



## **More predictable time series with enhanced stochastic or deterministic structures**

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Our work investigates why some time series are more predictable and how to distinguish the predictability of different datasets ahead of prediction. By employing the permutation entropy and prediction accuracy of a nonlinear time-series predictor, we demonstrate that time-series predictability is contributed by the enhanced stochastic or deterministic ordinal structures, among them the deterministic structures play a more significant role. The results are finally concluded in a phase diagram (PD), which could classify different types of ordinal structures and help to infer the time-series predictability ahead of prediction. For some climate indices such as surface temperature anomaly, river runoff, ENSO variability and AMOC variability, their temporal records are taken into the computation and this PD, and then they are indeed classified into distinguishable regions corresponding to different features. Our result might help to better comprehend the special time-series features of some records and to preselect the more predictable datasets in climate science.