



## **Total ozone patterns over the northern mid-latitudes: spatial correlations, extreme events and dynamical contributions**

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Tools from geostatistics and extreme value theory are applied to analyze spatial correlations in total ozone for the northern mid-latitudes. The dataset used in this study is the NIWA combined total ozone dataset (Bodeker et al., 2001; Müller et al., 2008). New tools from extreme value theory (Coles, 2001; Ribatet, 2007) have recently been applied to the world's longest total ozone record from Arosa, Switzerland (e.g. Staehelin 1998a,b), in order to describe extreme events in low and high total ozone (Rieder et al., 200x). Within the current study, patterns in spatial correlation and frequency distributions of extreme events (e.g. ELOs and EHOs) are studied for the northern mid-latitudes. New insights in spatial patterns of total ozone for the northern mid-latitudes are presented. Koch et al. (2005) found that the increase in fast isentropic transport of tropical air to northern mid-latitudes contributed significantly to ozone changes between 1980 and 1989. Within this study the influence of changes in atmospheric dynamics (e.g. tropospheric and lower stratospheric pressure systems) on column ozone over the northern mid-latitudes is analyzed for the time period 1979-2007.

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