

# Lecture 15

Why study past climate?

*“The farther backward you can look, the farther forward you are likely to see.”*  
*- Winston Churchill*

# Why bother studying ancient climate?

## Who cares what happened a long time ago?

1. Past variability can show climatic extremes that have not been experienced during recorded history
2. In order to understand the effects of human activity on climate, we must establish what the planet, the atmosphere, and climate change was like before human perturbations
3. Constructing and interpreting long-term records of climate are the only means to determine how periodic climate change is (All in all, we are just a blip)

# The Climate Puzzle

Movie: 50 minutes

An overview of

Climate Proxy Data and Modeling

Climate: Past, Present and Future

Cretaceous Greenhouse Climate

Ice Ages Climate

Little Ice Ages

Greenhouse Gases ( $\text{CO}_2$  and  $\text{CH}_4$ )