Model selection, cross validation, and performance of time series models

FISH 507 – Applied Time Series Analysis

Eric Ward, warde@uw.edu

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Overview of today's material

- Approaches for model selection
- Cross validation
- Quantifying forecast performance

How good are our models?

Several candidate models might be built based on

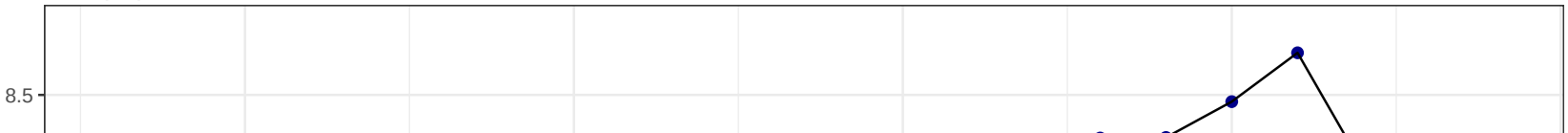
- hypotheses / mechanisms
- diagnostics / summaries of fit

Models can be evaluated by their ability to explain data

- OR by the tradeoff in the ability to explain data, and ability to predict future data
- OR just in their predictive abilities
  - Hindcasting
  - Forecasting

How good are our models?

We can illustrate with an example to the `harborSealWA` dataset in MARSS



Performance metrics summary

Raw statistics (e.g. MSE, RMSE) shouldn't be applied for data of different scale

Percent error metrics (e.g. MAPE) may be skewed & undefined for real zeroes

Scaled error metrics (ASE, MASE) have been shown to be more robust meta-analyses of many datasets + Hyndman & Koehler (2006)

Questions?