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Land surface contribution to climate predictability: the long way from early evidence to improved forecast skill

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Seasonal forecasts performance over most land areas remains relatively weak, particularly in the mid-latitudes where the interannual ocean variability has a lesser influence than in the tropics. Yet, many observational and numerical studies suggest that there is a fraction of predictability that is still untapped over land at the monthly to seasonal time scales, due to both local and remote land surface effects. Soil moisture and snow mass anomalies may have a strong signature in the land surface energy budget and thereby influence not only surface temperature, but also precipitation through changes in surface evaporation and/or moisture convergence. Land surface anomalies may also trigger planetary waves that can have remote effects on seasonal mean climate. This talk will first illustrate some potential land surface impacts on climate predictability using both statistical and numerical evidence. Then, the limitations of such studies and the practical difficulties for taking advantage of the land surface memory will be presented, as well as on-going efforts for adressing these issues at both European (i.e. SPECS) and international (i.e. GLACE) levels.