CPE/CSC 101

- Syllabus
- Schedule
- Overview
- Starting with Data

Welcome

Pre-lecture chat topic:
    Recommend a movie.

Programming

- coding
  ↳ typing

- problem solving

- algorithms

- thinking   —Python→   code

- writing / art
  - creative

The image shows a NASA Global Climate Change webpage about Carbon Dioxide with handwritten annotations overlaid.

Webpage content:

Carbon Dioxide

LATEST MEASUREMENT: July 2019

411 ppm

DOWNLOAD DATA

Carbon dioxide (CO_2) is an important heat-trapping (greenhouse) gas, which is released through human activities such as deforestation and burning fossil fuels, as well as natural processes such as respiration and volcanic eruptions. The first graph shows atmospheric CO_2 levels measured at Mauna Loa Observatory, Hawaii, in recent years, with average seasonal cycle removed. The second graph shows CO_2 levels during the last three glacial cycles, as reconstructed from ice cores.

The time series below shows global distribution and variation of the concentration of mid-tropospheric carbon dioxide in parts per million (ppm). The overall color of the map shifts toward the red with advancing time due to the annual increase of CO_2.
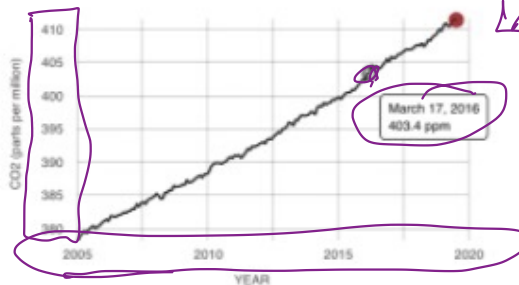
Missions that observe CO_2

Atmospheric Infrared Sounder (AIRS)

Orbiting Carbon Observatory (OCO-2)

DIRECT MEASUREMENTS: 2005-PRESENT

Data source: Monthly measurements (average seasonal cycle removed). Credit: NOAA

CO_2 (parts per million) — YEAR

March 17, 2016
403.4 ppm

Click+drag to zoom   RESET

Get Data: FTP | Snapshot: PNG

PROXY (INDIRECT) MEASUREMENTS

Data source: Reconstruction from ice cores. Credit: NOAA

CURRENT
HIGHEST HISTORICAL CO_2 LEVEL
1950
(parts per million)

Handwritten annotations:

Data?
- graph   - linear
   - time   input/
   - CO_2 output
- "latest"
- description

Types — operations / representation
Numbers
Strings - seq. of chars.
Dates