Interpretation of Plume Aging in a Transport Event in 2009 Application of folded GEOS-Chem and FLEXPART technique

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Transport Pathway and Export of Pollution Plume



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Folded Technique and Results Folded GC-FP Results of Event 2 in 2009 Ozone a) 110 increase 100 CO(ppbv) O_s(ppbv) 60 90 58 80 56 PAN PAN 70 Jun09,12pm Jun10,12pm Jun11,12pm Jun 12, 12pm Jun13,12pm Jun14,12pm Accumulation decomposition b) 0.30 30.25 1.5 a) 0.25 0.20 (nqdd)*0.10 NO_{(ppbv} 1.0 0.15 0.10 0.5 0.05 0.05 30.00E 0.00 0.0 Jun13,12pm Jun14,12pm Jun09,12pm Jun10,12pm Jun11,12pm Jun 12, 12pm PO_{*}(ppbv/day) O **Balanced** NO_x(pptv) pro/loss rate LO_{*}(ppbv/ Air particles are located in GEOS-Chem Air particles are released from the receptor in FLEXPART fields at a certain upwind time 2 0 Jun09,12pm Jun10,12pm Jun11,12pm Jun 12, 12pm Jun 13, 12pm Jun14,12pm b) d) 100 300 8000 7000 6000 5000 2000 2500 2000 1500 750 500 80 290 Height(m) EMP(°C) 280 270 40 20 260 250 At each upwind time, the folding process collects dispersed air particles together. Jun09,12pm Jun10,12pm Jun11,12pm Jun 12, 12pm Jun13,12pm Jun14,1

A Schematic of folded technique

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Please refer to our paper for more details : A Lagrangian View of Ozone Production Tendency in North American Outflow in Summers 2009 and 2010. B. Zhang, R. C. Owen, J. A. Perlinger, A. Kumar, S. Wu, M. Val Martin, L. Kramer, D. Helmig, R. E. Honrath. *Atmospheric Chemistry and Physics Discussion. In prep.*

