

URSI Commission G - Report

URSI Commission G Report



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Dust and Oxygen New players in the *D*-region

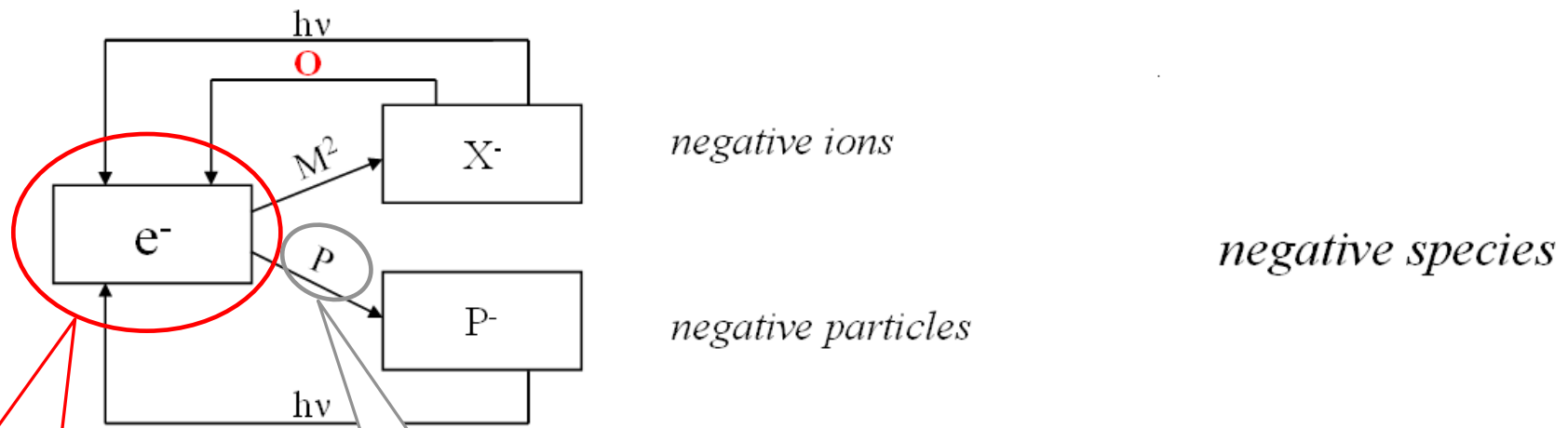
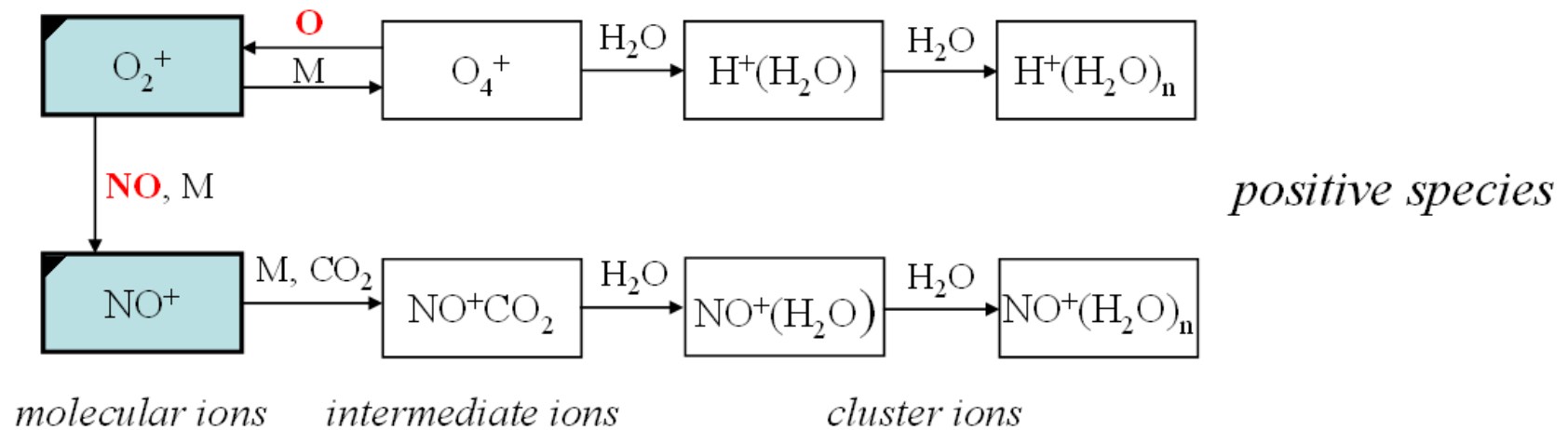
(correctly: *meteoric* dust and *atomic* oxygen)

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theoretical:

- study the size, charge and composition of meteoric dust in the mesosphere (aka the *D*-region)
- assess the relevance of meteoric dust for the charge balance in the *D*-region
- assess the role of atomic oxygen for the ion-chemistry of the mesosphere

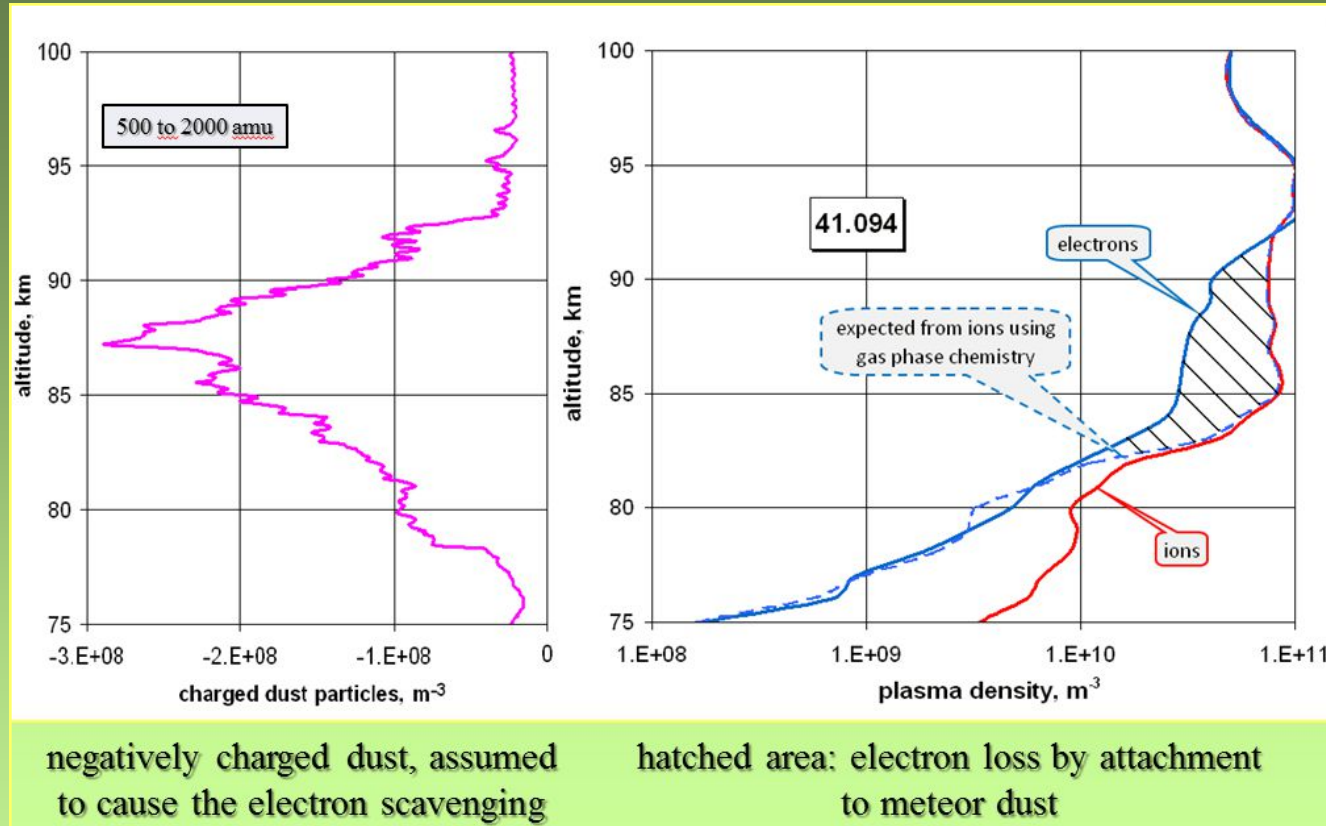
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this is URSI's interest

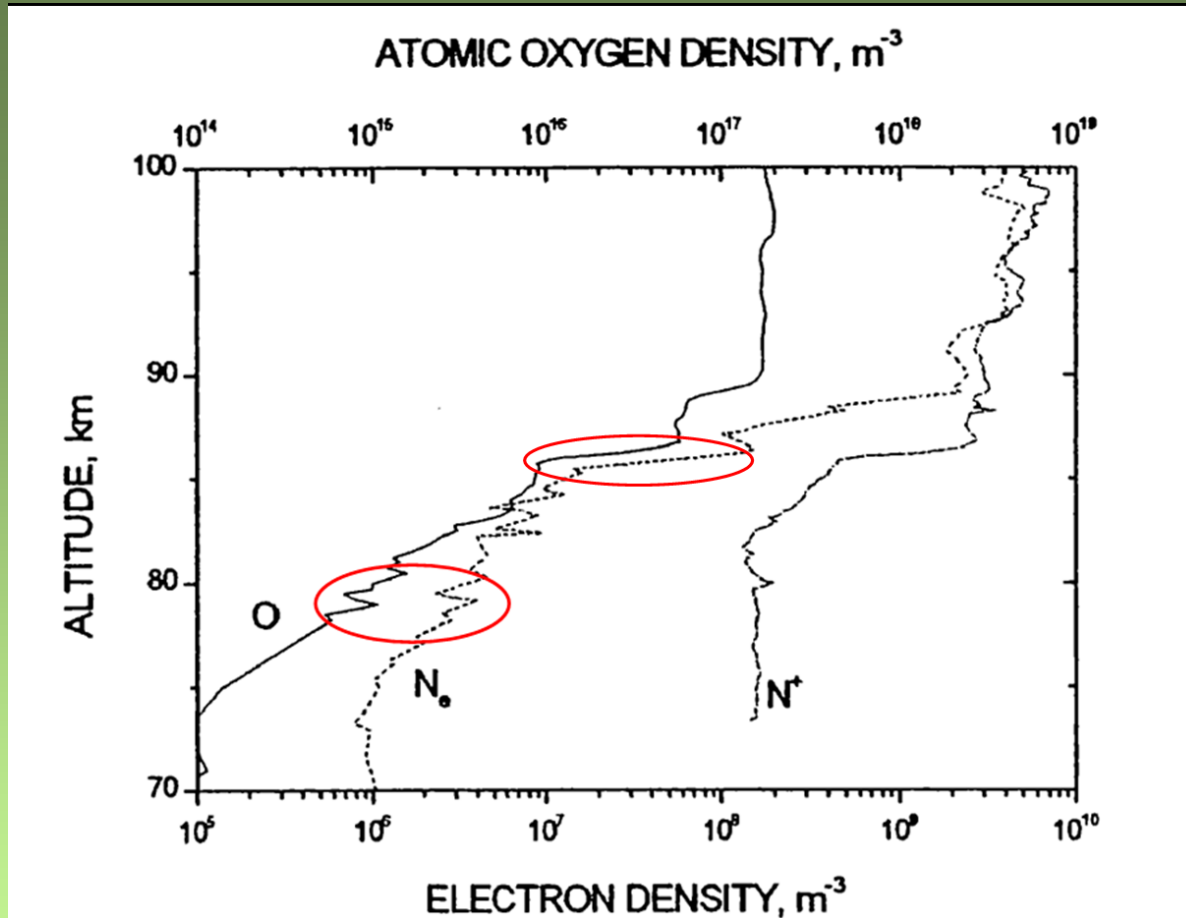
that is today's topic

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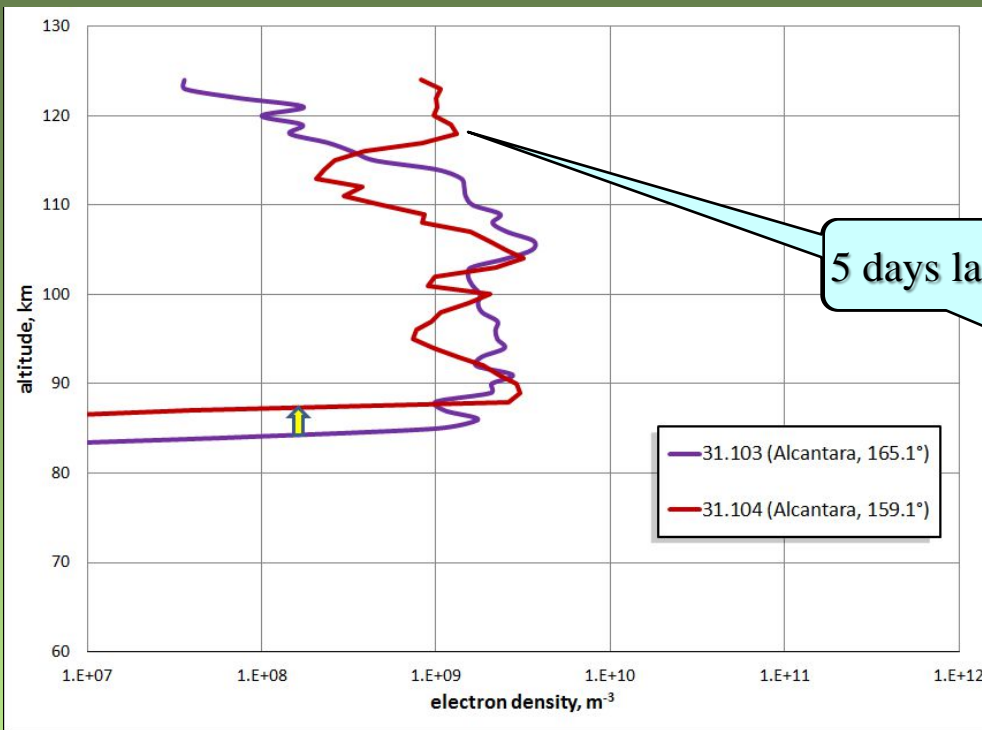
Friedrich *et al.*, 2012
(see last year's report)

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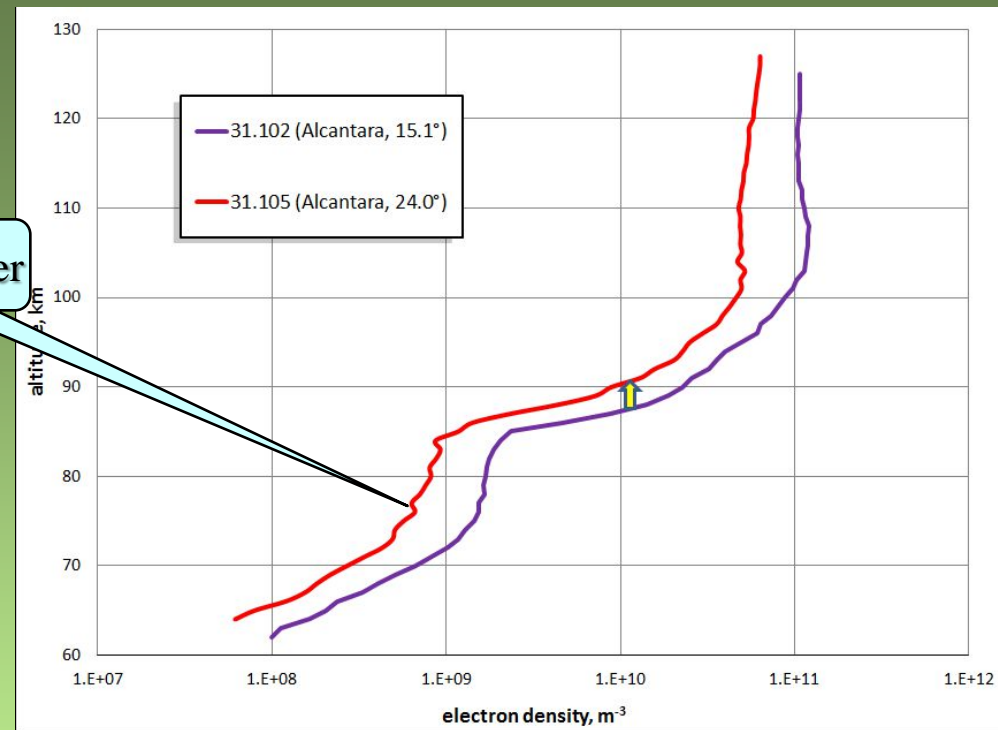


(clear) early evidence:
high latitude (Friedrich *et al.*, 1999)

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night



day

5 days later

(surmised) early evidence:
equatorial (Goldberg *et al.*, 1997)

the rise can best be explained
by a similar rise of the O-ledge

ad: (atomic) oxygen

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experimental:

rocket-borne plasma density measurements (wave propagation [Faraday rotation, absorption], electrostatic probe)

Analysis of global satellite O-data and its calculated impact on the *D*-region (Siskind *et al.*, 2014, submitted)

participation in recent sounding rocket campaigns (qualitative results):

ECOMA-7, 8 & 9, December 2010, Andøya

PHOCUS, July 2011, ESRANGE

WADIS-1, June 2013, Andøya

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relevant FWF projects:

- P 23100-N23 “Electron Scavenging in the Mesosphere“ (almost completed)
- P 26932-N29 “New Players in the Mesosphere: Assessing the Role of Meteoric Dust and Atomic Oxygen” (beginning)

participation in forthcoming sounding rocket campaigns (quantitative results):

- | | |
|------------------|-------------------------------------|
| WADIS-2 | March (or October) 2015, Andøya |
| MaxiDusty | Summer 2015, Andøya |
| O-States | two flights in Summer 2016, ESRANGE |