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Subseasonal forecasting of temperature and precipitation over India using a machine learning approach

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Subseasonal forecasting is forecasting of the weather parameters, mainly temperature and precipitation, two weeks to two months in advance. Sub-seasonal variability accounts for a substantial portion of the summer rainfall over India. Prediction of sub-seasonal climate is of immense societal importance in agriculture planning, water management, emergency planning, etc. Using various weather parameters and ECMWF dynamical model forecasts as predictors, this study tries to investigate the weekly forecast of temperature and precipitation at 2-week, 3-week, and 4-week forecast horizon over India using a computationally inexpensive machine learning model-MultiLLR, which prunes out irrelevant predictors and integrates remaining predictors linearly for each target date. The model's predictions calculated over the years 2019-2022 are as skilful as IMD's Extended Range Forecasting System (ERFS). The skill of the model is better in the coastal region than in the inland part of India.