



The role of large-scale atmospheric changes for the spread in the local precipitation response to global warming in CMIP5 models

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While CMIP5 model robustly project drying of the subtropics by the end of the century, the magnitude of this drying varies widely, with some models showing essentially no drying and others showing drying of more than 50% in e.g. the eastern Mediterranean. The factors explaining this spread are explored in 42 CMIP5 models. It is found that about half of this spread is related to large-scale drivers of climate variability such as Hadley Cell widening, Arctic amplification, stabilization of the tropical upper troposphere, or changes in the Arctic stratosphere over the Eastern Mediterranean, most of Eurasia, Mexico/Southern US, and subpolar America. In contrast, global factors unimportant over most of Europe and most of USA. Much of the rest of the spread is associated with local conditions such as variations in relative humidity.