useR2020 LDATS talk outline

Background

Problem statement: studying regime shifts in high dimensional time series

Distinguishing abrupt changes from gradual shifts, cyclical dynamics, autocorrelation, stochasticity

Motivated by ecology

Contextualize for non-ecologists: climate change, invasive species, restoration impacts, etc

Approach:

Statistical methodology to combine dimension reduction with time series analyses

Two-stage

LDA

TS

Development:

Method expansion

Stage 1

Stage 2

Cross validation

Application

We illustrate LDATS using a compendium of long-term ecological data sets, focusing on desert rodents and plants.

Conclusion

LDATS is a well-designed, user-friendly package with a clearly-defined top-level API, application vignettes, and functions to produce attractive and accessible publication-ready figures. It represents a significant contribution to multivariate time-series analyses and has broad applicability across research modalities.