

## **Space Weather studies using the low-latitude ionospheric sensor network (LISN)**

Cesar E. Valladares<sup>(1)</sup>, Robert Sheehan<sup>(1)</sup>, Rezy Pradipta<sup>(1)</sup> and Patricia H. Doherty<sup>(1)</sup>

(1) Boston College, Newton Center, 02459, <http://lisn.igp.gob.pe>

LISN is an array of small instruments that operates as a real-time distributed observatory to understand the complex day-to-day variability and the extreme state of disturbance that occurs in the South American low-latitude ionosphere nearly every day after sunset. The LISN distributed observatory aims to forecast the initiation and transport of plasma bubbles across the South American continent. These goals are important because the occurrence and development of plasma structures and their embedded irregularities poses a prominent natural hazard to communication, navigation and high precision pointing systems.

To achieve high quality regional nowcasts and forecasts, the LISN system was designed to include a dense coverage of the South American landmass with 47 GPS receivers, 5 flux-gate magnetometers distributed on 2 base lines and 3 Vertical Incidence Pulsed Ionospheric Radar (VIPIR) ionosondes deployed along the same magnetic meridian that intersects the magnetic equator at 68° W. This presentation will provide a summary of recent instrument installations and new processing techniques that have been developed under the LISN project to fully diagnose the characteristics of MSTIDs and TEC plasma depletions. We will show the results of a project aiming to correlate the occurrence, scale size and phase velocity of MSTIDs and the appearance of TEC depletions at mid latitudes during quiet magnetic conditions.