

Total ozone reduction over Rio Gallegos (Argentina) in November 2009 simulated by MIROC3.2 Chemical Transport Model

AKIYOSHI, Hideharu^{1*} ; KADOWAKI, Masanao¹ ; NAKAMURA, Haruna² ; SUGITA, Takafumi¹ ; NAKAMURA, Tetsu³ ; MIZUNO, Akira⁴

¹NIES, ²Fujitsu FIP, ³Arctic Environment Research Center, NIPR, ⁴STEL, Nagoya University

de Laat et al. (Geophys. Res. Lett., 2010) reported three weeks of reduced total ozone columns over the southern tip of South America in November 2009. The duration of the low total ozone was unusual for the regions. Ozone vertical profile measurements at Rio Gallegos, Argentina (51S, 69W) by ozone LIDAR suggest that the isentropic surfaces of 675K and 475K over Rio Gallegos was inside the Antarctic polar vortex around 13-14 November and 22-23 November respectively thus the low total ozone lasted for three weeks (Wolfram et al, 5th SPARC General Assembly, Queenstown, New Zealand, 2014). MIROC 3.2 Chemical Transport Model with a horizontal resolution of T42 (corresponding to 2.8 degree by 2.8 degree in grids) simulates this long term reduced total ozone over Rio Gallegos. The dynamical and chemical fields around the Antarctica in November 2009 are analyzed. Investigations of these fields for the other past years and comparisons with those in 2009 will be performed.

Keywords: Argentina, ozone hole, CTM, polar vortex, SATREPS, November 2009