Sekiyama, T. T. and M. Kajino, 2021: Performance of a 250-m grid Eulerian dispersion simulation evaluated at two coastal monitoring stations in the vicinity of the Fukushima Daiichi Nuclear Power Plant. *J. Meteor. Soc. Japan*, **99**, 1089−1098.
https://doi.org/10.2151/jmsj.2021-052

Plain Language Summary: A super-high-resolution Eulerian dispersion model is sometimes defeated by a lower-resolution model in the vicinity of emission sources; in that case, a plume augmentation (max pooling) process is effective for the higher-resolution model to improve the statistical scores.

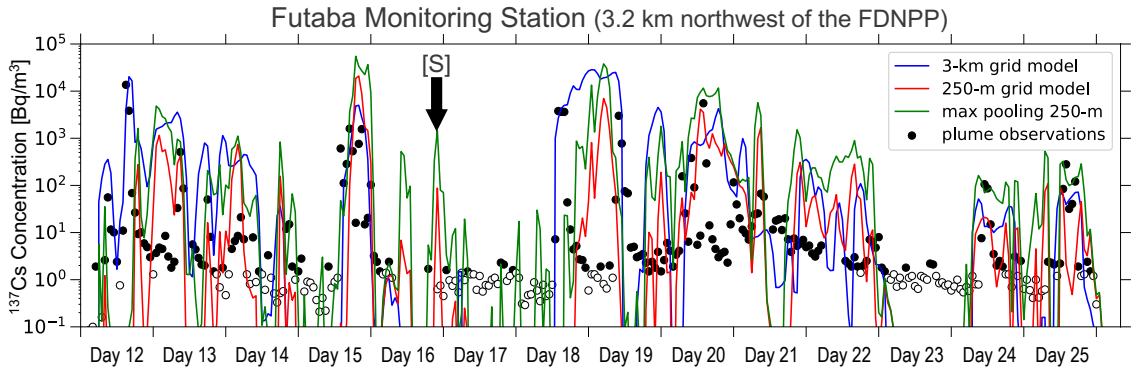

Figure 1. Cs-137 concentrations in March 2011 at the Futaba monitoring station. [S] indicates the snapshot time for Figure 2. Closed circles are observations defined as plume arrivals (> 1.5 Bq/m3).

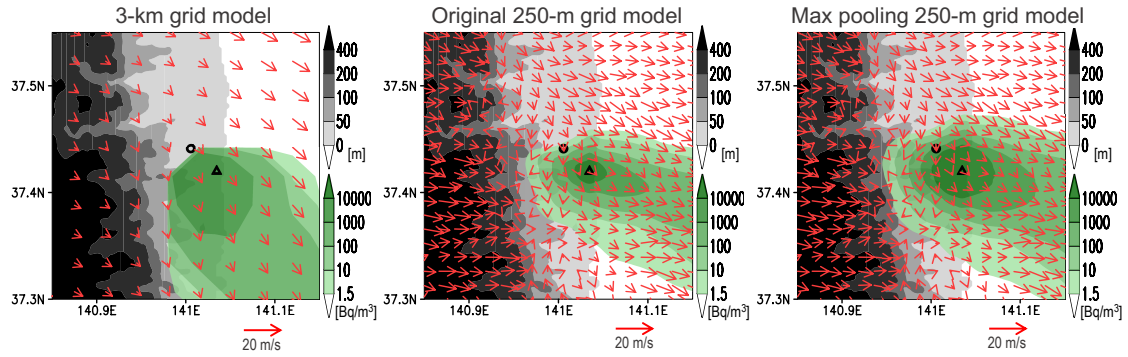

Figure 2. Hourly averaged surface Cs-137 concentrations (green shading) and surface winds (red arrows) near the Futaba monitoring station calculated by the models at Time [S] indicated in Figure 1. Gray shading indicates the elevation used in the 250-m grid models. The open circle (triangle) indicates the Futaba monitoring station (the nuclear power plant).

- We examined the performance of Eulerian dispersion models in the vicinity of a pollutant source (3.2 and 17.5 km distant) comparing 250-m and 3-km grid simulations.
- A disadvantage of Eulerian dispersion models is expected to be the artificial numerical diffusion near emission sources, but occasionally the artificial diffusion decreases the undetected error rate.
- Plume augmentation is advantageous to super-high-resolution models to improve statistical scores, which is beneficial for environmental emergency response systems.