# OAN - Yebes station report

## VLBI Equipment

No changes on the Mark 5B, VLBI terminal, PC-EVN and dBBC status since last report.

## Field System

No changes since last TOG report: we are still running 9.10.4 on a Debian Lenny host. Installation was not standard.

## VLBI observations

Some observations were performed remotely when observers were not available. This happened several times during the last VLBI experiments. In principle the telescope plus the VLBI terminal can work in unattended mode.

A 3 mm fringe test was performed on April 21$^{st}$ 2010 at 86 GHz together with Onsala and Metsähovi. Data were recorded on the 3 telescopes in disk packs and later transfered to Bonn correlator. The data were extracted using fuseMark5, which allows to mount the disk packs as an external disk, and transferred later using tsunami. Fringes were found in the three baselines with SNRs from 50 to 110. Metsahövi recorded the data on two polarizations, while Yebes and Onsala only used one circular polarization. Since polarization sense was unknown at Yebes, 6 scans were recorded with the plate in front of the horn in a given position and 2 were recorded after the plate was rotated 90 degrees.

## 40m radiotelescope

New pointing models for C band, X band, 22 GHz and 3 mm receivers are in use at the 40 m telescope. We think this has improved the efficiency of the telescope at any azimuth and elevation.

There is some work at our labs to build and install a new C band receiver. The goal is to cool the polarizer and use a vacuum window in waveguide that hopefully will decrease the noise temperature by a factor 4. We expected the receiver to be ready for the May-June EVN session, but it was not possible. The receiver is still being mounted.

The telescope has been successfully used at 3 mm for continuum and spectral observations. The remote control for this receiver is finished and the telescope has been partially characterized. The focus changes by approximately 2 mm between day and night. More work to characterize the telescope will come in the future.

We have estimated the efficiency of the antenna at 3 mm from observations of planets. The value: 9 %, leaves space for a big improvement. The results approximately match the figures obtained with holography for the main reflector and the absorption by the membrane placed at the vertex of the

antenna.  We expect to reach 40 to 50 % after an adjustment of the surface and a replacement of the membrane.

Some observations towards Mars Express at X band while flying by Phobos were performed together with Metsähovi and Wetzell. Results seem to be interesting and promising and hopefully should be disclosed by the PI in the future.

Pablo de Vicente