

Bellringer **REVIEW**:

- What's the difference between Weather and Climate?
- How does elevation and latitude each affect climate?
- What type of climate do we live in here, based on the Koppen Climate Classification System?

Learning Objectives:

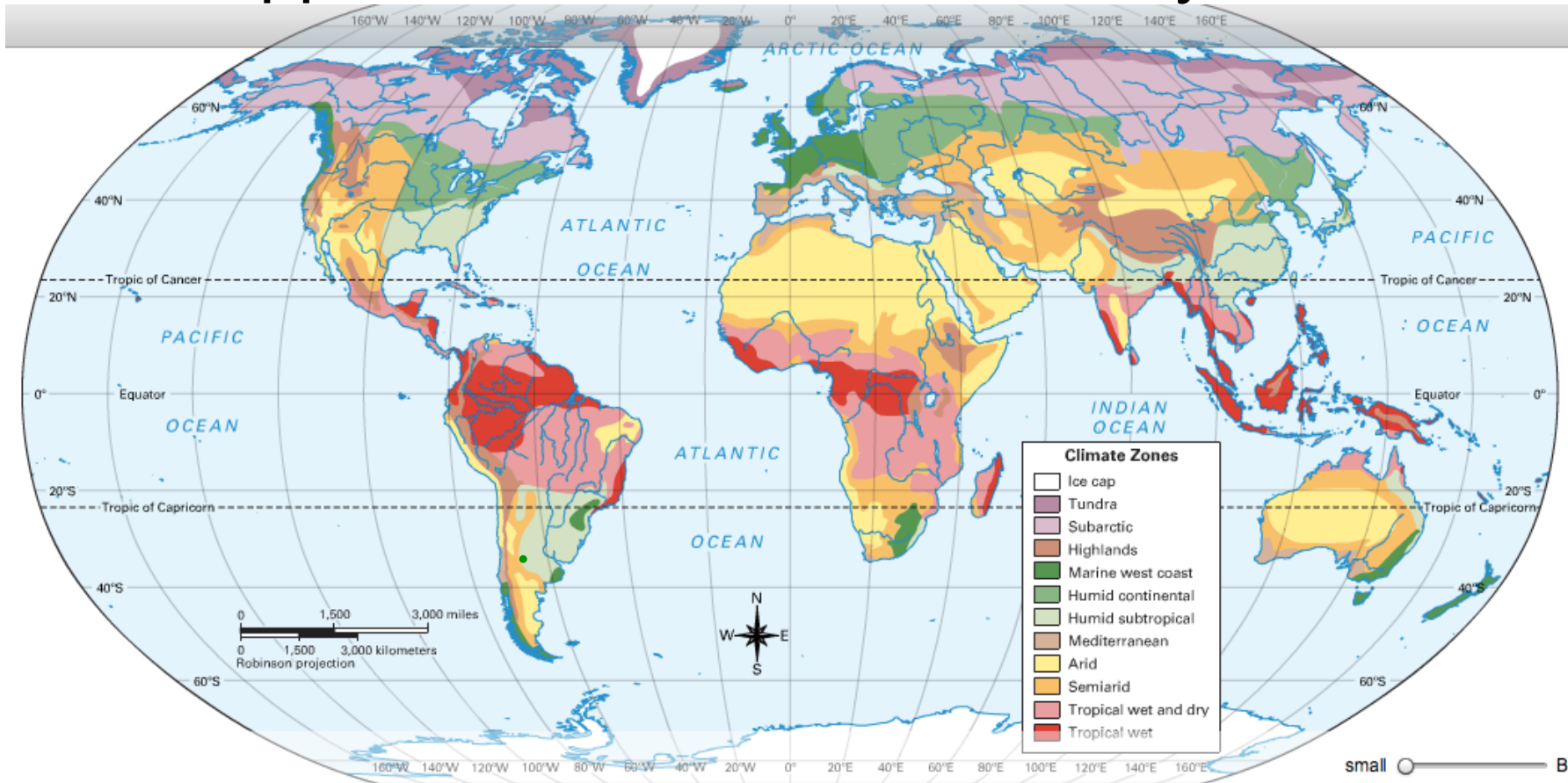
- I can form an educated opinion based on facts and variables.

Check for Understanding Questions:

- What are some things that can only affect the climate over a long time?
- What are some of the effects of our changing climate?

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Koppen Climate Classification System



History of Climate Change Timeline

In this activity walk around and read each point on the timeline.

Keep track and graph out these numbers.

- World Population
- CO₂ emissions tonnes/year

Population

1806 - 1 billion

1926 - 2 billion

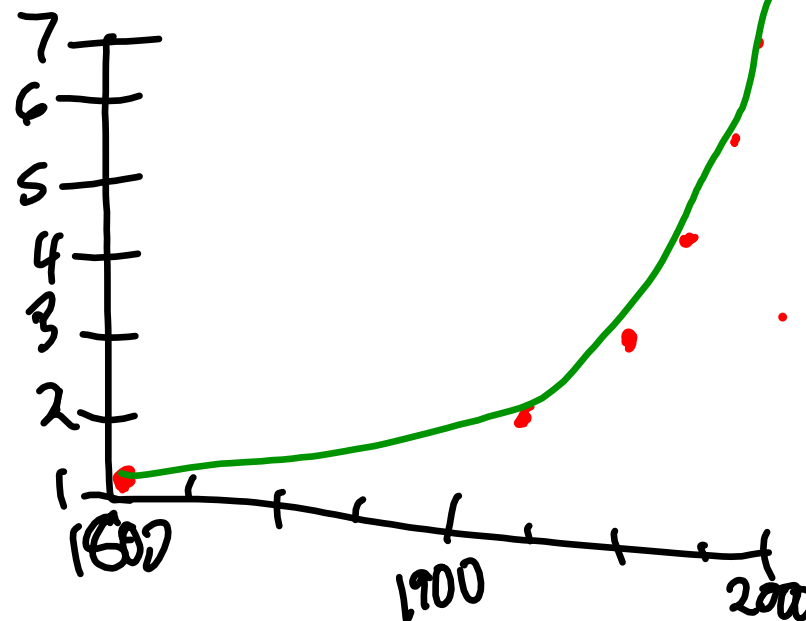
1960 - 3 billion

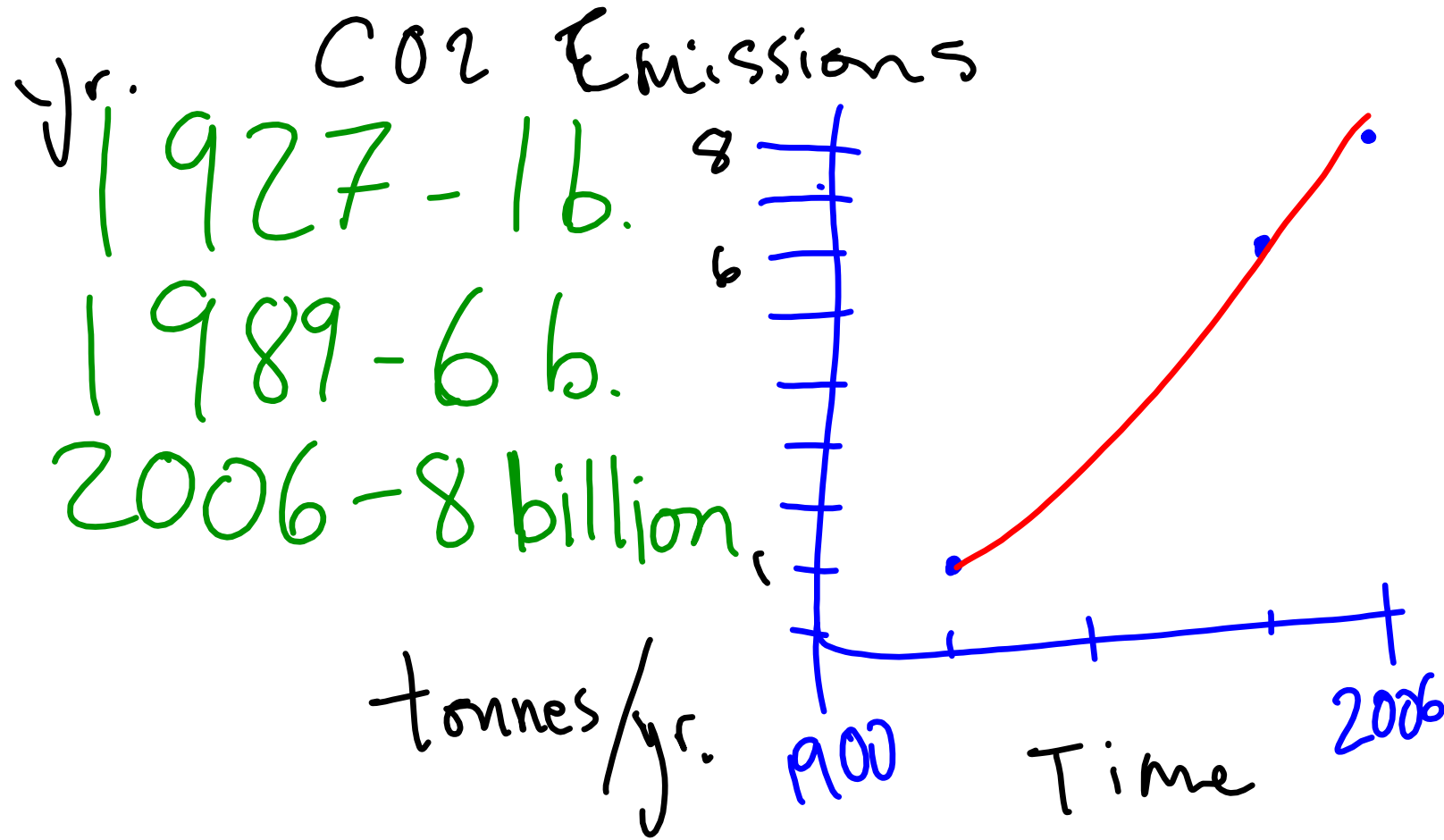
1975 - 4 billion

1987 - 5 billion

1999 - 6 billion

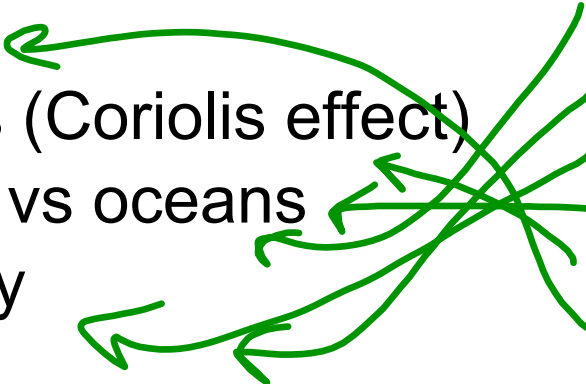
2011 - 7 billion

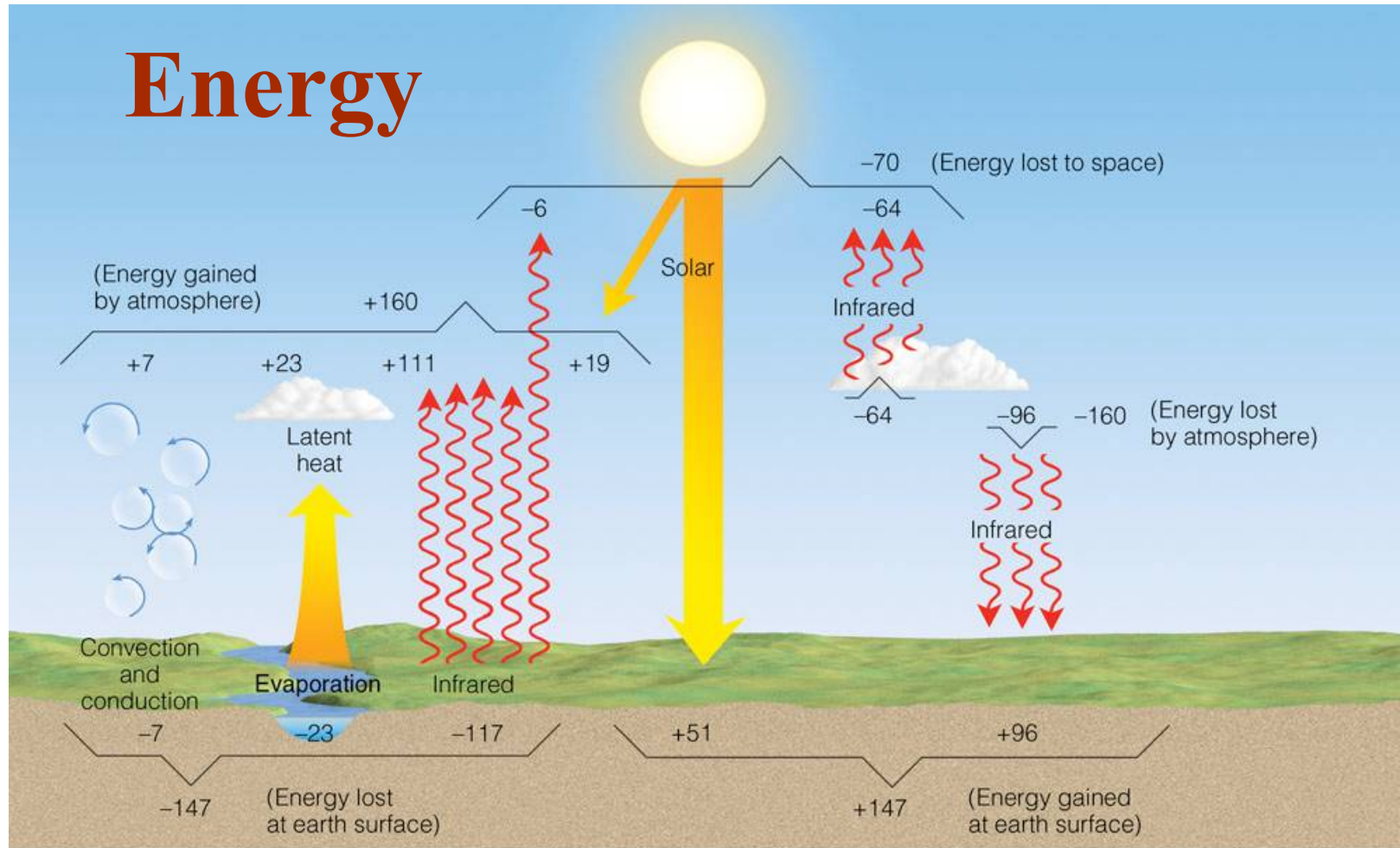




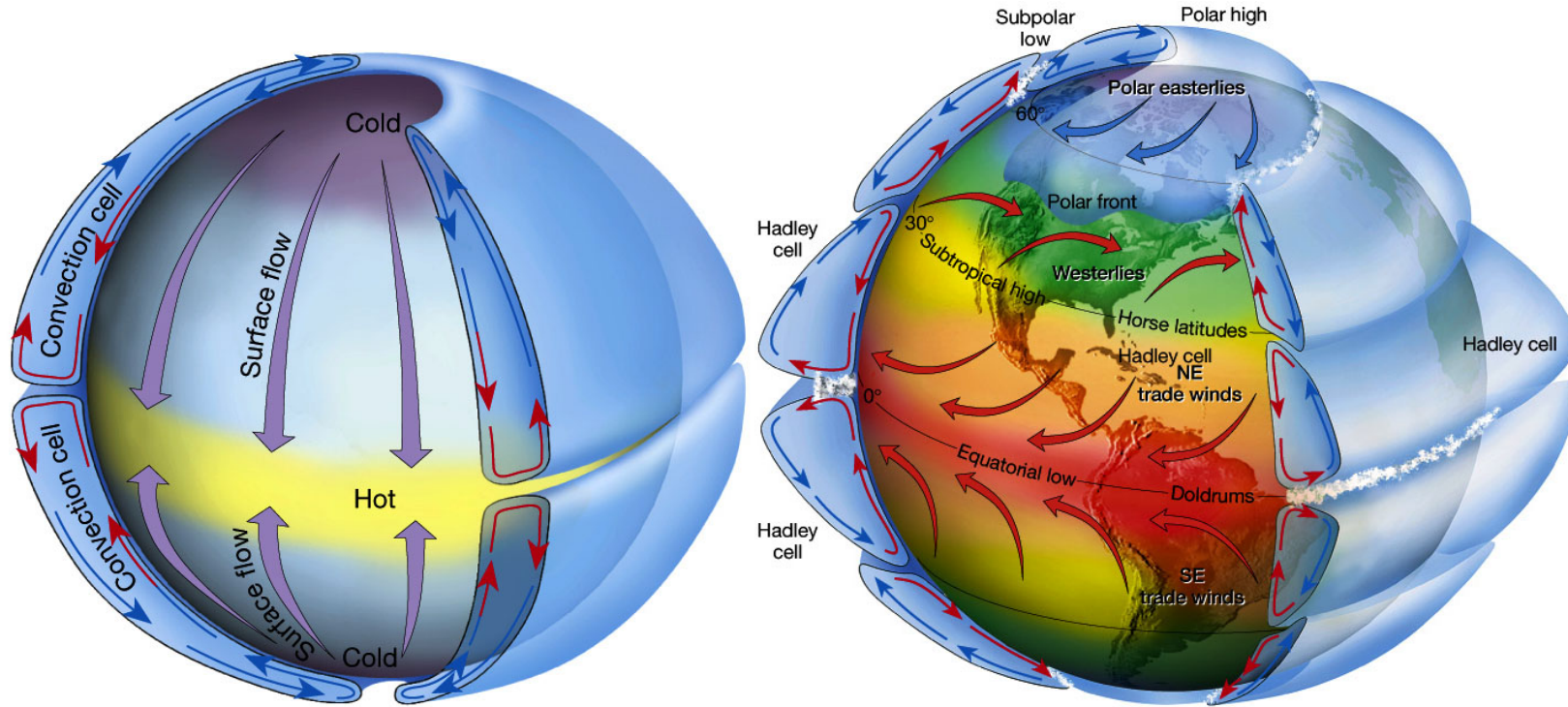
Climate Dynamics

What Drives Climate Dynamics?

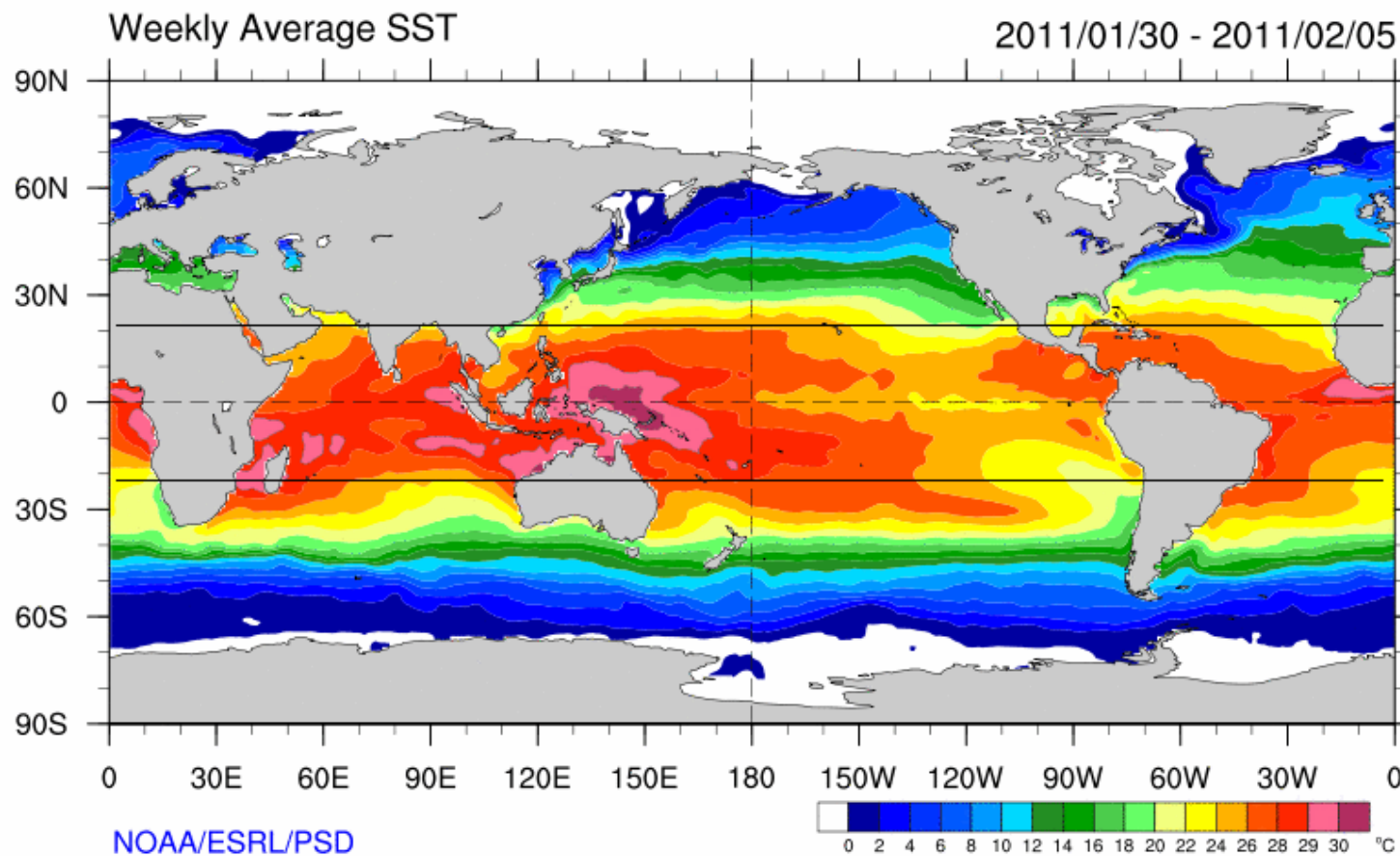
- Energy
 - Earth spins (Coriolis effect)
 - Continents vs oceans
 - Topography
 - Latitude
 - Elevation
 - Topography
 - Water Bodies
 - Atmospheric Circulation
 - Vegetation
- 
- Hand-drawn green arrows connecting the two lists of factors. A long arrow points from 'Latitude' to 'Energy'. Another arrow points from 'Elevation' to 'Topography'. A third arrow points from 'Topography' to 'Continents vs oceans'. A fourth arrow points from 'Water Bodies' to 'Continents vs oceans'. A fifth arrow points from 'Atmospheric Circulation' to 'Continents vs oceans'. A sixth arrow points from 'Vegetation' to 'Continents vs oceans'. A seventh arrow points from 'Continents vs oceans' to 'Topography'. A eighth arrow points from 'Continents vs oceans' to 'Energy'.



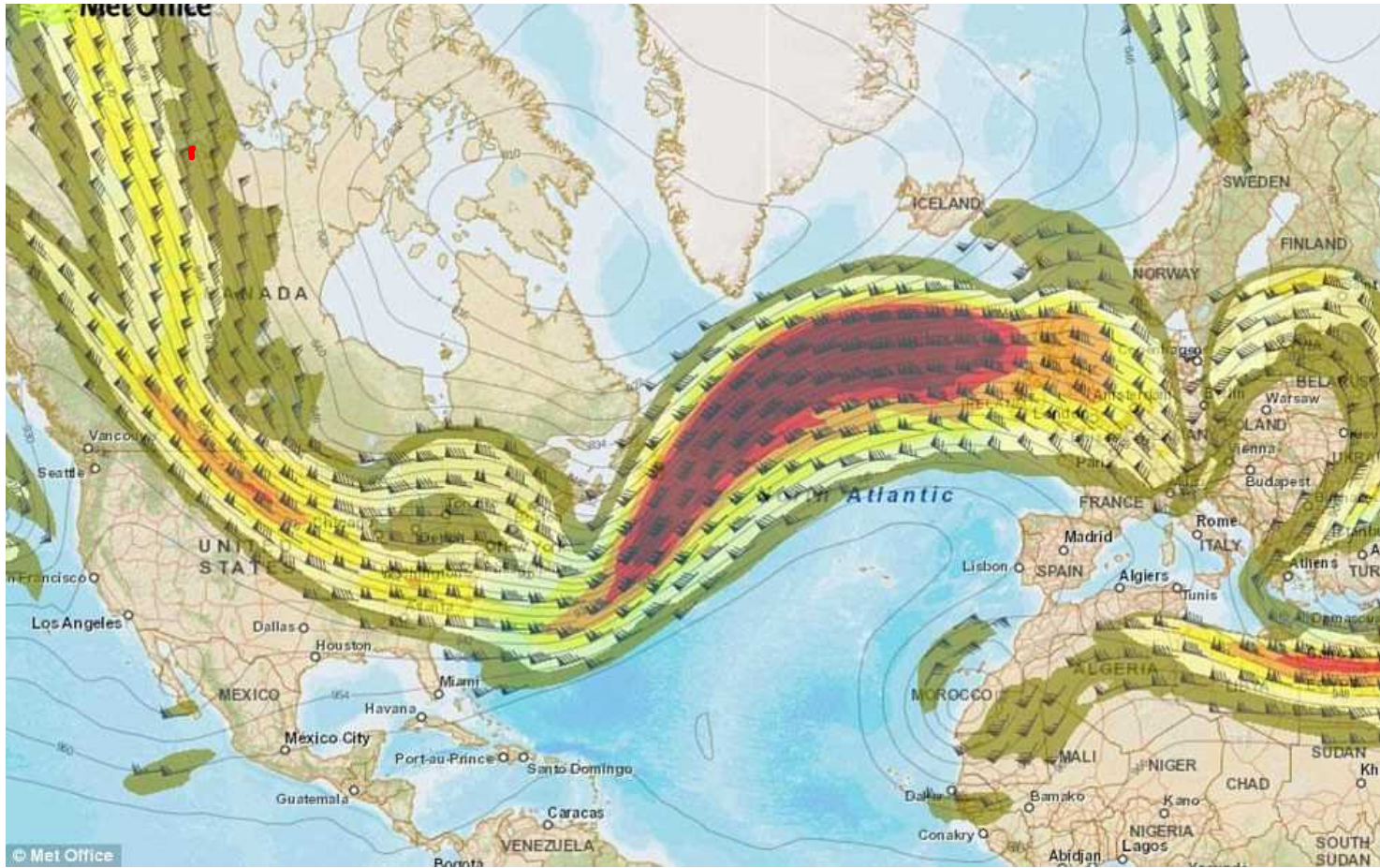
Earth Spins (Coriolis effect)



Continents vs. Oceans

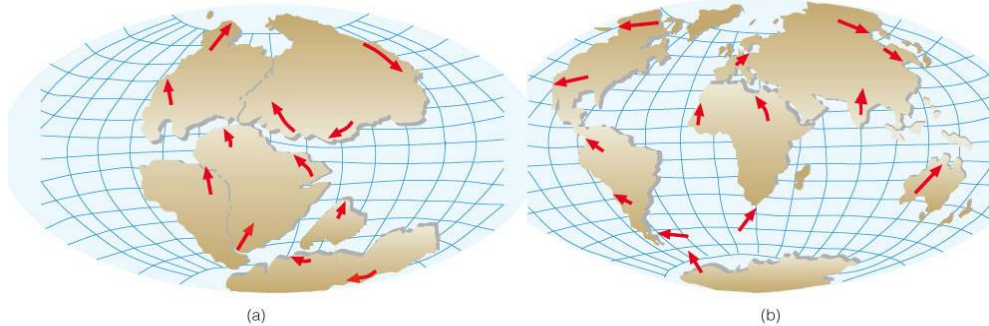


Topography

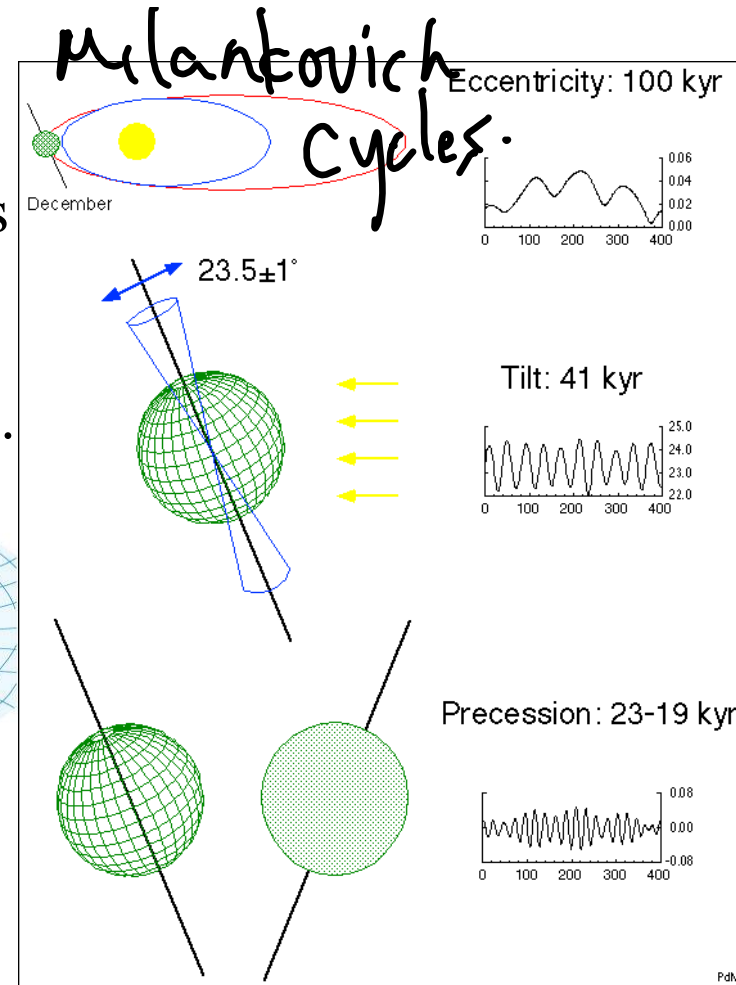


How long does it take?

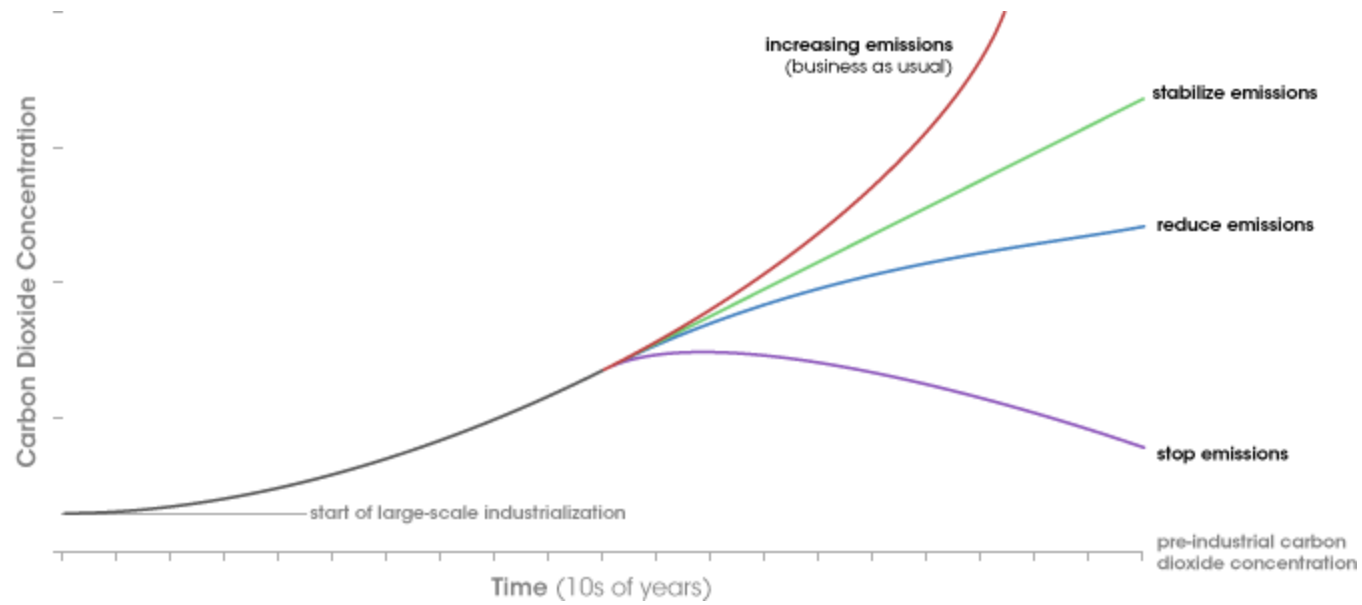
- Plate tectonics are millions of years
- Earth orbit is thousands of years
- Solar intensity millions of years
- Greenhouse gases years to millions.



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Greenhouse gases years to millions.



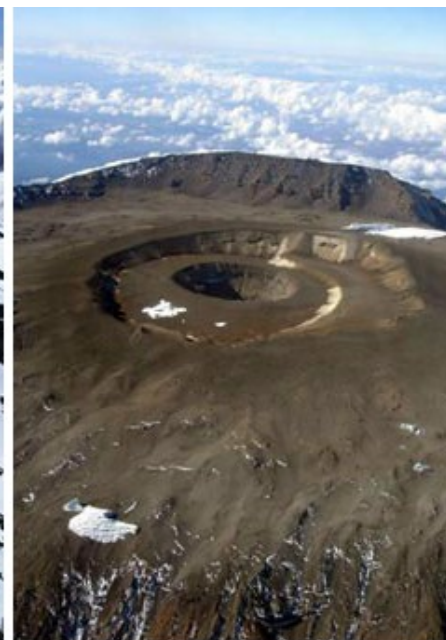
Evidence Supporting Our Changing Climate

- 90-95% of glaciers are thinning in the world (watch vid)
- Global average ocean temperature is increasing
- Ecosystems are shifting
- Sea level is rising
- Sea ice is thinning and becoming less extensive

Carbon is increasing in atmosphere, oceans, and land biota. Plate tectonics and rock reservoir is not.

Source of CO₂ is from fossil fuels and burning.

Glacial Retreat



Check for Understanding Questions:

- What are some things that can only affect the climate over a long time?
- What are some of the effects of our changing climate?

Learning Objectives: Did you accomplish them?

- I can form an educated opinion based on facts and variables.

Self-Evaluation

- How well did you understand the material today?
(1-Lost, 2- understand, 3-can teach it)
- How well did you and your team members participate in class?
(1-didn't do anything, 2-Bare minimum, 3-fully participated)

