

Critical sources of evaporated moisture for terrestrial precipitation

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Back trajectory calculations of water vapor using the Modern Era Retrospective-analysis for Research and Applications (MERRA) data set are used to establish geographical links between precipitation over land and the sources of evaporated moisture supplying that precipitation. Moisture recycling ratios and critical zones of moisture are also estimated. We find that regions of the globe largely corresponding to drought-sensitive agricultural regions derive much of their rainfall from evaporation limited continental regions with critical variability. We also assess the potential impacts of irrigation and land use on moisture sources, and assess interannual variability and trends present in the analyses.