

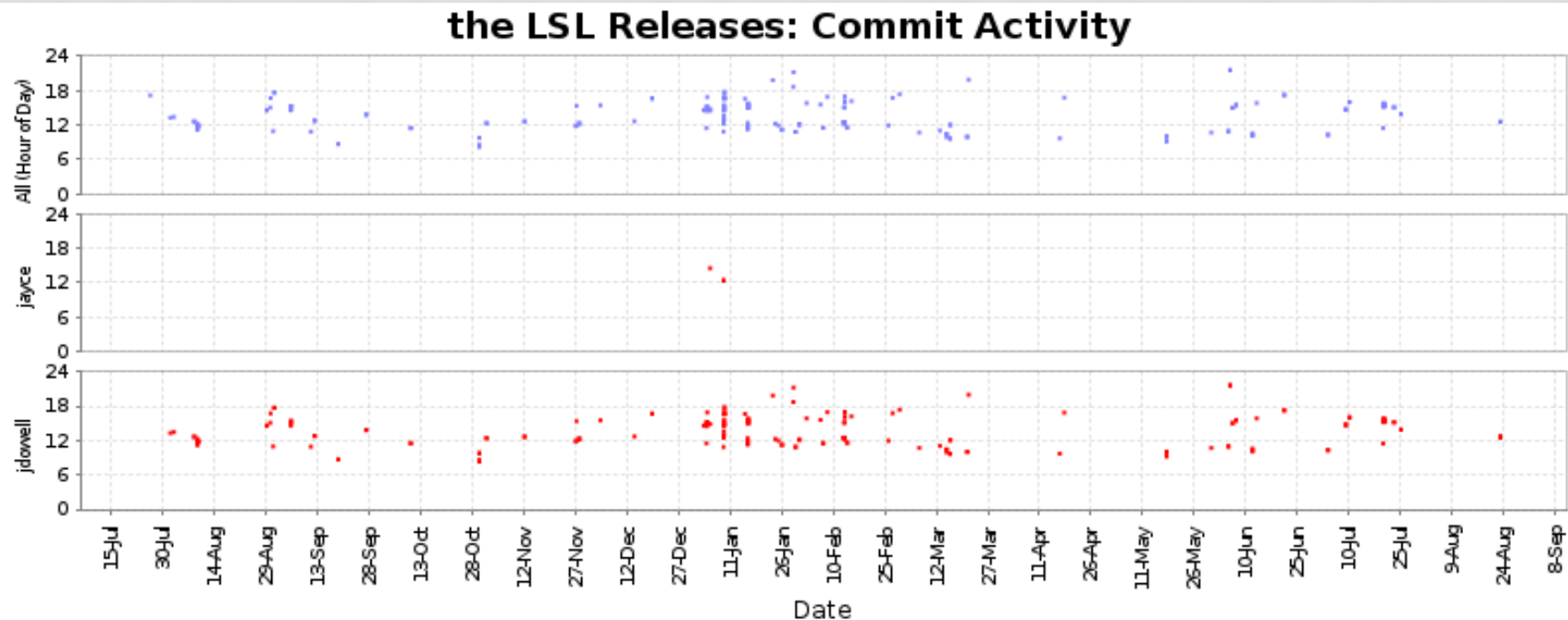
# THE LWA SOFTWARE LIBRARY

LWA USERS MEETING  
AUGUST 29, 2013



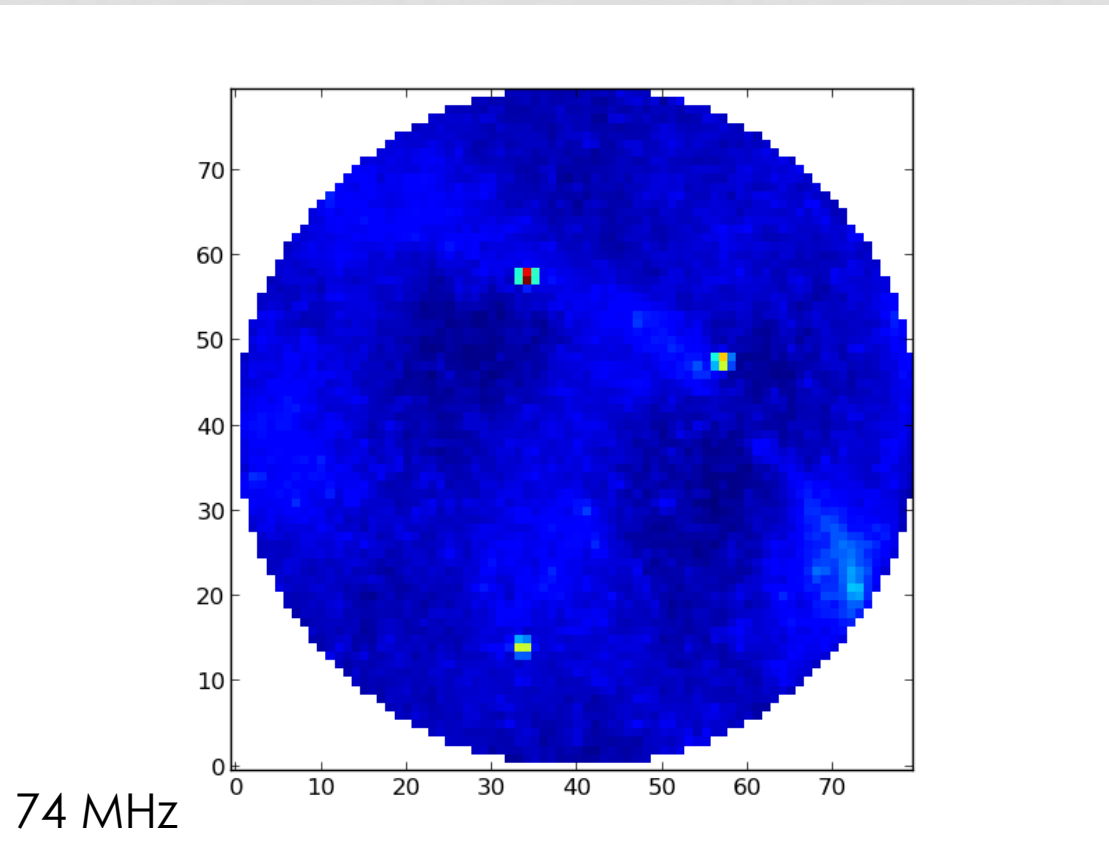
# STATE OF THE LIBRARY

- Current version of 0.6.5
  - Fixed a bug in the cable delay calculation
  - Improved SDF support and validation
  - Script reorganization and consolidation



# LSL IN ACTION

- TBN Post-Acquisition Beamforming



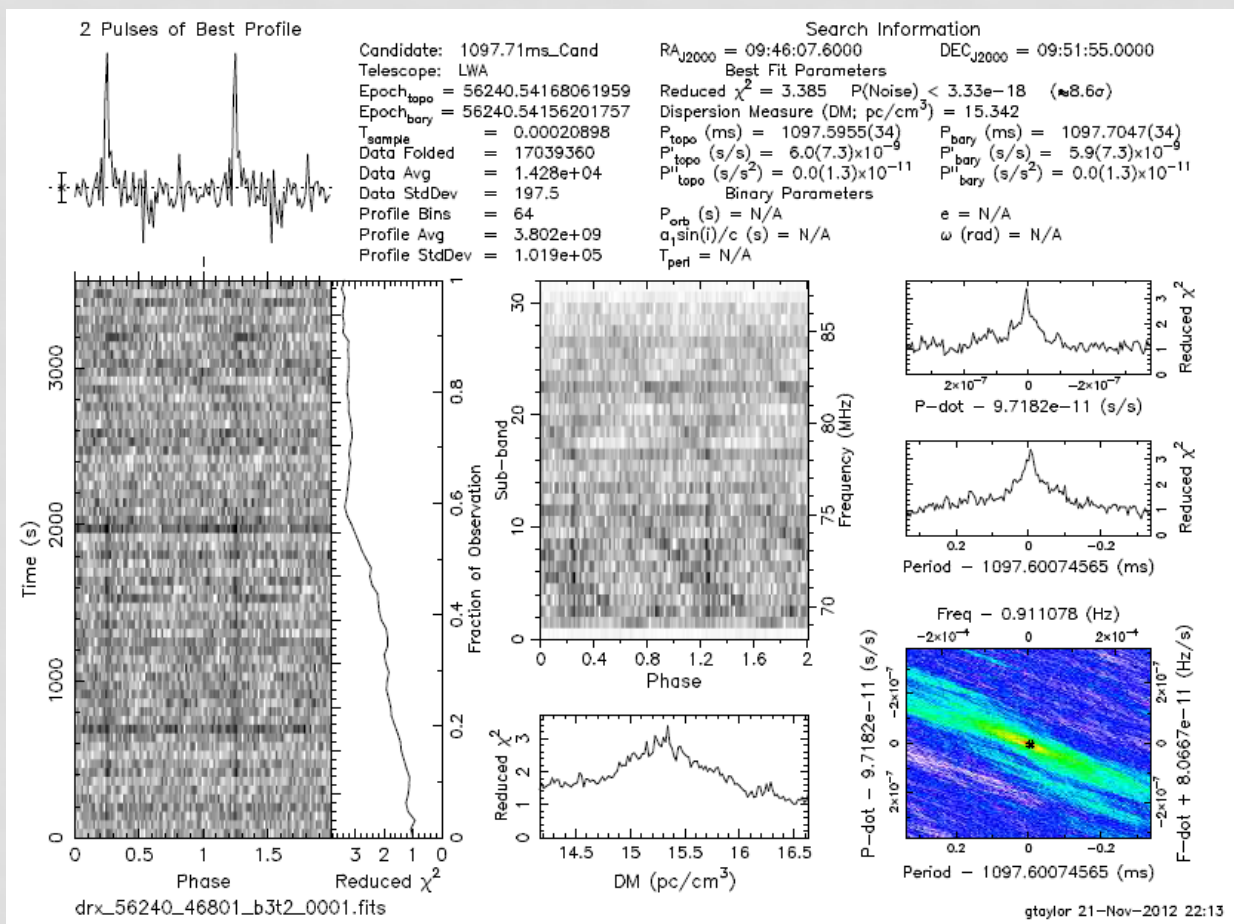
# NEW ADDITIONS

- Core Modules
  - Support for ASP configurations in the MCS metadata tarballs
- Toolkits
  - Support for LWAFS-formatted (old style) DRSUs
  - Support for older DR spectrometer data formats
  - Support for S/60 data
  - Support for USRP data with embedded metadata
- Extensions
  - Updated PSRFITS filler
- User Contributed Scripts

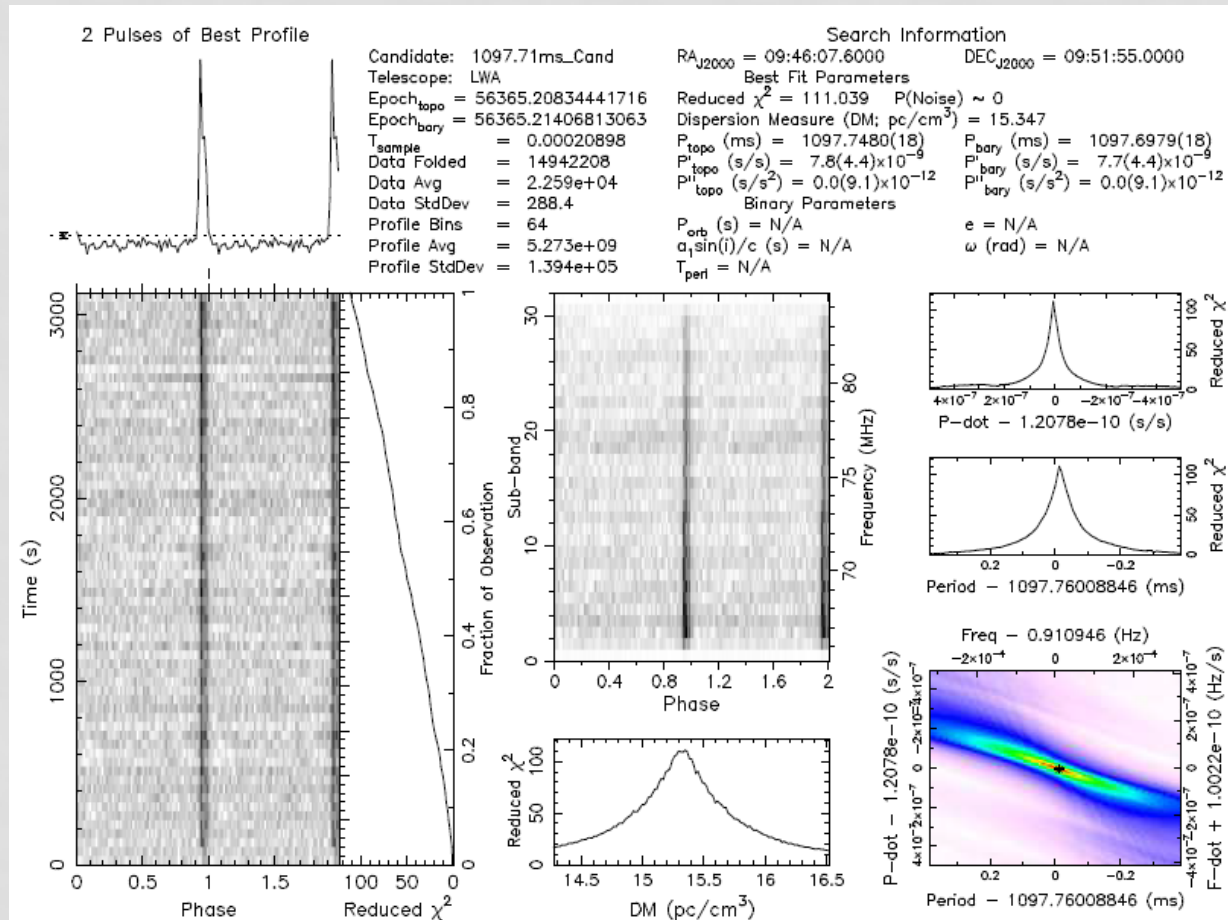
# LSL IN ACTION

- Array Delay Calibration with TBW
  - Down select to 240 good antennas
  - Cross-correlation yields 28,680 baselines with 1,024 spectral channels from DC to 98 MHz
  - Downselect to ~2,500 long baselines to remove the extended emission
  - Downselect to ~500 frequency channels between 35 and 80 MHz where the sky signal is strong
  - 239 unknown delays and ~1.2 million linear equations
    - This is an over-constrained problem

# LSL IN ACTION



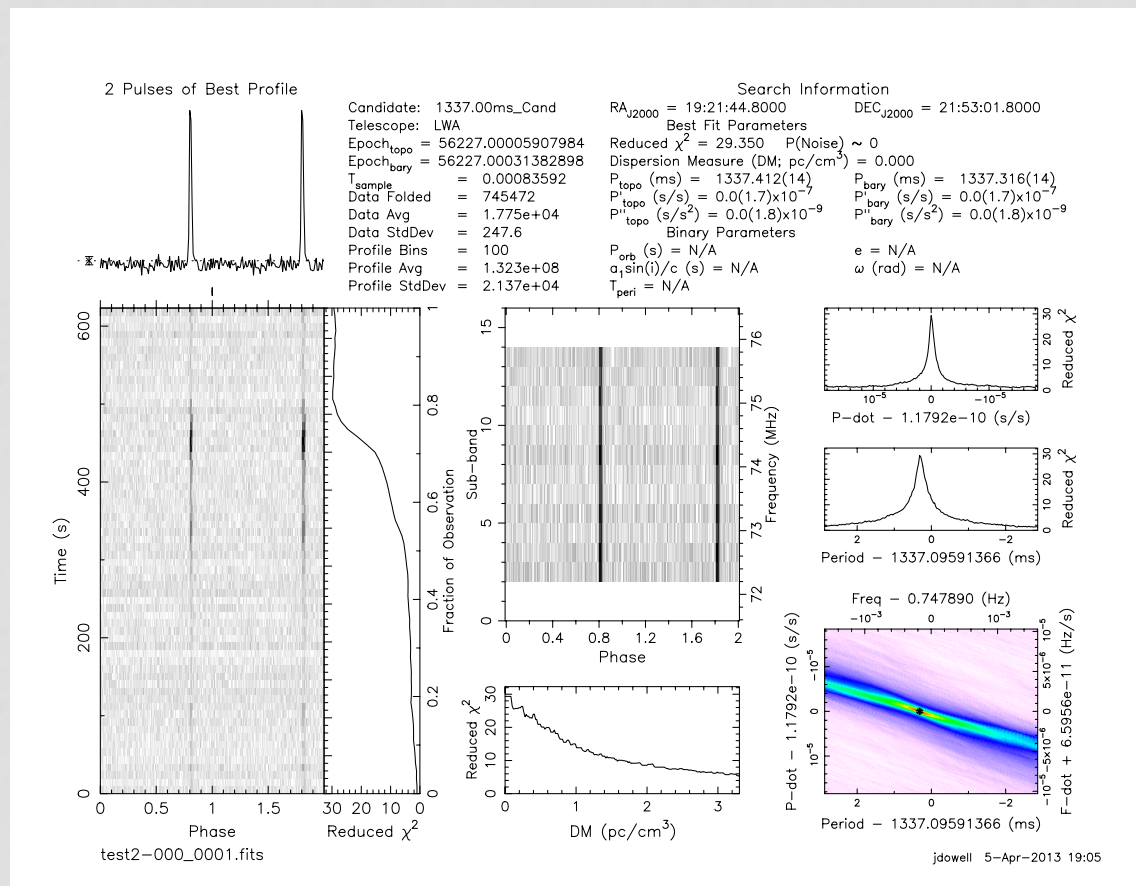
# LSL IN ACTION



J0946+0951

# LSL IN ACTION

- Coherent dedispersion

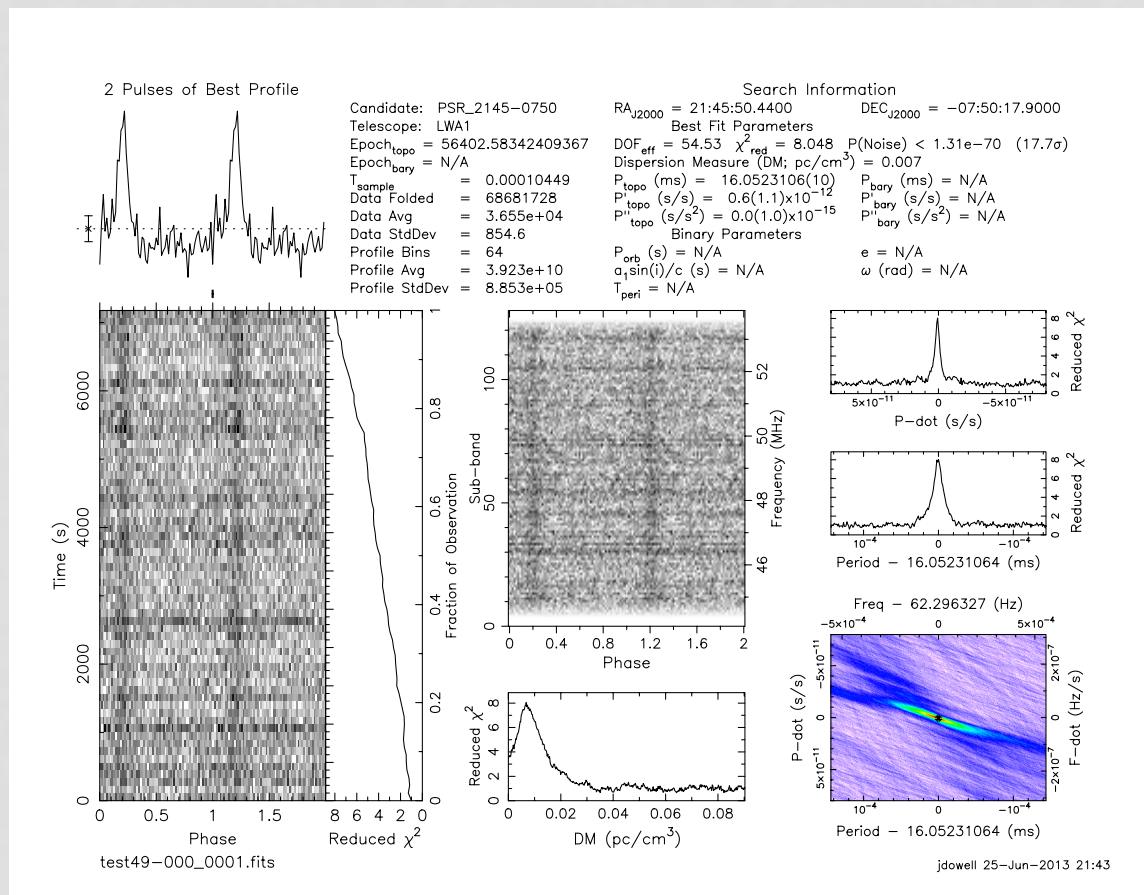


B1919+21



# LSL IN ACTION

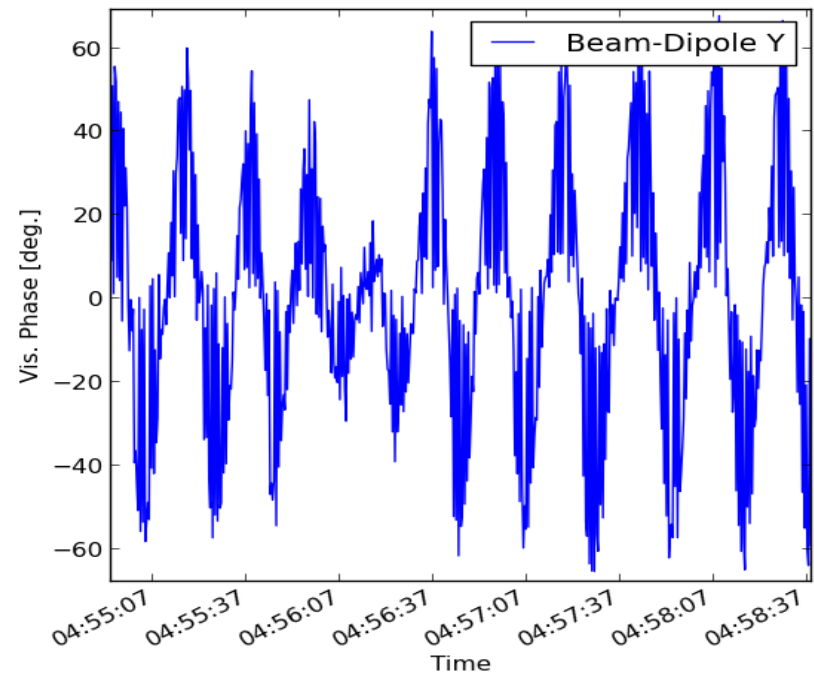
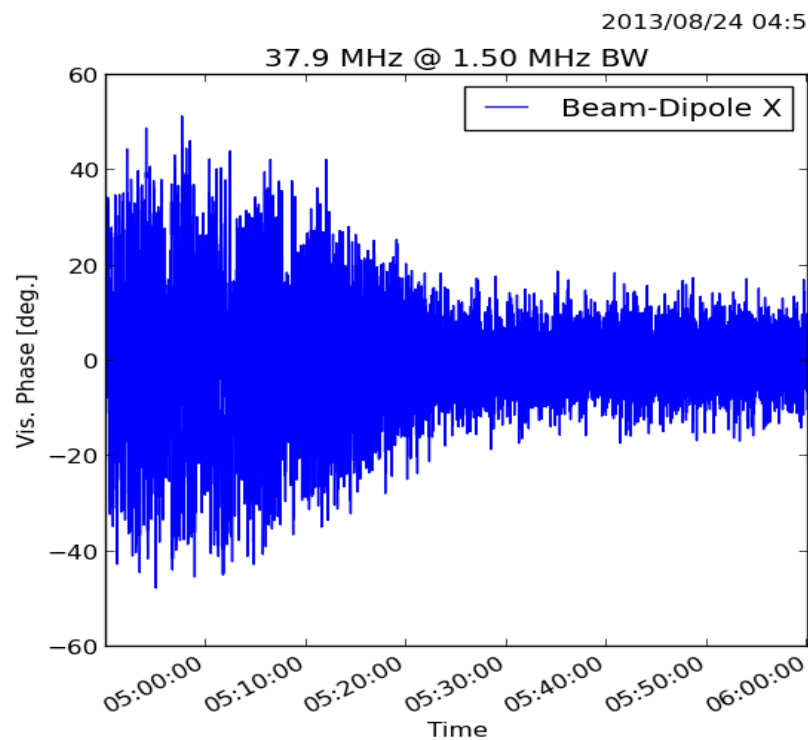
- Detection of an MSP



J2145-0750

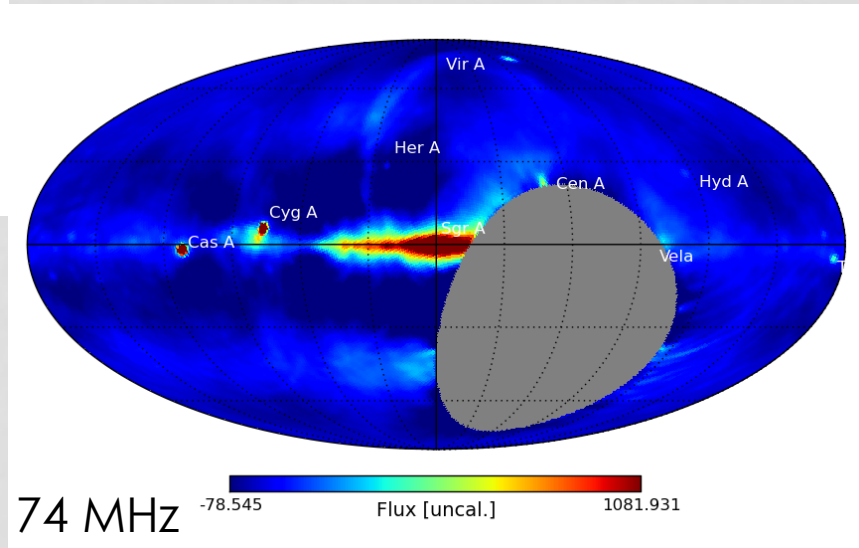
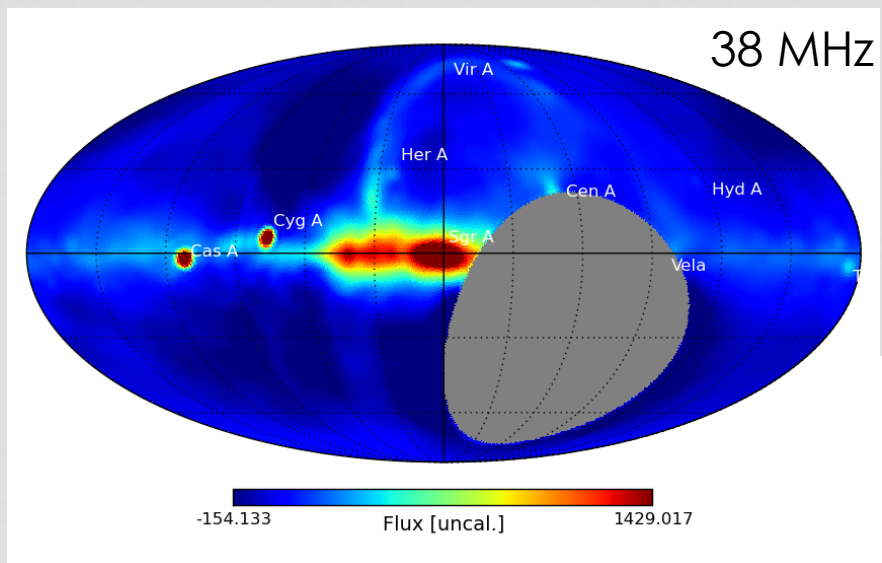
# LSL IN ACTION

- Fringes with a USRP
  - LWA1 to LWANA (20 km)
  - 37.9 MHz



# LSL IN ACTION

- All-Sky Survey



# LSL IN ACTION

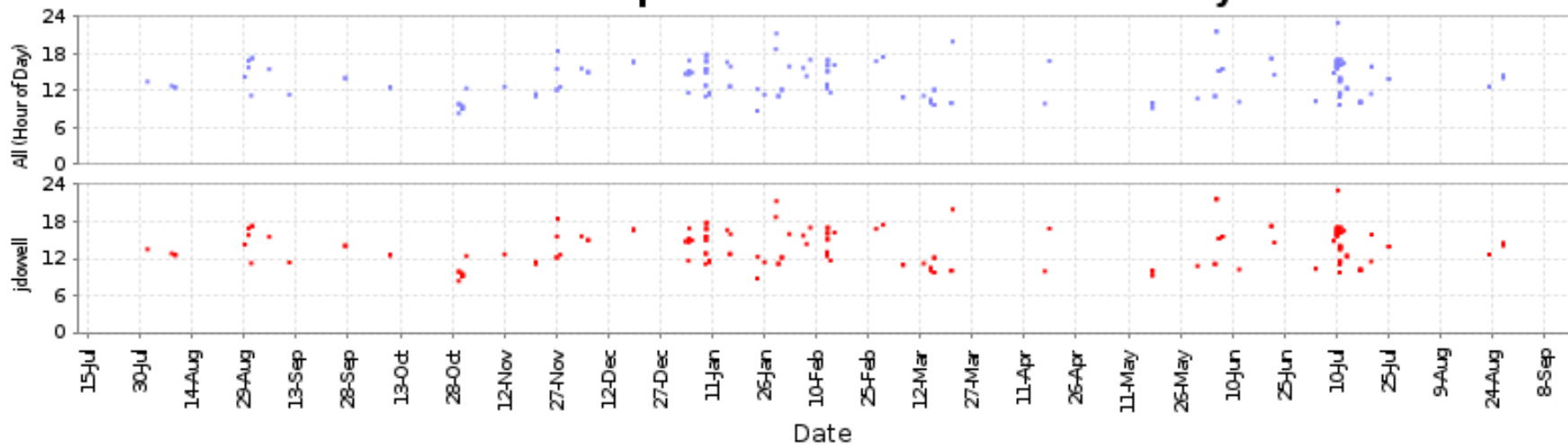
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# ROADMAP

- Version 1.0.0
  - Coming soon
  - Fewer dependencies, i.e., libnova
  - SpecMaster()/FXMaster() now return all 'LFFT' channels

**the LSL development trunk: Commit Activity**



# ROADMAP

- Extensions
  - Cleanup of options in 'Commissioning'
  - Work on GPU-aided reduction scripts
- Toolkits
  - Anything missing?
- User Requests?

