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3D Ionospheric Tomography using GPS and VLA JEFFREY KARLE, CHRISTOPHER WATTS, University of New Mexico, KEN DYMOND, Naval Research Laboratory, LONG WAVELENGTH ARRAY TEAM — Research is being carried out at UNM to recreate a three dimensional model of the Earth's ionosphere by incorporating data from GPS and GPS occultation and combining it with data from the Very Large Array (VLA) radio telescope. For three days in September of 2007, the VLA recorded data at 73.8 MHz in its largest configuration. The VLA proves to be highly sensitive to total electron content variations of the ionosphere within about a 30 km area. In addition, there are hundreds of GPS receiver stations spread throughout the U.S., each of which provide detailed information on the slant and vertical total electron content (TEC) that modifies the carrier phase signal from the satellites. Our goal is to combine TEC measurements from these GPS receiver stations that are localized around the southwestern United States with the data taken from the VLA to model the ionosphere in a three dimensional regional scale.

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