



Measuring Aridity: Perspectives from Meteorology, Agriculture and Hydrology

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Current perceptions are dominated by the idea that it will become more arid in future largely because increases in atmospheric CO₂ are expected to increase air temperatures with slightly lower relative humidity over land. That perception is derived from calculations using climate model output that show, on average, the ratio of precipitation to potential evaporation decreasing over global land areas over the next 100 years. In direct contradiction, the same model output also projects, on average, increased precipitation and increased runoff over land. That raises a paradox: how can the relative humidity decrease over a land surface that, on average, receives more precipitation and produces more runoff? In this presentation we investigate this seeming paradox from the point of view of meteorology, hydrology and agriculture. We show that this seeming paradox can be (partly) reconciled by considering the role of CO₂ in determining transpiration rates.