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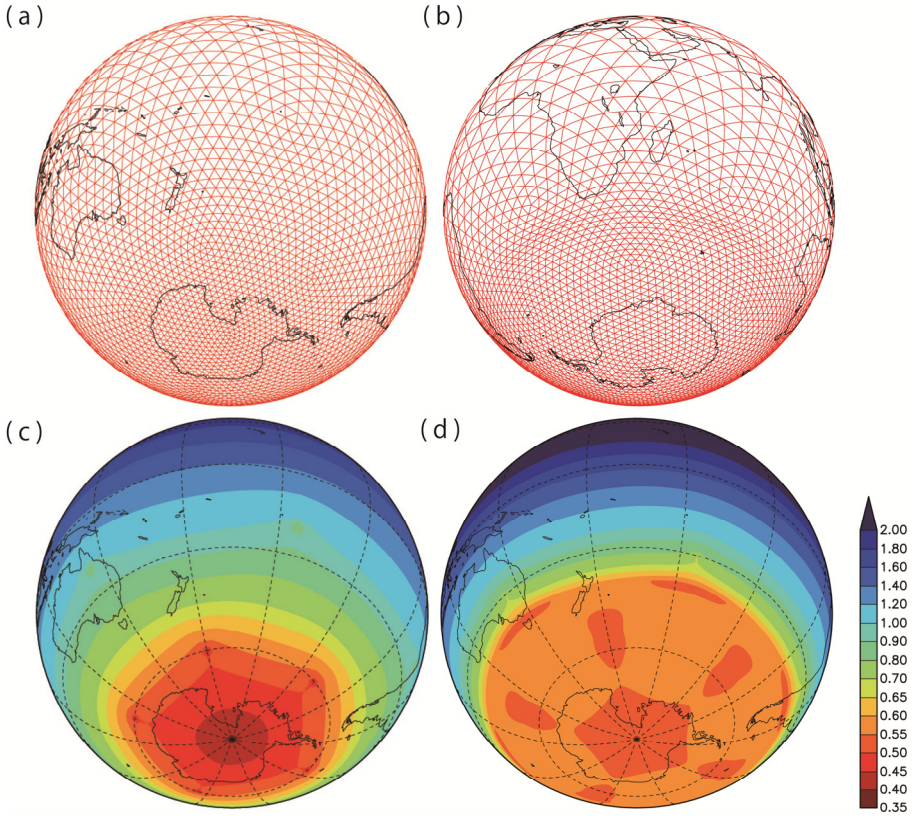

←
Figure 1. :
The stretched icosahedral grid by (a) the transformation with β ~ 5.42 in Tomita (2008) (b) the present transformation.
The horizontal map of the normalized grid interval (c) with the same grid as (a), and (d) with the same grid as (b), respectively. The g-level is 7 in (c) and (d), while it is degraded from g-level 7 to 4 in (a) and (b) for simplicity.

- Regionally enhanced meshes that have quasi-uniformly fine circular region is proposed by a new transformation method with icosahedral grids to obtain a cost-effective simulation for waves, transports and mixing processes, the behaviors of which depend strongly on the horizontal resolution.
- To realize this grid structure, the spring dynamics method can be used and the characteristic length of the spring connecting grid nodes should be determined through three parameters; (i) the number of grid points placed in the target region, (ii) the area of the target region and (iii) a parameter of the Schmidt transformation.
- Because the new grid system has a more homogenous resolution in the target region compared with that of the previous study, the estimation of the momentum fluxes of gravity waves are less affected by their dependence of the grid resolution.