EVN Amplitude Calibration
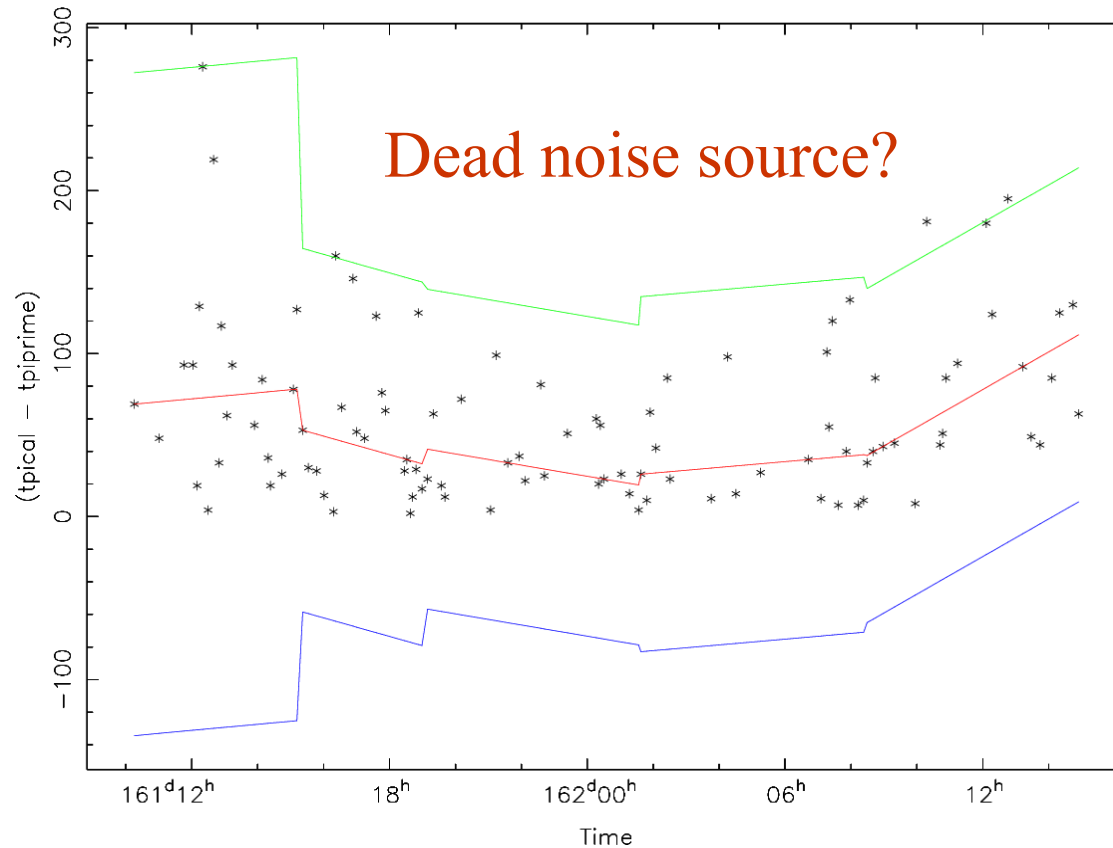
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Jb1 in 18cm eVLBI experiments EP070

10 June 2010.

Tpi readout number was OK.

Session 1/2010

Tr: Significantly low (~0.1x) amplitude in RCP in all C-band experiment except for the last one (RY002A).

Jb: Low (~0.6x) amplitude in RCP in all C-band experiments except for the 1st one (EP064K).
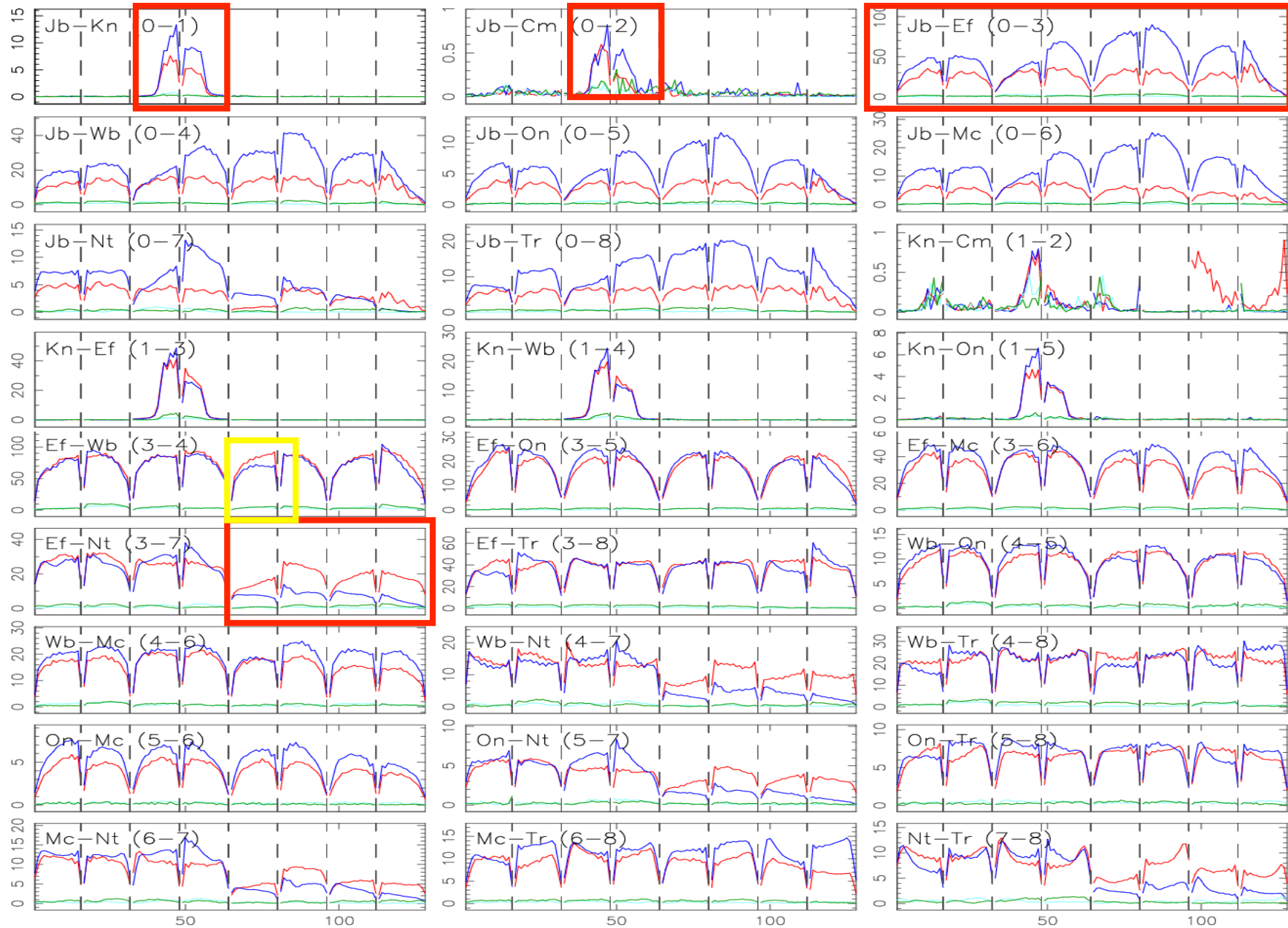
Nt: Low amplitude in upper four subbands (L&R) in all C-band 1Gbps experiments.

Wb: Low (~0.85x) amplitude in the 5th LCP TADUmax suband in all 1Gbps experiments.

Ur: No "tpicd" message during "midob".

Cm/Kn/Da: 16 MHz subband was fed in only 7 MHz signal.

Amplitude for klk20 (RY002A)

Correlation amplitude vs frequency channels, Blue: LL, Red: RR

K-Band EVN Observations

✓ Tr and Ur will get K-band receivers this year.

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, Jb, & Cm.

✖ Less experiments were performed.

Calibration Accuracy

Session 3/2009

```
=========================================================================
Station            18 cm              6 cm             5 cm
-------------------------------------------------------------------------
Kn                                   0.18(3)*
Da                 0.10(2)           0.22(4)*         0.17(4)*
Jb                 0.12(6)*          0.11(5)*         0.36(4)*
Ef                 0.04(6)           0.03(5)          0.06(4)
Mc                 0.08(6)           0.06(5)          0.07(4)
Nt                 0.07(6)           0.06(5)          0.13(4)*
On                 0.06(5)           0.06(4)          0.09(4)
Sh                 0.06(2)           0.08(4)
Tr                 0.08(6)           0.04(5)          0.04(3)
Ur                 0.04(4)           0.07(4)
Wb                 0.04(5)           0.06(4)          0.06(3)
Ys                                   0.07(4)          0.07(4)
Ar                 0.09(1)
Ro                 0.08(2)
Hn
=========================================================================
```

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.

Jb: problem with noise source?   Nt: large (10-20%) scattering of Tsys data at 5 cm.

Calibration Accuracy

```
Session 1/2009                                    Session 2/2009
---------------------------------------------     ---------------------------------------------
Station     18 cm         6 cm         5 cm       Station     18 cm         6 cm

---------------------------------------------     ---------------------------------------------
Cm          0.150(5)*     0.212(6)*    0.078(10)  Cm              *              *
Ef          0.018(5)      0.049(7)     0.038(10)  Ef          0.033(10)      0.046(8)
Jb          0.148(5)*     0.119(6)*    0.049(9)   Jb          0.109(10)*     0.123(8)*
Mc          0.077(5)      0.061(7)     0.039(10)  Mc          0.091(10)      0.040(6)
Nt          0.079(5)      0.136(7)*    0.073(10)  Nt          0.079(10)      0.066(8)
On          0.038(5)      0.078(6)     0.054(10)  On          0.078(10)      0.066(6)
Sh          0.064(2)      0.053(4)                Sh          0.073(7)       0.243(6)*
Tr          0.068(5)      0.031(7)     0.036(10)  Tr          0.129(10)*     0.070(7)
Ur          0.078(3)      0.067(1)                Ur          0.089(6)       0.115(8)*
Wb          0.023(5)      0.021(7)     0.073(10)  Wb          0.051(10)      0.042(8)
Mh                                                Mh
Ar                        0.031(1)                Ar          0.104(1)       0.078(2)
Ro          0.026(1)                              Ro
Ys                                     0.055(3)   Ys                         0.043(6)
Hh                                                Hh
---------------------------------------------     ---------------------------------------------
```

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.

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 non-standard 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.