

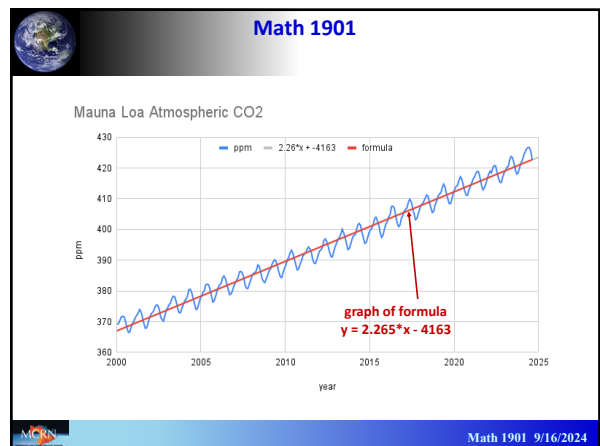
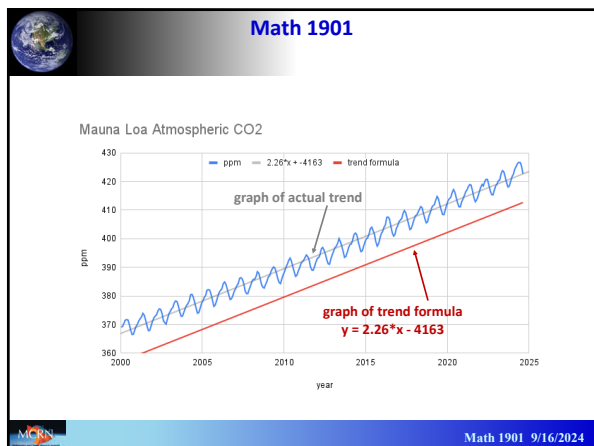
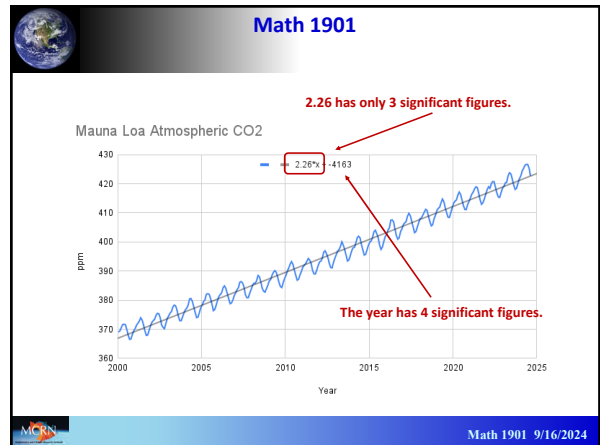
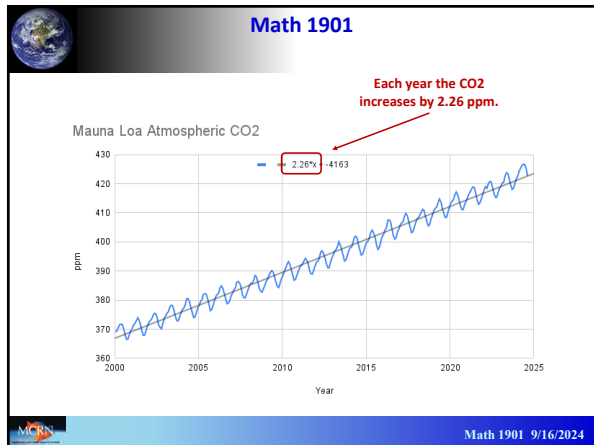
Math 1901
Freshman Seminar
Mathematical Climate Models

Fall 2024
1:00 - 2:15 Mondays and Wednesdays
Vincent Hall 213

Richard McGehee, Instructor
458 Vincent Hall
mcgehee@umn.edu
www-users.cse.umn.edu/~mcgehee/

course website
<https://www-users.cse.umn.edu/~mcgehee/Course/Math1901/>

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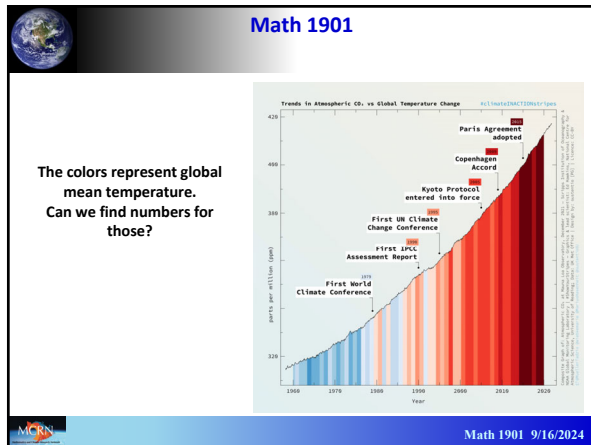
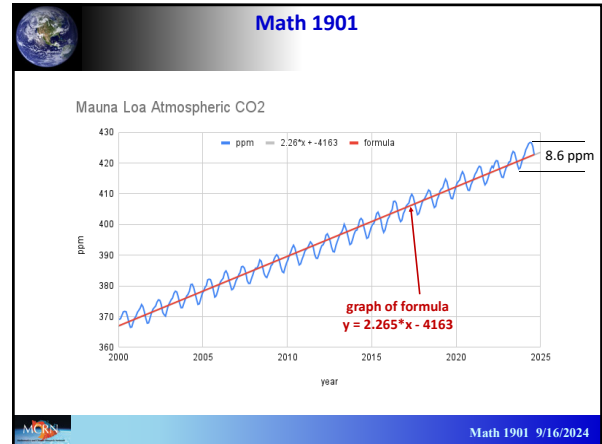
Using the equation for the linear trend, compute the predicted atmospheric CO₂ concentration for 2050. Assume that the concentration in 2024 is 425 ppm.

Google Sheets Formula
 $y = 2.26 * x - 4163 = 2.26 * 2050 - 4163 = 470$

Using differences:
 $y = 425 + 2.26 * (2050 - 2024) = 484$

More Formula Accurate Formula
 $y = 2.265 * x - 4163 = 2.265 * 2050 - 4163 = 480$

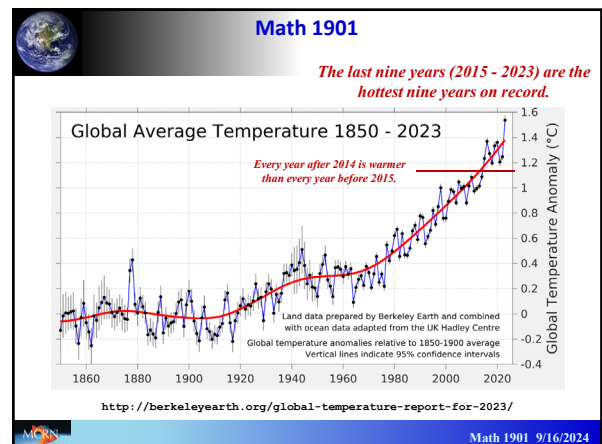
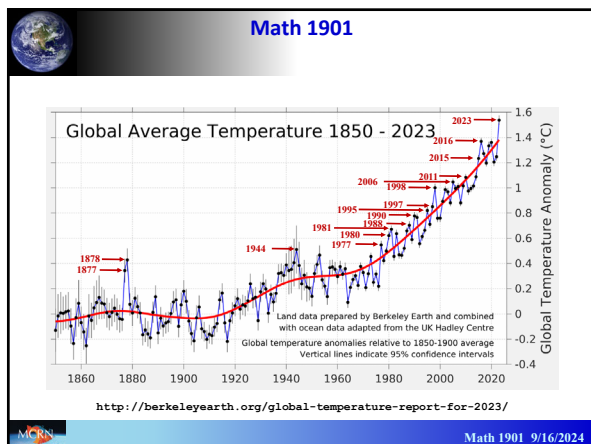
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Go to <https://berkeleyearth.org/>


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Go to
berkeleearth.org/
 Under "global warming", choose "data overview",
 or go directly to
berkeleearth.org/data/




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Math 1901

**MATH 1901: Freshman Seminar
 Mathematical Climate Models**

Surface Temperature Data from Berkeley Earth


Ways to get the Data

Using your browser


(1) Go to the Berkeley Earth Data Overview site [here](#).
 (2) Clicking on the text "Global Time Series Data" reveals a link labeled
 "Monthly Global Average Temperature (annual summary)".
 If you are using Chrome and if you click on that link,
 the text file of data will appear in your browser window.
 If instead you right-click on the link,
 you will be offered an opportunity to download the file to your computer.

Shortcut

To download just the monthly data in csv format, click [here](#).
 Alternatively, here is the URL you can enter into a Google Sheet:
<https://www-users.cse.umn.edu/~mcgehee/Course/Math1901/material/BerkeleyEarthMonthly.csv>



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**Using the Berkeley Earth data, plot the time intervals
 1850-2024
 1958-2024
 2000-2024
 and the linear trends for each.**

Assume that the current trend for 2000-2024 continues.

What will be the temperature anomaly level in 2050?

When will the temperature anomaly reach 2°C?



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