2015 Workshop: Jicamarca instruments and radar modes

Long title
Jicamarca: New instruments, radar modes and results
Conveners
David L. Hysell
Marco Milla
Fabiano Rodrigues
Description

Over the past few years, a number of new instruments, techniques, and radar modes were developed for studying ionospheric dynamics, instabilities, and irregularities. The instrumentation includes new radar systems, a new generation of ionosondes, GNSS receivers, all-sky cameras, Fabry Perot interferometers, and others. The collocation of these instruments at or near the Jicamarca Radio Observatory has made possible advances in upper atmospheric and ionospheric studies, including a better understanding of the climatology and day-to-day variability of thermospheric winds, equatorial spread F modeling, multi-frequency radar studies of ionospheric irregularities, joint radar-satellite studies of ionospheric electrodynamics, thermal structure, and composition, etc. We invite the CEDAR community to present their work and discuss new research directions in this session.

Agenda

'''Session A: Thursday 1000-1200 Kane 210'''

1. Marco Milla, Opportunities for new experiments and research at Jicamarca

2. David L Hysell, Radio and space physics in the 21st century

3. Miguel Larsen, The equatorial thermosphere: Some thoughts on atmospheric variability and neutral instabilities

4. Jorge L. Chau, Science and Infrastructure Ideas at the Equator and Low latitudes

5. Xinzhao Chu, Observing neutral metal layers, temperatures and winds in the MLT-X with Doppler lidar over the magnetic equator

'''Session B: Thursday 1600-1800 Kane 210'''

1. Gerald Lehmacher, Simultaneous observations of short-period, gravity wave-type oscillations in the daytime equatorial electrojet and 150-km region

2. Pablo Reyes, Probing the equatorial valley region fluctuations with Jicamarca ISR and VIPIR

3. Danny Scipión, Simultaneous observations of structure function of refractive index using a high resolution radar and the DataHawk small airborne measurement system

4. Cesar Valladares, LISN – The distributed observatory for the Jicamarca IS radar

5. Jade Morton, Comparative characteristics of equatorial scintillation based on measurements from Jicamarca, Hong Kong, Singapore, and Ascension Island

6. Yollan Amaro-Rivera, A VHF Coherent Radar near the Peruvian Andes: Implementation and First Observations

7. Edgardo Pacheco, TEC measurements with CubeSat instrumentation and ground-based receivers

8. Dustin Hickey, Observations of ESF with Optical Imagers and Radar

Justification

The workshop will reflect the system's emphasis on the CEDAR strategic plan. A system is elements in a standing relationship, and system science places the emphasis on the relationships. In practice, this means exploiting rather than neglecting the connectivity between different components of a research problem. For example, data analysis strategies can be posed in a systems perspective as optimization problems, deriving prior information or constraints from ancillary theory, models, or other data streams gainfully. In the CEDAR community, implementing the strategic plan amounts to replacing legacy, ad hoc methods with more transparent and optimal ones, adapted from the field of system dynamics in some cases. In this workshop, we highlight new approaches to problems in equatorial aeronomy and radio science inspired by the CEDAR strategic plan.

View PDF