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Sub-seasonal predictability of flood pulses in western South-America

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In recent years, high extreme precipitation events affected South-America to the west of the Andes, leading to widespread catchment flooding and landslides in central Chile, northwestern Peru and Ecuador. While the meteorological mechanisms leading to such wet spells differ along the NS climate gradient and are subject of current investigation, here we document some of the basic features associated with the anomalous in-season occurrence of wet spells, their hydrological impacts and predictability over selected catchments along the NS Pacific-Andean axis (∼0-35°S). We assess the predictability of hydrometeorological extremes events that triggered catchment flooding using ground observations, satellite imagery and a subset of GCM re-forecast from the Sub-seasonal to Seasonal (S2S) prediction project dataset on selected catchments in Tropical and extra-Tropical South-America. We determine skills and levels of predictability with focus on identification of spatial and temporal windows of predictability and investigate the role of the Madden Julian Oscillation in organizing the wet event and lending predictability in the S2S models. We found the best skills in catchments located in Tropical South-America (∼0°S) where skills show some potential for flooding warning in the weekly-to-monthly time scales.