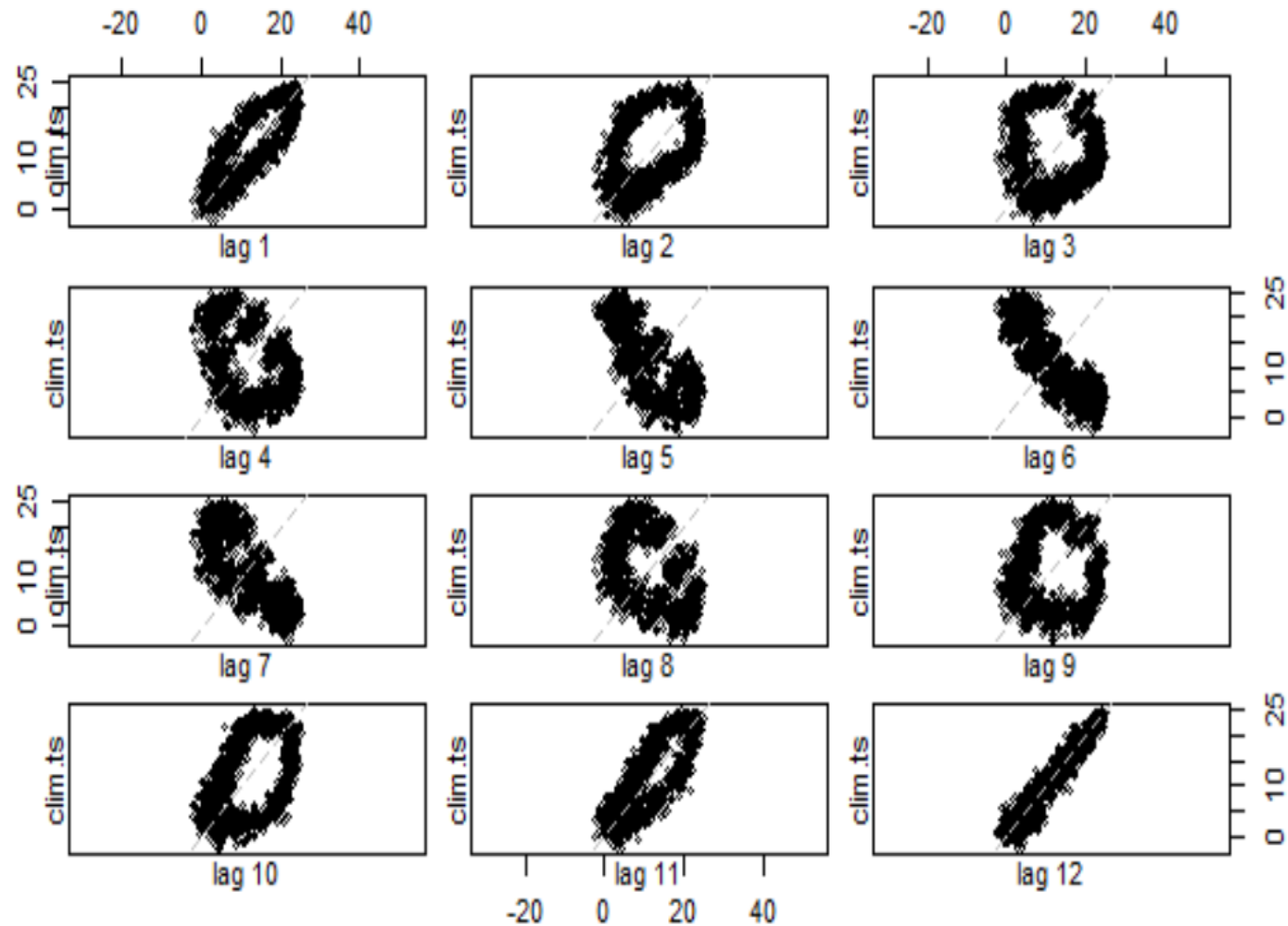


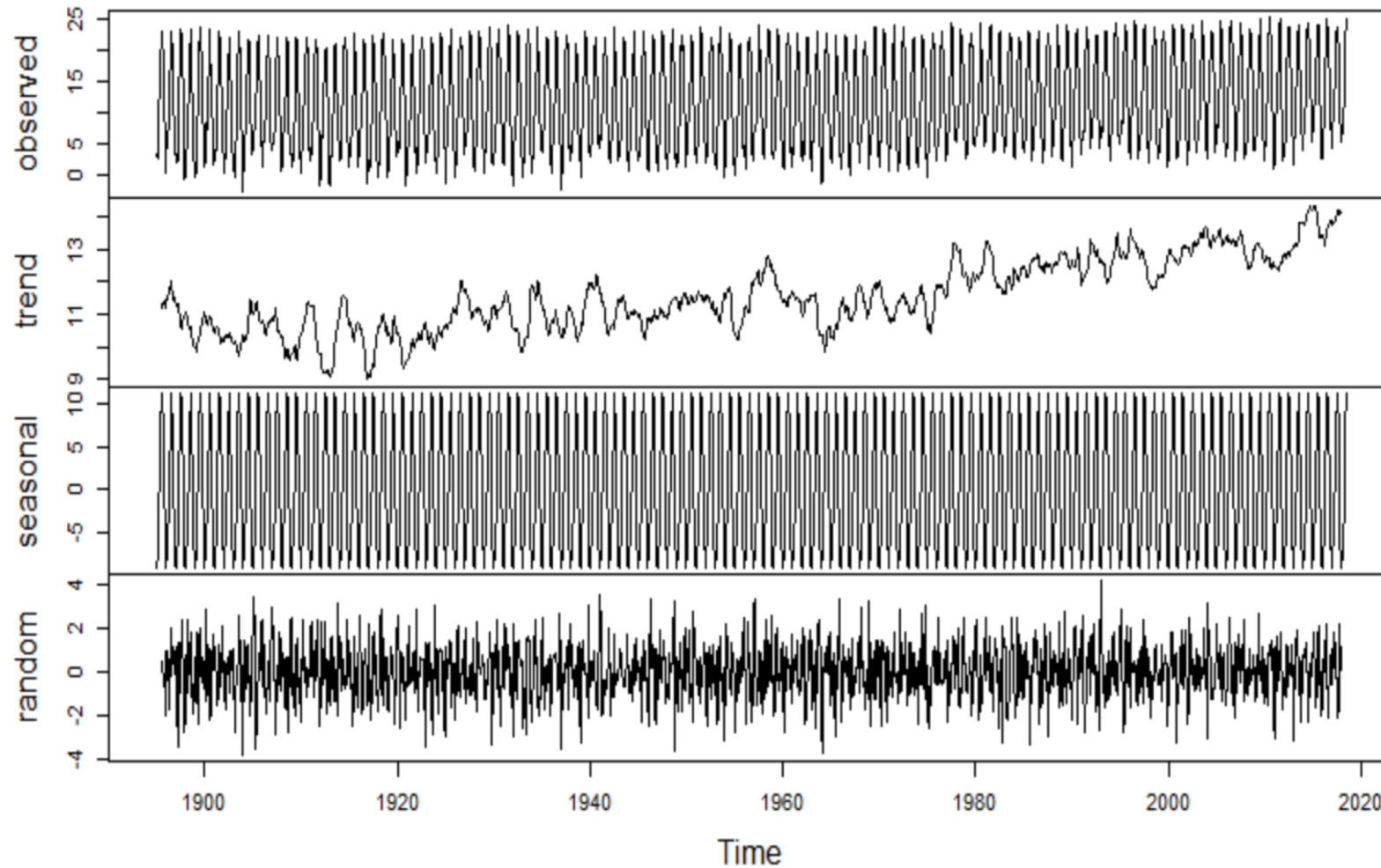
Check in for Lab 2 and 3

Check in for Lab 2 and 3

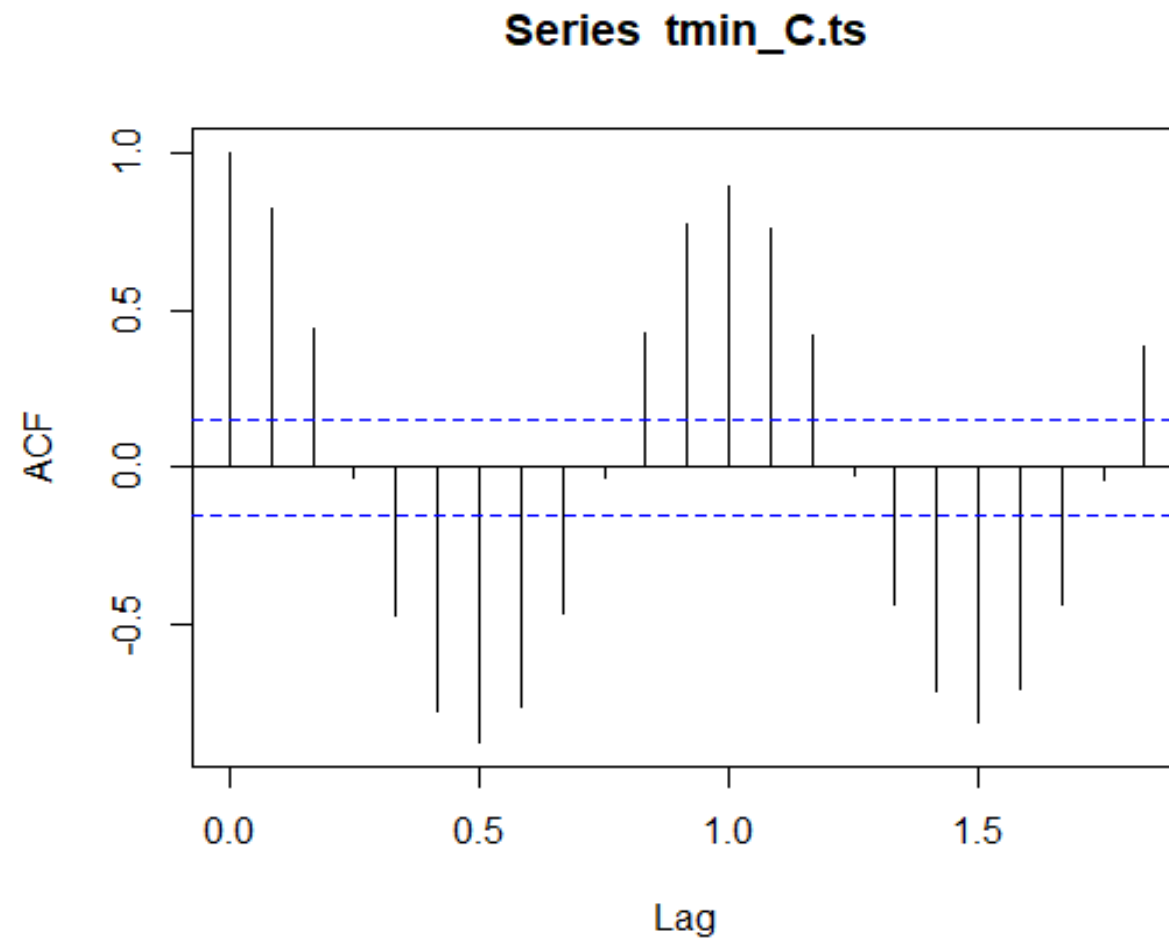


Check in for Lab 2 and 3

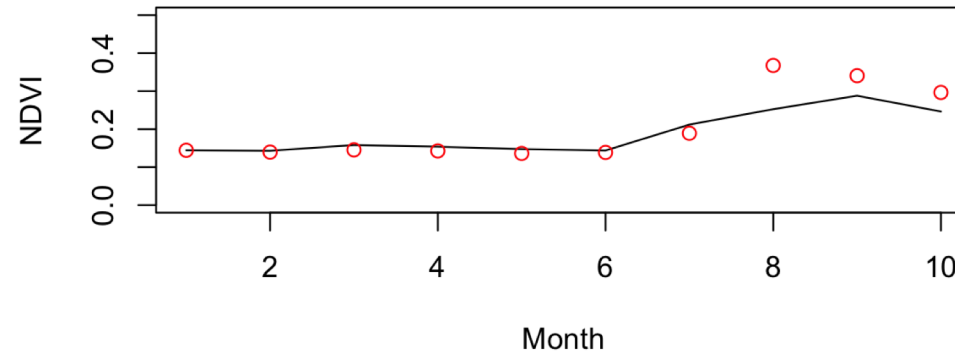
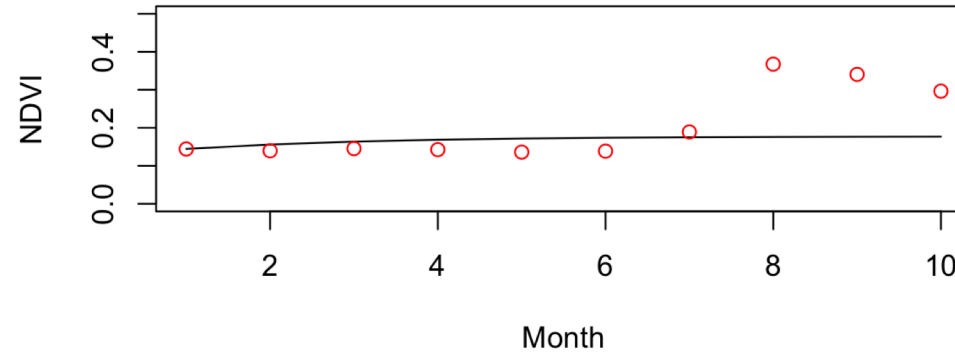
Decomposition of additive time series



Check in for Lab 2 and 3



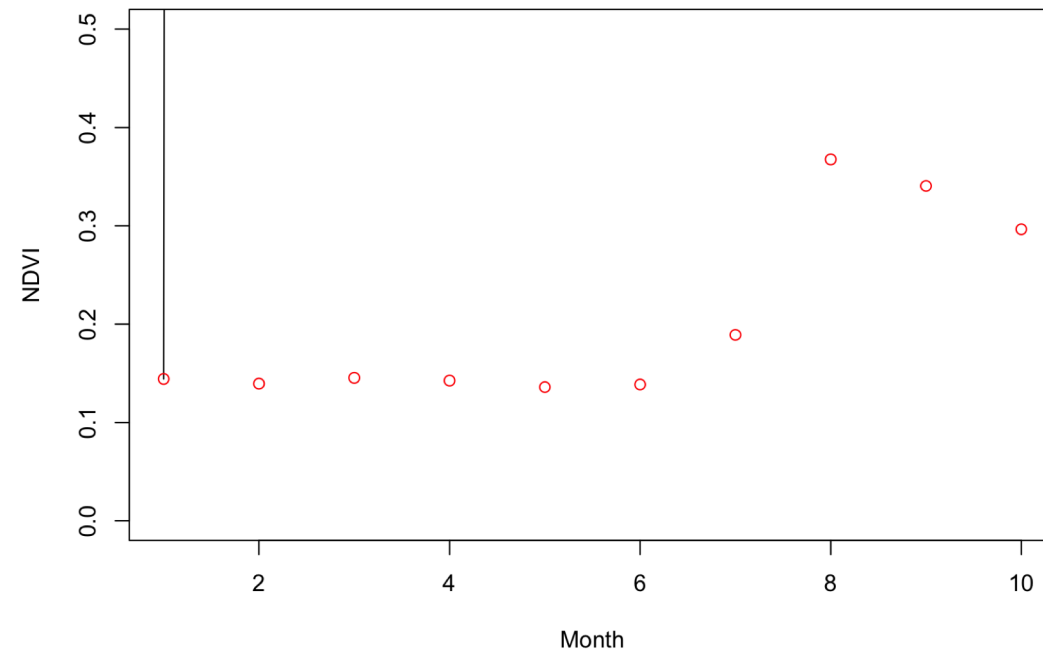
Check in for Lab 2 and 3



Check in for Lab 2 and 3

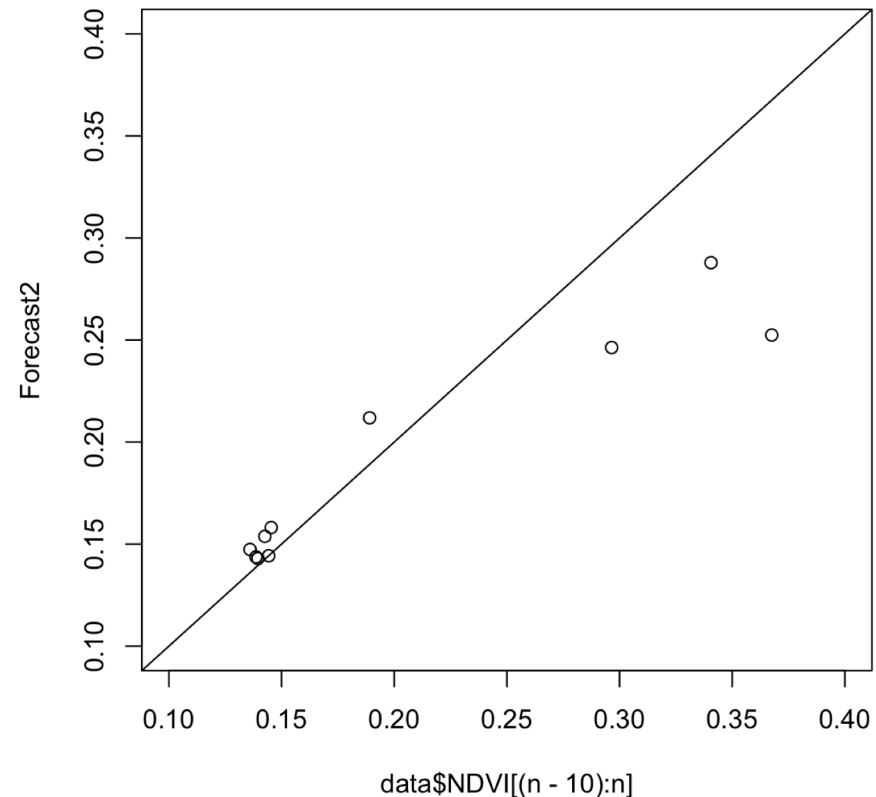
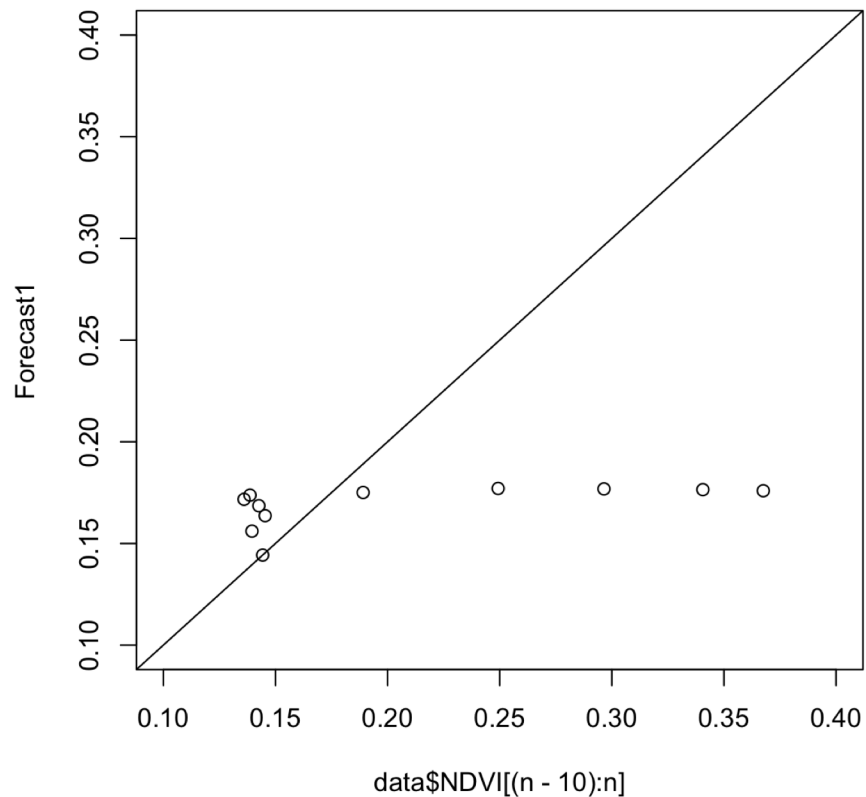
How do we check our forecasts?

- 1) Start with visualizations to ensure that results make sense. Useful for IDing coding errors.
-



How do we check our forecasts?

2) Plotting predicted vs observed



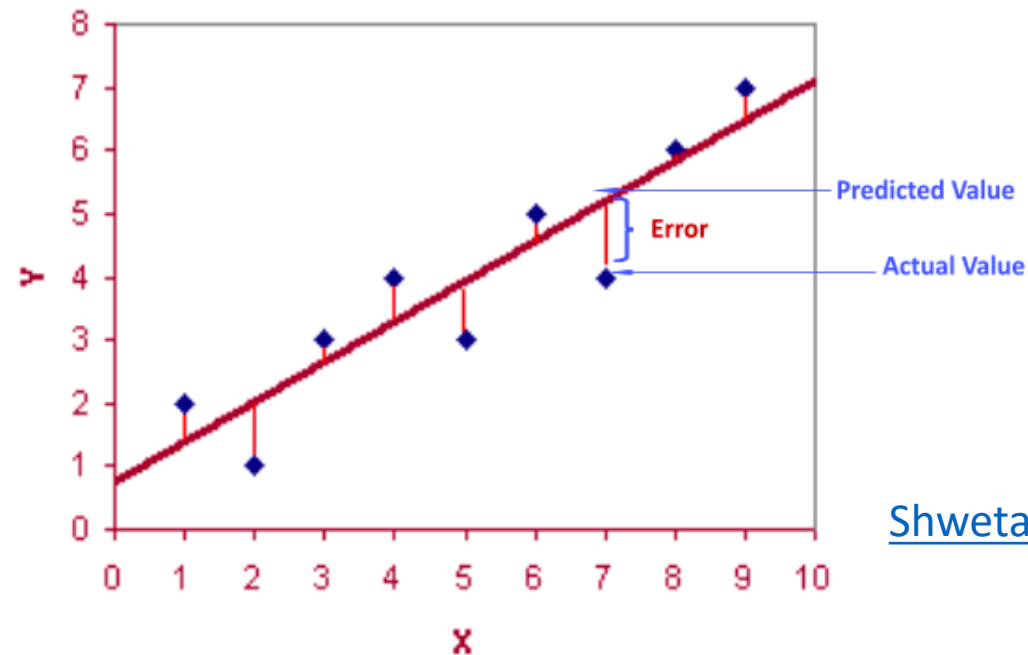
How do we check our forecasts?

Don't underestimate the value of visualizations!!

How do we check our forecasts?

3) Quantitative Metrics

$$RMSE = \sqrt{\frac{1}{n} (Y_{pred} - Y_{data})^2}$$

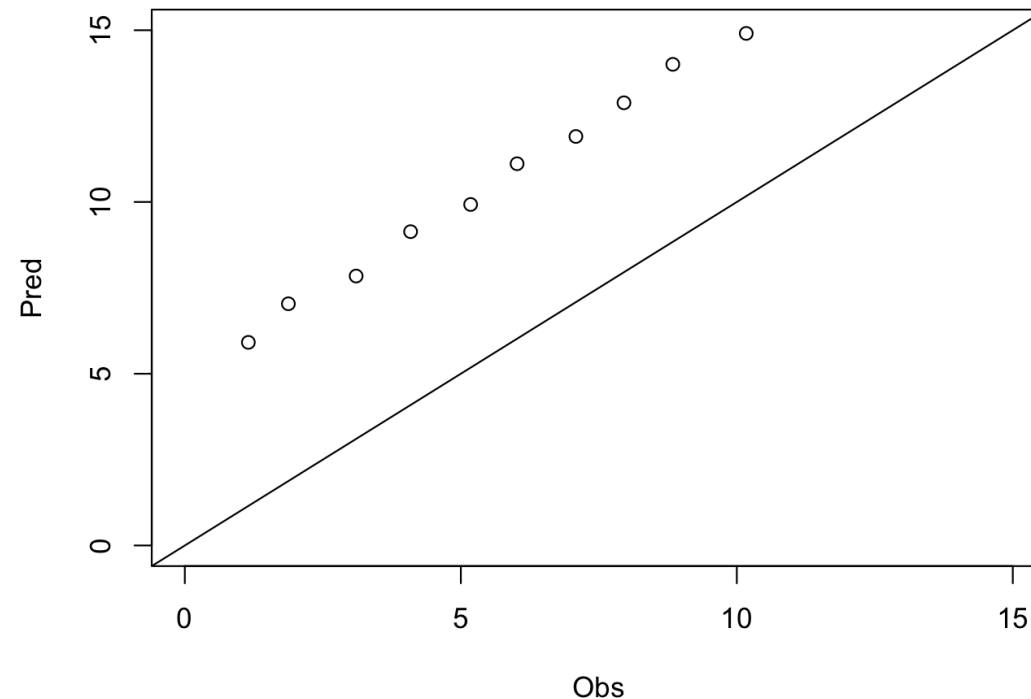


Shweta Gupta

How do we check our forecasts?

3) Quantitative Metric

Correlations and R^2 : Be careful!!



How do we check our forecasts?

3) Quantitative Metric

Coverage: How well do predictive intervals capture observed values

And many others!

We will be talking about more as the semester progresses

Benchmarking

Community developed standards to assess forecast skill and track model improvement

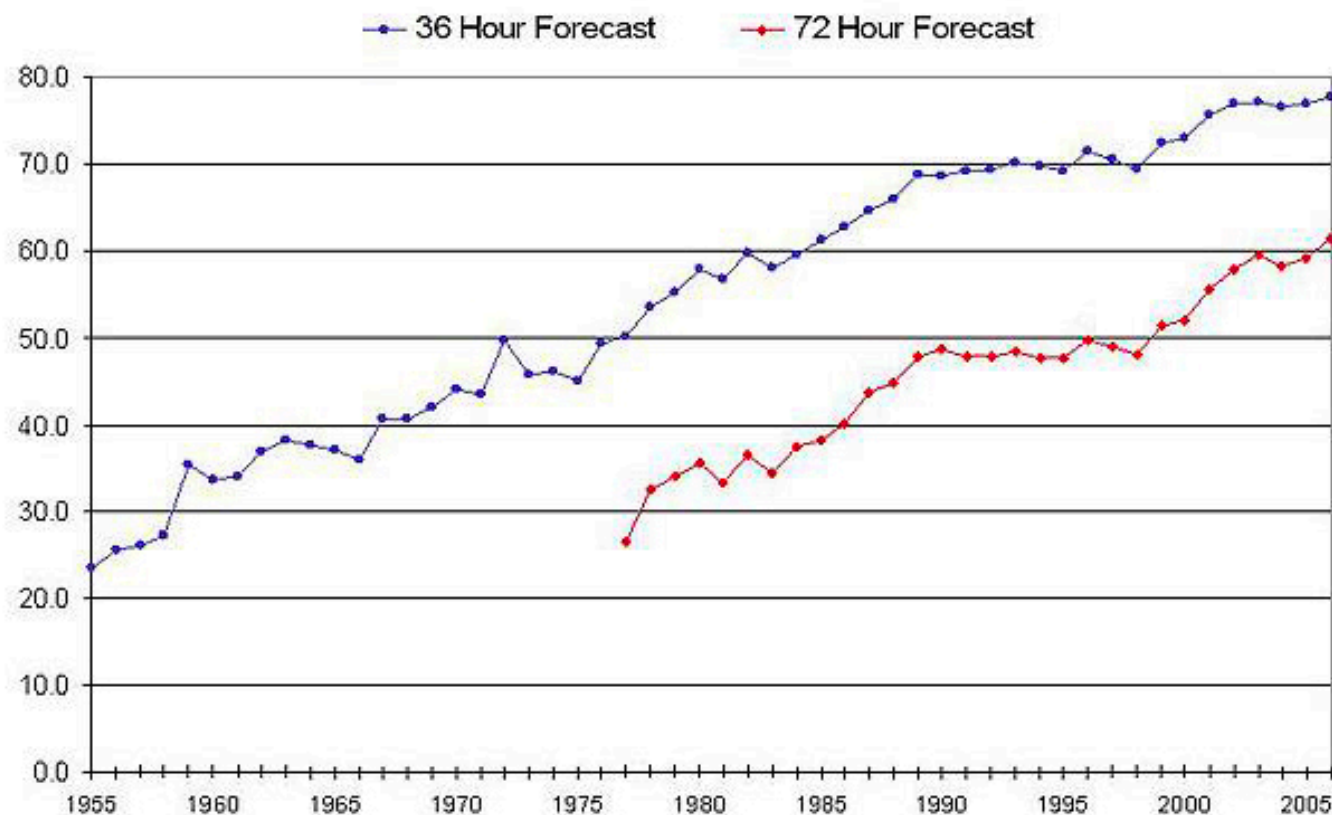
Can include:

- 1) Testing models against standard test data
- 2) Making sure models adhere to physical or biological constraints
- 3) Ability to predict specific variables or processes deemed important by the community

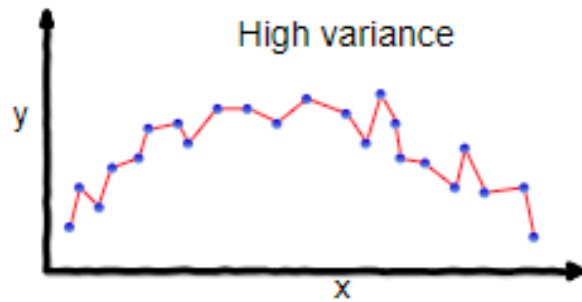
Benchmarking



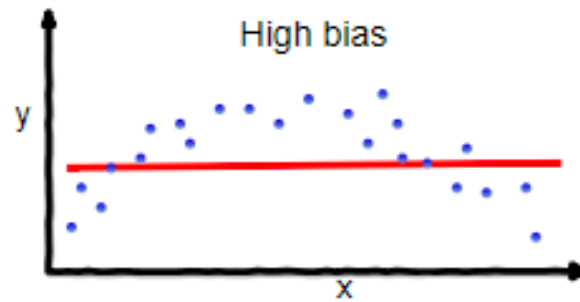
NCEP Operational Forecast Skill 36 and 72 Hour Forecasts @ 500 MB over North America [100 * (1-S1/70) Method]



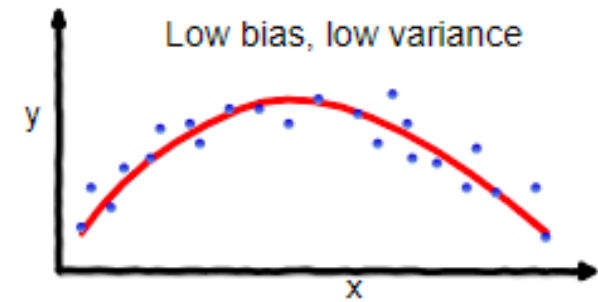
Bias-variance tradeoff: Balancing model complexity



overfitting

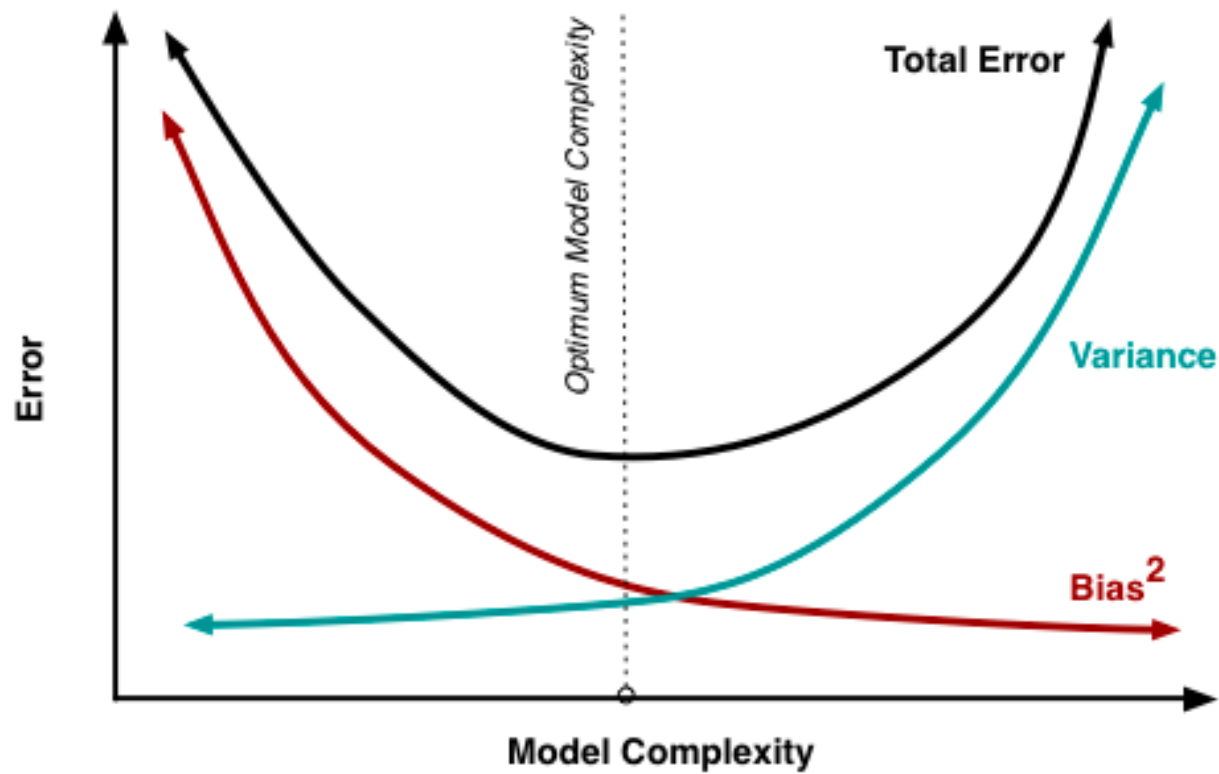


underfitting



Good balance

Bias-variance tradeoff: Balancing model complexity



Quick lab

Calculate RMSE of both forecasts from Tuesday.
Do this cumulative across month. E.g. Month 1, then Month 1 and 2, then 1, 2, and 3, etc.

What month do the forecasts diverge? why?

Create predicted vs observed plots