2012 Workshop: Radio Occultation

Long title
Technique and Applications of Radio Occultation
Conveners
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Description

A brief tutorial will review the technique know as radio occultation, and will describe some of the applications of RO data.

Possible talks include:
Sources of Radio Occultation Data
Ionospheric Applications for the E-region
Ionospheric Applications for the F-region
Techniques and problems with using RO data for retrieving lower atmosphere parameters
Ionospheric corrections to lower atmosphere retrieval techniques
Scientific Results that have used RO data (e.g. Ionospheric Weddell Sea Anomaly)
Use of RO data for mapping the plasmasphere

Justification

The technique of Radio Occultation is still in its infancy. Most RO measurements have been based on the GPS signals, however with the possibility of new GNSS satellite systems, the potential for RO measurements is growing. There have been several pathfinder missions, such as COSMIC, which have demonstrated the value of RO data for atmospheric measurements from the ground through the ionosphere to the plasmasphere. A new COSMIC-II mission is currently in the planning stage, and RO measurements have been proposed for the Iridium satellite constellation. RO data from the lower atmosphere is being assimilated into operational weather forecasts, and RO data from the ionosphere is being assimilated into ionospheric codes. In addition, RO data is increasingly being used for scientific research. Finally,

the RO analysis techniques that have been developed need to be improved, for example the lower atmosphere retrievals suffer from poor understanding of the ionosphere, and the necessary ionospheric corrections.
In summary, this workshop will address concerns relating to many CEDAR issues, including a number of strategic thrusts identified in the CEDAR Strategic Vision:

1) Encourage and take a systems perspective of geospace
2) Develop observational and instrumentation strategies for geospace system studies
3) Fuse the knowledge base across disciplines in the geosciences
4) Manage, mine and manipulate geosciences/geospace data and models

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