



## **On the (in)consistency of a multi-model ensemble of the past 30 years land surface state.**

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Global land-surface and hydrological models are a fundamental tool in understanding the land-surface state and evolution either coupled to atmospheric models for climate and weather predictions or in stand-alone mode. In this study we take a recently developed dataset consisting in stand-alone simulations by 10 global hydrological and land surface models sharing the same atmospheric forcing for the period 1979-2012 (the eart2Observe dataset). This multi-model ensemble provides the first freely available dataset with such a spatial/temporal scale that allows for a characterization of the multi-model characteristics such as inter-model consistency and error-spread relationship. We will present a metric for the ensemble consistency using the concept of potential predictability, that can be interpreted as a proxy for the multi-model agreement. Initial results point to regions of low inter-model agreement in the polar and tropical regions, the latter also present when comparing globally available precipitation datasets. In addition to this, the discharge ensemble spread around the ensemble mean was compared to the error of the ensemble mean for several large-scale and small scale basins. This showed a general under-estimation of the ensemble spread, particularly in tropical basins, suggesting that the current dataset lacks the representation of the precipitation uncertainty in the input meteorological data.