

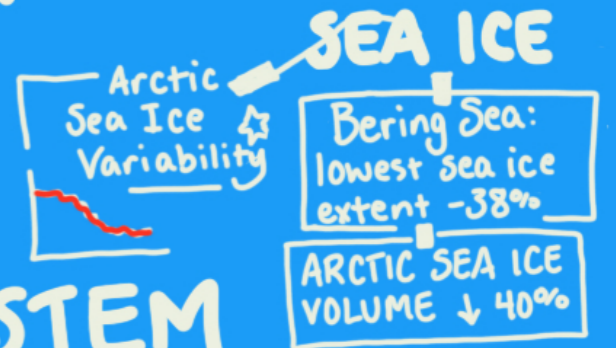
# POLAR CLIMATE & YOU



• RICK THOMAN • NWS ALASKA REGION •

• POLARTREC • 3/27/18 •

"Science is a way of understanding the world around us, a process."



## CLIMATE vs. WEATHER

- \* weather beyond one week
- \* statistics over weeks

- \* instantaneous physical state of atmosphere



Climate is what's in your closet...

Weather is what you wear today.

## BASELINE:

- ≈ 30 years
- \* normals, averages, ranges, extreme events & frequencies

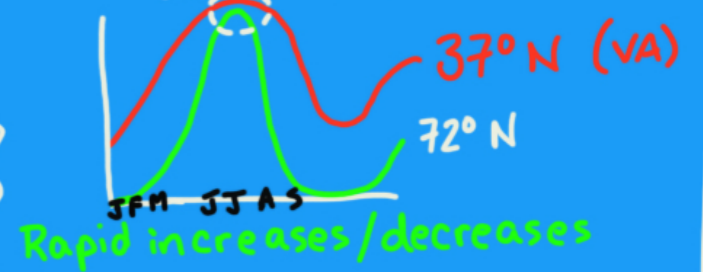


## EARTH'S CLIMATE SYSTEM



- \* Complex interaction among layers
- \* atmosphere / biosphere / cryosphere, etc.

- ★ BIOSPHERE influences & drives climate



## GREENHOUSE EFFECT

- \* Without them (CO<sub>2</sub>, CH<sub>4</sub> & H<sub>2</sub>O) we would not be here



Warmest Arctic temps in past 10 years

## POLAR AMPLIFICATION

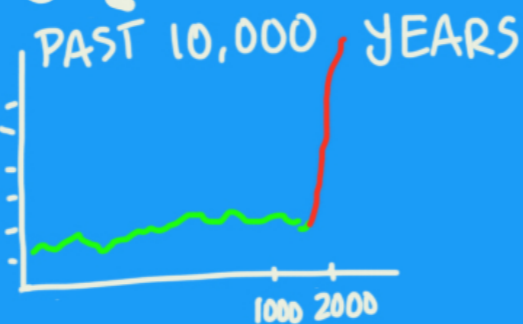
- \* high latitudes warm much more than low latitudes
- \* changes directly tied to changes in cryosphere

declines in sea ice  
decrease snow cover

## PROXY CLIMATE RECORDS

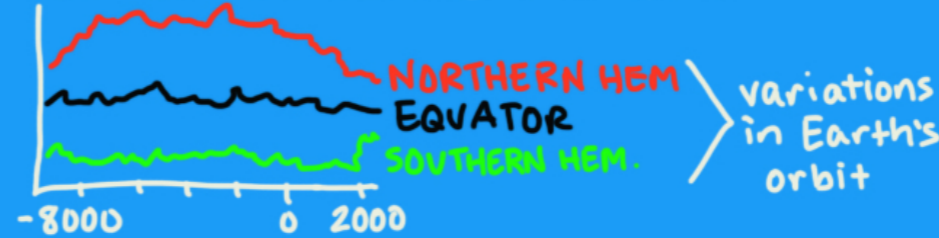
- \* tree rings
- \* ice cores
- \* Coral
- \* Lake/ocean Sediments

## CO<sub>2</sub> LEVELS



\* CH<sub>4</sub> will decompose quicker than CO<sub>2</sub>

## LATITUDINAL VARIATION IN HOLOCENE TEMPS



## WHY CHANGES?

- \* rising temperatures
- \* rising sea level
- \* decreasing snow and ice
- \* changing plant/animal distribution
- \* decreasing snow/ice cover