

Variability and Trends of Stratospheric Ozone at Hoher Sonnblick, Austria

D. Rauter, M. Fitruk, and S. Simic

University of Natural Resources and Life Sciences, Vienna, Institute of Meteorology, Department of Water - Atmosphere - Environment (WAU), Vienna, Austria (daniel.rauter@boku.ac.at)

Continuous long-term observations of total ozone have been carried out at the Alpine meteorological observatory Hoher Sonnblick (3106 m) since 1994 with the Brewer MkIV #93 spectrophotometer operated by the Institute of Meteorology of the University of Natural Resources and Life Sciences Vienna.

Trend analyses are carried out for this long-term record and events with unusually high or low total ozone are identified based on extreme value theory and a categorization is attempted. The suchlike detected “finger-prints” of hemispherical circulation features, such as Arctic Oscillation, North Atlantic Oscillation, Quasi-Biennial Oscillation and the Brewer-Dobson Circulation, as well as those of the eleven-year solar cycle and volcanic eruptions are discussed regarding observed changes.

Case studies of synoptic-scale weather patterns over Europe and of the Northern hemisphere (e.g. 300 hPa geopotential fields) during events of extreme low ozone will determine influence factors of weather situations on stratospheric ozone concentration. To trace the origins of low-ozone air masses, Lagrangian back-tracking trajectories are analyzed.