

# 20 Years of ClO Measurements in the Antarctic Lower Stratosphere

- G. Nedoluha, **B. Connor**, et al, acp-2016-188 – discussions
- 20 years of (1996-2015) of austral springtime measurements of ClO over Antarctica from the ChlOE1 ground-based millimeter wave spectrometer at Scott Base, Antarctica; 12 years (2004-2015) of ClO measurements from MLS
- To study interannual differences, we focus on a 3-week period from August 28 to September 17 for each year, and compare the average column ClO anomalies
- Anomalies are shown to be highly correlated with the average ozone mass deficit for September and October of each year
- Anomalies in column ClO are strongly anti-correlated with 30 hPa temperature anomalies, both on a daily and an interannual timescale
- We calculate the linear dependence of the interannual variations in column ClO on interannual variations in temperature, then
- Estimate the underlying trend in the total chlorine ( $\text{Cly} = \text{HCl} + \text{ClONO}_2 + \text{HOCl} + 2 \times \text{Cl}_2 + 2 \times \text{Cl}_2\text{O}_2 + \text{ClO} + \text{Cl}$ ) which provides the reservoir for the ClO
- The resultant trends for zonal MLS, Scott Base MLS (both 2004-2015), and ChlOE (1996-2015) were  $-0.5 \pm 0.2\% \text{ yr}^{-1}$ ,  $-1.4 \pm 0.9\% \text{ yr}^{-1}$ , and  $-0.6 \pm 0.4\% \text{ yr}^{-1}$ , respectively

Annual ClO Adjusted for temperature

