## The role of ground Surveys in GGOS and recent advances in ground survey techniques

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Sub-mm ground survey measurements provide the required vector connections among co-located space geodesy instruments (SLR, VLBI, GNSS, and DORIS) for maintenance and improvement of the Reference Frame within the framework of GGOS. Many SLR stations also use external targets for systems calibration, also required at the sub-mm level. New techniques, instruments and fixtures have improved ground survey procedures, making them more accurate and easier to implement on a routine basis. The talk will review procedures and tools used at the space geodesy stations in Australia that should be applicable to other space geodesy stations.