

The VLA Low Band Ionosphere and Transient Experiment (VLITE)

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VLITE was developed by the Naval Research Laboratory (NRL) and the National Radio Astronomy Observatory (NRAO) as a commensal observing system on the Karl G. Jansky Very Large Array (VLA). The primary focus of the system is a 64 MHz sub-band from the prime focus 240-470 MHz dipoles that is continuously correlated during nearly all observations using the VLA Cassegrain receivers. Dedicated samplers and fibers transport the signal from the low band receivers to a custom-designed, real-time DiFX software correlator. The operation of VLITE requires no additional resources from the VLA system running the primary science observing program. All astronomical correlated data are transported to NRL for automated calibration and imaging while the ionospheric data products are generated in near real-time on NRL computers at the VLA site.

During the initial 2.5 year phase, VLITE successfully operated on 10 VLA antennas to enhance the science capabilities of the array. Scientific programs included combining VLITE data with the PI observations for improved spectral studies, opening a new window on transient searches, and stand-alone astrophysics. I will discuss the recent upgrade of the system to more than double the number of baselines as well as the enhancement of correlator capabilities and automated pipelines to enable VLITE to produce commensal data products for the recently started VLA Sky Survey (VLASS). I will also discuss some of the advantages and difficulties that have arisen as NRL and NRAO proceeded with the VLITE program and outline the next steps needed to fully outfit the antennas for the LOw Band Observatory (LOBO) concept.