Hobart, Mt. Pleasant, Station Report for 2003

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Abstract

This is a brief report on the activities carried out at the Mt. Pleasant Radio Astronomy Observatory at Hobart, Tasmania. During 2003 the Observatory participated in 38 geodetic VLBI observing sessions. The recording system was upgraded from Mark III to Mark 5.

1. Introduction

The Mt. Pleasant Observatory is located about 15 km north east of Hobart at longitude 147.5 degrees East and latitude 43 degrees South. The station is operated by the School of Mathematics and Physics at the University of Tasmania with financial support from the University and with the aid of an Australian Research Council (ARC) Linkage grant in conjunction with Geoscience Australia. The station has participated in geodetic VLBI programs since 1988 but only joined IVS in 2002 when we were able to secure funding support for geodetic observations for a five year period. The station has a co-located GPS receiver and a site which has been used again during 2003 for absolute gravity measurements.

2. Brief Description of VLBI Facilities

The antenna is a 26m prime focus instrument with an X-Y mount. The focus cabin has recently been upgraded to include a feed translator with provision for four different receiver packages which enables rapid change over between geodetic and astronomical requirements. An upgrade completed during 2003 allows standard receiver packages to provide for operation at L band, S, C, X and K bands as well as the dual frequency S/X geodetic receiver. All of these receivers are cryogenically cooled. The antenna has a maximum slew rate of 40 degrees per minute about each axis. The station is now equipped with a Mark 4 electronics rack and a Mark 5 VLBI recording system as well as S2 recorder.

3. Staff

Staff at the observatory consisted of two academics, Professor Peter McCulloch and Dr. Simon Ellingsen as well as the Observatory Manager, Mr. Brett Reid, funded by the University. In addition we have an electronics technical officer, Mr. Eric Baynes funded through the ARC grant and a half time mechanical technical officer, Mr Barry Wilson. For operation of the observatory during geodetic observations we rely heavily on support from astronomy post-graduate students.

At Peter McCulloch's retirement dinner, Peter was awarded the honour of Professor Emeritus by the University of Tasmania in recognition of his contributions in the field of radio astronomy.

4. Geodetic VLBI Observations

Hobart participated in 38 geodetic VLBI experiments during 2003. These were divided between the R1, OHIG, SYOWA, CRF, SUR, and APSG programs. With the upgrade to Mark 5 during

Figure 1. The Mt Pleasant 26m antenna

2003, Hobart was the first station to switch from reel to reel tapes to using Mark 5 recording media only for geodetic experiments correlated at Bonn, Washington and Haystack. Syowa experiments, correlated at Mitaka, are recorded using S2 media. During 2003 the station's Hi-Ranger elevated work platform tower had its 10 year major overhaul done to enable continued safe work at heights.

5. Future Plans

We will have two new academic staff members commencing in 2004. Also, as a part of the (ARC) linkage funding, we plan to have a PhD student in geodetic VLBI commencing. The stations existing humidity, temperature and pressure sensors will be replaced in early 2004 by a more accurate MET3 sensor funded by NAOJ.