



Abstract Details

[AOGS 1st Annual Meeting](#) > [Ocean and Atmospheres](#) > **Microwave detection and quantitative analysis of the tertiary ozone maximum >**

Corresponding Author : Dr. Paul Hartogh (hartogh@linmpi.mpg.de)

Organization: Max-Planck-Institut fuer Sonnensystemforschung

Category: Ocean and Atmospheres

Paper ID: 57-OOA-A1524

Title: Microwave detection and quantitative GCM-analysis of the tertiary ozone maximum

Abstract:

The spatio-temporal behavior of the ozone mixing ratio in the upper mesosphere/mesopause region under nearly polar night conditions is the phenomena not very well understood and reproduced by models. We examine this issue using an advanced three-dimensional model of dynamics and chemistry of the middle atmosphere (0-150 km) particularly designed to investigate the extended mesopause region on the spatio-temporal structure of this phenomenon. The most marked features of modeling results are a pronounced ozone maximum around 72 km occurring close to the polar night terminator and a strong drop of the mixing ratio above about 80 km. These features were also found by means of ground-based 142 GHz microwave measurements in high latitude at the Arctic Observatory for Middle Atmosphere Research (ALOMAR 69.29° N, 16° E) and even at the moderate latitude of Lindau (51.66° N, 10.13° E) during the night in the winter season but less marked there. They were absent at both stations during the daytime hours. The calculations suggest that stronger enhanced ozone values occur in a latitudinal band of approximately 15 degrees in the vicinity of the polar night terminator. During night time enhanced values reach into mid-latitudes. The effect is confined both in height interval approximately between 66 and 76 km and to a certain latitudinal range which alters with season according to the change of polar night terminator. We discuss the model results in terms of chemical processes for nearly grazing incidence conditions of the solar insolation and in connection with advective transport. (Session OA1)

Presentation Mode: Oral

Keywords: microwave spectroscopy, photochemical modeling, general circulation model, tertiary ozone maximum, polar and mid latitudes, mesosphere

Status: Pending.

Co-Authors

No.	Title	First Name	Family Name	Organization
1	Dr.	Christopher	Jarchow	Max-Planck-Institut fuer Sonnensystemforschung
2	Dr.	Card	Sensmann	Leibniz Institute of Atmospheric Physics