



“Global warming, continental drying? Interpreting projected aridity changes over land under climate change”

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In recent years, a number of studies have suggested that, as climate warms, the land surface will globally become more arid. Such results usually rely on drought or aridity diagnostics, such as the Palmer Drought Severity Index or the Aridity Index (ratio of precipitation over potential evapotranspiration, PET), applied to climate model projections of surface climate. From a global perspective, the projected widespread drying of the land surface is generally interpreted as the result of the dominant, ubiquitous warming-induced PET increase, which overwhelms the slight overall precipitation increase projected over land.

However, several lines of evidence, based on (paleo)observations and climate model projections, raise questions regarding this interpretation of terrestrial climate change.

In this talk, I will review elements of the literature supporting these different perspectives, and will present recent results based on CMIP5 climate model projections regarding changes in aridity over land that shed some light on this discussion. Central to the interpretation of projected land aridity changes is the understanding of projected PET trends over land and their link with changes in other variables of the terrestrial water cycle (ET, soil moisture) and surface climate in the context of the coupled land-atmosphere system.