P64 A new sub-surface irrigation scheme for NOAH and NOAH-MP.

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The realistic simulation of irrigation in the NOAH and NOAH-MP land surface models is a useful method of improving land surface atmosphere feedbacks in agricultural landscapes. Crop specific water requirements and irrigation methods can profoundly affect energy balances over large areas and hence coupling with atmosphere processes. In arid and semi-arid regions, where water resources are scarce, flood and sprinkler irrigation methods are wasteful due to direct and intercepted evaporation, and to deep drainage caused by over-watering. For hardy desert crops such as jojoba, sub-surface deficit irrigation is a means of balancing water conservation, plant health and yield, by reducing losses by targeting the rootball and reducing evaporation and drainage losses. A flexible irrigation scheme for NOAH and NOAH-MP within WRF has so far not been implemented. Here, a new controllable scheme is introduced, allowing for the addition of water in prescribed soil layers, based on a target soil moisture fraction, which can be deduced from crop specific stress parameters.