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

Canberra, Australia
November, 2019
UN-GGIM-AP Working Group 1
- Geodetic reference frame -

Chair
Mr. Basara Miyahara, Japan

Vice Chairs
Dr. John Dawson, Australia
Dr. Yamin Dang, China
Dr. Suresh Kumar Singh, India
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Dr. Sangoh Yi, Republic of Korea
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UN-GGIM Geodesy

Regional Reference Frame (APREF, APRGP)

Regional Height System Unification

Regional Capacity Building

“Positioning geospatial information to address global challenges” ggim.un.org
UN-GGIM-AP Working Group 1 – Focus 2018 - 2021

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ggim.un.org
UN-GGIM GGRF Subcommittee 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 (SCoG)

- The SCoG 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-GGIM GGRF Subcommittee on Geodesy

- **Co-chairs:**
  Australia (Gary Johnston),
  Russia (Alexey Trifonov)

- **Working Groups:**
  - Geodetic Infrastructure (Zuheir Altamimi, France)
  - Policy, Standard and Convention (Mike Cramer, Canada)
  - Education, Training Capacity Building (Mikael Lilje, Sweden)
  - Outreach and Communication (Anne Jørgensen, Norway)
  - Governance (Laila Løvhøiden, Norway)
UN-GGIM GGRF Subcommittee on Geodesy

• Asia-Pacific members:
  
  Australia, China, Fiji, Islamic Republic of Iran, Japan, Kyrgyzstan, Malaysia, New Zealand, Philippines, and the Republic of Korea

• While these 10 countries are the official members, all other Asia Pacific Member States are invited and encouraged to participate in committee activities as associate members.
UN-GGIM GGRF Subcommittee on Geodesy

- The 1st inaugural meeting of the Subcommittee on Geodesy was held in Mexico City on November 2017.
- The 2nd meeting was held in China on November 2018.

- The 3rd meeting will be held in UK on 20-22 April 2020 in conjunction with UN-GGIM 6th High Level Forum / Cambridge Conference 2020.

“Positioning geospatial information to address global challenges”

UN-GGIM
United Nations Initiative on Global Geospatial Information Management

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2018 - 2021

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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

* Geoscience Australia
  Office of Surveyor-General Victoria, Australia
  Institute of Geodesy and Geophysics, Chinese Academy of Sciences
Asia Pacific Reference Frame (APREF)

The velocity field for the APREF CORS network

G. Hu, M. Moore and J. Dawson (2016): An Update on the Asia Pacific Reference Frame (APREF)
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 2018**: 16 to 22 September 2018
- Participation from Bangladesh, Hong Kong, Indonesia, Japan, Kyrgyzstan, Laos, Malaysia, Mongolia, Philippines and Vietnam

**APRGP 2019**: 15 to 22 September 2019
- Processing by Dr. Hu Guorong, Geoscience Australia
Asia Pacific Regional Geodetic Project 2018

Figure 1 APRGP stations in the APRGP 2018 GPS campaign analysis along with the APREF stations and IGS stations.

Report on the Analysis of the Asia Pacific Regional Geodetic Project (APRGP) GPS Campaign 2
Regional Height System Unification (APRHSU)

• Questionaries on current height system of each member countries
• Analyse the answers to understand current situation
• Planning next actions based on analysis
  Ex. Evaluate difference in height system among Asia-Pacific counties
  Compute averaged height reference surface among Asia-Pacific countries
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UN-GGIM Geodesy

Regional Reference Frame (APREF, APRGP)

Regional Height System Unification

Regional Capacity Building

“Positioning geospatial information to address global challenges”
Capacity Building Workshops

- Hosting and participating in capacity building workshops on geodetic reference frame, positioning and etc. in Asia-Pacific
- Collaboration with International Federation of Surveyors (FIG) Asia Pacific Capacity Development Network (AP CDN) and Commission 5, International Association of Geodesy (IAG), UN-GGIM Subcommittee on Geodesy (SCoG) and other organizations

- Pacific Geospatial and Surveying Council (PGSC)
Capacity Building Events after 7th Plenary session

- **Technical seminar on geodetic reference frame** jointly hosted by of the UN-GGIM-AP/FIG/ICG/VAGCRS
- **Special sessions on “Developing Capacity for Geodetic Infrastructure and Systems”** jointly organized by UN-GGIM-AP WG1/FIG AP CDN/SCoG at FIG2019
Capacity Building Events after 7th Plenary session


• Positioning and GNSS CORS infrastructure Workshop at South East Asia Survey Congress 2019 in Darwin, Australia, on August 2019
Capacity Building Events in 2020

- UN International Committee on GNSS is planning another GNSS workshop in Mongolia, April 2020
- Other events?
Resolution of UN-GGIM-AP WG1 - Geodetic Reference Frame

Canberra, Australia
November, 2019
Recommends the Member States

- Contribute to the GGRF through collaboration with SCoG
- Participation to GGOS (Global Geodetic Observing System)
- Multilateral cooperation to address infrastructure gaps and avoid duplication
- Support the adoption of the ITRF by participating in APREF and APRGP
- Support national GNSS, SLR and VLBI infrastructure
Recommends the Member States

- Support the collaboration with FIG and IAG
- Encourage open and free geodetic data sharing including real-time data
- Encourage technical capability development in geodetic reference frame, GNSS, Geoid and etc.
- Encourage participation to communication and outreach activities
- Host and participate in capacity building workshops in AP