



# DESCRIPTION OF THE DATA

The data are provided by the NASA Langley Research Center.

- Investigated variables
  - Elevation
  - Air temperature
  - Atmospheric ozone
  - Air pressure
  - Cloud coverage (low, middle, and high troposphere)
- Spatial aspects
  - Interpolated onto regular 24x24 spatial grid
  - Longitude 114W to 56W
  - Latitude 36N to 21S
- Temporal aspects
  - Mean values for each of 72 months
  - 1995–2000



# GOALS

- Explore the data by using dynamically linked statistical graphics
- Detect outliers and unusual observations
- Learn what impact spatial effects have on the meteorological variables
- Identify regions for which meteorological variables are similar
- Examine seasonal trends by averaging meteorological variables over spatial regions



# APPROACH

- Select observations with certain spatial features
  - Latitude and longitude
  - Elevation
  - Land versus sea
- Investigate distribution of meteorological variables for the selected observations
- To investigate seasonality
  - Average variables over spatial regions with similar attributes
  - Average variables over months



# CONCLUSIONS

Exploratory data analysis reveals these findings

- Measurements of the atmospheric pressure variable changed after May 1998
  - Most noticeable at high elevations
- Ozone abundance is quadratically related to latitude, with a seasonal component
- There are geographic regions with similar meteorological attributes
- Spatial features that have a strong effect on atmospheric variables include:
  - Latitude
  - Elevation
  - Land/Sea dichotomy