

Results from the Regional AUSTRAL VLBI Sessions for Southern Hemisphere Reference Frames

Lucia Plank¹, Jim Lovell¹, Johannes Böhm², David Mayer², Jamie McCallum¹, Elizaveta Rastorgueva-Foi¹, Stas Shabala¹, Jing Sun³, Oleg Titov⁴, Stuart Weston⁵, Jonathan Quick⁶

¹ University of Tasmania, Australia

² Vienna University of Technology, Austria

³ Beijing Aerospace Control Center, China

⁴ Geoscience Australia, Australia

⁵ Auckland University of Technology, New Zealand

⁶ Hartebeesthoek Radio Astronomy Observatory, South Africa

Session: Geodetic Measurement Techniques

Preferred presentation type: Poster

Since late 2011, more than 40 dedicated AUSTRAL VLBI sessions have been undertaken with the aim to strengthen the terrestrial and celestial reference frame in the southern hemisphere. In this program, the three 12-m antennas from the Australian AuScope array in Hobart (Tasmania), Katherine (Northern Territory) and Yarragadee (Western Australia) observe together with the new 15-m dish in Hartebeesthoek (South Africa) and the 12-m antenna in Warkworth (New Zealand). Recently, the planned observations have been greatly expanded, with 50 additional sessions planned until mid-2015, along with 3 continuous campaigns covering 15 days each. Independent scheduling at the Vienna University of Technology allows short-notice scheduling, optimized for strategies specific to each session. Presently, the aim of the AUSTRALs switches between geodesy, astrometry, and densification of the southern hemisphere celestial reference frame. All AUSTRALs are recorded with an increased data rate of 1 Gbps, allowing to compensate for the reduced sensitivity of the generally smaller dish size.

We give an overview of the AUSTRAL observing program and summarize the results so far. The performance is validated against standard global VLBI sessions and we identify the suitability of our global geodetic and astrometric products. Finally, we give an outlook on our future plans for the AUSTRAL observing program: this includes improved operations through the application of dynamic scheduling techniques, studying the use of sibling telescopes available at two sites within the AUSTRAL array (Hobart and Hartebeesthoek), and investigating source structure effects through astrometric imaging and source monitoring.