

## Mopra pointing

Interim report #1  
mjk, 22/may/1994

Progress has been made on several fronts:

### 1. Pointing Analysis.

The software has been overhauled and now seems reliable.

- a. Data collection. The task POINT will drive the antenna to a specified position and then execute a pointing pattern. It collects data from a dataset connected directly to the conversion rack GTP .. ie, it operates asynchronously to the ACC cycling. At the end of the pattern the data will be analysed to provide a measure of the pointing error in azimuth and elevation. A record is written out to the logfile for subsequent processing.
- b. Processing. The narrabri analysis task (modified after transport to socorro and then to mopra) reads the logfile and computes the corrections to the current pointing model parameters.
- c. Recent experiences. The system was tried out in april (at 12 GHz) and in may (at 8.6 GHz). The algorithm seems robust and honest, but probably a bit cautious (rejecting some scans because the baseline slope was excessive, even though the source was quite obvious). 2 Jy at 8.6 GHz seemed to be the limit.
- d. Future developments. At present you have to enter the full source details - name, ra, dec, epoch. Access to the AT catalogues will be implemented.

A scheduler will also be implemented. This will use the AT SCHED.

A link to the correlator will be provided -- ie, a pointing run using methanol masers will be possible. (And SiO masers in july).

### 2. Results.

The history of the present pointing model parameters is unclear. The two runs (april and may) both indicate that at night (in april and may) the parameters need revising. Only four (out of ten) parameters are used and checked :-

parameter	current (arcsec)	april error (arcsec)	may error (arcsec)
az zero point (ea)	200	-100 +/- 26	-98 +/- 6
az squint (fz)	17	36 +/- 13	17 +/- 3
el zero point (fx)	-192	23 +/- 26	6 +/- 2
el grav sag (ce)	433	13 +/- 13	36 +/- 5

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(The april run was primarily a test run with just a few (poorly chosen) sources so the errors are high; in may the number of sources was greater, and teh selection rather better).

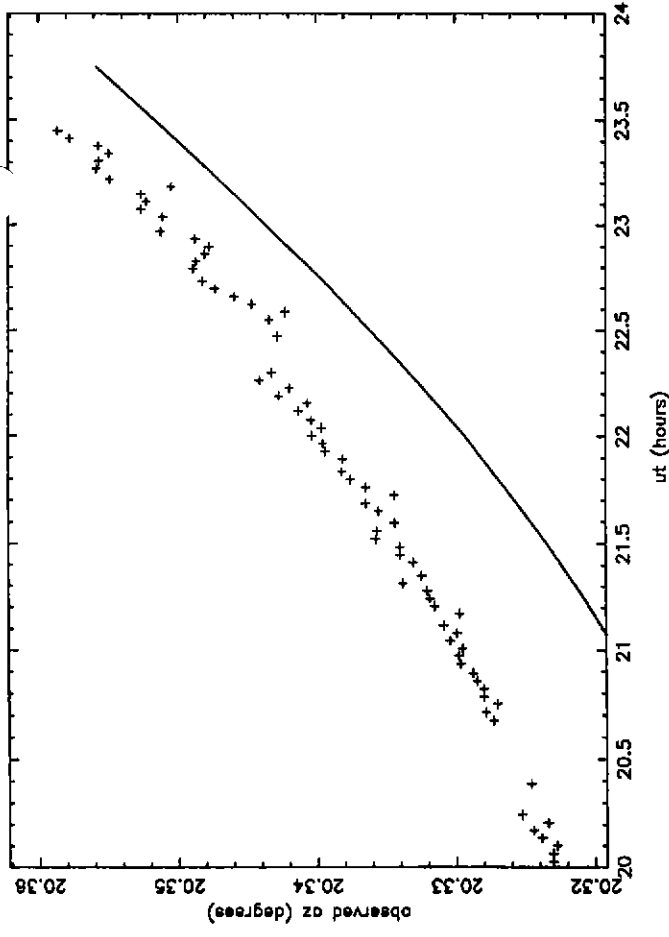
It would be prudent to reset ea and ce.

It would be useful if pointing runs were made at frequent intervals for a while to assess the stability of the parameters. The tests will become more practical when the scheduling capabilities are installed.

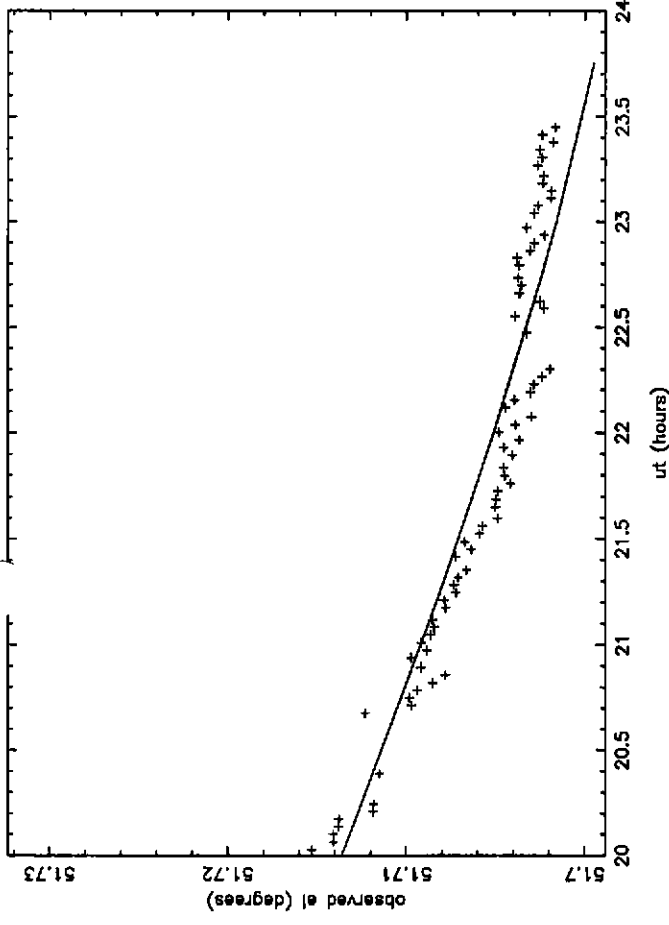
### 3. Diurnal variations.

An experiment was run on the mornings of May 18 and 19: we tracked the Optus-B1 satellite from 6am till 10am. The orbital elements for these periods were provided by Optus. Figures 1 and 2 showing the observations and the difference between observation and prediction indicate that we may have a problem with the elevation at sunrise (and probably a comparable problem in the evening) : there is a distinct discontinuity in the elevation error, suggesting an error of around 10 arcsecs.

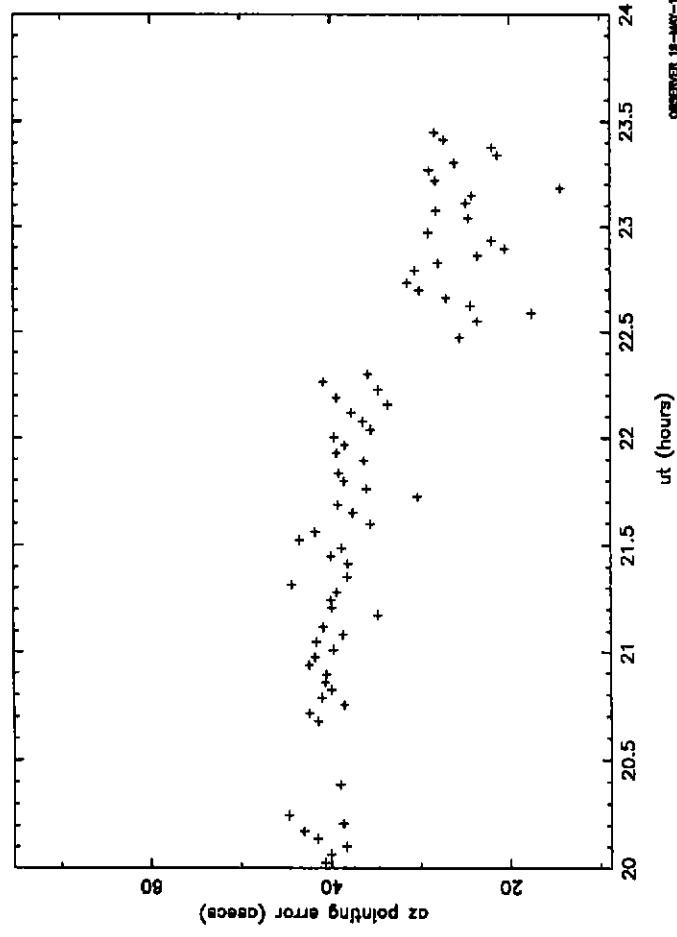
optus-B1 : may 17/68



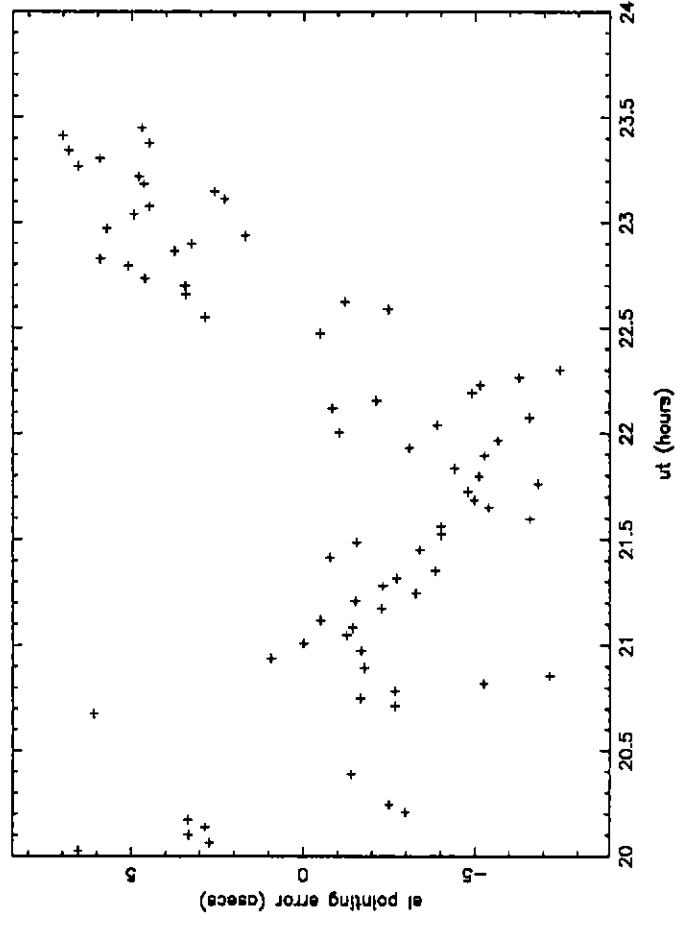
optus-B1 : may 18



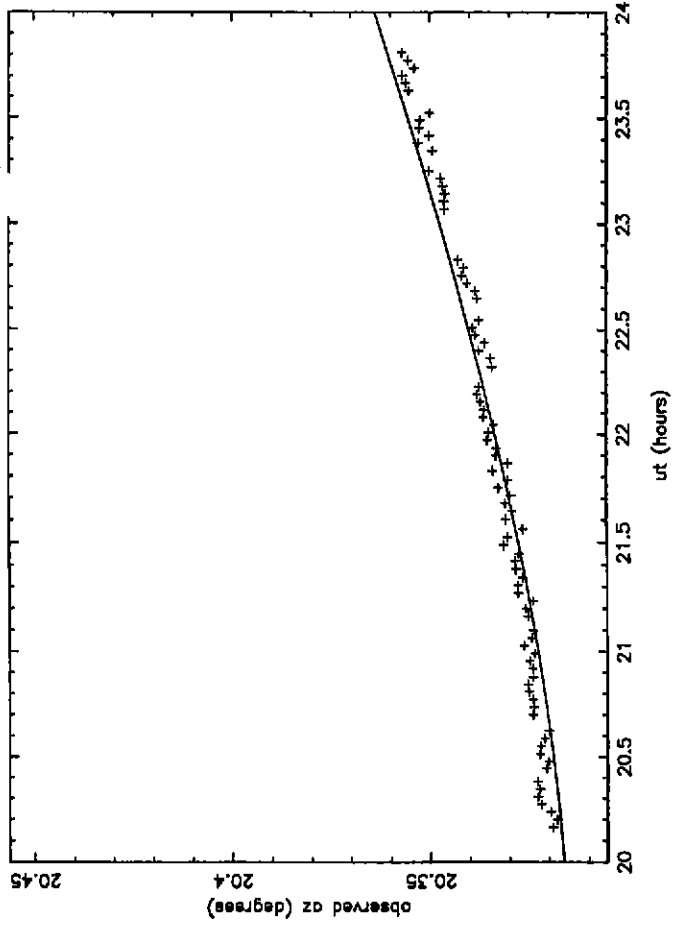
optus-B1 : may 17/68



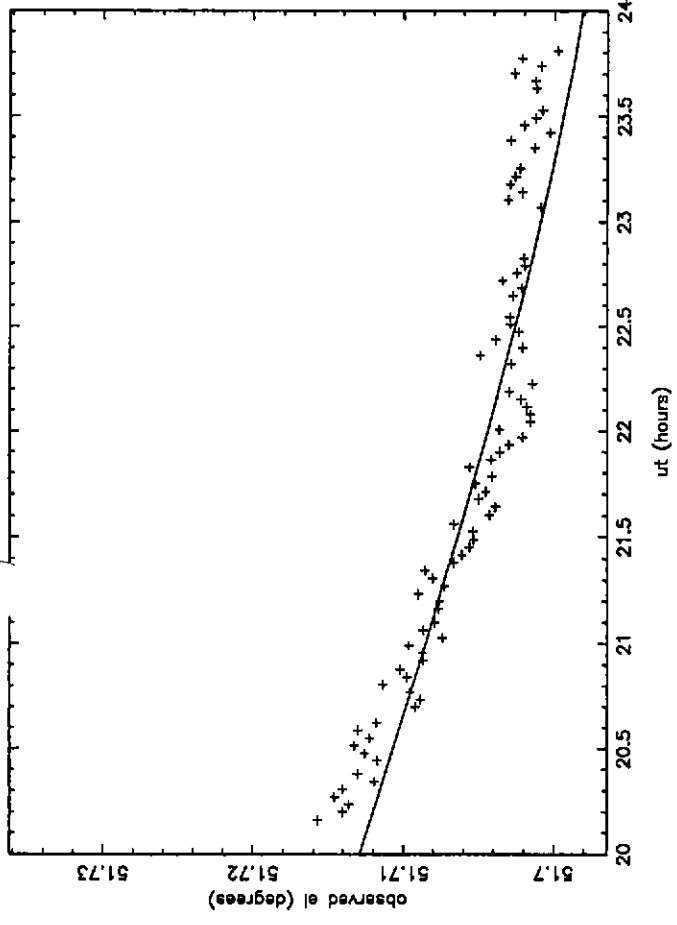
optus-B1 : may 17/68



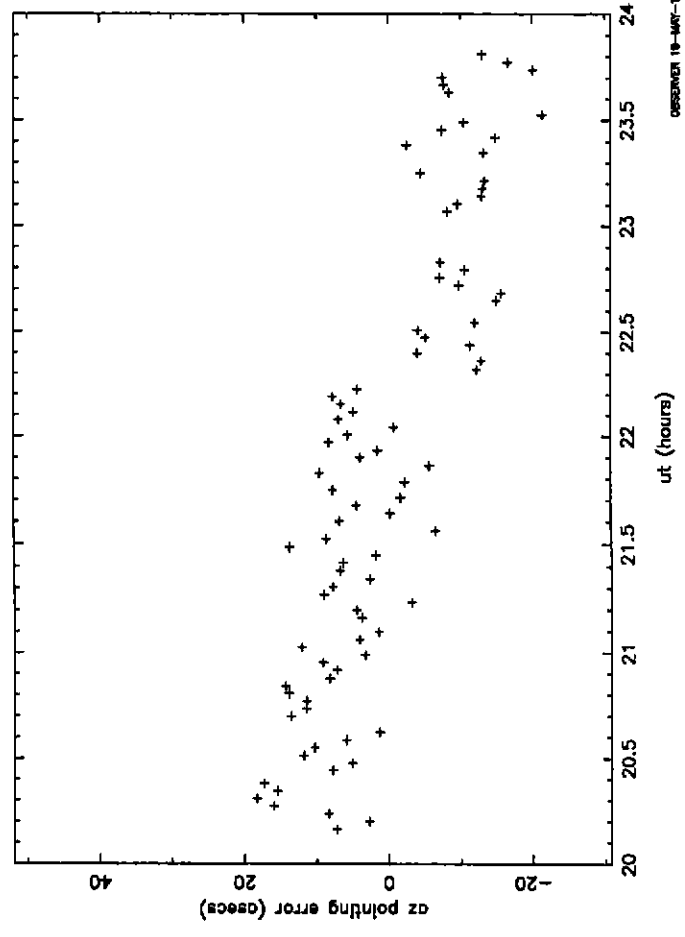
optus-B1 : may 17



optus-B1 : may 17



optus-B1 : may 17



optus-B1 : may 17

