

# EVN Performance and Reliability

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# Outline

- ★ **Recent EVN Highlights**
- ★ **Early view of Session 2/2011**
- ★ **Summary of Session 1/2011**

# EVN Highlights

- ☺ DBBC has been used at Ef Since session 1/2011.
- ☺ The 1<sup>st</sup> 2Gbps fringes were detected on the baselines of Ef-On with DBBC and Sh-Ur-Km with CDAS.
- ☺ Fringes to EF at 49/90 cm was firstly detected.
- ☺ JIVE SFXC software has started to provide multiple phase center correlation in one pass.
- ☺ Sh, Hh, Sv, and Zc have successfully converted their MK5A to Mk5B.

# May/June Session of 2011

**Ro70:** No fringes in the ToO experiment RT011/RM008, likely related to improper setup of its subreflector.

**Ef:** Out in EG049B as its antenna control PC crashed and could not be fixed during the night. RCP was lost in ES066A&B due to an error of the DBBC configuration script.

**Mc & Mh:** Failed to record at 1 Gbps. In the case of Mh, the culprit was that the (Molex-style) connectors from the PSU units to the back panel NIM/Coaxicon connectors were badly burned---thus this was the location of the voltage drop!

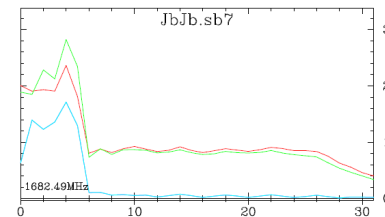
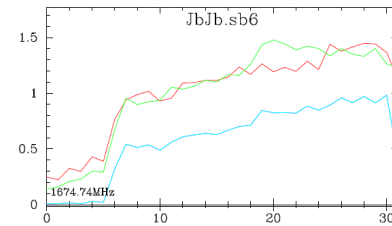
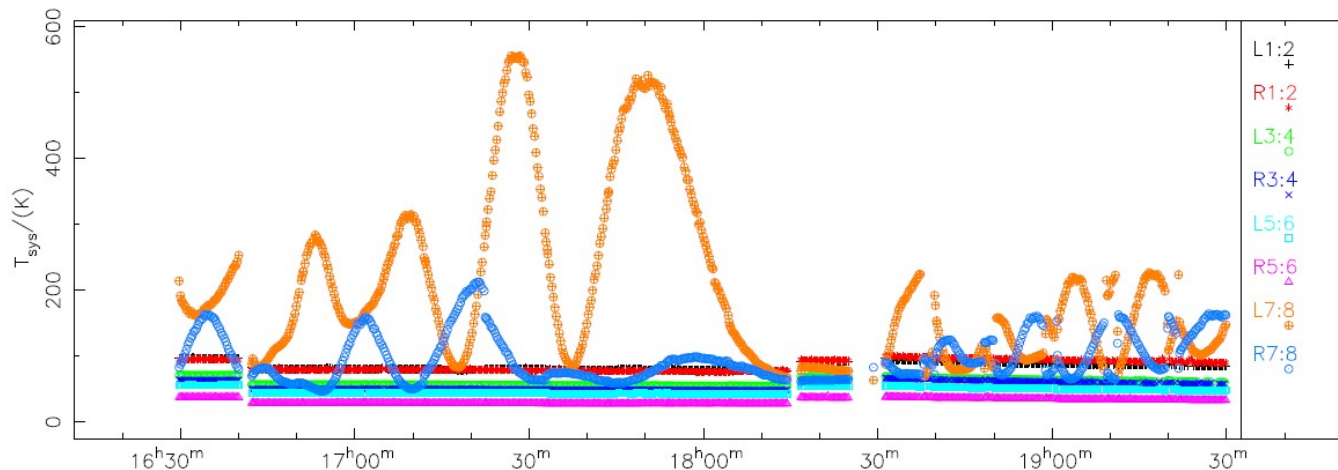
**Tr:** The C-band receiver did not work stably and had a  $T_{\text{sys}} > 100$  K.

**Jb1:** No fringes in N11P1 likely due to a problem of PSU (power supply unit). High  $T_{\text{sys}}$  reduced its sensitivity down to SEFD  $\sim 65$  Jy (44 Jy) at 18cm and  $\sim 130$  Jy (35 Jy) at 6cm. The number in bracket is from the EVN status table

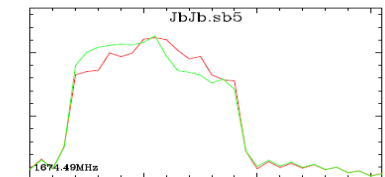
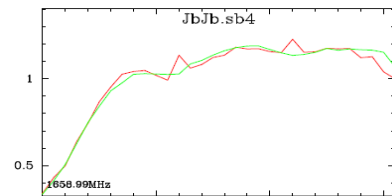
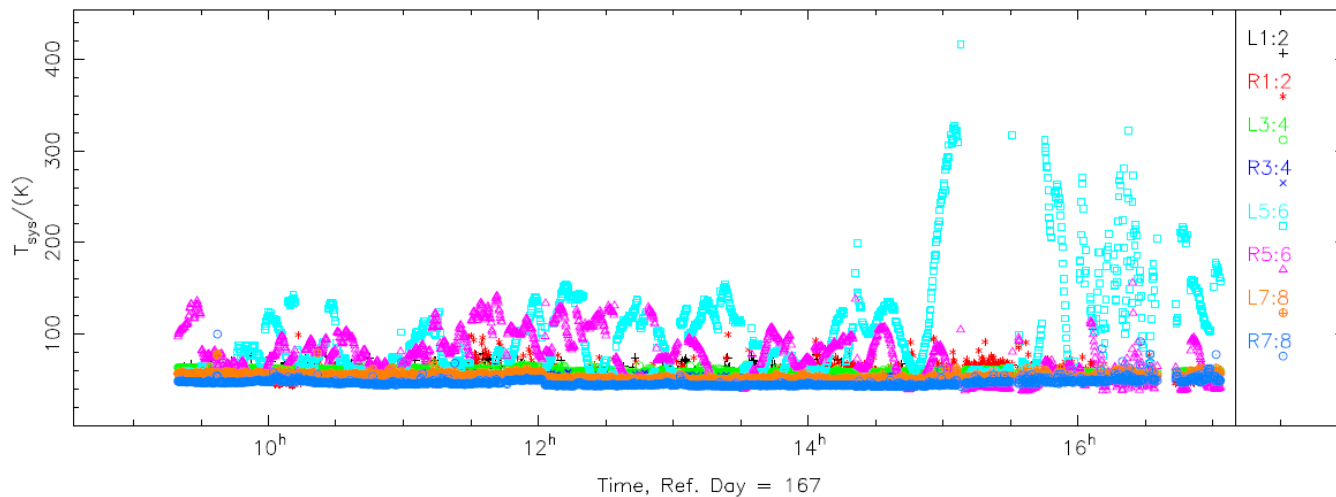
**Jb2:** Suffered significant sensitivity loose at 5 GHz. SEFD  $\sim 1000$  Jy (320 Jy) in the latest e-VLBI experiment EG058A on 25/26 Aug 2011.

Jb1: Correlation amplitude/ $T_{\text{sys}}$  at 18cm was not stable in BBC 7-8 (512 Mbps mode) or BBC 5-6, (1 Gbps mode). No spikes in the auto-correlation plots.

$T_{\text{sys}}$  for JB in experiment N11L3

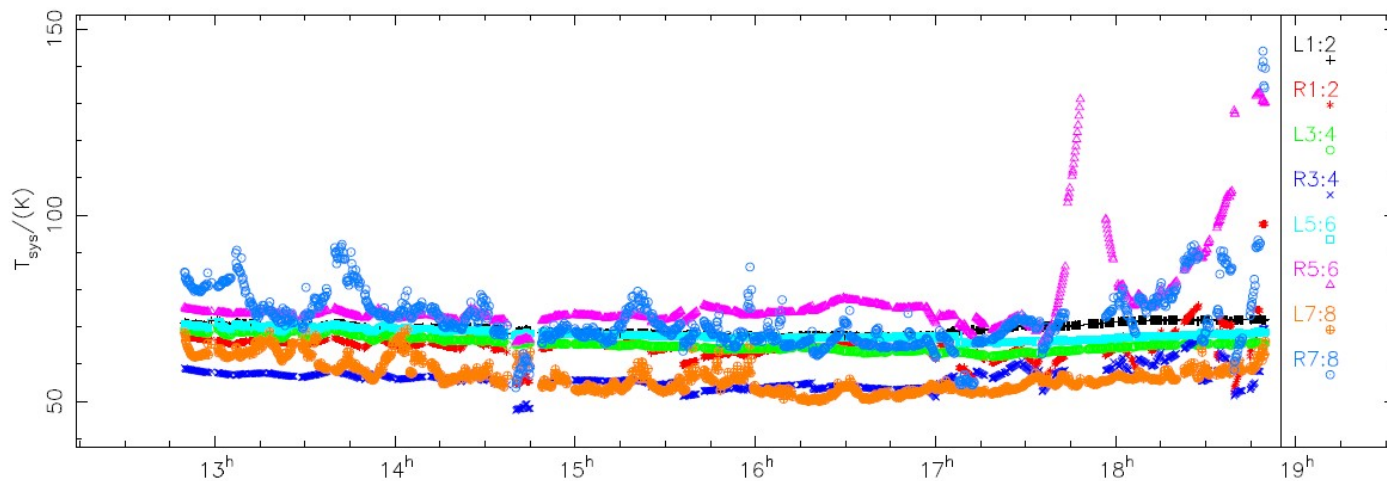


$T_{\text{sys}}$  for JB in experiment EM084B

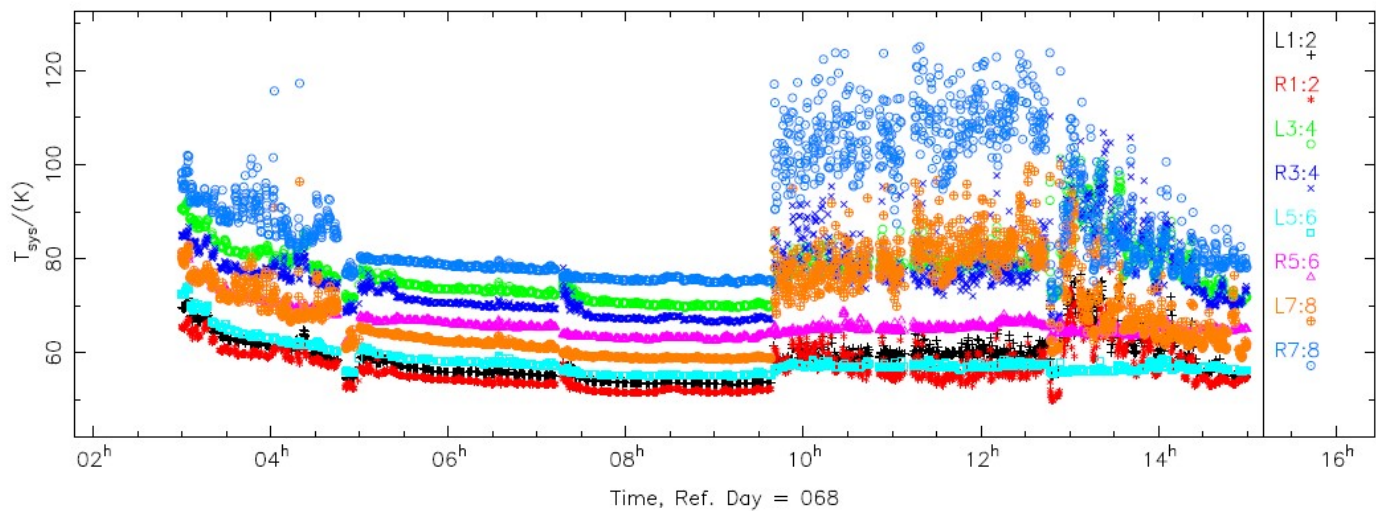


# Also seen at 6 cm

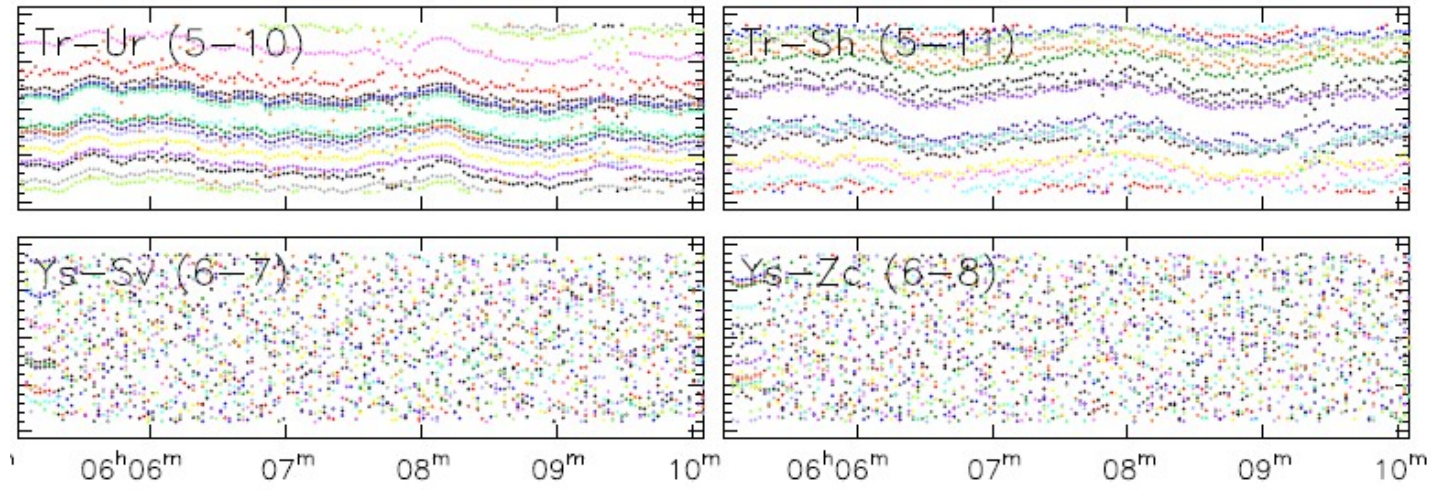
$T_{\text{sys}}$  for JB in experiment EP068C



$T_{\text{sys}}$  for JB in experiment EV018C



**Ys: Fringes only seen at the beginning of each scan in EGO49B.**



The scan\_check reported "data missing".

2011.154.03:44:09.16/scan\_check/47,eg049b\_ys\_no0002,-,715,2011y154d3h30m4.0000s,833.6s ?,1024.000000,-30769152,E

The problem was also found in some scans of EV018D, EG051 at Ys and in a few scans at other 5B stations: Ur, Zc, Wb.

2011.166.14:50:47.06/scan\_check/72,ec032\_ur\_no0259,-,727,2011y166d14h46m56.0000s,115.2s ?,1024.000000,189761580,E

2011.166.10:12:17.23/scan\_check/3,ec032\_wb\_no0152,-,727,2011y166d10h2m46.0000s,571.8s ?,1024.000000,220512256,E

2011.166.08:42:08.36/scan\_check/37,ec032\_zc\_no0118,-,727,2011y166d8h32m36.0000s,571.4s ?,1024.000000,174358528,E

# February/March Session of 2011

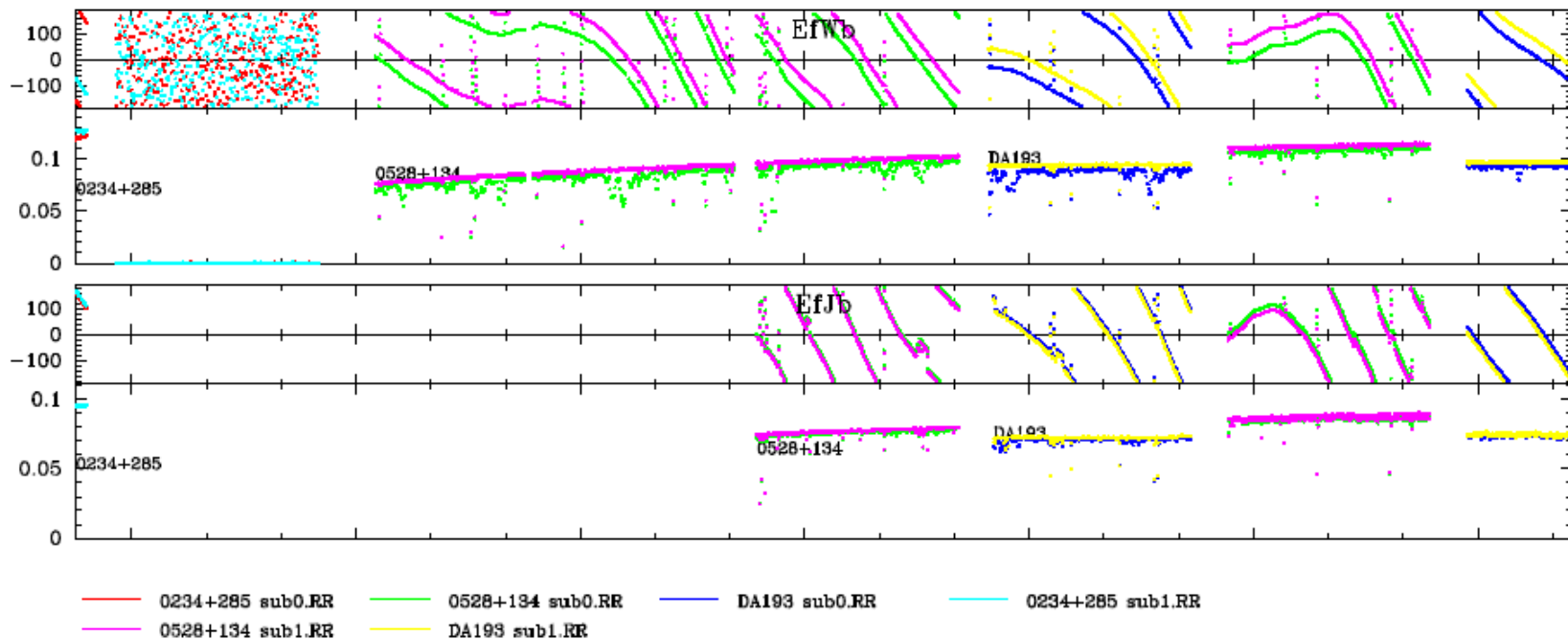
**Tr:** Mis-set LO by 4 MHz in EG052A.

**Sh:** Out in EY010D due to China's Chang'E-2 observations.



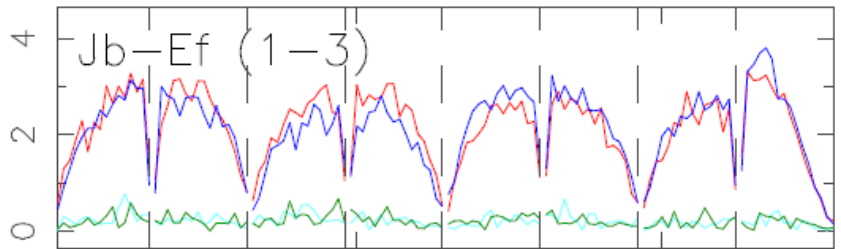
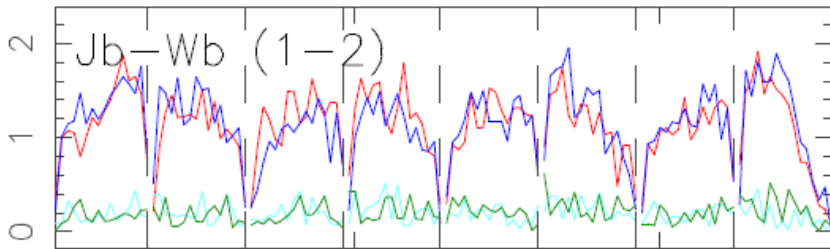
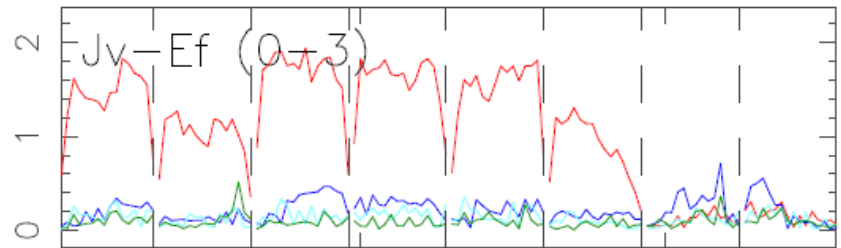
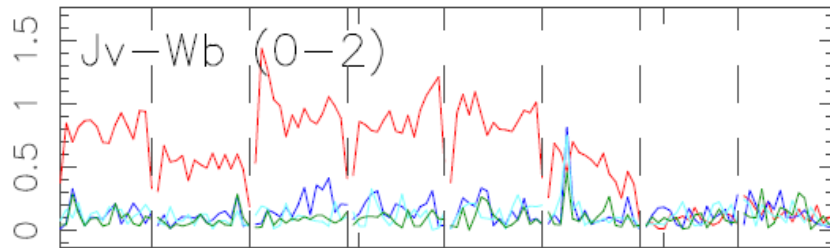
Ef: Had un-periodic drops in phases at 18cm (caused by a loose connection?).

Amplitude/Phase versus time; data: n1111.ms N11L1 jops@core-5 Thu-26-May-2011/15:27:  
Pol=RR; Nsub=2; Chan=3:29 page:1/3



# Jb2: No useful fringes in LCP channels in EV018C.

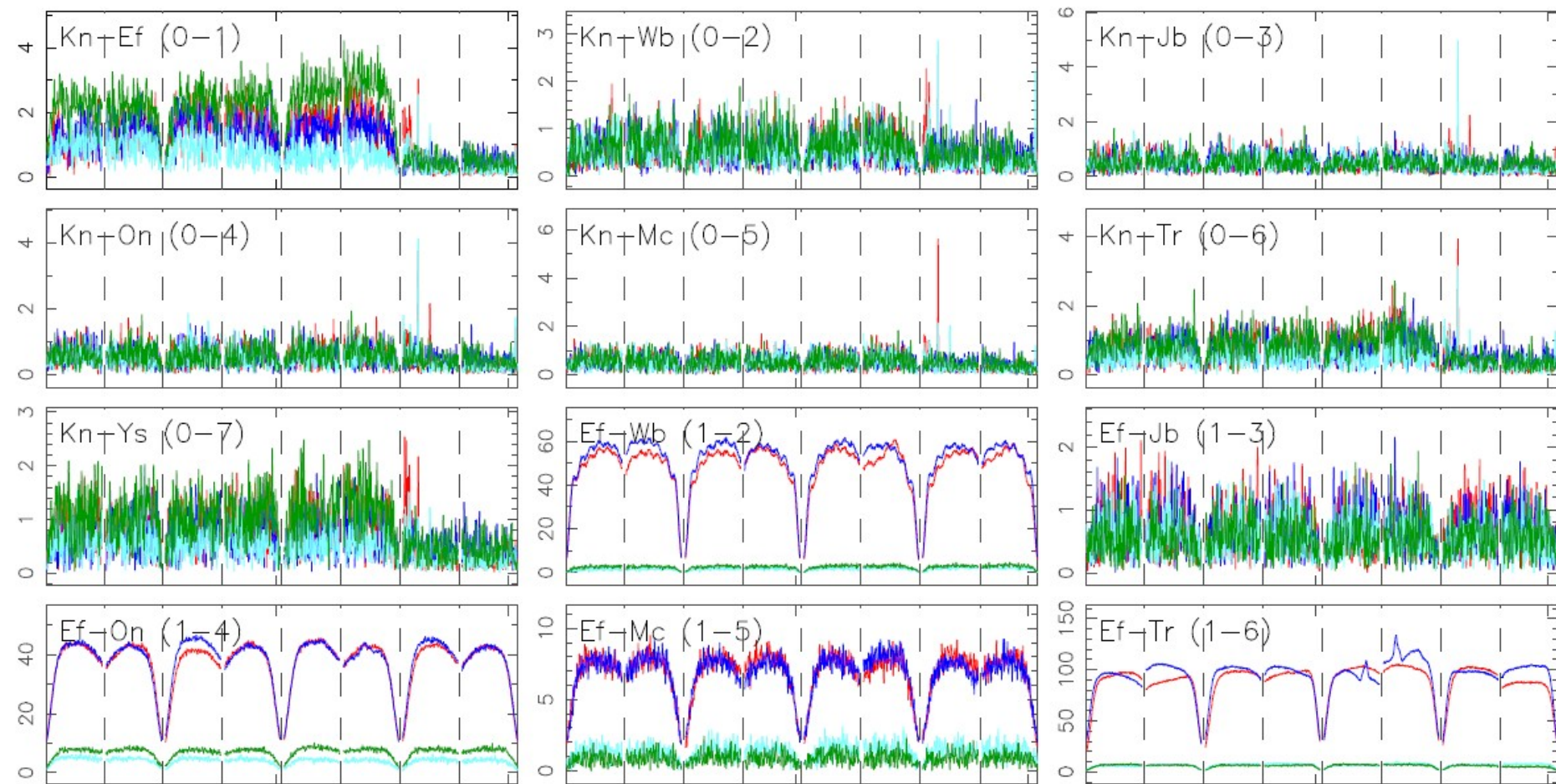
Jv -- Jb2, Jb -- Jb1



Kn: Fringes at 5cm were too weak.

Jb2: Poor sensitivity at 5 GHz.

Amplitude for k1k (EM071C, 104151216)



# Sampler statistics

- ☆ It has been monitored by the ftp fringe tests since session 1/2010.
- ☆ Wb TADUmax: A slightly high DC component ("--" is ~20%; "++" is ~16%) at 18cm and 6cm.
- ☆ **Jb**, less seen bad sampler statistics.
- ☆ **Tr**, Still had problem with achieving the optimal sampler statistics in some channels.
- ☆ **Sh**, The problem of strong DC component with the backend of VLBA4-VSIC-MK5B was due to improper clock phase and polarization and has been fixed now.
- ☆ **Upcoming DBBC and CDAS** — Remove the problem forever.