

Film: *Before the Flood* or *An Inconvenient Truth* + Boston Globe Article

- The film presents several compelling investigations into the scientific analyses which may convince the viewer that the earth is undergoing a profound change.
 - Melting glaciers, melting ice caps, melting ice shelves, long term temperature records, sea level change, coral reef changes, forest loss, burning of the rainforest, fracking, etc.
- It also presents information from the scientific community (government and scholarly researchers) and from climate skeptics (politicians, policy officials and a few scientists)
- I may pose one or two questions based on the film's ideas and content. You will be expected to provide examples from the film or articles to support your answers.

Lab LA1: Introduction to Isoline mapping

- Isolines = Iso (same) + line (line) = all points on a line have an equal value
- Isotherms = lines of equal temperature
- Isobars = lines of equal barometric pressure
- Drawing isolines (RULES)
 - They do not cross
 - Draw at fixed intervals (10°, 20°, 30°, 40°, etc.)
 - All values on one side will be HIGHER and on the other will be LOWER (except in unusual cases)
 - Lines only where the exact value exists (a 40° line does not go over a 42° value)
- Weather maps often display isotherms
 - In North America, temps tend to be higher in the south, and lower in the north
 - Know how to plot isotherms on a map given station information

Lab 10: Air Masses and Fronts

- **Air masses**
 - Large body of air with similar characteristics of
 - Temperature
 - Humidity
 - Air masses form over **source regions**
 - Large uniform areas of the surface
 - Need to remain near stationary over these to obtain characteristics
 - Defined/Named
 - Humidity
 - m = Maritime = Ocean = Moist
 - c = Continental = Land = Dry
 - Temperature
 - A = Arctic = Very Cold
 - P = Polar = Cold
 - T = Tropical = Hot
 - E = Equatorial = Very Hot
 - Know the Air Masses that effect North America (cP, mP, cP, mT, cT)
- **Fronts**
 - Where two air masses meet
 - Know the Types and Map Symbols
 - Warm Front – Warm air overrunning Cold
 - Cold Front – Cold air overrunning Warm
 - Stationary Front – Air masses moving parallel
 - Occluded Front – Cold front overrunning warm front – lifts warm air

GPS Lab

- Know what a GPS is and what it stands for (global positioning system)
- Understand how it “knows” where it is... hint... think satellites and TRILATERATION
- Consider some of the ways in which a GPS can be useful
- Be able to describe how the latitude and longitude values changed (around campus)

Lab 14: Climate Classification

- Climate Classification based on average annual Temperature and Precipitation patterns
- Know how to use the Climate Classification ‘decision tree’
- Know the BASICS of the 6 major Climate Classification types
 - A: Tropical Humid
 - B: Dry (deserts)
 - C: Temperate Humid (Hot summer, cool winter)
 - D: Temperate Humid (Warm summer, cold winter)
 - E: Polar (ice)
 - H: Highlands (altitude changes = fast climate transitions)
- Know (and be able to describe in temp/precip terms) the Climate Classification for Salem

You will be allowed **one sheet of 8.5” x 11” paper with any notes you choose to write on it. You may write on one side only.** Only the four basic math functions (addition, subtraction, multiplication and division) will be required. **You should bring a calculator – cell phones may not be used.** You may choose which questions to answer (4 of 6 for example) and you should expect problem sets of a similar type as we have done in these labs with short essay questions to examine the concepts.