Assessment of Climate Risk
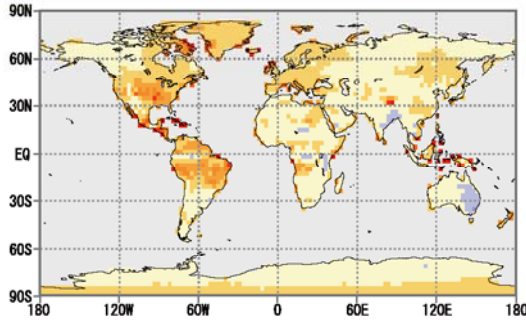
Assessment of Climate Risk Based on Integrated Climate, Impact, and Land Use Models
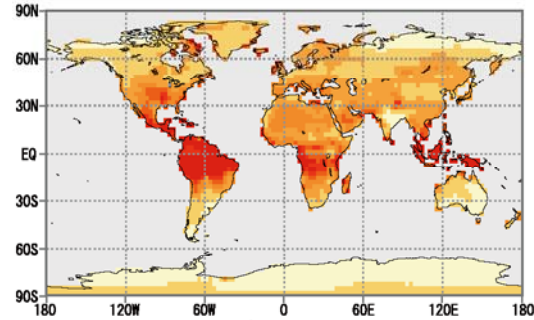
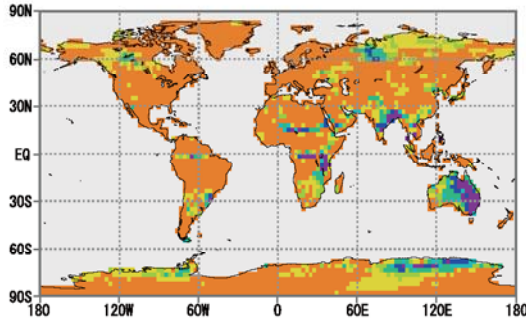## Warm Days

(a)

Warm Nights

(b)

relative changes in frequency
(e.g. 2 = twice as many days)

0.5 1 2 3 4 5 6 7

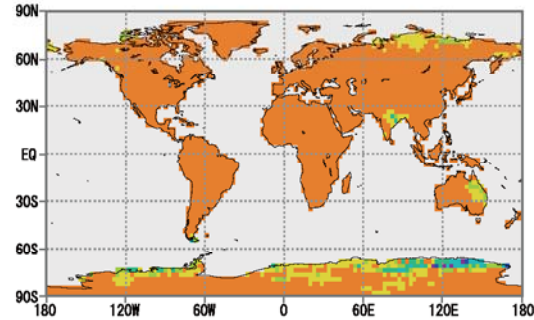**(c)**

(d)

runs (out of 10 members)

4 5 6 7 8 9 10

Top: Ensemble mean predictions of relative changes in frequency of (a) warm days and (b) warm nights (comparing 1951-1970 to 2011-2030).
Bottom: Number of runs out of 10 that predicted more frequent (c) warm days and (d) warm nights.

Near Future Changes in Temperature Extremes

As a quantitative assessment of the robustness and uncertainty of climate predictions, we conducted a study to examine whether human contributions to changes in extreme temperature indices have larger amplitudes than uncertainty due to natural variability in near-future (up to 2030) climate prediction.

We performed 10 runs of the initial-condition perturbed ensemble of a coupled atmosphere-ocean general circulation model under the 'SRES A1B' anthropogenic greenhouse gas and aerosol emission scenario of IPCC. All 10 runs predicted that in the near future over most land areas there would be more frequent occurrences of warm nights and warm days, and less frequent cold nights and cold days, suggesting that human influences will have become larger than natural variability. In addition to this study, we are also conducting assessments of water resources, agriculture, and land use change at a global scale.

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