2014 Workshop: AIDA 2

Long title
Arecibo Initiative in Dynamics of the Atmosphere (AIDA 2)
Conveners
M. F. Larsen
D. L. Hysell
R. F. Pfaff
Description

The mid-latitude mesosphere-thermosphere-ionosphere system is unaffected by the more complicated phenomena associated with auroral forcing and equatorial dynamics, but observations over the last two decades in particular have shown it to be a rich environment with complex coupling processes between the plasma and neutrals. In particular, there are a variety of instabilities operating in this part of the atmosphere, including instabilities that are primarily plasma processes, instabilities that are primarily neutral, and instabilities that show evidence of strong coupling between the two species. In addition, mid latitudes are a rich source of upward propagating waves that couple the lower and upper atmosphere and, in turn, influence the occurrence and characteristics of the instabilities that are generated in situ. The AIDA campaign in the 1980’s was one of the first major CEDAR campaigns. A variety of radar and optical instrumentation was brought together at Arecibo for the purpose of investigating the dynamics of the mesosphere and lower thermosphere. Arecibo remains a unique location for studies of mid-latitude coupling and instability phenomena. Indeed, considerable progress has been made in the development of sophisticated new radar techniques and in studies of the dynamics of sporadic E, mid-latitude spread F, and various neutral instabilities and wave modes that characterize the region.

Justification

The objectives of the workshop will be:

1) to provide an overview of radar and optical instrumentation available at the Arecibo observatory, including technique developments 2)to provide an overview of our current understanding and outstanding problems related to mid-latitude plasma and neutral instabilities, plasma/neutral coupling processes, and coupling across

atmospheric layers 3)to develop an initial plan for a ground-based campaign to investigate the outstanding problems 4)to initiate planning for a sounding rocket campaign to supplement and extend the ground-based campaign 5)to set goals and milestones for resolving problems related to plasma/neutral coupling in the midlatitude MLT

View PDF