A Brief Look at the NAO

Data Analysis: HW1
THE DATA
Model Hierarchy

• Output from three model runs
  – CAM4 – fixed SST
  – CAM4 – slab ocean
  – CCSM4 – dynamic ocean

• Structure:
  – Gridded (288 longitude x 192 latitude x 3600 months)
  – Many physical variables (today, sea-level pressure(SLP))
Processing

• Detrend and deseason data
  – Detrending will also remove the mean from the data

• NAO Index
  – For simplicity, we’ll use the difference in standardized SLP between the Azores and Iceland
NAO Index

Time Series of NAO Index (DJFM)

- Fully Coupled
- Slab Ocean
- Fixed SST
Filtered NAO Index

Time Series of Filtered NAO Index (DJFM)

- Fully Coupled
- Slab Ocean
- Fixed SST

Years

Standardized Index

0  50 100 150 200 250 300
Some NAO Index Statistics

• All three, mean = 0
• Variance
  – Dynamic and Slab = ~2.7
  – Fixed = ~2.8
  – Distribution of the fixed SST a little wider
  – Let’s look at the distribution
NAO Index Distribution

NAO Index Distribution

Frequency

NAO Index

Dynamic
Slab
Fixed
Positive NAO Composite

NAO Positive Event Average
Dynamic Ocean

Slab Ocean

Fixed SST Ocean

Average SLP (hPa)
Negative NAO Composite