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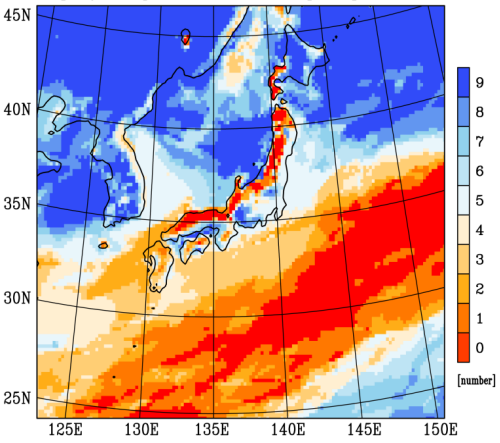
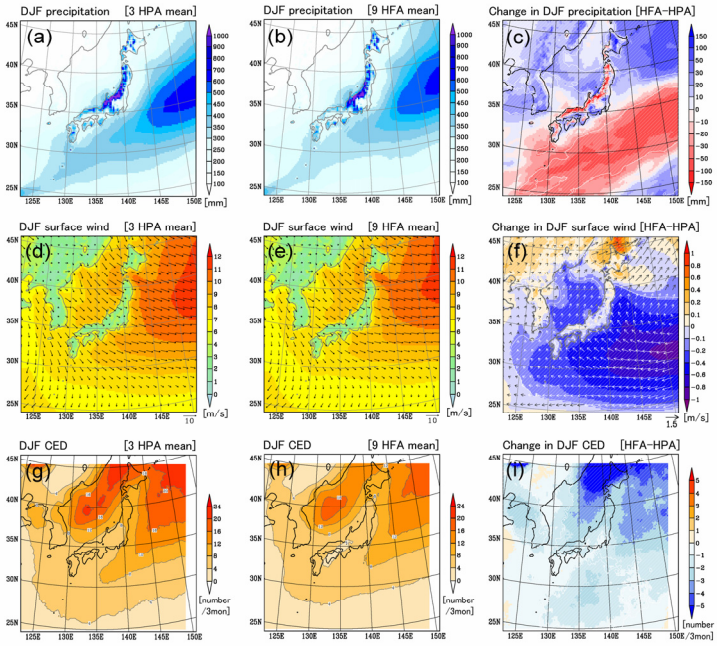
Figure 1. Number of experiments projecting an increase in DJF precipitation.
↓





↑ Figure 2. Climatology and future changes in (a-c) DJF precipitation and (d-f) surface wind, and (g-i) cyclone existence density. (a, d, g) three present climate experiments mean, (b, e, h) nine future climate experiments mean, and (c, f, i) future changes.

- Future changes in winter precipitation around Japan and their uncertainties are investigated using the downscalings of a non-hydrostatic regional climate model (NHRCM) with 20-km grid spacing based on ensemble global climate projections.
- Most ensemble members show decreases in the winter precipitation on the coast of the Sea of Japan and over the Pacific Ocean in the south of the Japanese archipelago, while the winter precipitation increases over the northernmost part of Japan (Hokkaido) (Fig. 1, Fig. 2).
- The decreases in precipitation results from a weakened winter monsoon and the changes in extratropical cyclone number in the coast of the Sea of Japan and over the Pacific Ocean, respectively (Fig. 2). In Hokkaido, the strengthened northwesterly, which results from the reduction of sea ice in the Sea of Okhotsk, brings about the increase in precipitation in the inland area of Hokkaido. In addition, moistening due to global warming also relates to the increase in precipitation in extremely cold regions (Fig. 1).