

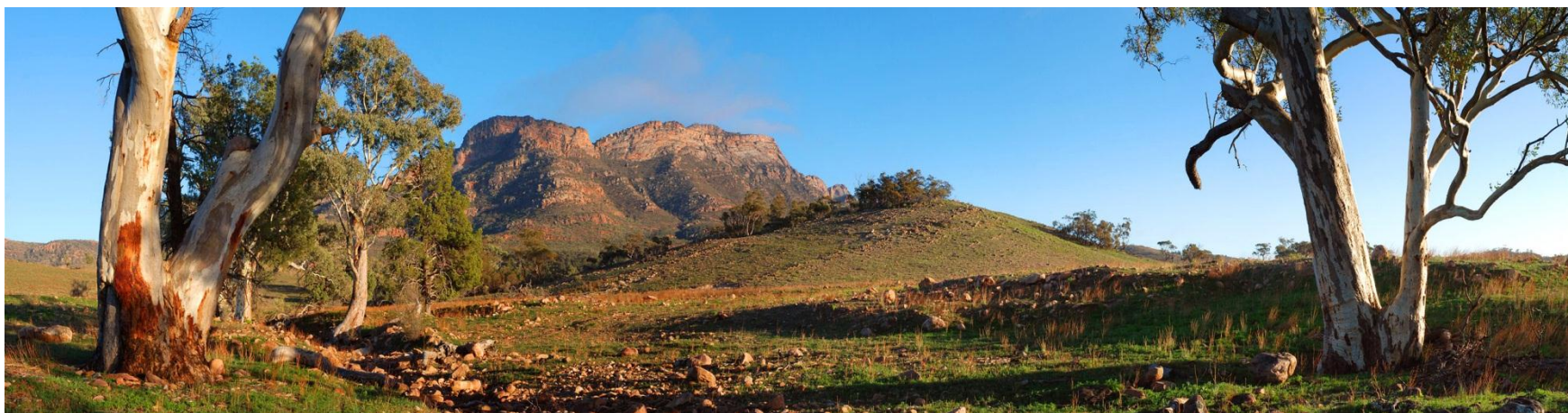


Australian Government
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Australasian Geodetic VLBI Network

Oleg Titov (Geoscience Australia)



Outline

1. IVS and VLBI networks
2. AuScope and Warkworth
3. Observational results
4. Conclusion

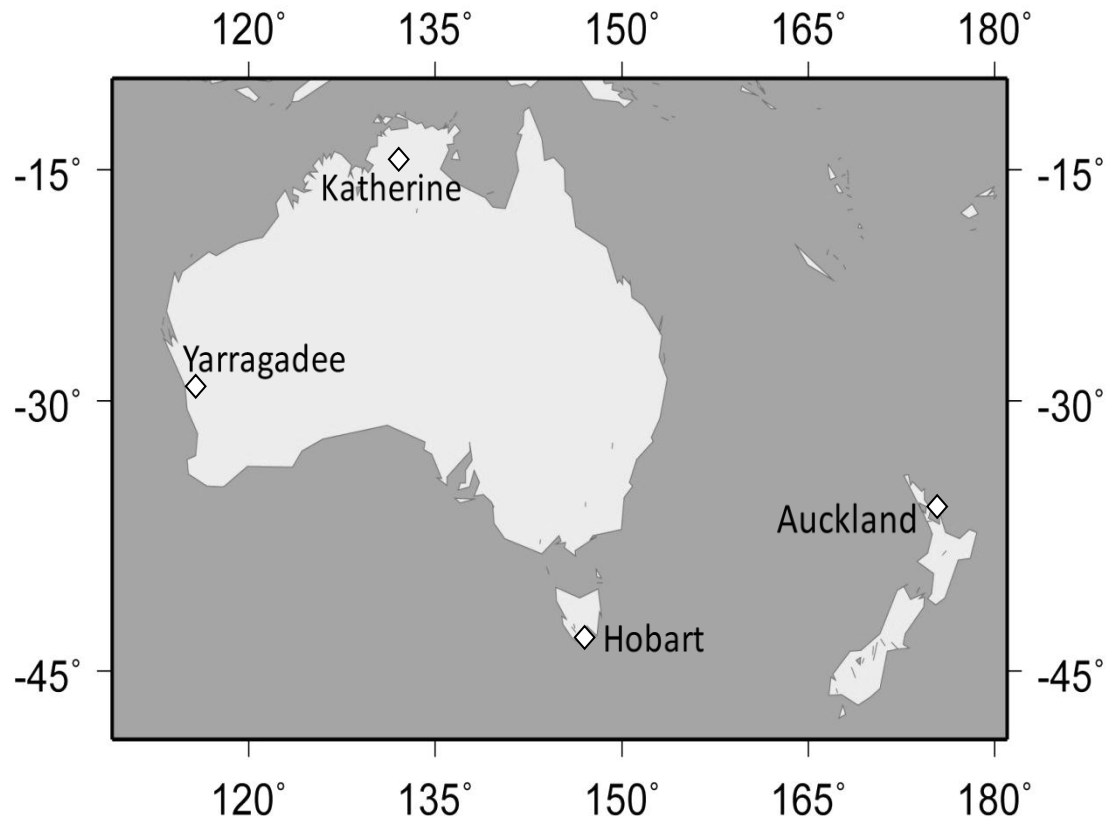
IVS and VLBI networks

1. Geodetic VLBI data from 1991-2001
2. Gravitational delay and coordinate term in geometric delay were switched off for a set of selected radio sources
3. Equatorial coordinates of the selected radio sources were estimated as daily parameters for each 24-hour VLBI sessions
4. The estimated coordinates are converted to the deflection angle α and PPN parameter γ .

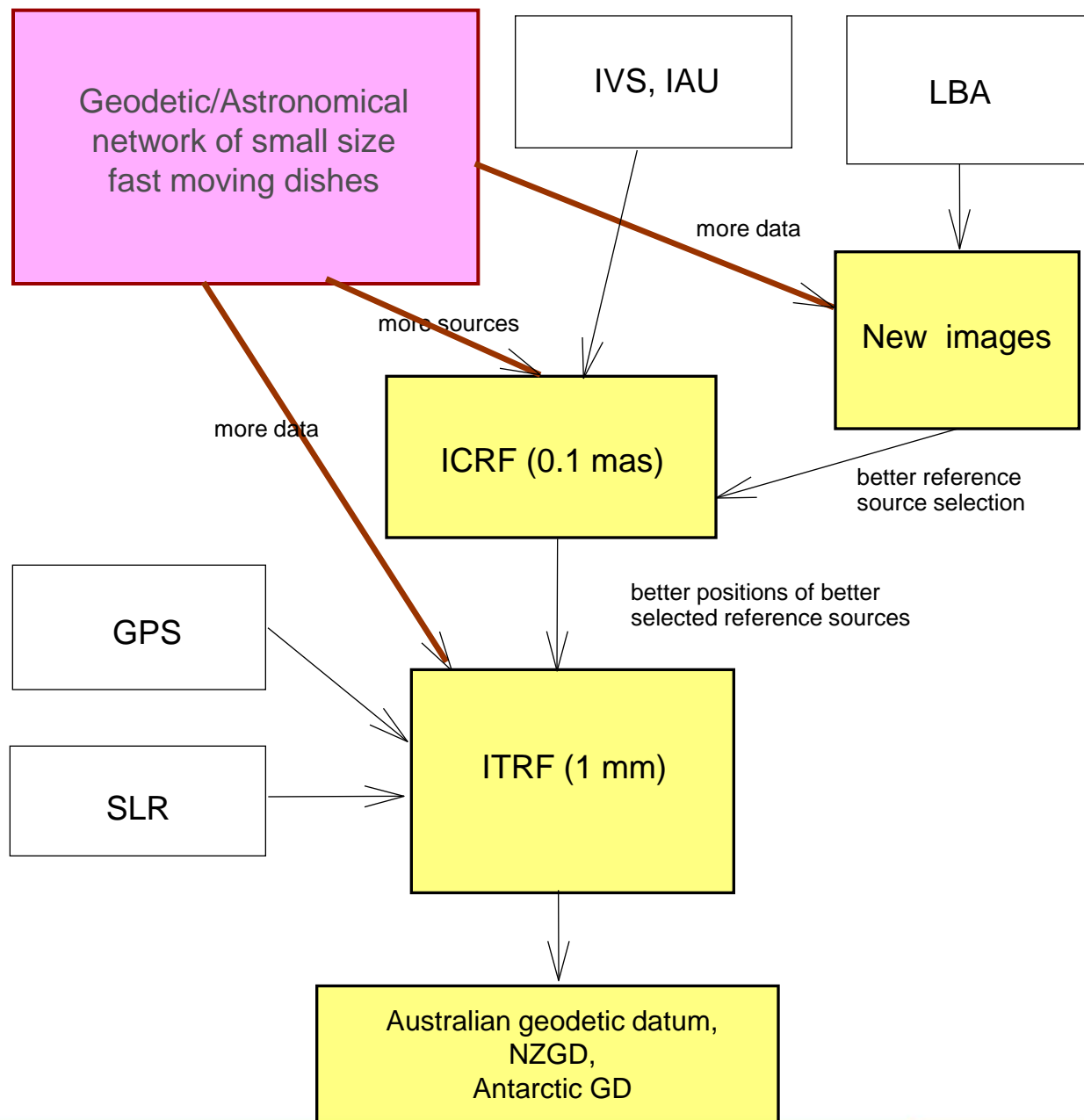
AuScope and Warkworth

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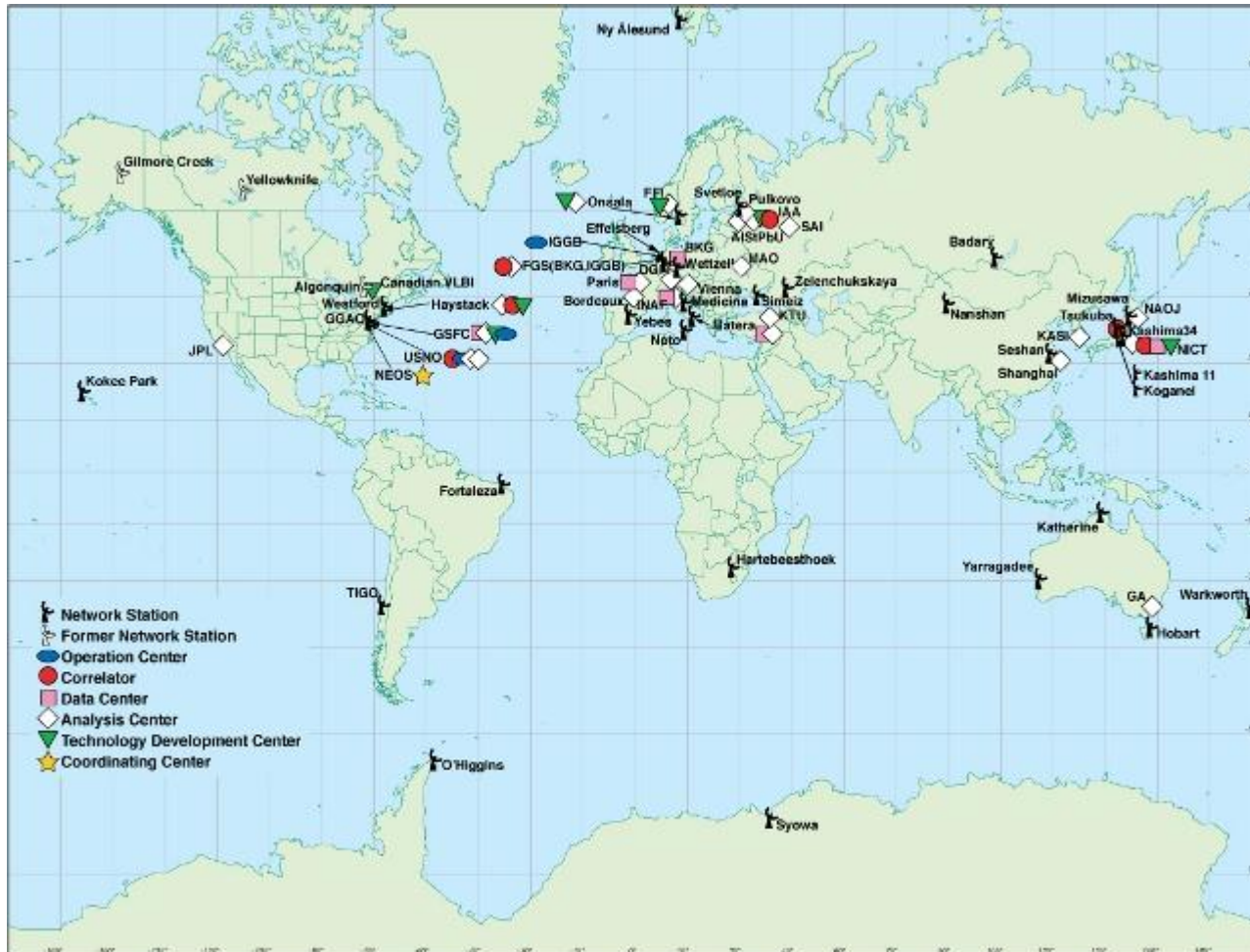
AuScope and Warkworth



Significant improvement in ICRF and ITRF is expected due to implementation of this network:

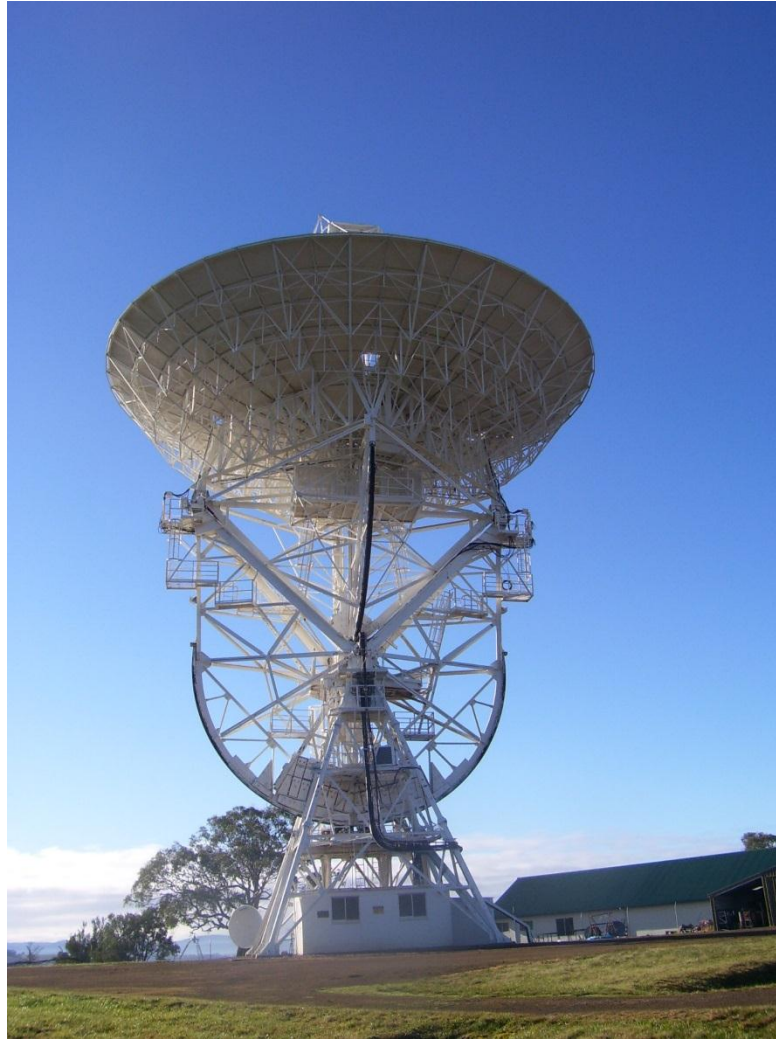


IVS site distribution



26m Antenna in Hobart

0.8 deg/sec in azimuth, 0.6 deg/sec in elevation

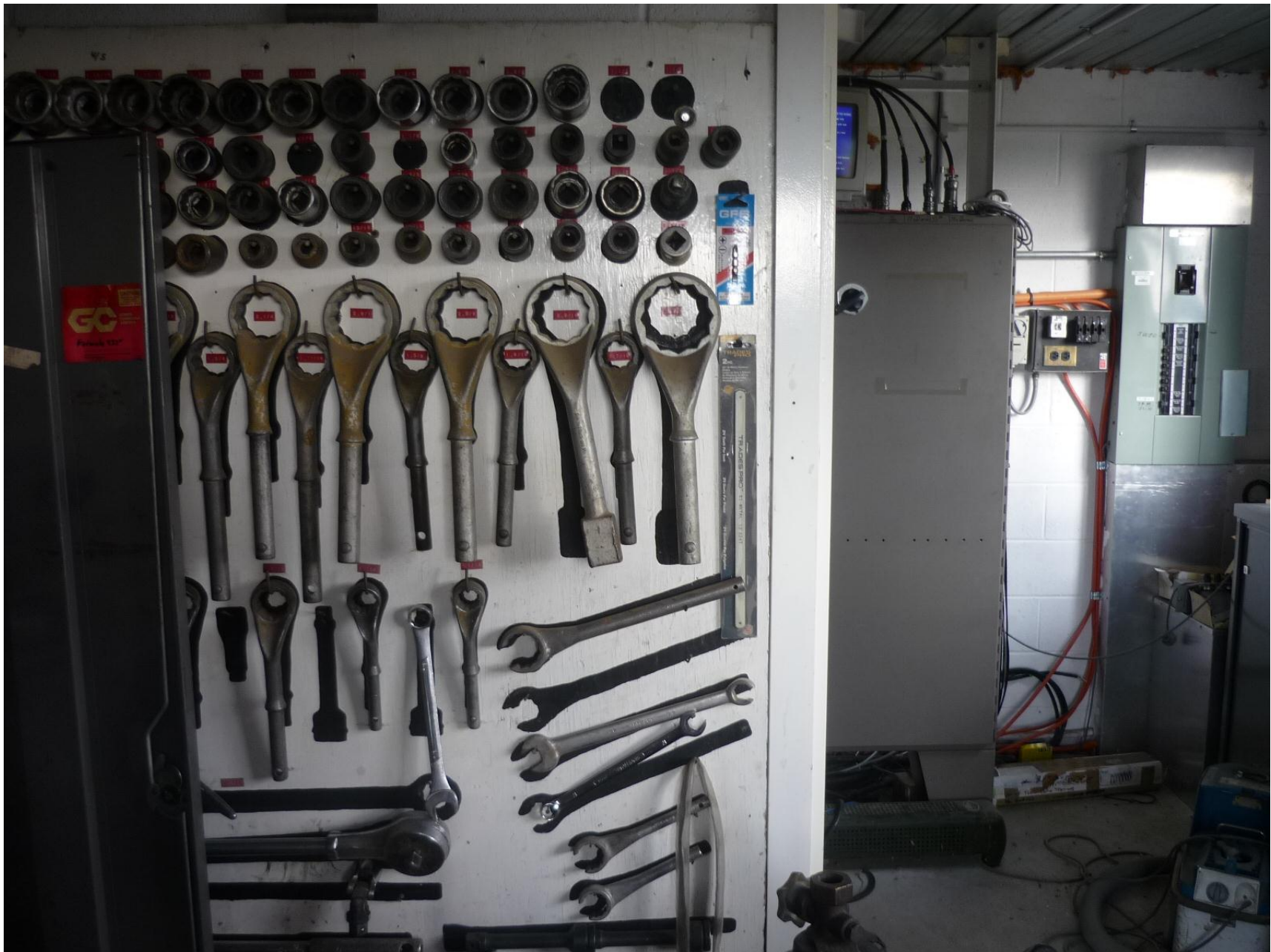


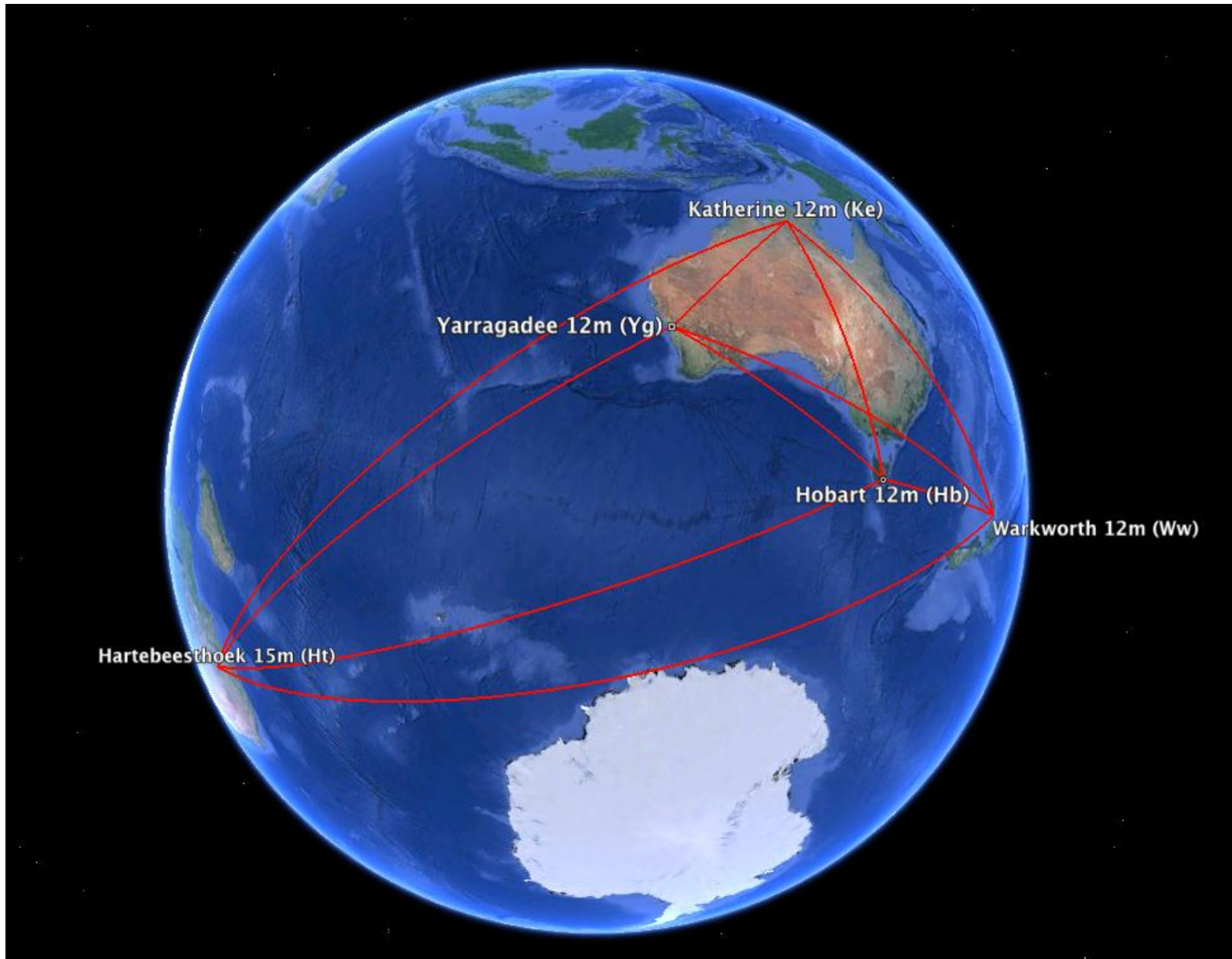


12m Antenna “Patriot” in Hobart

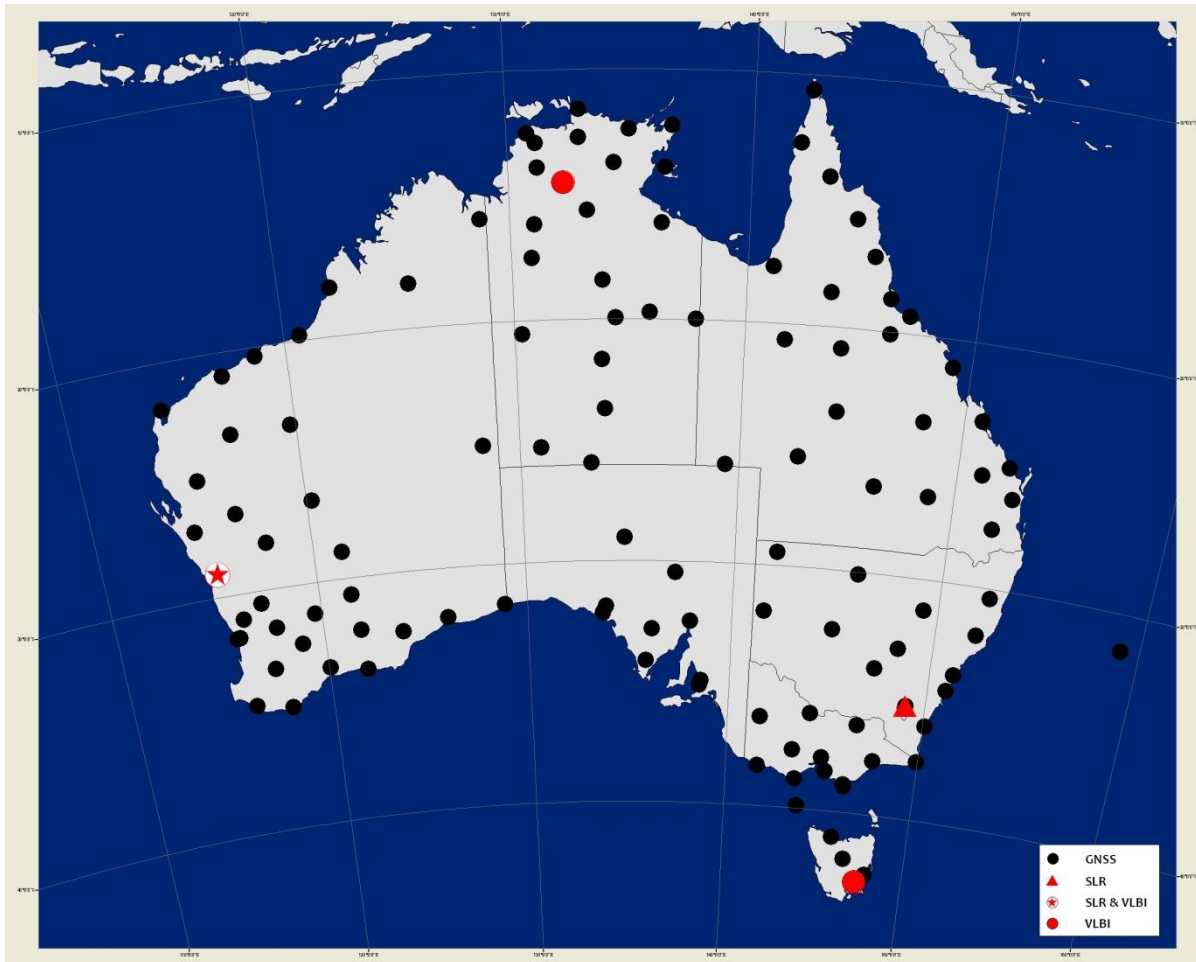
5 deg/sec in azimuth, 1.5 deg/sec in elevation







AuScope Network (GPS, SLR, VLBI)



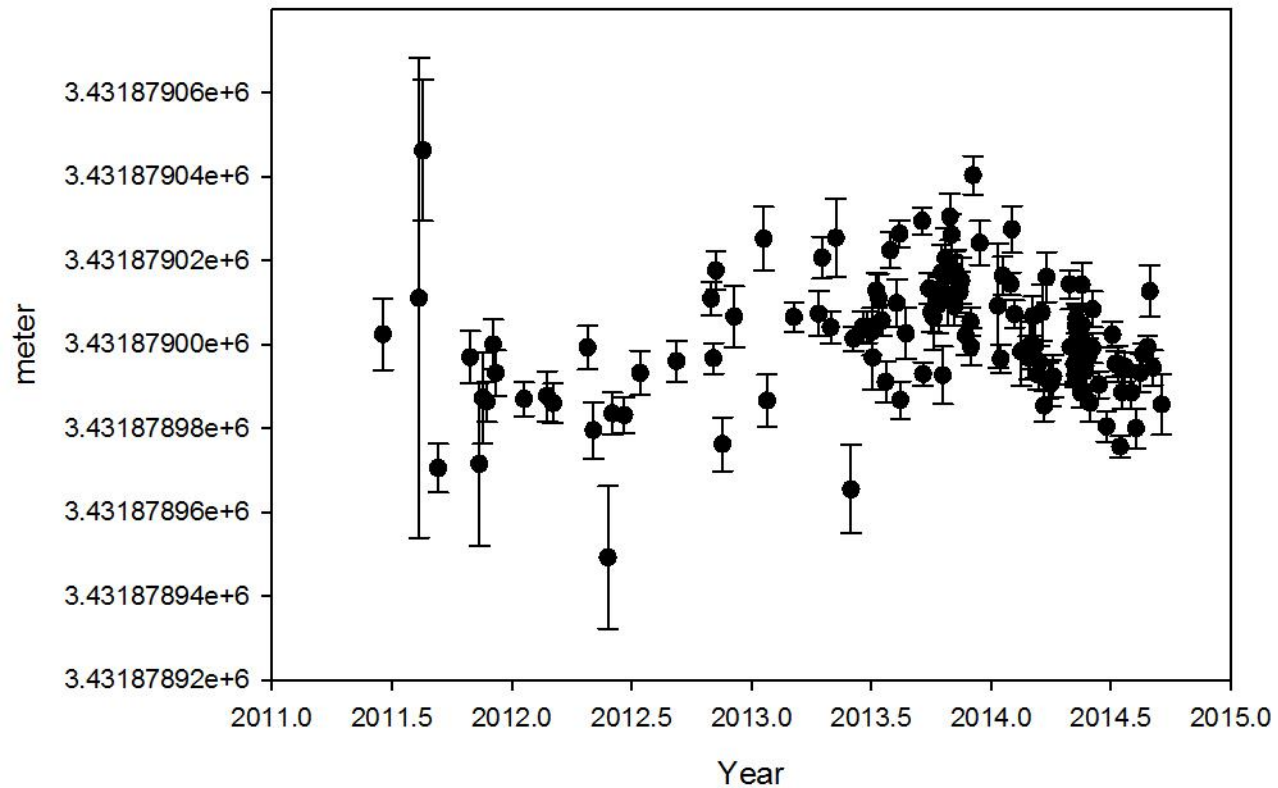
100 GNSS receivers
3 VLBI telescopes
2 SLR facilities

Observational results

1. Operations started in 2011 (funded by AuScope)
2. Extra funds granted by Geoscience Australia since 2013
3. Hobart12, Yarra12M, Kath12M, Warkworth, HartRAO (two stations), Hobart26, Parkes (64 meter)
4. Three AuScope stations – more than 100 sessions per year in 2013-2014
5. Correlation in Curtin Uni
6. Full integration to the global IVS network

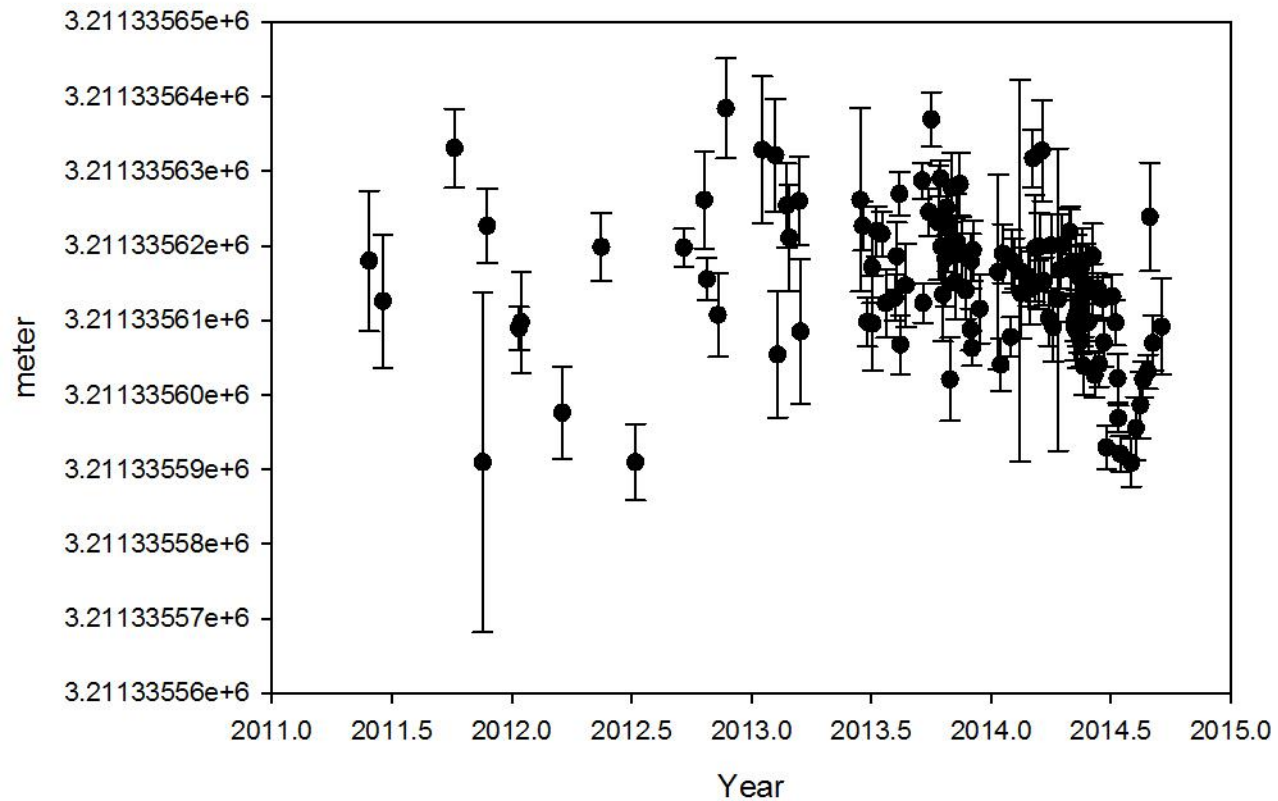
Baseline Hobart12-Kath12M

Hobart12-Kath12M



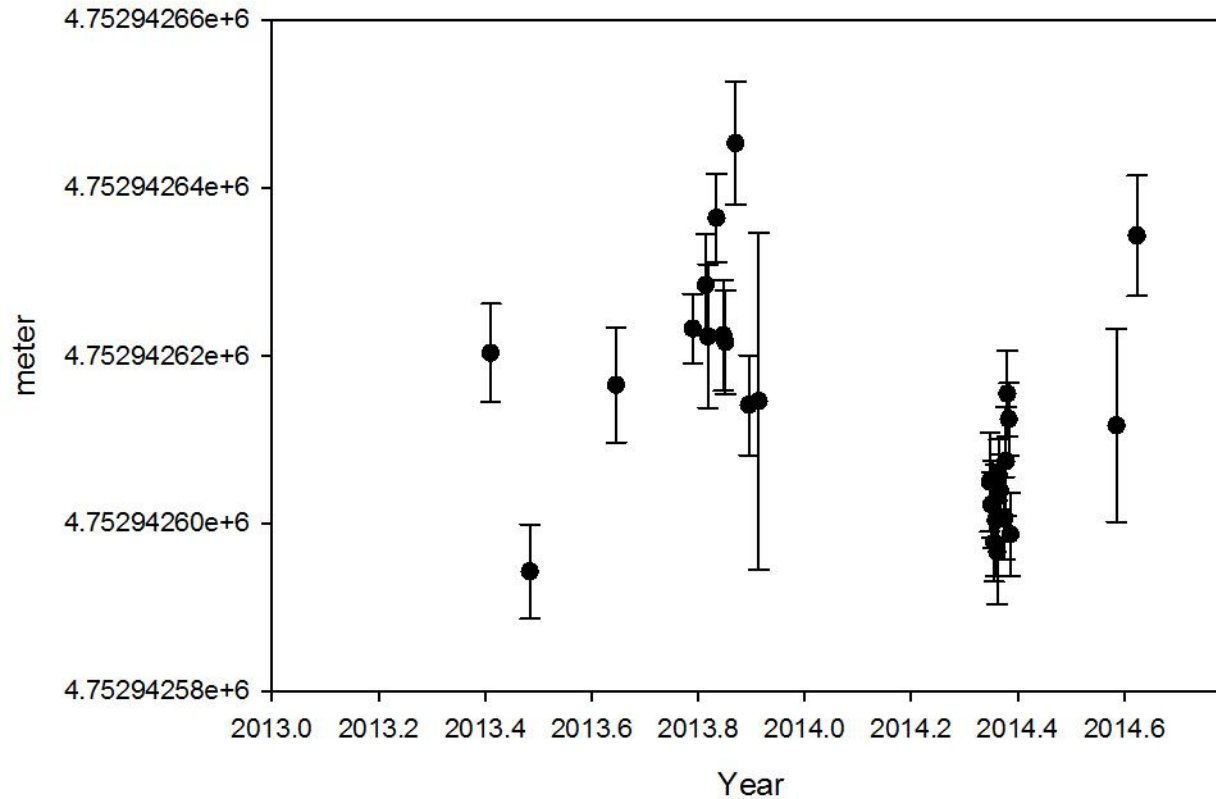
Baseline Hobart12 – Yarra12M

Hobart12-Yarra12M



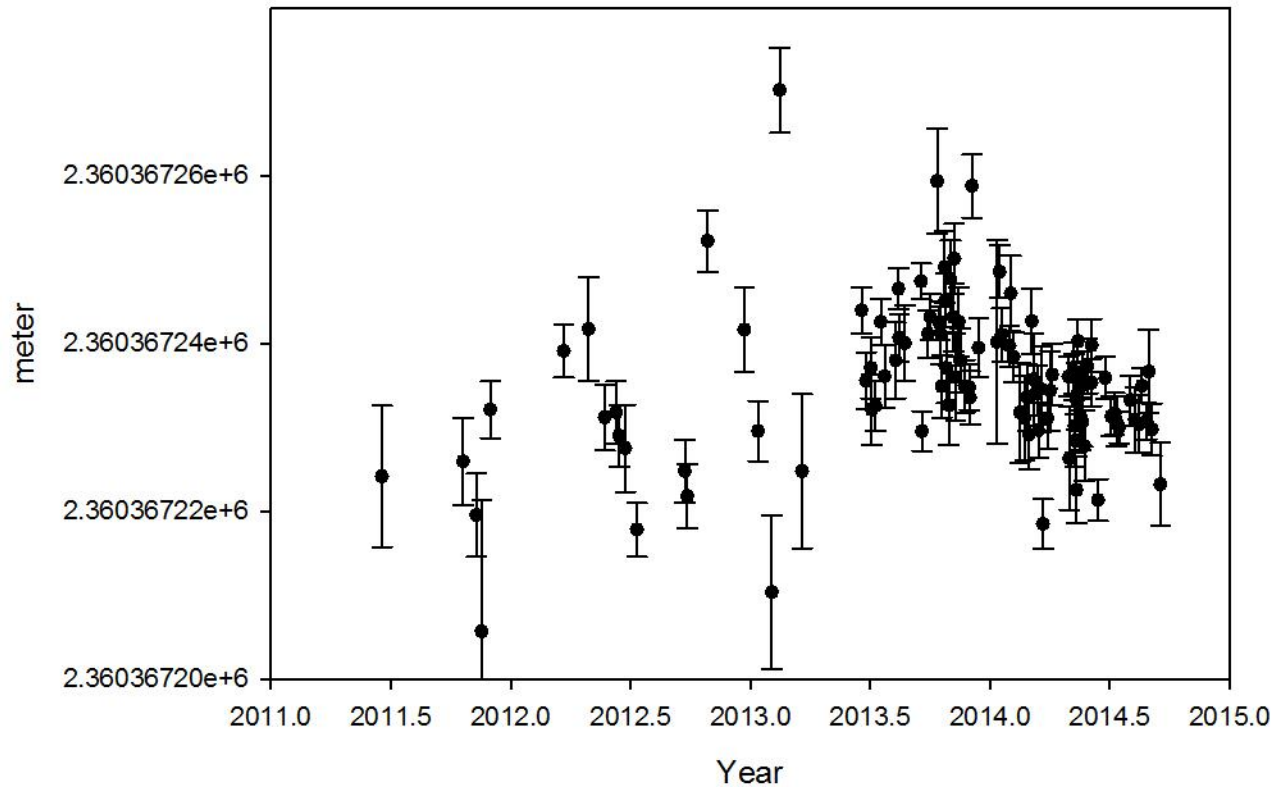
Kath12M - Warkworth

Kath12M-Wark12M



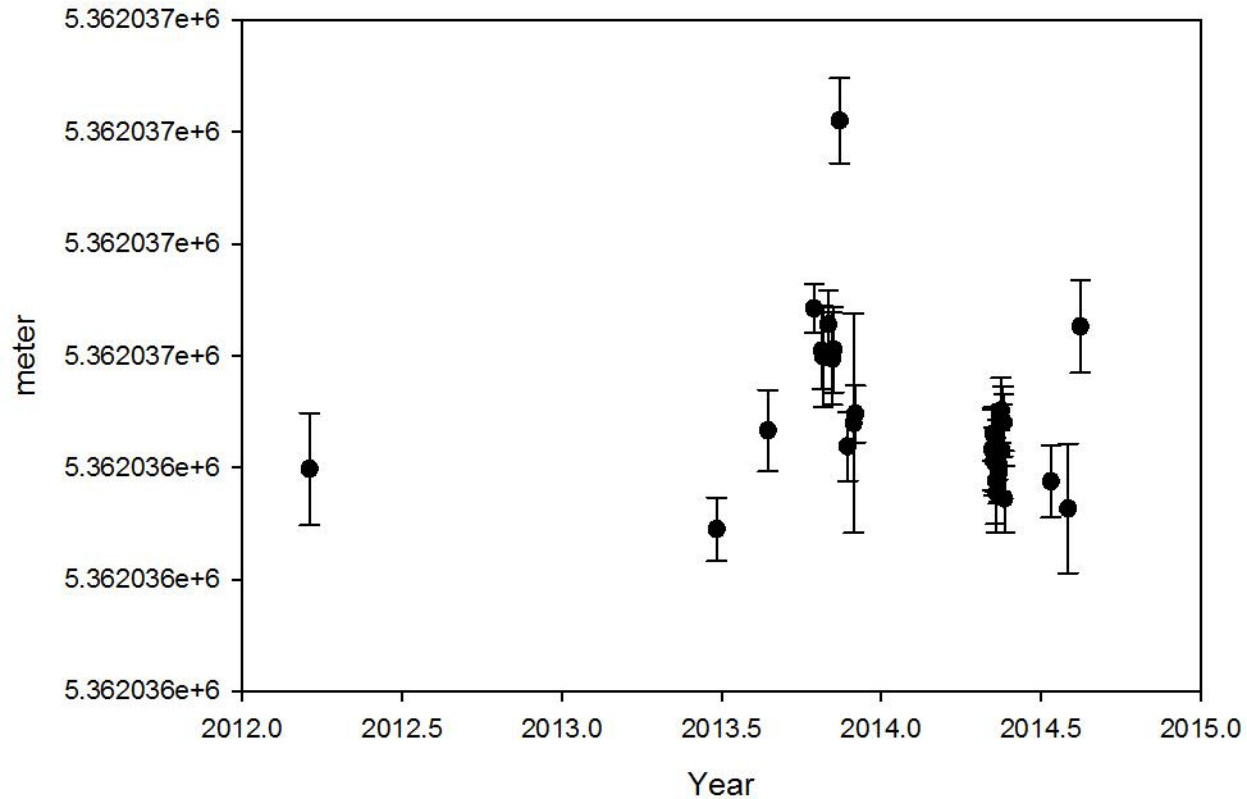
Kath12M – Yarra12M

Kath12M-Yarra12M



Yarra12M - Warkworth

Yarra12M-Wark12M



Linear rates (mm/year)

Baseline	Hobart12-Kath12M	Hobart12 - Yarra12M	Yarra12M – Kath12M
Linear rate N	-0.4 +/- 1.6 (129)	- 6.4 +/- 1.3 (122)	-1.1 +/- 1.1 (108)

Baseline	Hobart12-Wark12M	Wark12M-Yarr12M	Wark12M – Kath12M
Linear rate N	-8.6 +/- 3.0 (34)	- 9.1 +/- 6.5 (30)	-7.1 +/- 7.8 (22)

Conclusion

1. There are lot of daily estimates of the baseline lengths (station coordinates) obtained in 2011-2014, especially since January, 2013
2. Linear rates are estimated properly
3. Irregular variations of baseline lengths are indicated using the frequent time series
4. Nature of the variations needs to be explained (Atmosphere loading? Hydrology? Non-tidal deformation?)
5. Further extension of the network is desirable



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Any Questions?

Thank you for your attention



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