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Global Energy and Water Cycle Experiment (GEWEX) Progress in understanding Land-Atmosphere Interactions

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The Global Energy and Water cycle EXperiment (GEWEX) of the World Climate Research Programme (WCRP) has been undertaking research on land–atmosphere interactions since its inception in 1990. In general, GEWEX develops global data products for analysis and undertakes studies that support new approaches for modeling features such as clouds, land surface hydrology and coupled land-ocean-atmosphere interactions. Over the past 16 years GEWEX has supported the development of land atmosphere process studies on local and continental scales; advanced land surface modeling, and developed extensive land surface data sets to support analysis and modeling studies. This presentation will review the approach GEWEX has taken in coordinating these efforts; highlight some significant GEWEX research results and developments, and describe some of the leading scientific questions that remain to be solved. Recent progress in land-atmosphere studies has led to better understanding and parameterizations from field studies and satellite observations, improved regional models, and new data assimilation capabilities at regional and global scales. Some of the factors limiting further advances include the difficulties of measuring surface evapotranspiration and the modeling challenges posed by orographic systems.