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## **Advances in land-climate interactions for Earth system models: The Community Land Model (CLM) experience**

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The land surface models used with climate models have expanded greatly beyond their hydrometeorological roots. Important new developments include representation of the terrestrial carbon cycle, vegetation dynamics, and land use. In this talk, I review these developments in the Community Land Model (the land component of the Community Climate System Model) and applications of the model to understand the carbon cycle-climate feedback and the effects of past and future land cover change on climate. The hydrologic cycle, through its effect on land-atmosphere coupling strength, is an important mediator of these climate forcings and feedbacks. Other model developments include an urban land cover parameterization to represent cities and fine-mesh capability so that the land model operates on a grid independent of its host atmosphere model.