

Activity Report of UN-GGIM-AP WG1- Geodetic Reference Framework for Sustainable Development

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Vice Chairs

Dr. Yamin Dang, China

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Mr. Graeme Blick, New Zealand



UN-GGIM

United Nations Initiative on
Global Geospatial Information Management

"Positioning geospatial information to address global challenges"

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UN-GGIM-AP WG 1 Activities

- Supporting UN-GGIM GGRF efforts
- Providing access to the GGRF (ITRF)
 - Annual GPS campaign (APRGP)
 - CORS networks (APREF)
- Height system unification
- Geodetic capacity building and technical exchange



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UN-GGIM GGRF

- The Global Geodetic Reference Frame (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



UN-GGIM GGRF

- Recognising its importance the UN General Assembly adopted resolution 69/266 in February 2015, entitled ‘A Global Geodetic Reference Frame for Sustainable Development’
- The resolution called for UN GGIM to develop a global geodetic road map that addresses key elements relating to the development and sustainability of the global geodetic reference frame

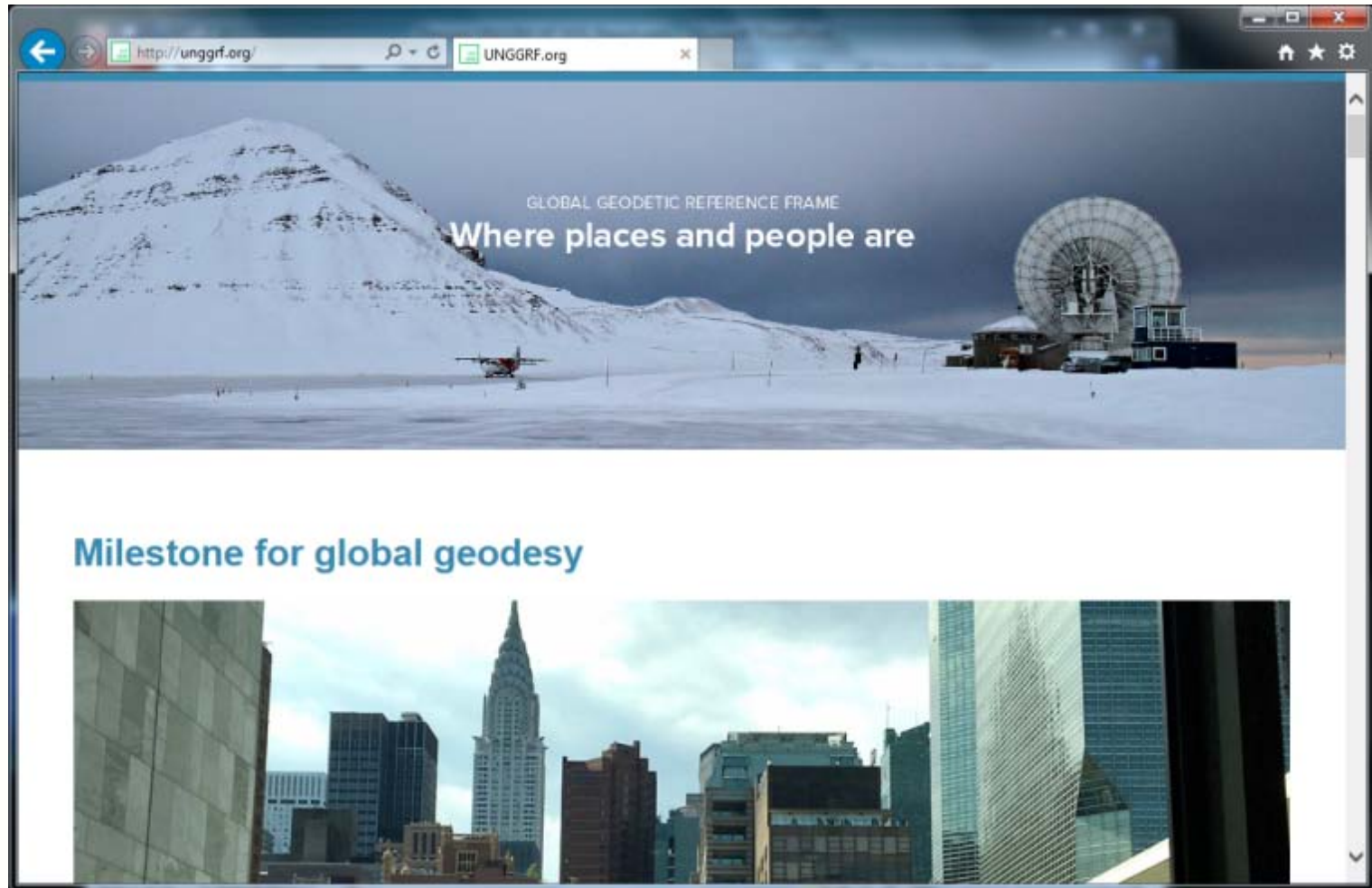


UN-GGIM GGRF

- Working Group (GGRF-WG) comprises 29 Member States, the International Association of Geodesy (IAG) and the World Health Organisation (WHO)
- Australia and Norway co-chair
- Working group had two face to face meetings (San Francisco and Vienna) and five teleconference meetings
- Working Group members also informed stakeholders about the status of the road map work and gave numerous presentations highlighting the importance of the road map



UN-GGRF – www.ggrf.org



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Summary of Road Map recommendations

The highlights of the 5 categories of action issues are:

- Actions must be taken to **maintain and upgrade current national infrastructure** and secure all Member States accurate access to the Global Geodetic Reference Frame
- Member States are urged to support efforts to **develop geodetic standards, and more openly share their data**, standardised operating procedures, expertise, and technology
- Actions must be taken to **raise geodetic competence and skills**, as a lack of geodetic capability currently limits utilisation of the global geodetic reference frame in many countries, and hinders their achievement of the sustainable development goals. It also threatens the development and sustainability of the Global Geodetic Reference Frame
- Actions must be taken to **raise the general awareness** around the value proposition of the Global Geodetic Reference Frame
- Actions must be taken to **improve the Global Geodetic Reference Frame governance mechanism**, as this is needed to ensure the sustainability and improvement of the Global Geodetic Reference Frame



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Asia Pacific Regional Geodetic Project 2015

➤ Available from www.ga.gov.au

Record 2016/20 | eCat 101401

Report on the Analysis of the Asia Pacific Regional Geodetic Project (APRGP) GPS Campaign 2015

G. Hu

Table 2 The final computed Cartesian coordinates in ITRF2008 at the mean epoch of the measurements, i.e. @2015. 69.

| Station | X (m) | 1 std (m) | Y (m) | 1 std (m) | Z (m) | 1 std (m) |
|---------|---------------|-----------|--------------|-----------|--------------|-----------|
| 0029 | -3862398.6296 | 0.0006 | 3105008.5386 | 0.0005 | 4001961.0183 | 0.0005 |
| 0745 | -3512920.0666 | 0.0004 | 4524558.0948 | 0.0005 | 2795881.9186 | 0.0003 |
| 0746 | -3786804.9581 | 0.0006 | 4311846.1473 | 0.0006 | 2774485.5299 | 0.0005 |
| 0837 | -3530185.7427 | 0.0009 | 4118797.2213 | 0.0009 | 3344036.7862 | 0.0009 |
| 1135 | -3591931.0570 | 0.0006 | 3758796.9397 | 0.0006 | 3682342.8163 | 0.0005 |
| 2004 | -3565271.8273 | 0.0005 | 4118973.0667 | 0.0006 | 3306293.0992 | 0.0005 |
| 2005 | -3642161.4011 | 0.0005 | 2861487.8620 | 0.0005 | 4370351.2484 | 0.0005 |
| 2007 | -4490605.2322 | 0.0009 | 3483894.9129 | 0.0007 | 2884928.2784 | 0.0006 |



APREF website for more information

- <http://www.ga.gov.au/earth-monitoring/geodesy/asia-pacific-reference-frame.html>



FOMO,
Macau, China



KUAL, Malaysia



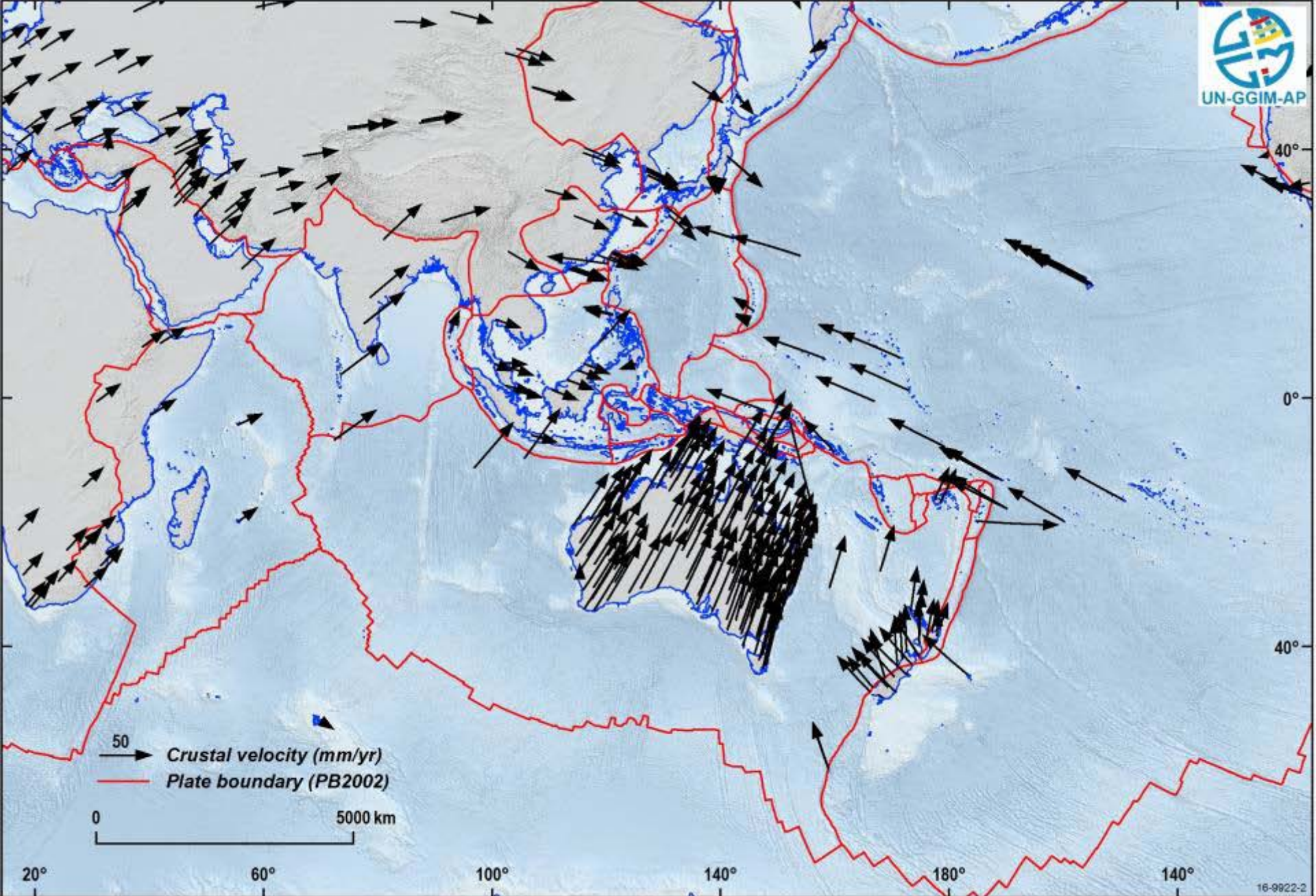
PTAG, Philippines



Asia Pacific Reference Frame

- **Asia Pacific REference Frame – APREF**
- Analogous to other ITRF based regional reference frames EUREF, SIRGAS, NAREF, AFREF, etc
- Joint initiative of the UN-GGIM Asia Pacific and the International Association of Geodesy (IAG) supported by **FIG**
- Encourage sharing GNSS CORS data and its analysis
- Create and maintain a common, accurate and densely realised geodetic framework, based on continuous observation and analysis of GNSS data in the Asia Pacific





16-9922-2

Positioning geospatial information to address global challenges

Asia Pacific Reference Frame

- Data from 28 countries
- 16 national agencies participating
- Approximately 420 Asia Pacific stations
- Approximately 600 stations routinely analysed
- Four independent analysis centres
 - Geoscience Australia
 - Curtin University
 - Department of Sustainability and Environment in Victoria, Australia
 - Institute of Geodesy and Geophysics, Chinese Academy of Sciences



WG1 Activities - APRHSU

- Asia-Pacific Regional Height System Unification (APRHSU)
- The objective of the APRHSU project is to encourage data sharing and facilitate technical exchange towards height system development in the Asia-Pacific region



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WG1 Activities - APGCB

- Asia-Pacific Geodetic Capacity Building (APGCB)
- WG1 has continued to be involved in regional workshops aimed at geodetic capacity building in the Asia Pacific



WG1 Activities - APGCB

- The Reference Frame in Practice Symposium held in Manila, Philippines, June 2013
- FIG Pacific Small Island Developing States Symposium held in Suva, Fiji, September 2013 with a session entitled Reference Frame in Practice for Responsible Governance



WG1 Activities - APGCB

- Reference Frames in Practice - The Future, FIG International Congress, June 2014, Kuala Lumpur, Malaysia.
- A joint UN-GGIM-AP, FIG and Secretariat of the Pacific Community (SPC) meeting of Pacific geodetic surveyors, November 2014
- Technical seminar on vertical reference frames, Singapore July 2015, 13th South East Asian Survey Congress.



WG1 Activities - APGCB

- Geospatial and GNSS CORS Infrastructure forum, Kuala Lumpur, Malaysia, 16-17 October
- ~150 attendees



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