

EVN Amplitude Calibration

Jun Yang, JIVE



EVN TOG Meeting – JIVE, 28 Jan, 2011

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Calibration Accuracy

Session 2/2010

Station	18 cm	6 cm	5 cm
Cm	0.15 (7) *		0.14 (4) *
Jb	0.11 (11) *	0.08 (6)	0.06 (4)
Ef	0.04 (11)	0.04 (6)	0.03 (4)
Mc	0.09 (11)	0.04 (6)	0.06 (3)
On	0.06 (11)	0.08 (6)	0.06 (4)
Sh	0.11 (9) *	0.05 (6)	0.09 (2)
Tr	0.07 (11)	0.03 (5)	0.03 (4)
Ur	0.09 (7)	0.18 (5) *	
Wb	0.03 (11)	0.02 (5)	0.10 (4) *
Bd*	0.07 (3)	0.08 (3)	
Zc*	0.14 (3) *		

Numbers here are **the median absolute error** in the antenna gain amplitude.

This number will be approx half the error in the SEFD and is the same that you see in AIPS gain plots. The number in brackets after each entry is the number of experiments that were used to determine the median error for that entry.

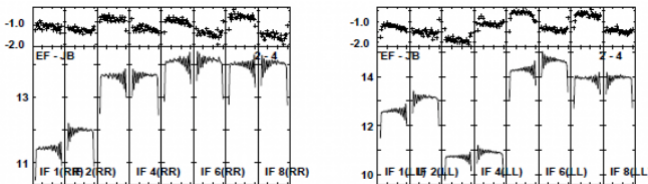
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Jb1/Jb2/Cm/Kn/Da

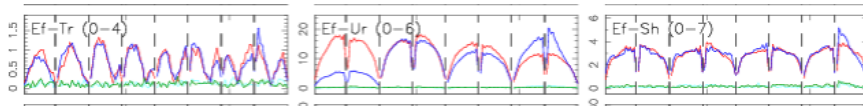
- q No feedback in Session 3/2010
 - q Antab files were made at JIVE
 - q Frequently see improper IF attenuation level/dead noise source
 - q No Tsys data at 22 GHz
 - q Cm/Kn/Da: 8 MHz signal in 16 MHz Channel
 - q Cm/Kn/Da: rad files are total power-dependent
- Short of manpower (operators, RF engineers).

Need external support?

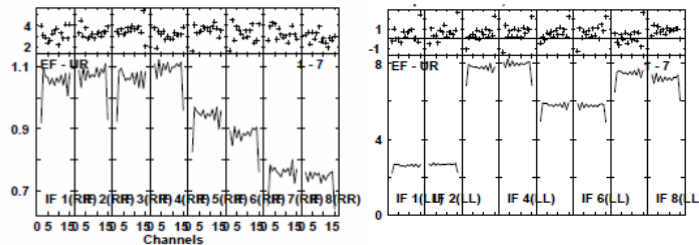


N10C2
Calibrated
amp & phase vs. freq.

Urumqi in EF022A



Clock-search plots: amp. vs. freq. (Tr: problem with receiver)

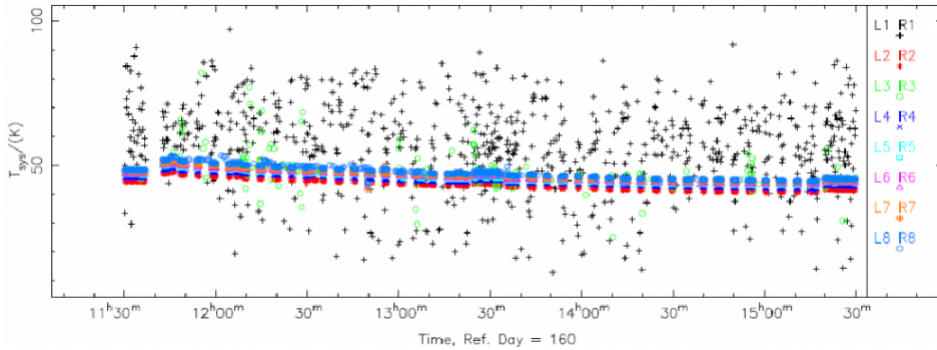


Calibrated amp & phas vs freq. channels (Source OQ208)

BBC 1 (IF 1-2 LL) and 8 (IF 7-8 RR): low correlation amplitude.

RXG file could not cover the unknown sensitivity loss.

Tsys for Wb in EY010B



The gaps: Missing calibration data during the scan of pulsar observations.

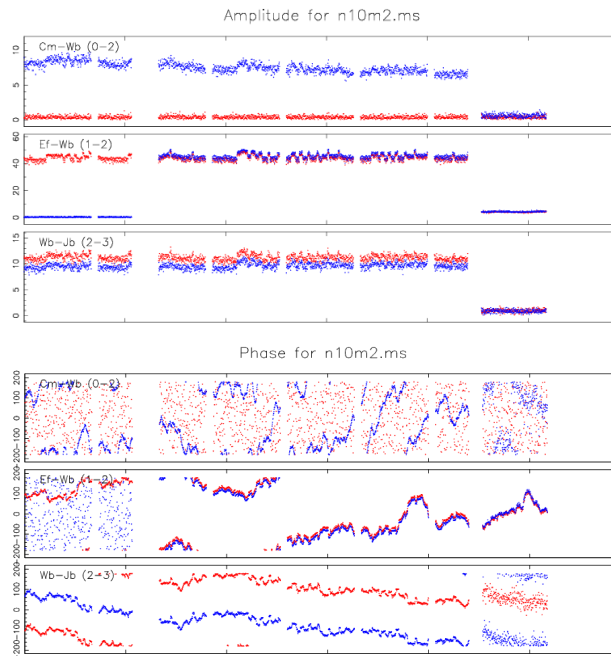
Wb SEFD measurements seems to source-dependent. It may not have enough sensitivity to get good measurements in the case of weak (<10 mJy) sources.

Wb in N10M2

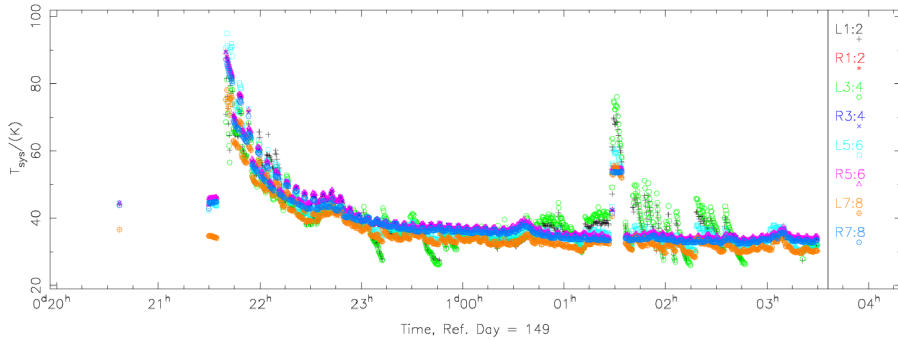
Station-based small-scale amplitude variation.

Signal from other unused telescope was not properly attenuated and went into adding box.

Solved after session 2/2010.



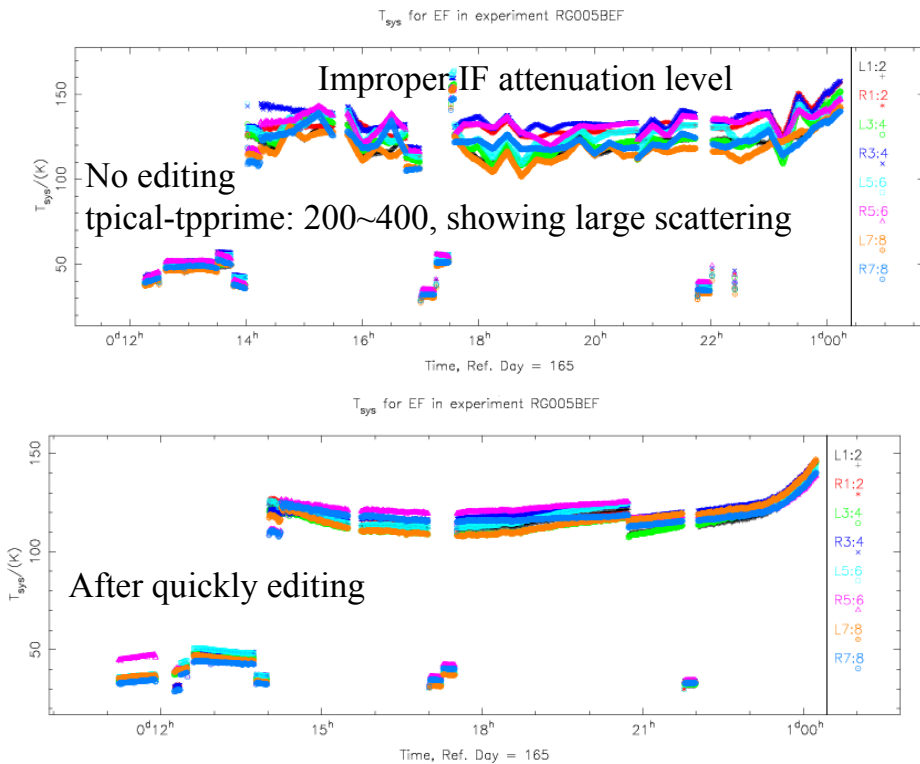
Tsys for Ef in EP064N



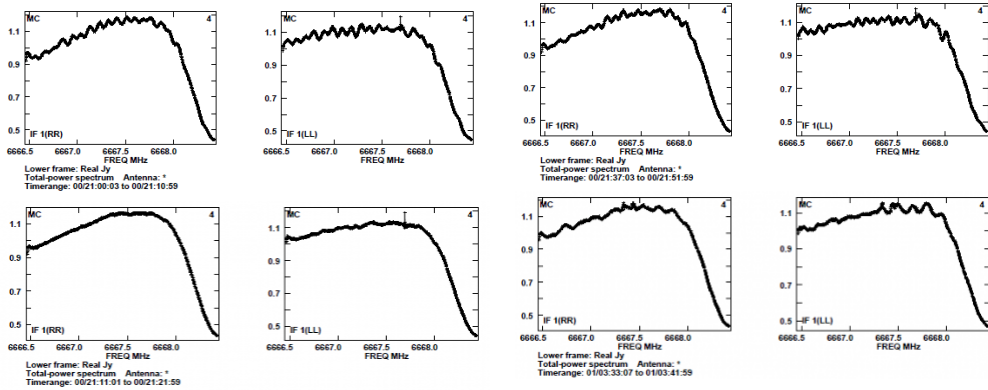
L1:2 and L3:4 (BBC1 and 3) are more noisier than the other channels.

A broken amplifier in the IF1 chain caused interference or drifts in the IF power (reported by Uwe Bach).

The problem was seen in some 6cm disk experiments at the beginning of the session 2/2010.

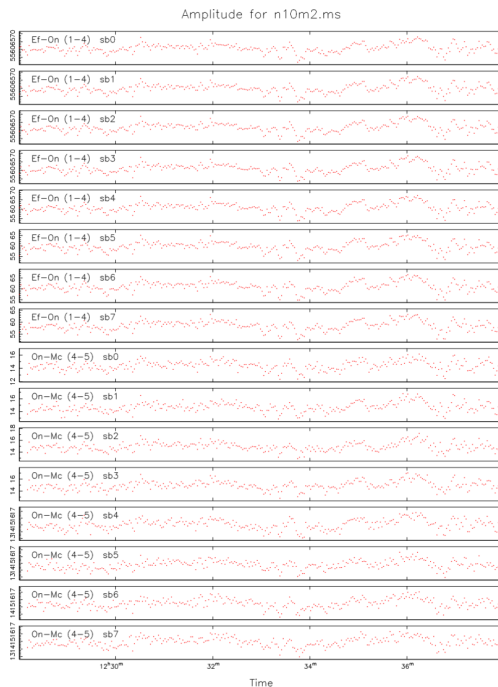


Mc in EB045B

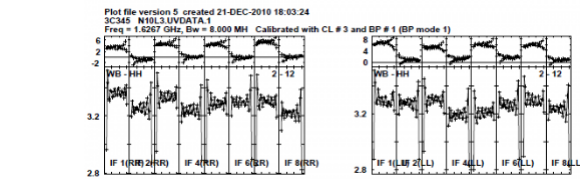
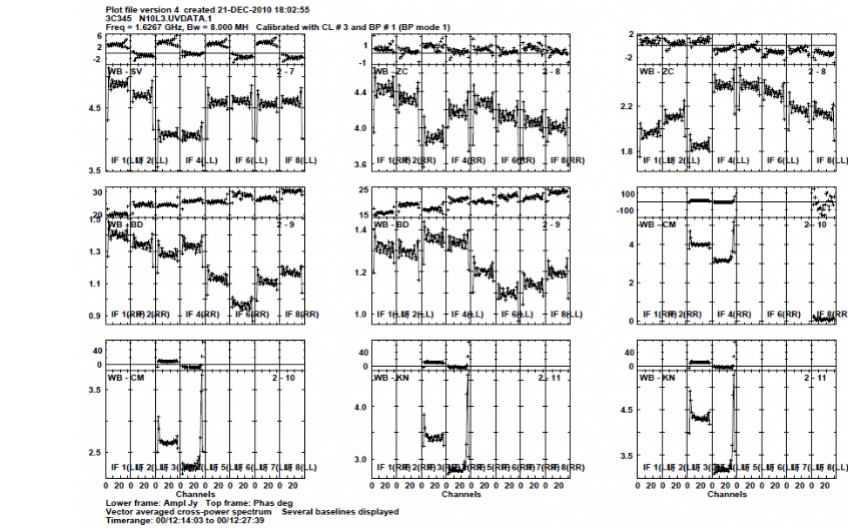
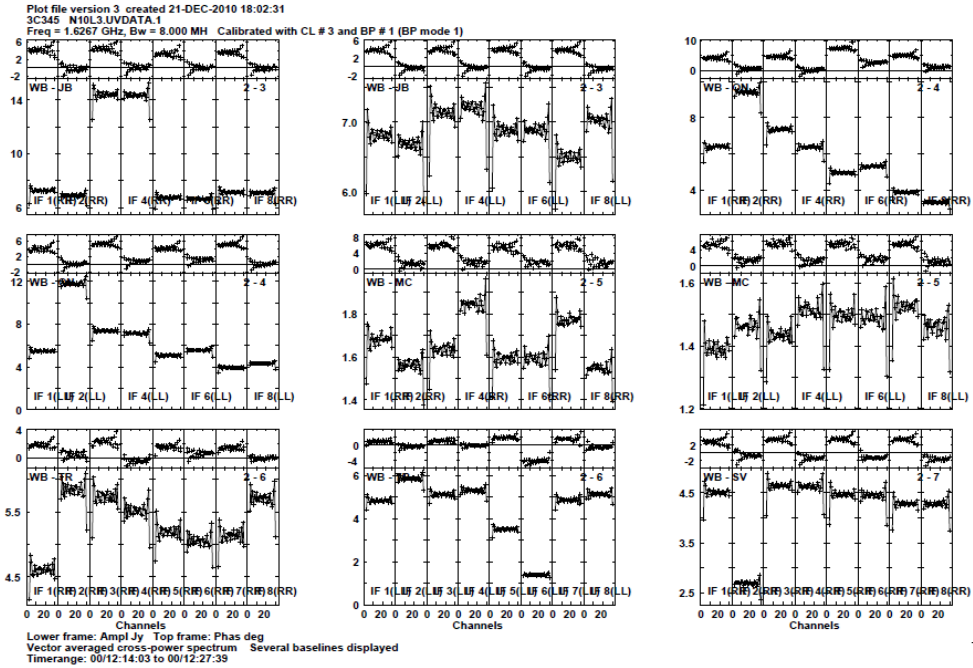


Noisy and unstable auto-correlation bandpass shape.

Onsala
Affected by winds



IF-dependent offset in N10L3



K-Band EVN Observations

Current status

- ✗ Amplitude calibration at 22 GHz does not look as good as at low frequencies.
- ✗ Opacity-free gain curve is not available at Nt, Ys, Ro.
- ✗ No Tsys data from Jb, & Cm.
- ✗ Less experiments were performed.

ANTABFS script

Problems

- (1) On: It gives large error as its Tcal varies significantly across the subband at 5 cm. Antabfs program gets Tcal at the center frequency of each subband by linear interpolation from two Tcal data points at nearby frequencies rather than integration across the subband.
- (2) Sh: Lost a channel in the 16 channels experiment. Problems with the used Linux system.
- (3) Russian stations: Crash to deal with their log files since they have some local-defined commands.

Suggestions?

Timely delivery of data

Timely delivery can significantly speed up the correlation, post review, and pipeline processes and make more disk packs be available in the upcoming session.

Feedbacks, **rxg**, **antab** and **uvflg** files should be delivered **within 2 weeks after the end of a session**.

Automatically uploading log files and gps data are very welcome.