2012 Workshop: Commercial Sub Orbital

Long title
In situ measurements of the mesosphere-lower thermosphere (MLT) by commercial suborbital spacecraft.
Conveners
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Description

In situ measurements in the altitude range 60-120 km are sparse and little progress has been made in quantifying its variability, either spatially or temporally, the region is referred to, colloquially, as the “Ignorosphere”. Not because the region is not important, but because it is not easily accessible due to logistical constraints: too high for conventional aircraft and balloons, too low for orbiting satellites.

Several successful experiments have been flown in this region onboard sounding rockets, but these are infrequent and expensive. The emergence of commercial spacecraft will provide frequent and low cost access to precisely this region of space with multiple flights per day, gathering about 10 minutes of data per flight. Initially all the flights will be from the same location (probably New Mexico) and during the day. If, as seems likely, the use of sub-orbital vehicles for space-borne science investigations gains traction it is hoped that flights will launch from different locations and include night-time flights. These flights can be co-ordinated with observations done by ground-based radar measurements such as Arecibo and SuperDARN to help characterize the lower E- and D-region plasma environment of the ionosphere.

We encourage participation from community members to explore what measurements can be made to help us better understand this region in general. What in situ measurements should be made in order to characterize the region and to study specific peculiar phenomena observed in this region of the Earth’s atmosphere such as high altitude lightning, sprites, nocti-luminescent and polar-mesospheric clouds.

Justification

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Summary

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Jonathan Fentzke - Coordinated studies of meteor aerosols using commercial sub-orbital platforms (pdf)

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