CORRELATOR SCIENCE OPERATIONS REPORT, EVN MkIV DATA PROCESSOR AT JIVE
EVN TOG MEETING, January 2011, Dwingeloo

25 January 2011 (statistics cover 17 June 2010 - 26 January 2011)

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SCIENCE OPERATIONS

Sessions and their Experiments

The table below summarizes projects correlated, distributed, and released from 17 June to 26 January (to include the completion of the currently running e-VLBI experiments). The table lists the number of experiments as well as the network hours and correlator hours for both user and test/NME experiments. Here, correlator hours are the network hours multiplied by any multiple correlation passes required.

	User Experiments			Test & Network Monitoring		
	N	Ntwk_hr	Corr_hr	N	Ntwk_hr	Corr_hr
Correlated	56	463	694	9	30	30
Distributed	66	537	742	9	31	31
Released	69	553	733	13	42	42

The following table summarizes by session the user experiments with activity since the previous TOG meeting , with an additional column for experiments not yet distributed (entries = remaining to do / total).

	N_to.corr	Corr.hrs	N_to.dist	
session 1/2010	0/23	0/259	0/23	
Mar-May e-VLBI	0/9	0/61	0/9	
session 2/2010(h)	0/16	0/229	0/15	
session 2/2010(s)	0/1	0/12	0/1	
session 2/2010(e)	0/6	0/63	0/6	
Jul-Oct e-VLBI	0/8	0/68	0/8	(incl. 4 ToO obs)
Aug d-VLBI	0/1	0/1	0/1	
session 3/2010(h)	0/15	0/203	1/14	
session 3/2010(s)	1/3	12/30	3/3	
session 3/2010(e)	0/1	0/11	0/1	(ToO)
Nov-Jan e-VLBI	0/10	0/60	3/10	(incl. 2 ToO)

Some landmarks:

The attached plots show, updated through the end of 2010:

ntwkhr.png: evolution of EVN network hours counting only user experiments over 2004-2010. The e-VLBI observations are plotted as the green line, and also their contribution on top of disk observations is shown as the green shaded region. Altogether, we fell just 1 hour short of 1000 network hours in 2010.

etypes.png: evolution of network hours for e-VLBI observations, divided into 5 categories, traceable back to the type of proposal. 2010 had 296 e-VLBI network hours (not counting gaps or test time before/between user experiments in a given e-VLBI day), 128 of which were in target-of-opportunity observations (more than the total amount of e- network hours for any year <= 2008).

Stations providing Mark5B recordings exclusively by/before session 3/2010 include Wb, Ys, Ur, Sv, Zc, Bd.

Astronomical Features:

We processed our first user experiments on the SFXC software correlator. Most of these involved pulsar gating, including our first user ms-pulsar, as mentioned in the most recent EVN newsletter. We are in the middle of running our first spectral-line user experiment on SFXC.

NETWORK SUPPORT

The automatic-ftp feature continues to be exercised in all network monitoring experiments. Stations send the specified portion of a scan directly to JIVE for correlation on the SXFC software correlator. Correlation results go to a web page available to all the stations within a couple hours, and Skype chat sessions during the NME provides the station friends with even more immediate initial feedback. With 2-3 ftp fringe-test scans per NME, there is opportunity to find, feed-back, fix, and verify a problem and its solution within a single NME.

We continue to process all experiments, including NMEs, via the pipeline (now run via ParselTongue), with results being posted to the EVN web pages. The pipeline provides feedback on stations' general performance and in particular on their gain corrections, and identifies stations/ frequency bands with particular problems. Jun will present a more detailed calibration report in his presentations.

The preferred patching for KVASAR stations isn't supported yet in sched, so we provided PIs with setini sections that allow sched to produce the output skd/vex file, and then we hand-edited these skd/vex files to conform to the KVASAR preferences (i.e., in the $FREQ, $BBC, $LO sections) prior to having them moved over to .latest/. Getting a proper sched-based solution remains on the agenda; support for DBBCs will also need attention once their control by the skd/vex file via the field system is known.

There also remains an issue with the C-band Gbps total spanned-frequency range in relation to RFI and/or front-end limitations at KVASAR stations. Initial attempts to schedule test observations in an 80-MHz lowered Gbps set-up have yet to bear fruit, but RFI information at some stations has been passed along. We hear unofficially from CRAF sources that the frequency range above 5000 MHz may become less favorable going into the future (outside primary or secondary protection), so long-term there may be motivation for lowering the frequency range anyway. We're still aiming to carry out such observations. Of course, tests to explore the RFI environment at new frequencies may have UT considerations, if there are classes of sometimes-on interferers.

In recent sessions, there have been experiments going to three different correlators. There remain occasional problems with individual packs containing data intended for more than one correlator.

USER SUPPORT

The EVN Archive at JIVE continues to provide web access to the station feedback, standard plots, pipeline results, and FITS files. Access and public-release policy remain the same. The archive machine continues to have 12.8 TB of dedicated disk space, with a buffer of another 1.8 TB that also houses the pipeline work area. In addition to the tape back-up of the Archive, we also now have a mirror to a machine physically in Westerbork. We now have 9.8 TB of FITS files in the Archive, a gain of 1.4 TB since the quote in the previous TOG report (9 apr).

We continue to contact all PIs once the block schedule is made public, and to check over schedules posted to VLBEER prior to stations downloading

them. This occupies occupies a great deal of time in the fourth to second weeks before the start of the session. After the PIs had desposited their session 3/2010 schedules, we learned that Jb1 would not be able to observe. We restored Jb2 to schedules that had used Jb1, including reinserting scans Jb1 may have missed in fast cycle-time phase-referencing observations. This led to a new set of schedules that only Jb instrinsically needed, but which were automatically download by other stations from .latest/. In one case, a separate bug that re-entered in this process (too-long comments) caused loss of some time in ED030B at a station that re-DRUDG'ed this new schedule without noticing the resultant DRUDG crash. (Craig removed the too-long comment lines in v9.4).