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CONTROL ID: 713058

TITLE: Multipoint observations of nightside auroral activity: the Cascades2 sounding rocket mission

PRESENTATION TYPE: Assigned by Committee

SECTION/FOCUS GROUP: SPA-Magnetospheric Physics (SM)

SESSION: Relationship Between Auroral Phenomenology and Magnetospheric Processes (SM06)

AUTHORS (FIRST NAME, LAST NAME): Kristina A Lynch[1], Meghan R Mella[1], Paul M Kintner[2], Erik T Lundberg[2], Marc Lessard[3], Sarah Jones[3], H C Stenbaek-Nielsen[4], Donald L Hampton[4], Nickolay V Ivchenko[5], Hanna Dahlgren[5]

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Title of Team:

ABSTRACT BODY: Cascades2 was launched from Poker Flat Alaska on 20 Mar 2009 at 11:04 UT (roughly 30 minutes premidnight magnetic local time.) The 12 minute 43 second flight reached an apogee of 564 km over the northern coast of Alaska at 11:11:11 UT, and entered the polar cap at 11:14:40 UT before atmospheric reentry at 11:16:42 UT. The experiment array included a 5-payload suite of in situ instrumentation, ground cameras of various fields of view at three different points under the trajectory, various ground magnetometers, the PFISR radar

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at the launch site, and the THEMIS spacecraft in the magnetotail.
The array design was chosen to address questions about (1) shears in ionospheric electric fields and their ability to drive waves; (2) proper motion of auroral structures with respect to the ambient ionosphere; and (3) quantifying parameters of dispersive Alfven wave phenomena and their effects on auroral fluxtubes. The successful flight was due to the sustained and dedicated effort of the many and varied members of our team.
The Cascades2 trajectory passed through several parts of a poleward boundary intensification event, with both inverted-V type aurora and sustained Alfvenic activity seen. Other presentations will detail the ground camera, onboard DC electric fields, and onboard multipoint electron data. In this presentation we show onboard magnetometer results of current signatures both compressional and transverse. Also we present ion data showing the complex motion of low and medium energy ions in these poleward boundary events; ions are seen to be both moving upward along the field line, and then precipitating back down at higher energies with dispersion signatures.

www.dartmouth.edu/~aurora/cascades2/data.html

KEYWORDS: [2407] IONOSPHERE / Auroral ionosphere, [2736] MAGNETOSPHERIC PHYSICS / Magnetosphere/ionosphere interactions, [7894] SPACE PLASMA PHYSICS / Instruments and techniques.

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Additional Details

Previously Presented Material: 30%, Cedar2009 meeting

Scheduling Request: This is a Cascades2 sounding rocket abstract submitted specifically to SM06; we have requested the SM06 session convenors to keep all the Cascades2 posters together. This particular talk (first author lynch) is also the overview talk and we request that (a) this be an oral talk prior to the associated poster session; or, less preferably, (b) this be the first of the set of associated posters.
Other posters will be submitted by Mella, Lundberg, and Hampton.

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