| | Descriptions | Sources and references |
|---|---|---|
| Physical processes | | |
| Wet deposition | Parameterization for scavenging in both convection and large-scale precipitation for soluble gases and aerosols | Mari et al. (2000), Liu et al. (2001) and Amos et al. (2012) |
| Dry deposition | Resistance-in-series algorithm | Wesely (1989), Zhang et al. (2001) |
| PBL mixing | Non-local mixing scheme | Lin and McElroy (2010) |
| Anthropogenic emissions | | |
| Global | Emissions Database for Global Atmospheric Research (EDGAR v4.2) | http://edgar.jrc.ec.europa.eu/ |
| East Asia and South Asia | MIX emission inventory | Li et al. (2017) |
| United States | Environmental Protection Agency (EPA) National Emission Inventory (NEI) | https://www.epa.gov/air-emissions-inventories |
| Canada | Canadian Criteria Air Contaminant | http://www.ec.gc.ca/ |
| Europe | European Monitoring and Evaluation Program (EMEP) | http://www.emep.int |
| Mexico | Big Bend Regional Aerosol and Visibility Observational study inventory (BRAVO) | Kuhns et al. (2005) |
| Natural sources | | |
| Biogenic emissions | Model of Emissions of Gases and Aerosols from Nature (MEGAN) | Guenther et al. (2006) |
| Lightning ($NO_x$) emissions | Parameterization based on cloud top height, and spatially constrained by satellite observed lightning flashes | Price and Rind (1992), Sauvage et al. (2007) and Murray et al. (2012) |
| Soil $NO_x$ emissions | empirical parameterization of available nitrogen (N) | Hudman et al. (2012) |
| Biomass burning emissions | Atmospheric Chemistry and Climate Model Intercomparison Project (ACCIMP) for 1990–1996 and Global Fire Emission Database version 3 (GFED3) for 1997–2010 | Lamarque et al. (2010) and van der Werf et al. (2010) |
| Methane | Prescribed over four latitudinal bands with year-specific mixing ratios constrained by measurements from the NOAA Global Monitoring Division (GMD). Concentration ranges over 1990–2010 are given below: 90–30° S (1663–1732 ppbv), 30° S–0° (1666–1741 ppbv), 0–30° N (1733–1801 ppbv), and 30–90° N (1792–1855 ppbv) | |