

Report of UN-GGIM-AP WG1 - Geodetic Reference Frame

UN-GGIM-AP Executive Board Meeting
Singapore
March 13, 2023



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United Nations Initiative on
Global Geospatial Information Management

"Positioning geospatial information to address global challenges"

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UN-GGIM-AP Working Group 1 - Geodetic reference frame -

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Mr. Graeme Blick, New Zealand

Mr. Jongsin Lee, Republic of Korea



UN-GGIM-AP Working Group 1 – Focus 2023 - 2025

**UN-GGIM
Geodesy**



**International
Height Reference
Frame (IHRF)**

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

**Regional
Capacity
Building**



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UN-GGIM GGRF Subcommittee on Geodesy

- Established in August 2017
- Working on sustaining the UN General Assembly Resolution, the **Global Geodetic Reference Frame (GGRF) for sustainable development**
- Co-chairs: Nick Brown (Australia)
- Working Groups:
 - Geodetic Infrastructure (Zuheir Altamimi, France)
 - Policy, Standard and Convention (Nick Brown, Australia)
 - Education, Training Capacity Building (Dan Roman, USA)
 - Outreach and Communication (Anne Jørgensen, Norway)
 - Governance (Laila Løvhøiden, Norway)



UN-GGIM GGRF Subcommittee on Geodesy

- The 3rd meeting in Bonn, Germany on 29 - 31 March 2023
 - ✓ Discussion on Revision of Terms of Reference (ToR) and members of SCoG
 - ✓ Strategic Plan and Plan of Action of SCoG
 - Engagement and coordination with regional reference frames and regional committees of UN-GGIM
- In conjunction with Opening Ceremony of the United Nations **Global Geodetic Centre of Excellence (GGCE)** on 29 March 2023
- Virtual meeting on 21 March 2023
- Informal face-to-face meeting in NY on August 2023
- Nomination of SCoG members from UN-GGIM-AP
 - ✓ Australia, China, India, Indonesia, Japan, Russian Federation, Fiji, New Zealand, Mongolia, Republic of Korea



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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 Local Analysis Centres*
 - Station coordinates made available publically
-
- 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



Asia Pacific Reference Frame (APREF)

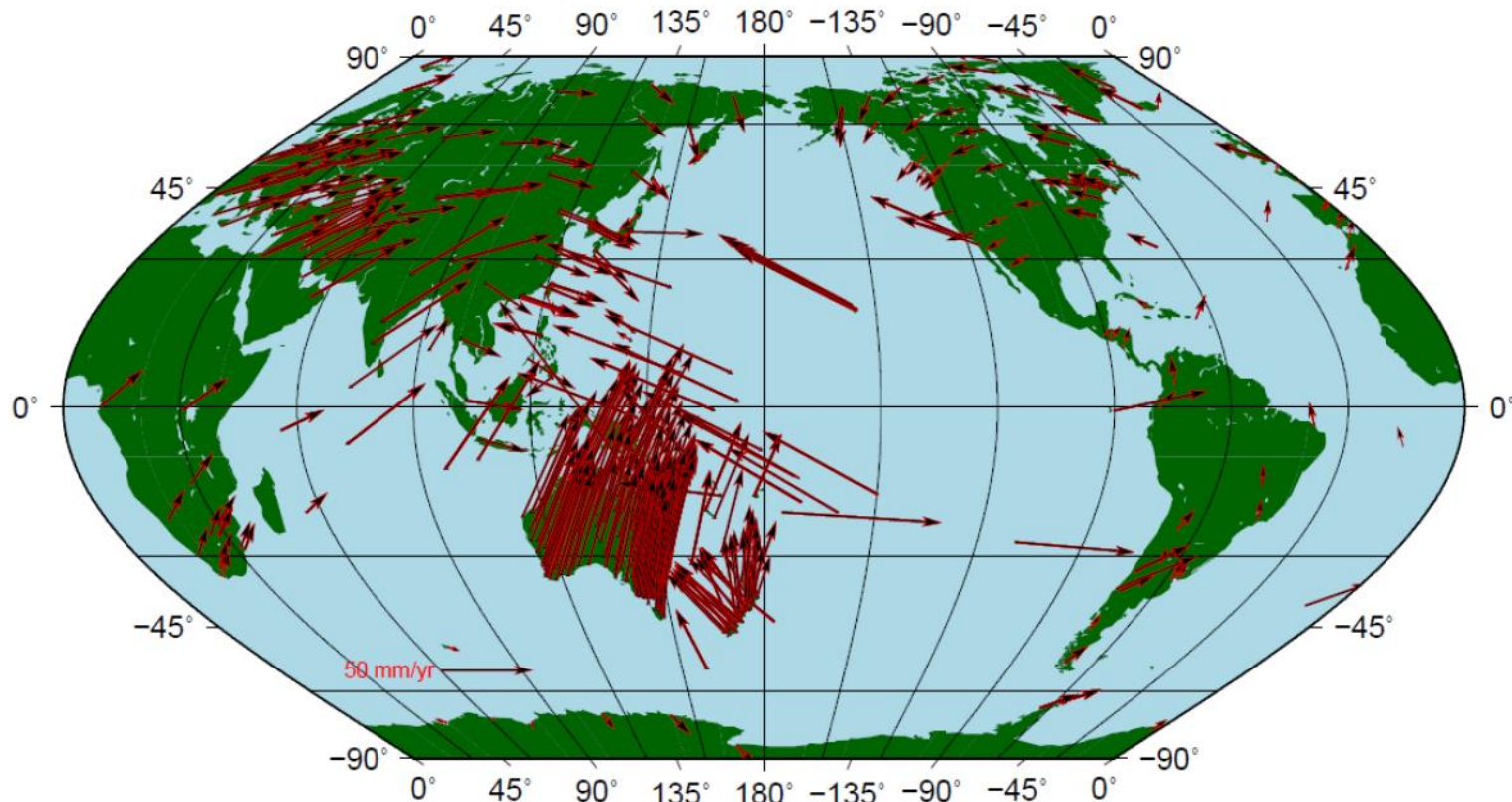


Figure 1. The distribution of APREF CORS network along with the IGS core stations. The arrows represent the GPS-derived velocity field.

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

- **APRGP 2022:** 11 to 18 September 2022
- Under processing by Guorong Hu, Geoscience Australia
- Final report will be available at UN-GGIM-AP website
<https://www.un-ggim-ap.org/wg/working-group-1-geodetic-reference-frame>

- **APRGP2023:** TBD



Asia Pacific Regional Geodetic Project 2021

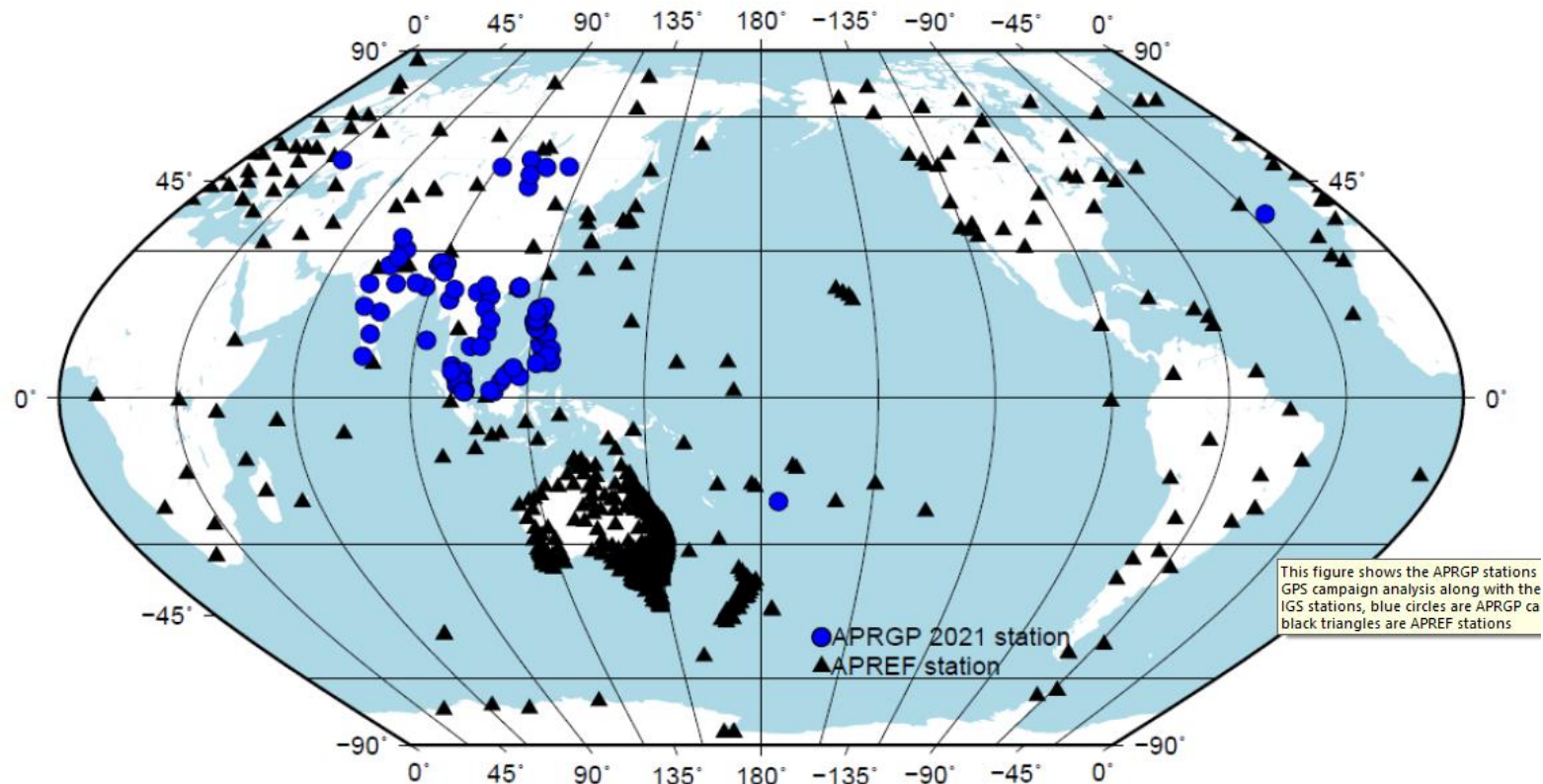


Figure 1 APRGP stations in the APRGP 2021 GPS campaign analysis along with the APREF stations and IGS stations, blue circles are APRGP campaign sites, and black triangles are APREF stations.

G. Hu: Report on the Analysis of the Asia Pacific Regional Geodetic Project (APRGP) GPS Campaign 2021



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International Height Reference Frame (IHRF)

- Global Geodetic Observing System (GGOS) Focus Area: Unified Height System has been working to establish International Height Reference Frame (IHRF)
- Evaluation of IHRF has been completed by international geoid evaluation, “Colorado Experiment”
- The first operational product center of IHRF will be launched
- IHRF related geodetic capacity development including sharing of knowledge and expertise is one of focus of WG1 in this term



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Capacity Building Opportunities in 2023

- WG1 annual session and workshop at the UN-GGIM-AP 12th Plenary in Indonesia
- FIG seminar “Reference Frame in Practice” at FIG2023?
- PGSC meetings
- ICG Task Force on “Applications of GNSS for Disaster Risk Reduction”
- Subcommittee on Geodesy and Global Geodetic Center of Excellence
- Other opportunities?



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**Thank you for
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