## Surface ozone at Nam Co (4730 m a.s.l.) in the inland Tibetan Plateau: variation, synthesis comparison and regional representativeness

Xiufeng Yin<sup>1, 2, 3</sup>, Shichang Kang<sup>1, 4</sup>, Benjamin de Foy<sup>5</sup>, Zhiyuan Cong<sup>2, 4</sup>, Jiali Luo<sup>6</sup>, Lang Zhang<sup>2</sup>, Yaoming Ma<sup>2, 4</sup>, Guoshuai Zhang<sup>2</sup>, Dipesh Rupakheti<sup>2, 3</sup>, Qianggong Zhang<sup>2, 4</sup>

<sup>1</sup>State Key Laboratory of Cryosphere Sciences, Northwest Institute of Eco-Environment and Resources, Chinese Academy of Science, Lanzhou, 730000, China
<sup>2</sup>Key Laboratory of Tibetan Environment Changes and Land Surface Processes, Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, 100101, China
<sup>3</sup>University of Chinese Academy of Sciences, Beijing, 100039, China
<sup>4</sup>CAS Center for Excellence in Tibetan Plateau Earth Sciences, Beijing, 100085, China

<sup>5</sup>Department of Earth and Atmospheric Sciences, Saint Louis University, St. Louis, MO, 63108, USA <sup>6</sup>Key Laboratory of Semi-Arid Climate Change, Ministry of Education, Lanzhou, 730000, China

Correspondence to: Qianggong Zhang (qianggong.zhang@itpcas.ac.cn) and Shichang Kang (shichang.kang@lzb.ac.cn)

15

20

25

30

35



Fig. S1. Variation of surface ozone at Nam Co Station from January 2011 to October 2015. Hourly mean mixing ratios of surface ozone are in blue dots; monthly mean mixing ratios of surface ozone are in black dots; average mixing ratio of surface ozone during whole measurement period in red dash line.



Fig. S2. Time series of maximum 8-hr daily average observed surface ozone, total column ozone, potential vorticity and WRF-FLEXPART Free Troposphere tracer at Nam Co Station. The Free Troposphere tracer is based on the number of 4-day back-trajectories that have been above 8000 MSL before reaching the measurement site.



Fig. S3. Scatter plot of model surface ozone mixing ratio against observed surface ozone mixing ratio at Nam Co Station for the Multiple Linear Regression (MLR) model. The dots are points that are included in the regression; the circles are points that were excluded as outliers by the Iteratively Reweighted Least Squares (IRLS) method.



130 Fig. S4. Average Residence Time Analysis grids for each WRF-FLEXPART trajectory cluster at Nam Co Station. The black diamond represents the sampling site.



155 Fig. S5. Likely source areas of surface ozone at Nam Co Station during the whole measurement period identified by PSCF (Potential Source Contribution Function).