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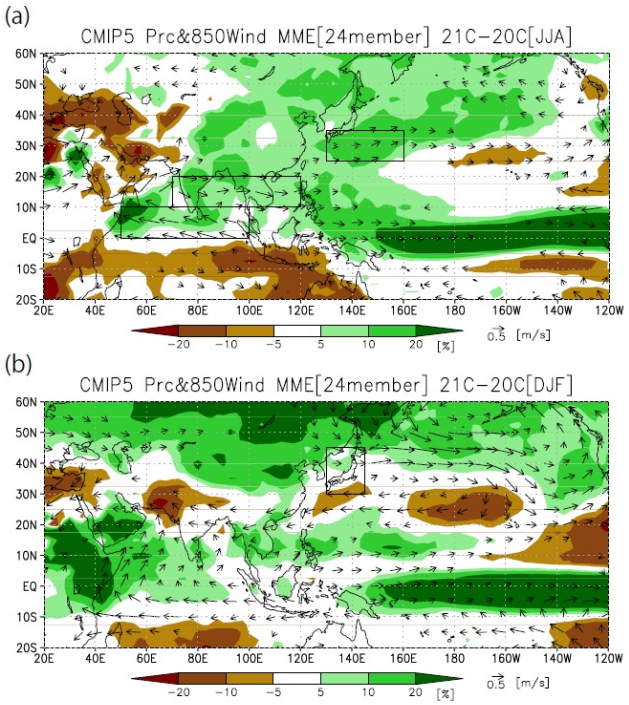
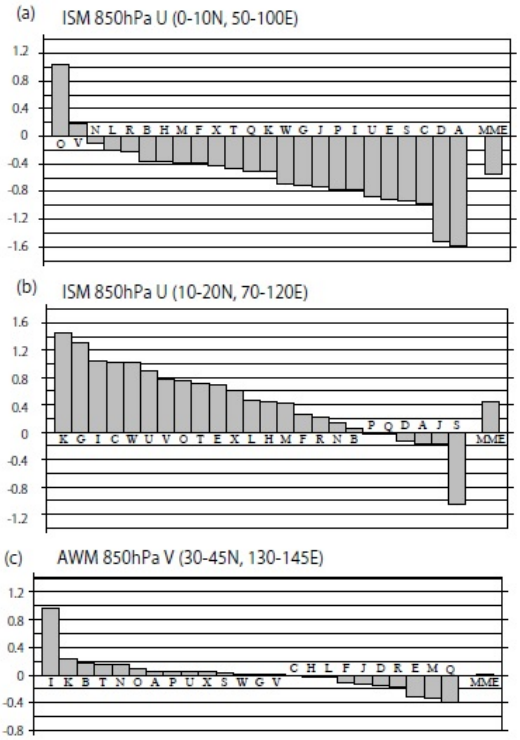
↓ Figure 1.
Future changes (differences between 2081–2100 and 1981–2000 results) in seasonal rainfall (shading; units, %) and 850-hPa winds (vectors; units, m/s) in the region 40°E–120°W, 20°S–60°N, based on CMIP5-MME means, during (a) June–August and (b) December–February. Rainfall is normalized to present values.





↑ Figure 2.
Future changes (differences between 2081–2100 and 1981–2000 results) projected by each of the CMIP5 models for simulated 850-hPa zonal winds (m/s) during June–August, in the regions of (a) 50°–100°E, 0°–10°N and (b) 70°–120°E, 10°–20°N. (c) simulated 850-hPa meridional winds (m/s) during December–February, in the region 130°–145°E, 30°–45°N.

- Evaluations of the summer/winter Asian monsoon through the late 20th century (1981–2000) were conducted on the basis of model simulations using 20 Coupled Model Intercomparison Project Phase 3 (CMIP3) and 24 Phase 5 (CMIP5) multi-model datasets. Based on these evaluations, we examined projected future (2081–2100) changes in the summer/winter Asian monsoon, including those of the tropical Hadley–Walker circulation, for mid-range emission scenarios (SRES-A1B for CMIP3 and RCP4.5 for CMIP5).
- In boreal summer, the CMIP5 MME shows a projected acceleration of climatological low-level monsoon westerlies (Figure 1a), especially in subtropical regions (10°–20°N). This is robust feature in most CMIP5 models (Figure 2a, 2b).
- In boreal winter, the CMIP5 MME shows a projected intensification of the Aleutian Low (Figure 1b), but future change of Asian winter monsoon circulation (measured by 850-hPa meridional wind around Japan) has large uncertainties in individual CMIP5 models (Figure 2c).