

<b>National Geospatial Reference Systems Project Geoscience Australia</b>
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**Key objective/s with respect to space-related activity**

Benefit the Australian community and industry by:

- Contributing data to the Global Geodetic Observing System (GGOS), and
- Using the resulting science and products to realise a higher accuracy National Geospatial Reference System in Australia.

**Current space-related activities/responsibilities**

Observatory functions:

- Two satellite laser ranging (SLR) stations tracking at least 15 satellites as per International Laser Ranging Service (ILRS) priorities. Data submitted to the ILRS global data centres.
- 21 continuously operating permanent GPS stations – Australian Regional GPS Network (ARGN). Data submitted to the IGS global data centres.
- Ten continuously operating permanent GPS stations for the South Pacific Sea Level and Climate Monitoring Program (SPSLCMP).
- Two continuously operating permanent DORIS beacons transmitting to SPOT (2, 4, 5), Jason-1, Envisat.
- Geodetic Very Long Baseline Interferometry (VLBI) observations at the Mount Pleasant Radio Telescope – in cooperation with the University of Tasmania.
- Coordination of the Asia Pacific Regional Geodetic Project (APRGP) under the auspices of the Permanent Committee for GIS Infrastructure in the Asia Pacific (PCGIAP).

Data processing, analysis and research functions:

- Regional Associate Analysis Centre for the International GPS Service (IGS);
- Analysis Centre for the International Laser Ranging Service;
- Analysis Centre for the International VLBI Service;
- Analysis Centre for the International DORIS Service;
- Analysis Centre for the SPSLCMP;
- Type A Analysis Centre for the global GPS at Tide Gauge (TIGA) project of the IGS;
- Analysis Centre for the APRGP.

Outcomes of these activities:

- High accuracy orbit determination of geodetically/scientifically relevant satellites from GPS, SLR and DORIS systems;
- Definition, core network and densification of the International Terrestrial Reference Frame (ITRF);
- Source coordinates for the Celestial Reference Frame (CRF) with the aim of densifying the Southern Hemisphere CRF;
- Earth orientation parameters (Earth rotation and polar motion parameters);

- Long term time series from space geodetic data for global / climate change monitoring.

### **Recent major achievements**

- Data and analysis results provided to the technique specific international services groups of the International Earth Rotation and Reference Systems Service (IERS).

### **Portfolio/Agency expenditure on space-related activity**

Investment and expenditure for geodesy space-related activity for 2006-2007:

Capital investment	Operations costs per year
\$0.14 M	\$4.6 M

### **International space-related agreements**

- National Aeronautics and Space Administration – “Cooperation in Space Geodesy and Geodynamics”, 1973, 1981, 1995 (amended 1998, 2003)
- Institut Geographique National (IGN) and Centre National d’Estudes Spatiales (CNES) (France) –“DORIS Agreement” and “CATREF Agreement”.
- Geographic Survey Institute (GSI), Japan “Cooperation in Geodesy”.
- Informal relationships and cooperation with several national agencies worldwide, including National Geodetic Survey (USA), Geodetic Survey of Canada, Communications Research Laboratory (Japan), BKG and GFZ (Germany and France), etc.

### **Contact**

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Last updated October 2006.