

Kernel Analog Forecasting for Multiscale Problems

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Data-driven prediction is becoming increasingly widespread as the volume of data available grows and as algorithmic development matches this growth. The nature of the predictions made, and the manner in which they should be interpreted, depends crucially on the extent to which the variables chosen for prediction are Markovian, or approximately Markovian. Multiscale systems provide a framework in which this issue can be analyzed. This talk surveys kernel analog forecasting methods from the perspective of data generated by multiscale dynamical systems. The problems chosen exhibit a variety of different closures, using both averaging and homogenization. The studies provide guidance for the interpretation of data-driven prediction methods when used in practice.