# SA52A-01: Recent observations of neutral winds in Brazil

**Friday, 14 December 2018**
**10:20 - 10:33**
 *Walter E Washington Convention Center - 202B*

Data from two new Fabry-Perot "Doppler Imagers" recently installed in Brazil for the Brazilian space agency, INPE, are released and described. These represent a novel implementation of instrumentation remotely measuring winds and temperatures of the neutral atmosphere at thermospheric altitudes. Incorporating recent optical manufacturing developments, modern network awareness and the application of machine learning techniques for intelligent self-monitoring and data classification, this class of instruments is prepared to provide the neutral wind and temperature context for proper physics-based Space Weather nowcasting and forecasting.

These new Fabry-Perot systems achieve high precision measurements of neutral winds and temperatures, with high data collection rates using internet aware, cloud-based analysis and operations. Cost savings in manufacturing, deployment and lifetime operating costs have been achieved allowing for deployment in remote locations. This disruptive technology will allow computer models of ionospheric variability and storm-time response to operate with higher precision. Other sensors, imagers, photometers, ionosondes, and MF radars can be folded into the data collection and analysis architecture, easily creating autonomous virtual observatories. The prototype version of this sensor has recently been deployed in Trivandrum India for the Indian Government.

Arrays of magnetometers have been deployed for the last 20 years [Alabi, 2005]. Other examples of ground based arrays include an array of white-light all sky imagers (THEMIS) deployed across Canada [Donovan et al., 2006], oceans sensors on buoys [McPhaden et al., 2010], and arrays of seismic sensors [Schweitzer et al., 2002]. A comparable array of Doppler imagers and related space weather sensors can be constructed and deployed on the ground, complementing existing networks and increasing the overall amount of data available for space weather prediction.

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