

Possible presentation topics

Historical climate

- K-T extinction – was it caused by a meteorite?
- Little ice age – what was it? Was it global in extent?
- Proxies – climate variability from tree rings, ice cores, pollen, etc.
- Theories of snowball earth

Climatology

- Deserts – causes
- Droughts – predictions; American dustbowl; is drought increasing?
- Large ice sheets – dynamics of ice sheets; is Greenland melting?
- Impacts of volcanic eruptions
- Role of warm boundary currents (Gulf stream) in coastal climates
- Impacts of El Nino – climate; economics
- Hurricanes – predictions; change in frequency – past or future
- Role of desert dust on climate
- Air pollution trends
- Impact of rainforest on climate

Climate prediction

- Do climate models make accurate predictions?
- How does chaos affect our understanding?

Climate forcing

- Role of greenhouse gases
- CO₂ changes – past and future
- Methane
- Ozone and the ozone hole

Climate change impacts

- Effects on ecosystems – corals, mangroves, forests
- Ocean acidification
- Impacts of sea level rise
- Impacts on small Pacific islands (Marshall Islands)
- Impacts on the Pacific northwest – energy, water use, fisheries
- Arctic and Antarctic sea ice

Responses to climate change

- Adapting to climate change – planning for the future
- The skeptics – what are their arguments? Are they sound?
- Moral and ethical dimensions of climate change
- Impact of Kyoto protocol
- Developed vs. developing countries
- CO₂ sequestration
- Role of nuclear power

Planetary climate

- Mars – NASA observations of Martian climate; water on Mars
- Venus – the runaway greenhouse
- Titan – methane cycling in Titan's atmosphere

Renewable energy and climate

- Solar energy
- Wind energy
- Biofuels – Corn ethanol; ethanol in Brazil
- Hydrogen fueled automobile – the Freedom car
- Geothermal energy
- Tides and waves

Geoengineering

- Using particles to reflecting solar radiation
- Altering clouds
- Fertilizing the ocean

Biographical

- George Hadley
- Gilbert Walker
- Svante Arrhenius and John Tyndall (early greenhouse studies)
- Charles David Keeling (CO₂ measurements on Mauna Loa)
- Lonnie Thompson (ice core research)
- Jim Hansen (global climate modeling)