

**Seminar on Physics and Chemistry of the Atmosphere
04.02.2022, WiSe 2021/2022, IUP Bremen**

**BMBF SynopSys-Ozone:
Assessment of ozone data and study of
troposphere-stratosphere interaction**

**F. Monsees, M. Weber, A. Rozanov, J.P. Burrows
(IUP)**

monsees@iup.physik.uni-bremen.de

Abstract

Complex interactions between the troposphere and the stratosphere in polar regions strongly influence weather predictability, but still cannot be fully forecasted. The overarching goal of the project SynopSys, a joint project between Alfred Wegener Institute (AWI), the Deutscher Wetterdienst (DWD) and the University of Bremen, is therefore to evaluate and improve the forecasting capability of the ICON-NWP forecast model over the Arctic region by utilizing the unique measurements of synoptic processes and events during the MOSAiC ship expedition as well as by analyzing ozone data.

The goals of the part, which we at the university Bremen are working on, are the development of diagnostics of synoptic events during the Year of Polar Prediction using satellite ozone data, optimization of the spatial resolution of the ozone profile retrieval from OMPS-LP limb observations targeted to the polar upper troposphere lower stratosphere (UTLS) region and the long-term diagnostics of synoptic events and their relationship to ozone.

In this talk we provide an overview of SynopSys-Ozone project and, as a first step, focus on diagnostics of potential vorticity anomaly related to ozone change. We first explain, what synoptic events in this context mean and what the connections to ozone are. We then investigate three special events that were identified and classified during the MOSAiC expedition by AWI, and compare MOSAiC data with ERA5 reanalysis data. There were two event structures, one, where a low pressure center correlated with the minimum tropopause height and one, where this correlation was not expected. It could be shown, that

**Seminar on Physics and Chemistry of the Atmosphere
04.02.2022, WiSe 2021/2022, IUP Bremen**

also for the events, where a correlation wasn't expected, a correlation occurs, but relatively smaller. Moreover the influence of the potential vorticity anomalies on the ozone content was observed and therefore the possibility of the determination of synoptic events through ozone shown.