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Seasonal Predictability of Wintertime Precipitation in Europe Using the Snow Advance Index

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In this study, we tested the applicability of Eurasian snow cover increase in October, as described by the recently published Snow Advance Index (SAI) (Cohen and Jones, 2011), for forecasting December-January-February precipitation totals in Europe. A classical correlation analysis using as reference the E-OBS gridded dataset was carried out, obtaining local significant correlations of up to 0.89 and -0.78 for the Iberian Peninsula and southern Norway, respectively; results that were confirmed when using high-quality station data. Moreover, we used linear regression to hindcast precipitation by using the SAI index as only predictor variable. Results from a one-year-out cross-validation showed that precipitation in the mentioned regions was reproduced with correlations of up to 0.84 and 0.71, what clearly outperforms the skill of competing indices and general circulation models, demonstrating thus the great potential of the SAI for seasonal forecasting.

References:
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