# A Machine Learning based Approach to Climate Predictability Studies

- Since predictability is state-dependent, inevitable bias in climate models that is model-specific
    - Complicates relating model-based predictability studies to the actual climate system
    - Leads to reduced skill in near-term predictions that rely on natural-variability related predictability
- A complementary data-driven approach to learn and predict spatiotemporal variability of climate is pursued

Impact: The proposed ML-based approach has the potential to

- Better characterize predictability of the actual climate system than a purely model-centric approach.
- Provide more skillful predictions of natural variability (near term initialized predictions) than state-of-the-art climate models
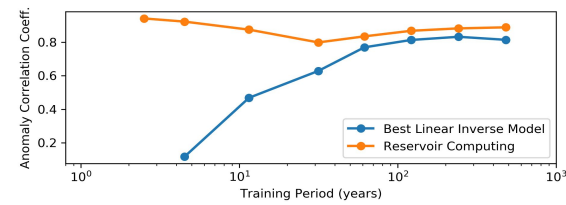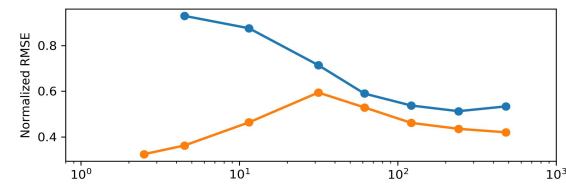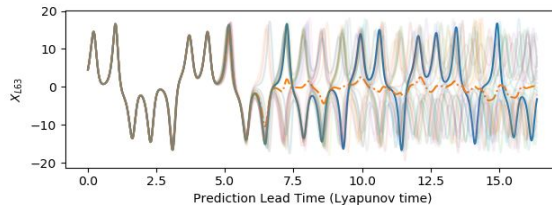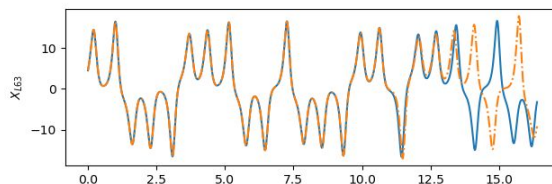
Reservoir Computing learns and predicts low-dimensional chaotic systems surprisingly well (left) and out-performs the state of the art in learning and predicting high-dimensional spatiotemporal variability of climate (right)