Supplemental Information

Fig. S1. Source regions are marked in different colors
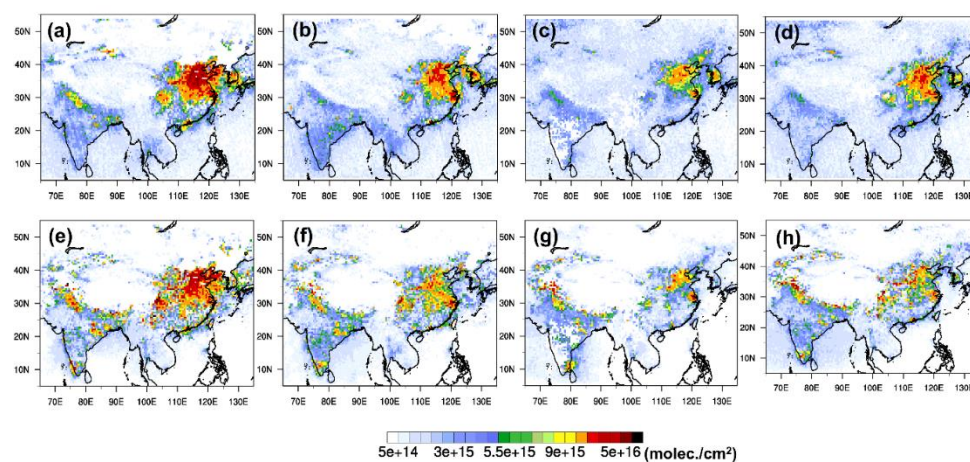
Fig. S2. Modeled and satellite observed NO_2 column for winter (a, e), spring (b, f), summer (c, g) and autumn (d, h)
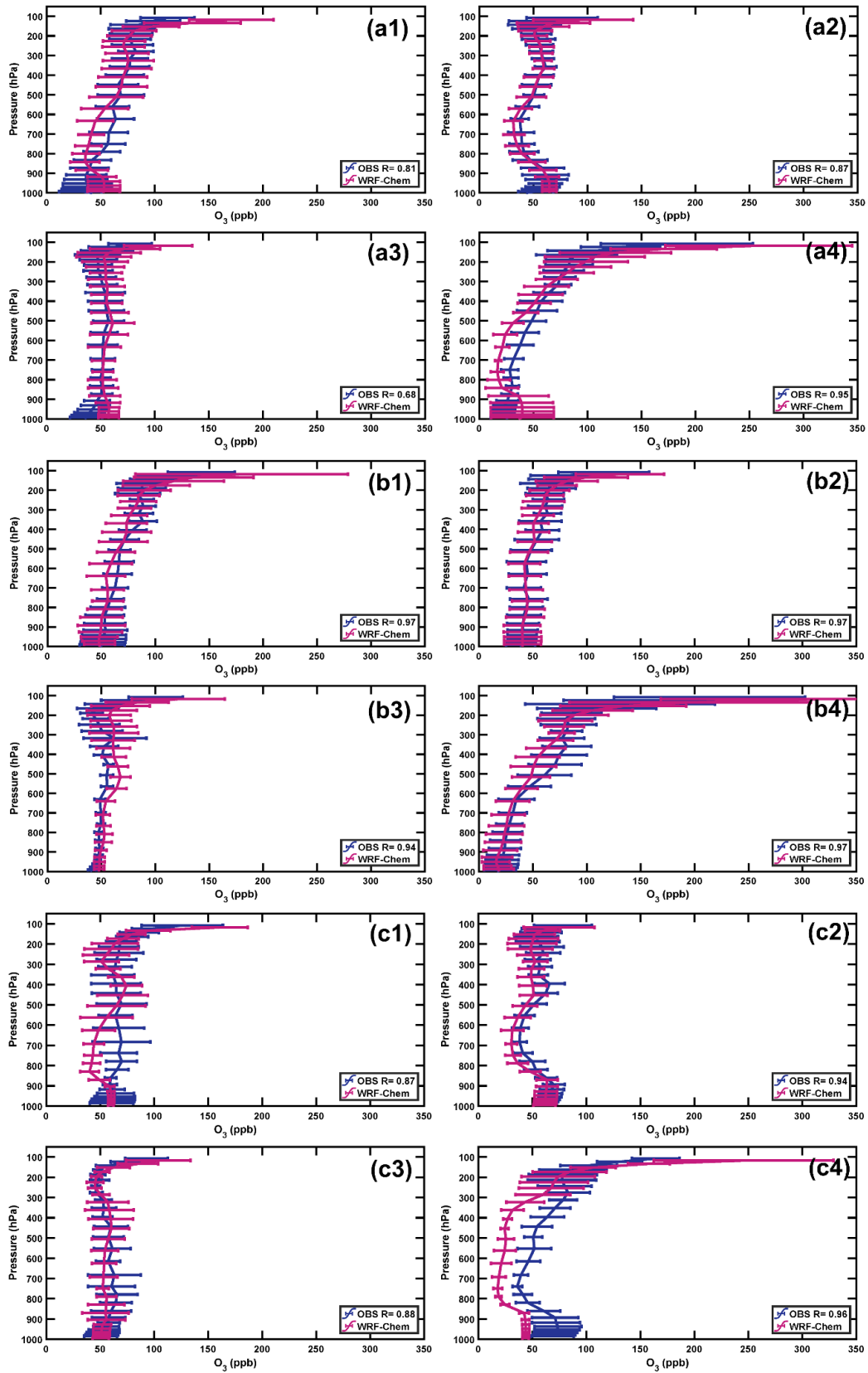
Fig. S3. Observed and simulated seasonal mean O₃ concentrations for the HKO (Hong Kong Observatory, a1-a4), JMA (Japan Meteorological Agency, b1-b4), and HSSRV (Hydrometeorological Service of S.R. Vietnam, c1-c4) stations.
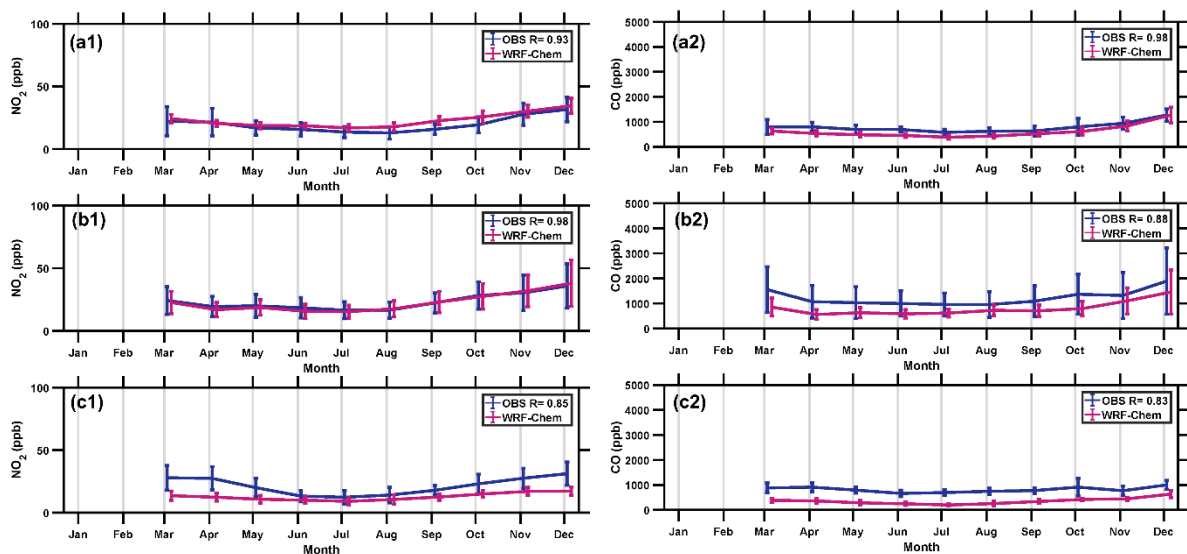
Fig. S4. Modeled and observed monthly concentrations of NO$_2$ and CO in NCP (a1-a2), YRD (b1-b2), and PRD (c1-c2)