sustainable Operation of GNSS CORS Network

- Half day workshop on November 27, 2024
- Co-organized by UN-GGIM-AP/IAG/FIG/SoI
- Approximately 300 participants from 40 countries



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# Capacity Development Workshop on Sustainable Operation of GNSS CORS Network

## Presentations

- Country cases (Australia, India, Japan, New Zealand, Tonga)
- Support to GNSS CORS capacity development by international bodies (APREF, IAG, IGS, FIG)
- 1<sup>st</sup> Joint Development Plan for Global Geodesy (UN-GGCE)



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# Reference Frame in Practice Seminar in Brisbane, Australia

- April 5-6, 2025 in conjunction with FIG Working Week 2025 / Locate 25
- Co-organized by FIG/IAG/UN-GGIM-AP
- Reference Frame theory, best practices and challenges in countries especially in the Pacific
- Sessions
  - ✓ Session 1: International Geodesy Initiatives (ICG, UN-GGIM-AP, IGS, UN-GGCE)
  - ✓ Session 2: Introduction to Geodetic Reference Frame Theory (IAG, Univ. Otago, LINZ)
  - ✓ Session 3: Reference Frames in Asia-Pacific Region (Australia, NZ, Japan, Nepal, Trimble)
  - ✓ Session 4: Reference Frames in the Pacific (SPC, PNG, Fiji, Cook Islands, Tonga..)



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# Geodesy Capacity Development opportunities in 2025

- UN-GGCE Geodesy Capacity Development Workshop for Asia-Pacific on Transitioning to a Modern Geospatial Reference System
  - ✓ 30 June - 4 July 2025, Thailand, Bangkok
- Geodesy Side Event in conjunction with UN-GGIM-AP 14<sup>th</sup> Plenary Meeting
  - ✓ Later 2025 in Republic of Korea (TBD)
  - ✓ Topics and Focus will be discussed with the host (NGII)
- UN-GGIM-AP WG1 annual session in UN-GGIM-AP 14<sup>th</sup> Plenary Meeting
  - ✓ Annual reports from the member countries
  - ✓ Discussion on issues/challenges and possible activities
- Any opportunities for geodetic capacity development in the region?



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**THANK YOU!**

