

ATCA Observing

Overview

ATCA antenna control is via the terminal program caobs. caobs is the identical version used for normal ATCA observing and controls telescope tracking, IF setup and stowing the antenna etc. Full understanding of ATCA control is out of scope of this page. For VLBI a special CABB mode is used which sums 64 MHz bandwidth from each of the 2 IFs to form a tied array. This only works if the array is well calibrated in delay and phase. Large phase offsets between the antenna will result in decorrelation and loss of sensitivity. The VLBI backend consists of two "LBA DAS". Unlike Parkes and Mopra, these do not have any samplers installed as the tied array output is all digital. The rest of the DAS processing is identical when the data is filtered and the LBADR recorder captures the sampled data, formats it in software and writes to local or remote disk (or streams for eVLBI). The DAS setup is controlled via the "DAS GUI" and the recorder via "cdisko2". These are the same for ATCA, Parkes and Mopra and some documentation is available at:

<http://www.atnf.csiro.au/vlbi/wiki/index.php?n=Main.ObservingNotes>

Antenna control control is from the xbones:1 VNC, while VLBI control is run on the xbones:2 VNC.

Antenna control

The antenna is controlled via the terminal program called caobs, run on xbones. To load and run a schedule just type

```
> set file vt999a
> start
```

where vt999a, in this example, is the name of the experiment.

Stowing

To stow the (active) antennas, in caobs stop the the current scan first then type stow, ie

```
> stop
> stow
```

Gain

Generally the observer does not need to adjust attenuation of the system unless antennas are added or removed from the tied array. The only exception is when running in 64 MHz mode and the tied array gain needs to be adjusted to fix sampler stats (see trouble shooting below)

Monitoring

You should regularly monitor the following every 10-15 minutes

- Any message on portal chat
- caobs is showing no errors
- Variation in phase between (tied) antenna < 60deg or so
- DAS IF level within range
- Recorder still running
- cdisco has not frozen
- If running 64 MHz mode, sampler stats are within 17.3/32/7/32/7/17.3% range

Troubleshooting

- **Phase variation in vis > 60deg or so:** Either run “cor pcal” in caobs while observing a compact calibrator for a few minutes, or drop antenna from the tied array
- **In 64 MHz mode, sampler stats are not close to ideal 17.3/32.6% range:** If the “extreme” stats (usually around 17.3% are too large you need to **reduce** tied array gain. If the “extreme” values are too small, you need to increase gain. On the caccc1:1 VNC, type “tie” into the command window of cacor. Increase or decrease the gain in increments of 0.01 with the syntax `tie gain XX XX`, based on the value recorded when you just typed “tie”
- **cdisco freezes:** Try killing the GUI (via window manager or ^C fro starting terminal) and restarting. Killing the GUI should not interrupt the recording
- **DAS IF power level is out of range:** Adjust attenuation in loGUI (see above)
- **Recmon says recorder not connected:** See Recorder Notes

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