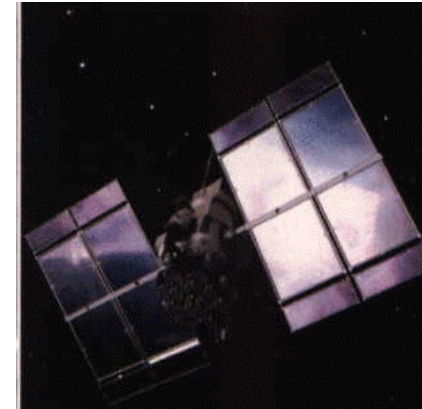
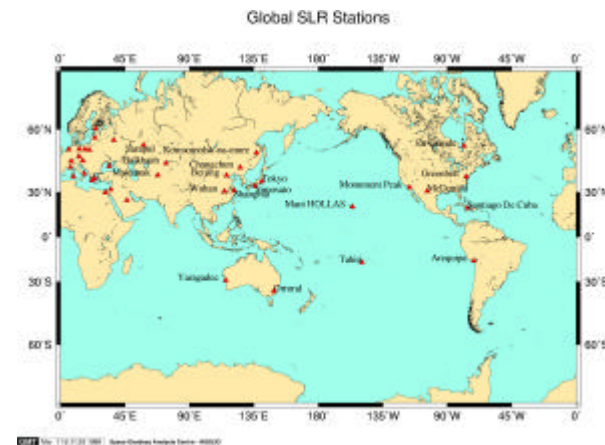


AUSLIG - Geodesy



Space Geodesy Analysis Centre
1999

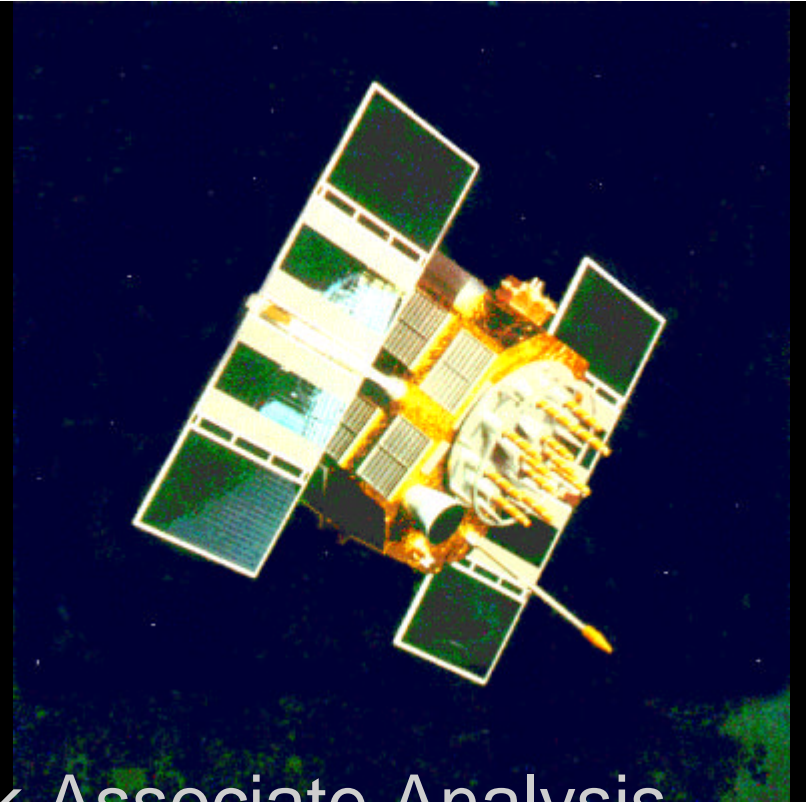


AUSLIG Geodesy

- GPS
- SLR
- DORIS
- GLONASS
- VLBI
- IERS
- GSFC
- PCGIAP
- Absolute gravity



AUSLIG Geodesy



- GPS
 - IGS Regional Network Associate Analysis Centre
 - Global POD, EOP, regional solutions
 - LEO POD
 - Absolute Sea Level Monitoring Campaigns

GPS Processing Site Report - ALIC

Computed Velocities:

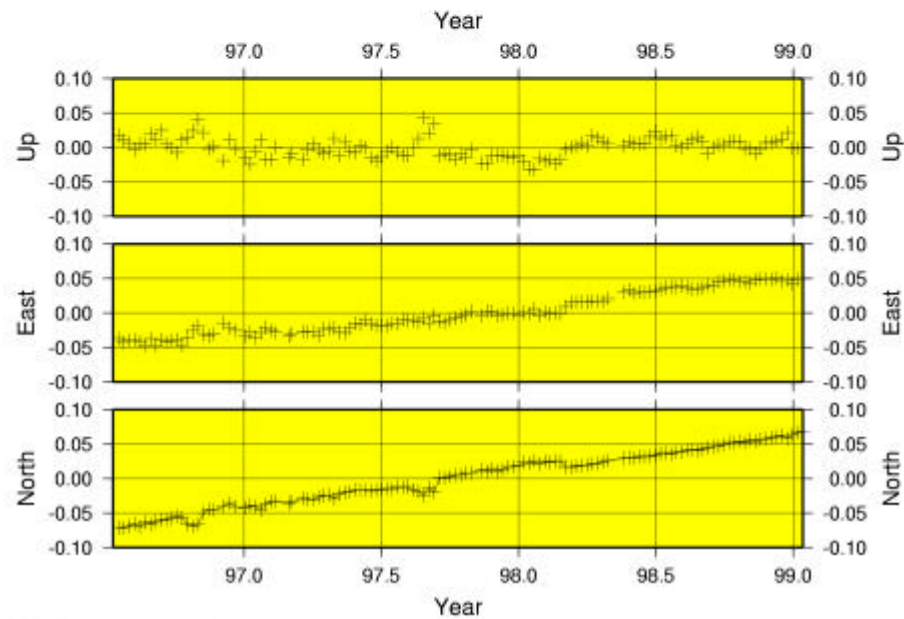
North : 76.1 mm/year (sigma 0.2)

East : 51.9 mm/year (sigma 0.2)

Up : -3.2 mm/year (sigma 0.2)



Repeatability Plots (metres)



GPS Processing Site Report - DST1

Computed Velocities:

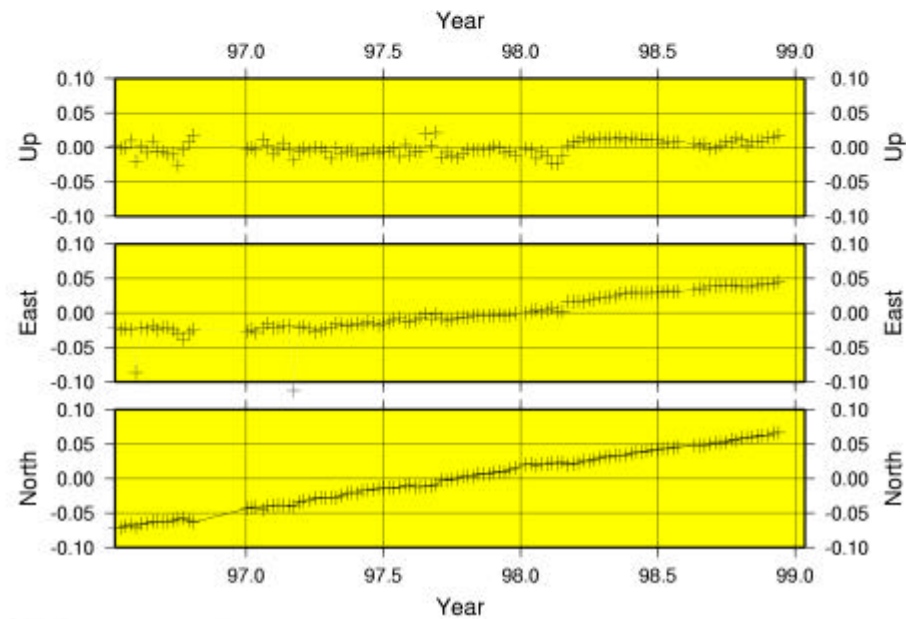
North : 73.6 mm/year (sigma 0.2)

East : 37.8 mm/year (sigma 0.2)

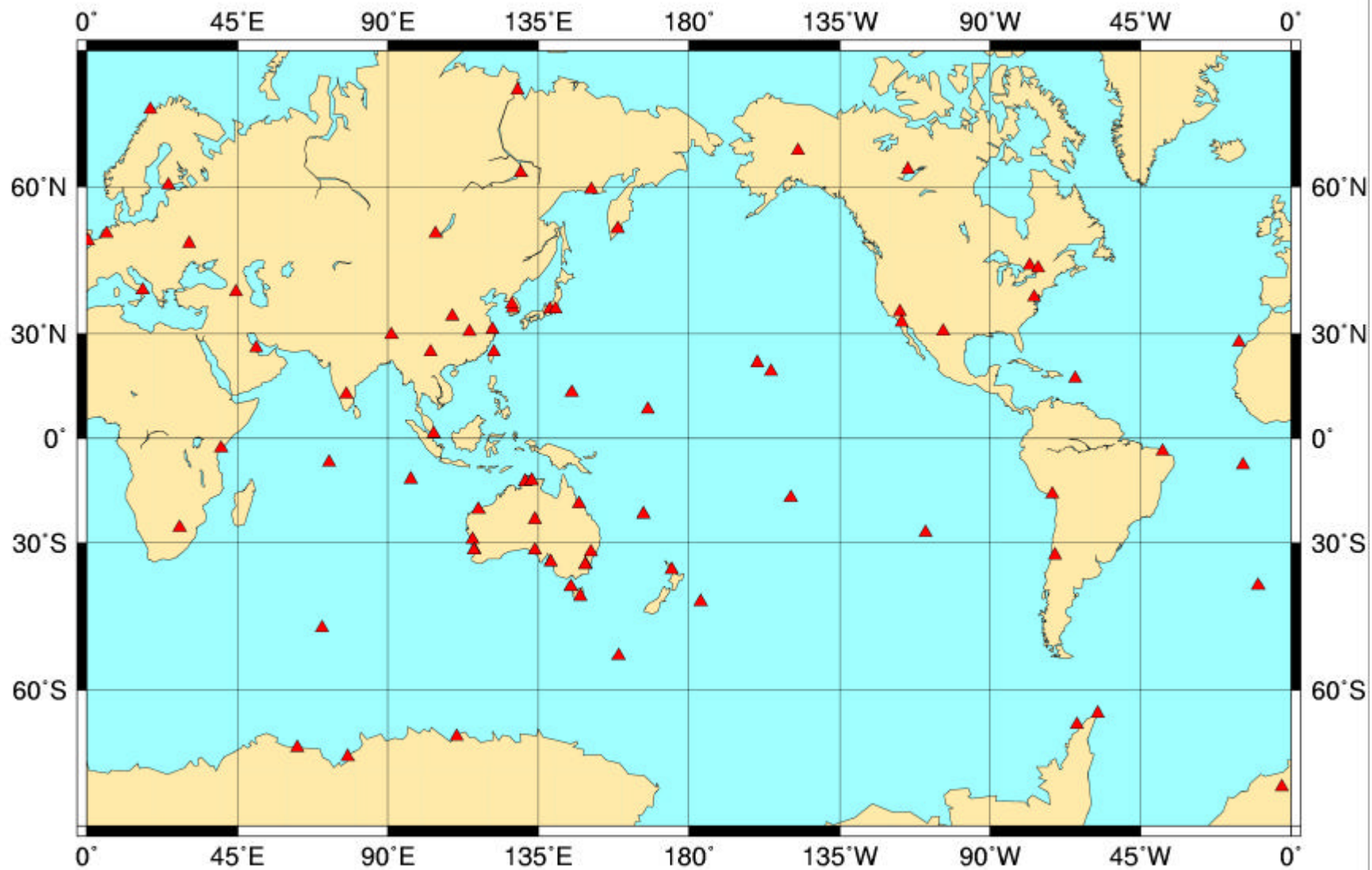
Up : 4.6 mm/year (sigma 0.2)



Repeatability Plots (metres)



GPS



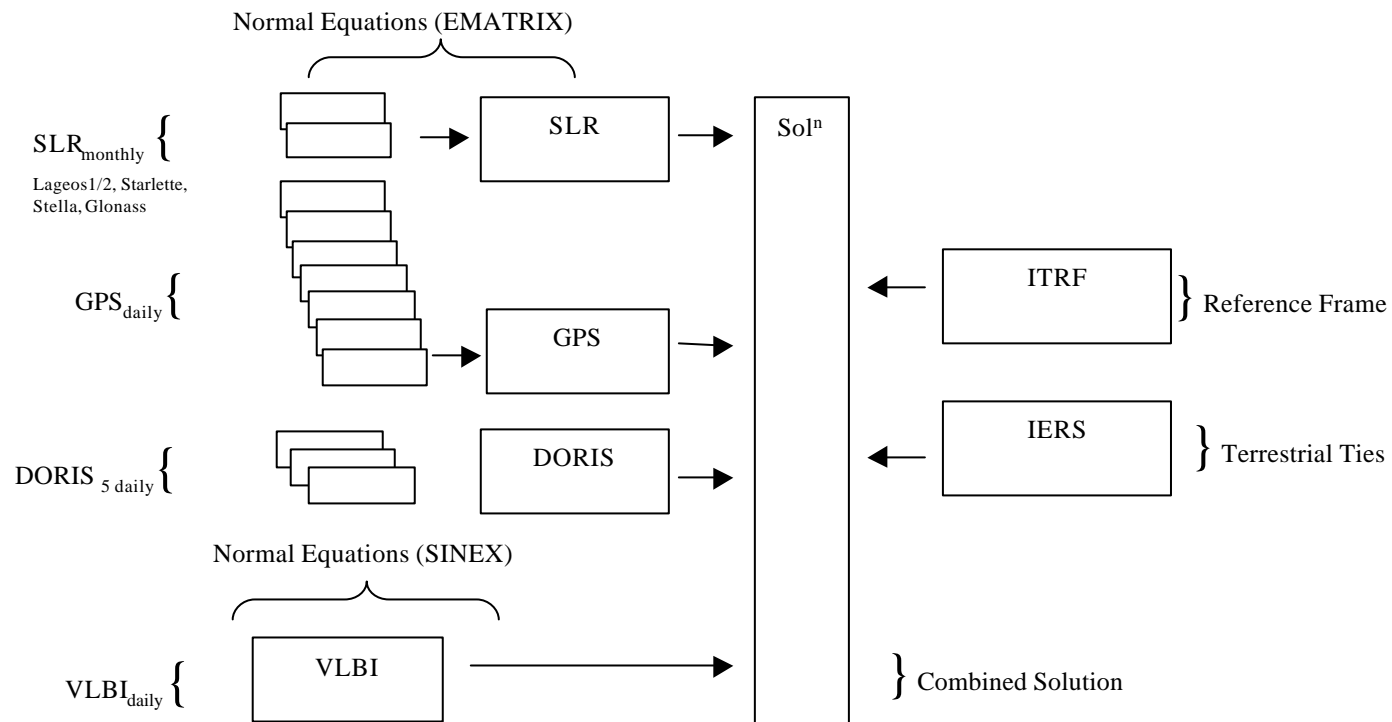
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- Estimated parameters

Parameter	SLR	DORIS	GPS
Station Coordinates	WPLTN stations	Asia-Pacific stations	Global and Asia-Pacific stations (reference stations constrained to ITRF96 at 1mm)
UT and pole position	Daily	Daily	Daily
State vectors	30-day arc	5-day arc	1-day arc
Solar Radiation	One per arc	One per arc	One per day
Pressure Scale factor			
Drag	Once per day for Stella, and Starlette only	Once per day	-
General Acceleration	Once per five day constant. Once per revolution sine and cosine of the period in the along track and cross track direction.	Once per day constant. Once per revolution sine and cosine of the period in the along track and cross track direction.	Once per day Y-bias constant. Once per revolution Y-bias sine and cosine of the period.
Measurement Biases	Pass by pass range and time biases.	Pass by pass range rate and time biases. Once per arc satellite clock linear drift. Once per arc satellite clock quadratic drift. Pass by pass tropospheric scale factor at every station	Carrier Phase Ambiguities. Cycle slips. Tropospheric scale factor every two hours at every station.

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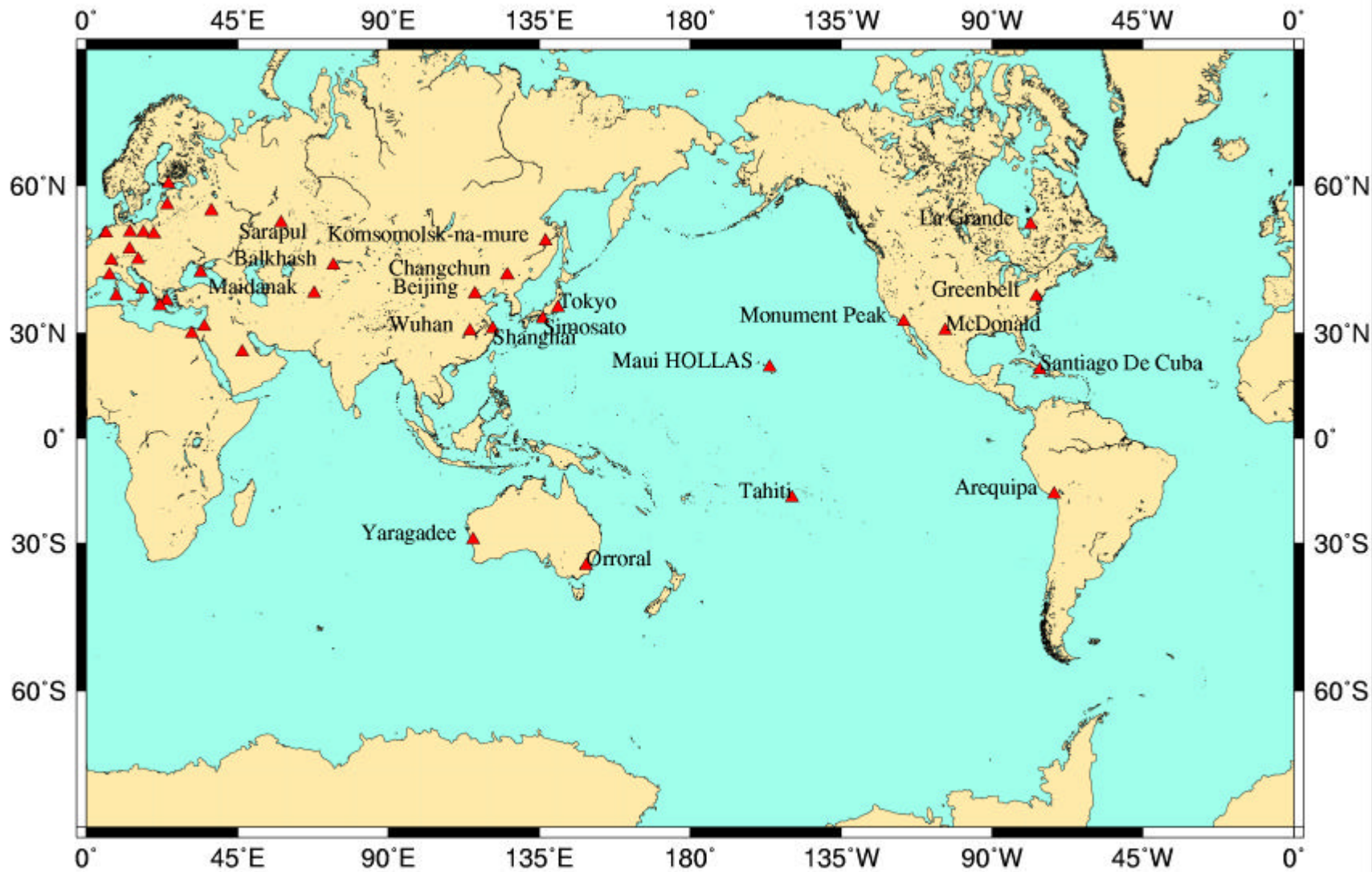
AUSLIG Geodesy

- GPS results
 - Global MicroCosm
 - Orbit (versus IGS final product)
 - RMS 7 - 10 cm radially
 - RMS 15 - 25 cm along and cross track
 - Station coordinates (weekly combined)
 - RMS 9 - 14 mm difference to MIT SSC
 - 5, 7, 6 mm (N,E,U) repeatability

AUSLIG Geodesy

- SLR
 - ILRS Associate Analysis Centre
 - Lageos1, Lageos2, Stella, Starlette, Etalon-1, Etalon-2, Glonass
 - Station performance monitoring
 - Five day EOP
 - Multi-satellite combined solutions

Global SLR Stations

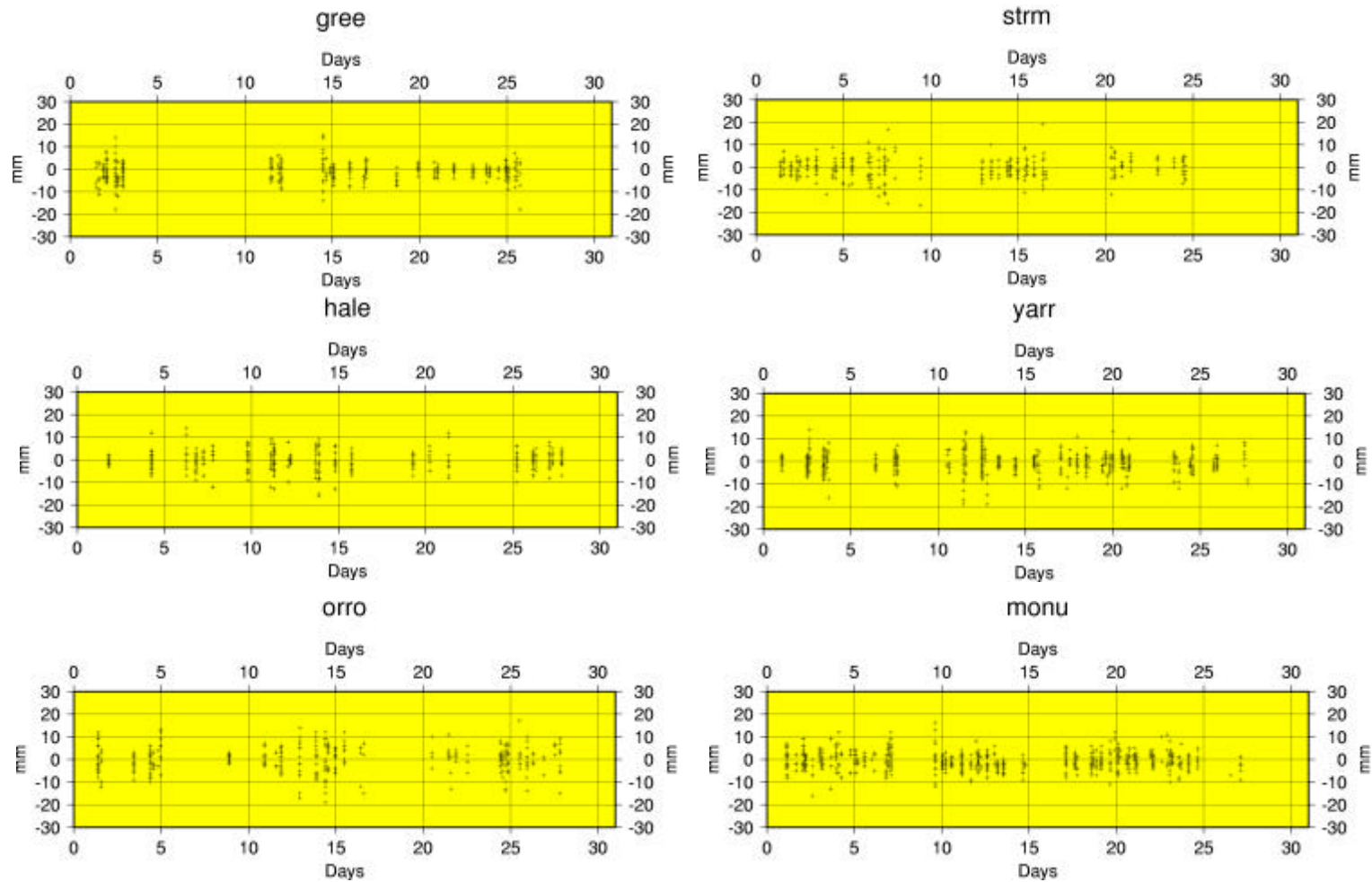


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Lageos-1, Oct. 1998, SLR Post-Fit Residuals

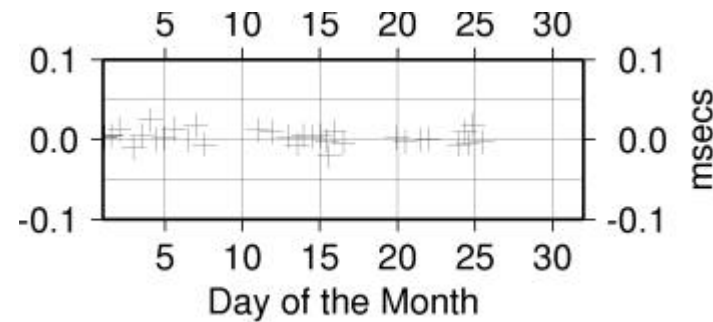
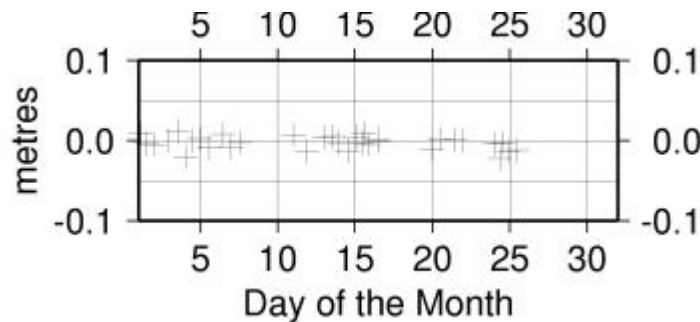


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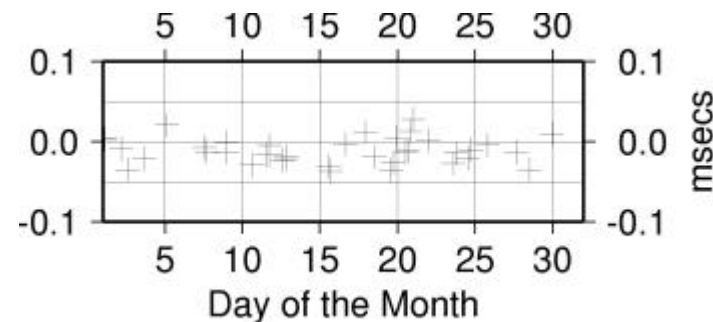
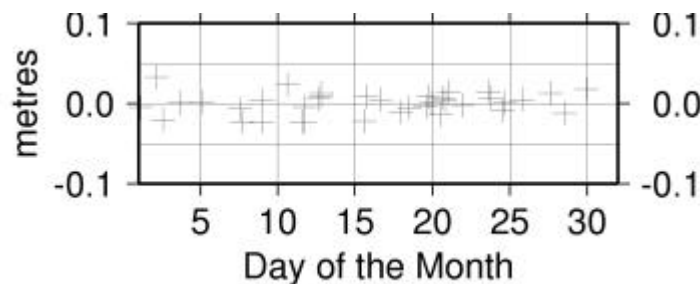
- SLR results
 - RMS postfit residuals for Lageos-1 and Lageos-2, 1 month arc; 5 - 7 mm
 - Stromlo and Yaragadee; 2 - 4 mm
 - Transformed to ITRF96 at the combination stage
 - 3-D RMS for station coordinates 9 - 13 mm for combined monthly Lageos-1 and Lageos-2
 - month to month repeatability of station coordinates; 15mm

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Mount Stromlo Range and Time Biases (Oct. 1998)



Yaragadee Range and Time Biases (Oct. 1998)

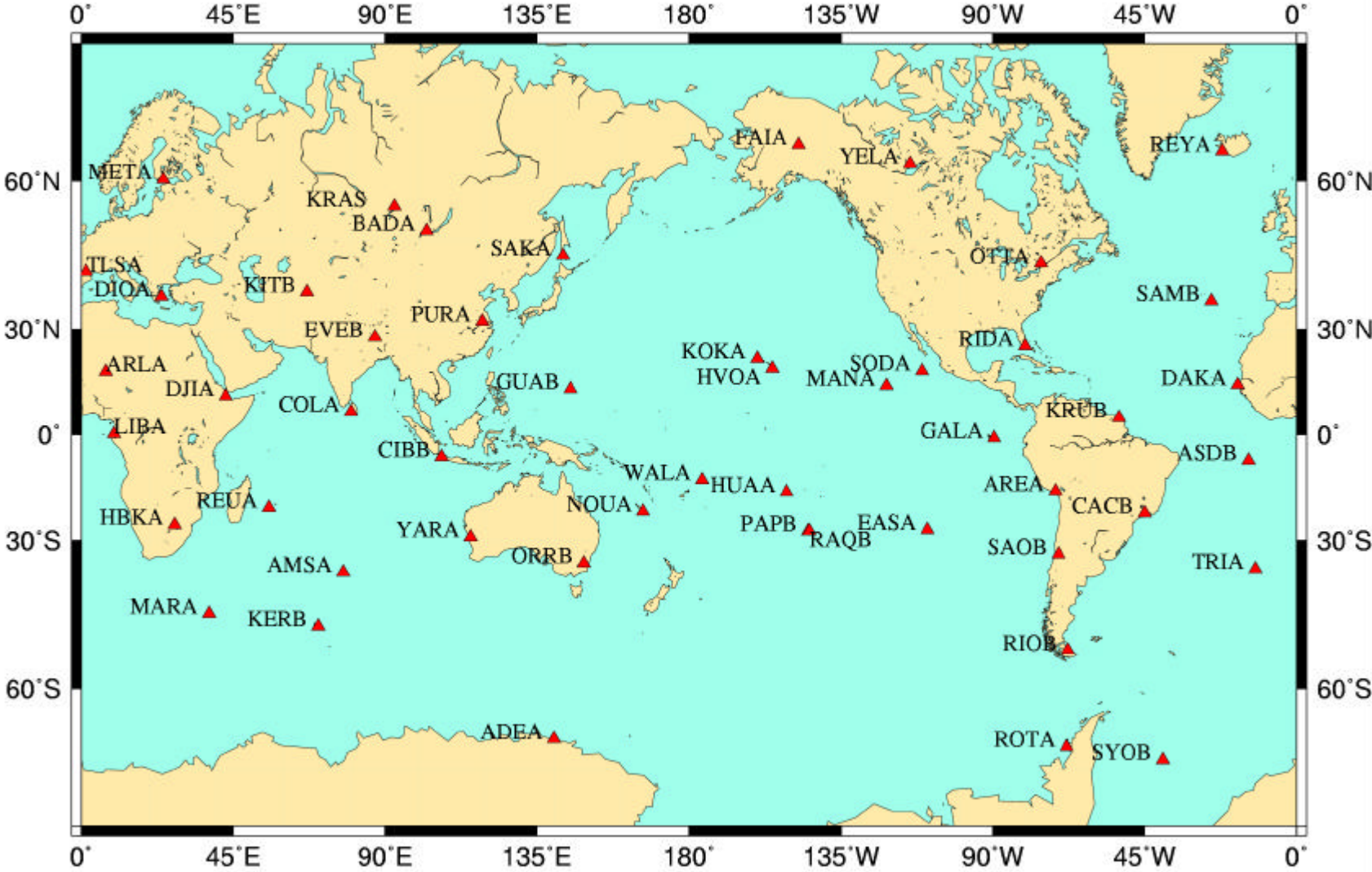


AUSLIG Geodesy

- DORIS
 - SPOT-2 (SPOT-4 to follow)
 - IGN/CSTG results



Global DORIS Stations

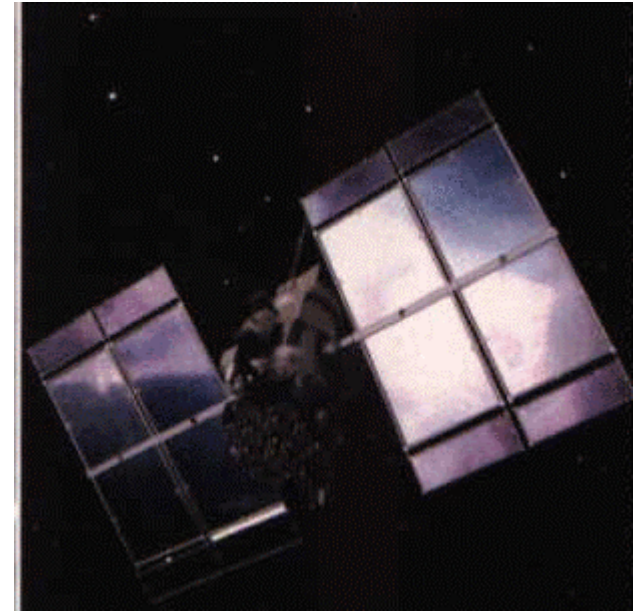


AUSLIG Geodesy

- DORIS results
 - 51 station solutions
 - rms fit 5-day arc 0.8 mm/sec
 - matching CNES, UT-CSR 0.5 mm/sec for 1 day arc
 - 1-5 mas x-pole (wrt IGS)
 - 1-3 mas y-pole (wrt IGS)
 - fits ITRF SSC at the 7mm level
 - 3,6,2 mm E,N,U respectively

AUSLIG Geodesy

- GLONASS
 - IGEX analysis centre
 - SLR orbits
 - Microwave analysis system development



AUSLIG Geodesy

- GLONASS results
 - SLR solutions for IGEX98
 - 8 GLONASS satellites
 - 10 day arcs being computed
 - orbit parameters
 - state vector
 - solar radiation scale factor
 - y-bias
 - range and time bias

AUSLIG Geodesy

- GLONASS results...
 - reference frame CSR L06
 - global parameters estimated in Lageos-2 solutions
 - 2-3cm fit

AUSLIG Geodesy

- GLONASS results...
 - rms difference from CODE microwave solution at 20 - 30 cm level (radially)
 - reference frame
 - EOP
 - 10 day arcs
 - no knowledge of SRP models

AUSLIG Geodesy

- IERS
 - Combination solutions
 - SLR, GPS and DORIS solutions to ITRF
 - ITRS time series project
 - submitted SLR and GPS solutions
 - Local ties
 - telescope IVP determination software

AUSLIG Geodesy

- VLBI
 - preparing for IVS analysis centre
 - VLBI SINEX combined with satellite techniques



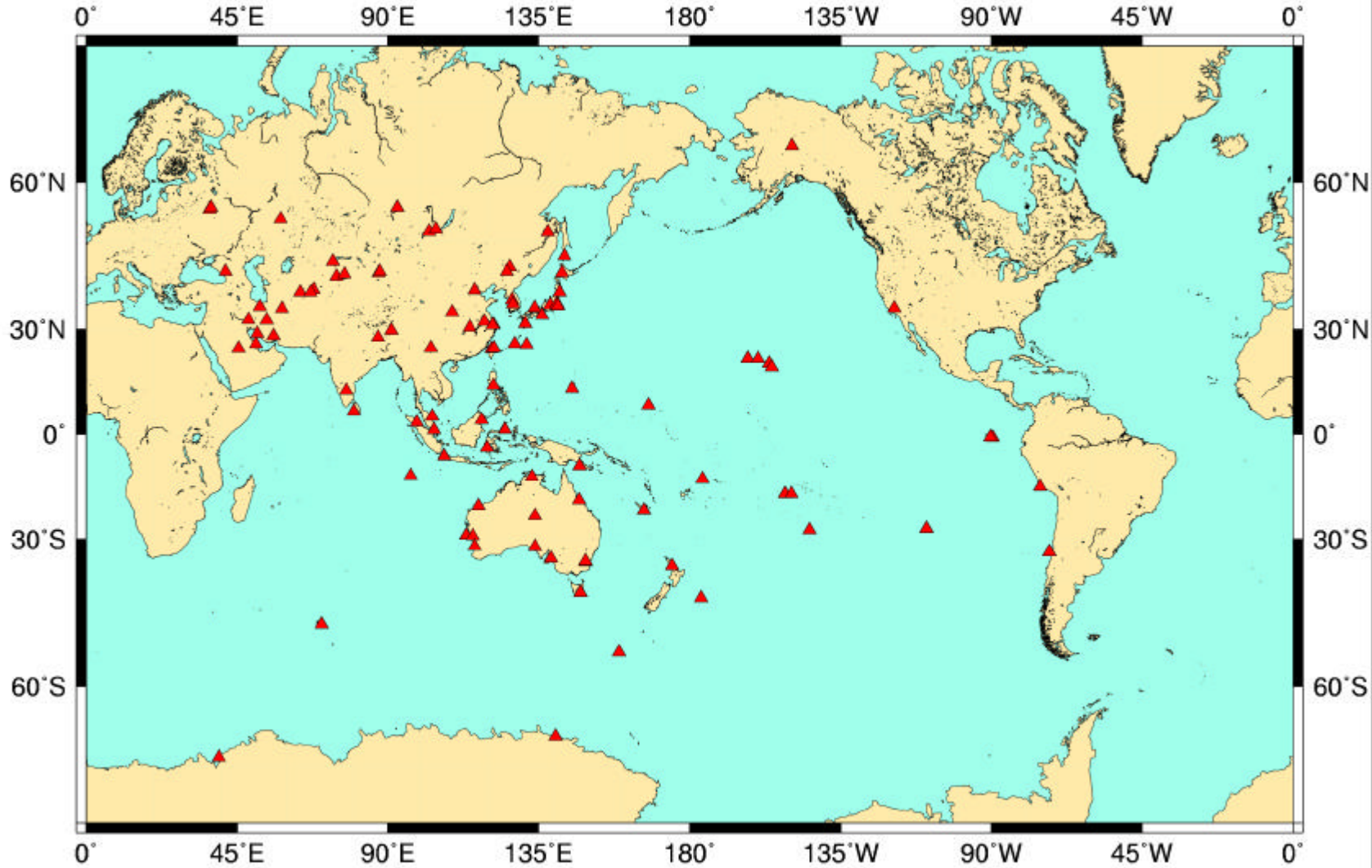
AUSLIG Geodesy

- GSFC
 - Partners in long term time series of combined solutions
 - AUSLIG July 1995 onwards
 - GSFC prior to 1995

AUSLIG Geodesy

- PCGIAP
 - Analysis centre for GPS, SLR and DORIS
 - Densification of the ITRF in the Asia-Pacific Region

Asia Pacific Regional Geodetic Project 1997



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AUSLIG Geodesy

- Absolute gravity
 - analysis of the February 1996 absolute gravity data
 - further observations



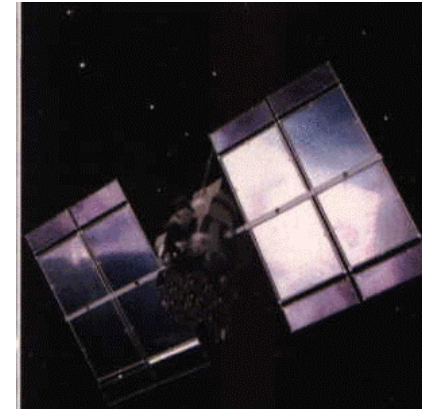
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- Future
 - relative weights of SLR solutions
 - relative weights of combined technique solutions
 - Antarctica
 - near real time monitoring ice movement with DORIS
 - IVS analysis centre

AUSLIG Geodesy

- Future...
 - LEO combined solutions by collocations of techniques at the space-craft -- significant recommendation of GEMSTONE
 - altimetry data analysis for gravity anomaly recovery over oceans/ocean-geoid (within 2 years)
 - gravity field estimation (within 2 years) using combinations of GPS/LEO, SLR, and DORIS -- CHAMP, GRACE

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Space Geodesy Analysis Centre
1999

