Effect of soil initialization on seasonal forecast skill - 2000-2010

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In the second Global Land Atmospere Coupling Experiment (GLACE2) the degree to which realistic initial soil moisture conditions improved the forecast skill of precipitation and temperature at seasonal time scales was analysed. It was found that outside the US area little systematic forecast improvements were achieved at the monthly time scale or longer. Selection of extreme soil moisture conditions did improve the skill somewhat. The experiment was limited to the Global Soil Wetness Project time frame 1986-1995. In this study, an extension of GLACE2 is executed for the period 2000-2010, an episode in which a number of marked heatwaves occurred (including the Russian heatwave in July/August 2010). Soil moisture data are obtained by integrating an offline land surface model forced with analysed precipitation/radiation/temperature and used to intialize a 10-member ensemble of forecasts covering the NH warm season at a range of start dates. A control experiment uses randomized initial soil moisture data. For the Russian heatwave it is found that the initialized forecasts do improve the simulations of the duration of the blocked event when initialized during conditions in which this event was already ongoing. Simulations started well before the event were not succesful in generating the strong temperature anomaly. This lack of predictability of this event has been demonstrated by other studies as well.