LBCS – Long Baseline Calibrator Survey

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Jackson et al. 2016; Badole et al. 2020 (in prep)

LBCS is finished! (as of 3 months ago)

- Selection for combination of
- bright at low frequencies
- flat low-f spectral index
- 25000 sources observed
- 3 minutes, 3MHz BW, groups of 30

- Covers all northern sky except Cas/Cyg A
- Approximately 1 calibrator / sq deg
- Sparser south of 30N (selection harder)
- Gives coherence statistics to ~2000km
- Products: statistics on baselines to ST001





Cone search available

Returns statistics:

Goodness (P/S/X as VLA list, estimated from AIPS fringe fit)

FT_goodness (S:N-based estimate of coherent flux)

String refers to signal DE601, DE602... \rightarrow ST001

LBCS position search

LOFAR SURVE

Results for co-ordinates 180.0, 55.0

See below the table for column descriptions

							Search:			
Observation *	RA 🕴	Dec 🔶	Date	Time 🕴	Goodness 🔅	Flags	FT_goodness 🛊	Quality 🕸	Separation 🕴	Downloads
L332440	12:14:57.70	53:45:54.0	2015-03-18	23:27:51	PPP-XPPXP	0	999-98999	56	2.50358	<u>PL PR D L F</u>
L332446	12:15:29.88	53:35:50.2	2015-03-18	23:27:51	PPP-PPPPP	0	999-99999	56	2.66022	<u>PL PR D L F</u>
L332452	12:17:37.54	53:34:40.1	2015-03-18	23:27:51	XXX-XXXXX	0	200-30000	56	2.93827	<u>PL PR D L F</u>
L332544	12:19:35.61	55:28:28.5	2015-03-18	23:39:55	PXX-PXXXX	0	802-91013	60	2.83236	PLPRDLE
L332546	12:16:19.56	55:46:37.4	2015-03-18	23:39:55	PPP-PPPPP	0	999-99999	60	2.44465	PLPRDLE
L333144	11:42:15.80	53:35:10.8	2015-03-18	22:45:37	XXX-XXXXX	0	000-0000	40	2.94812	<u>PL PR D L F</u>
L333150	11:48:56.74	52:54:24.8	2015-03-18	22:45:37	PXP-PSPXX	0	914-94511	40	2.65016	<u>PL PR D L F</u>

PL/PR buttons download picture on previous page

https://lofar-surveys.org/lbcs.html

(Thanks to Martin Hardcastle for help with setting up the archive)





Atmospheric coherence statistics





Coherence time is worse on longer baselines, but the effect is not huge



Sources observed more than once: results very similar for all baselines

Why? Statistics of how compact "2-3 arcsec compact" sources are

Sample of LBCS sources in WENSS+FIRST region (to get fluxes/spectral indices)



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Green – LBCS, good coherence Red – LBCS, poor coherence

L: all sources, R: VLBA calibrators

Suggests effect of flux limit

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Now using extrapolated flux

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Also to do: comparison with MWA IPS

- MWA doing scintillation survey (Morgan et al) of bright sources
- Estimates of size with same effective resolution as I-LOFAR
- Comparison of overlapping region of sky looks good so far