Preliminary Calculation of JMA Regional ATM

Specifications of Regional ATM for the Preliminary Calculation

Input Data[1]	**3 hourly outputs of JMA meso analysis (MA) and half-hourly outputs of Radar/Rain gauge-Analyzed Precipitation (R/A)**
Grid Size for concentration / deposition	5 km
Number of tracers	100,000/3 hr
Horizontal Diffusion	Gifford (1982)
Vertical Diffusion	Louis et al. (1982)
Dry Deposition[2]	Ngas: None Dgas: dry deposition-velocity=$1x10^{-2}$ m/s Lpar: dry deposition-velocity=$1x10^{-3}$ m/s (Seino et al., 2004, Sportisse, 2007, Draxler and Rolph, 2012)
Wet Scavenging / Deposition[3]	Ngas: None Dgas: Hertel et al. (1995) with Henry's constant=0.08 Lpar: below-cloud scavenging coefficient [1/s]=$2.78x10^{-5}\ P^{0.75}$ with accumulated precipitation P [mm/h] (Kitada,1994)
Gravitational settling	Ngas: None Dgas: None Lpar: Stokes' law with Cunningham correction (e.g. Sportisse, 2007) grain-size dist. given by log-normal (median=1μm, SD=1.0, upper cutoff=20 μm) and density=1 g/cm^3 (uniform)
Reflection on the ground and sea	Iwasaki et al. (1998)
Decay	None

- Source Configuration
  - Location: 37.42deg N, 141.03deg E (Fukushima-Daiichi NPP)
  - Release height: 0-100 m ASL uniform release
  - Release rate: 3 Bq/3 hour uniform release
  - Forecast time : 72 hours from each 3-hourly initials

- Note
  - [1]Time step of ATM is 10 min and time interpolation with input data. Vertical advection is calculated by the upward flow of MA
    (without 9-grids average and zero at lowest level)
  - [2]Dry deposition is applied to the tracers within 100 m from surface
  - [3]Below-cloud scavenging is applied to the tracers under about 3000 m and force out for P>10 mm/h