

Environmental Science

The Science of Hope

Environmental Science

CLASS 1 (Journal Entry 1)


- **1:30-2:45:**
 1. Introduction & Welcome!
 2. Introduce yourself to one other classmate
 3. Slides: 4 Global Challenges & Transition to a Sustainable Future
 4. Review of syllabus, assignments and assessments
 5. Team Activity: Form 4-5 person teams; Enter all assignments, quizzes, exams and corresponding due dates on page 1 of your journal

Environmental Science

CLASS 1 (Journal Entry 1)

- **2:45-3:20: Activity**
 - Tour Kirsch Center with instructor
 - MAX areas, SRC, Kitchen
 - Maps and other information on the walls!
 - SEMP Lab, John Muir Biodiversity Lab
 - Kirsch garden, Cheeseman Environmental Study Area (ESA)
 - Answer in your journal:
 - Where is the SRC and what resources does it have?
 - Where are the Solar Plaza, Monarch Conservation Area, ESA?

Why study Environmental Science?

- 
- Are we facing Environmental Challenges?
 - How should we address them?
 - With what policies and actions?
 - Who is responsible?
 - “Agents of Change”, “Stewards”
 - Why should you become one?
 - How will you evaluate your efforts 1 year from now, 3, 5, 10 years from now?

Four Global Challenges

1. Increasing population growth

2. Declining Ecosystems

- Ecosystem resources and services, aka, natural wealth, in jeopardy

3. Global Warming and Climate Change

4. Loss of Biodiversity

- Loss of life at many scales

Three Urgent Actions

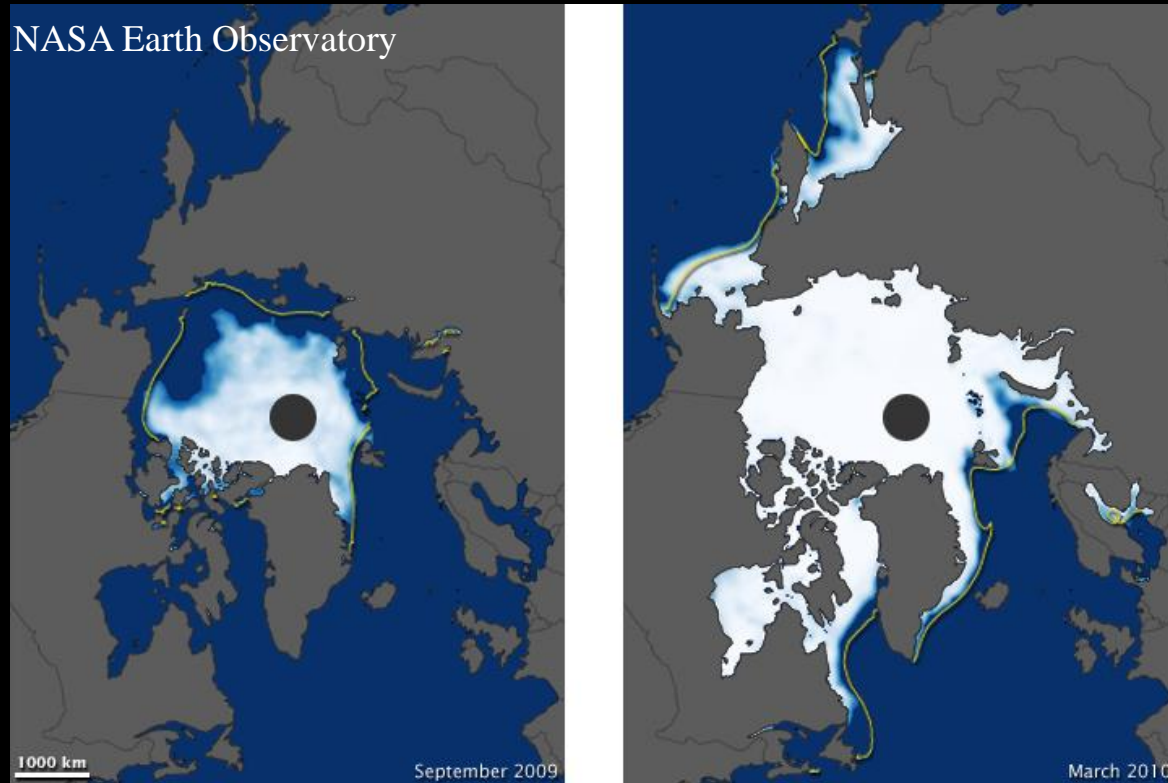
- **Protect, preserve and restore “Our Home”!**
 - *Natural Resources: water, air, soil, species, ecosystems, energy and minerals (WASSEEM)*
- **Increase open space and Reduce Pollution**
 - *Natural processes yield natural resources*
 - *Open spaces promote natural processes*
 - *Pollution hampers natural processes*
- **Educate and build stewardship principles**
 - *In ourselves, community, state and nation*
 - *For us, our children and future generations*

Example:

Global Warming and Climate Change

Observations

NASA Earth Observatory



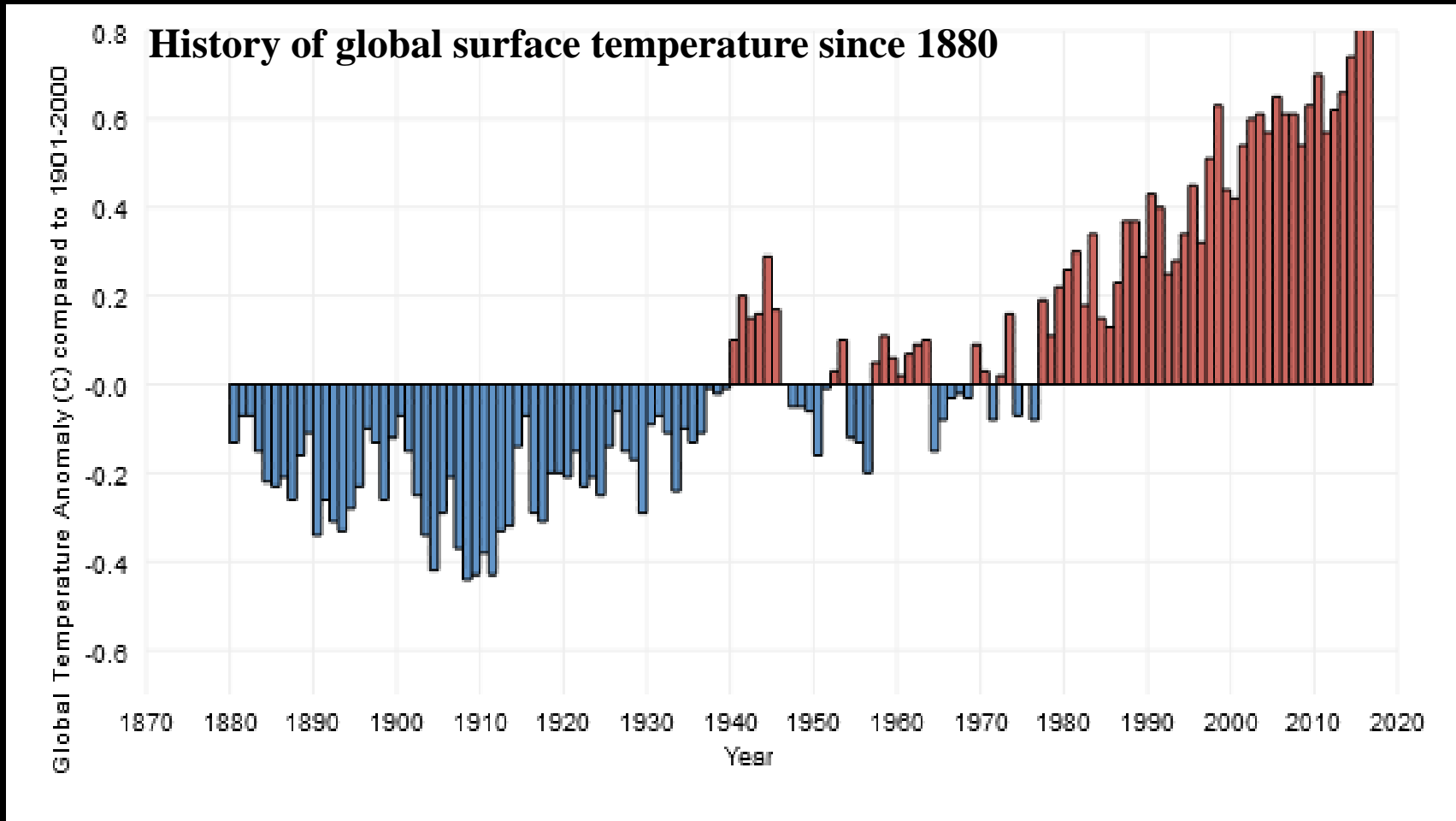
Grinnell Glacier - from Overlook
Glacier National Park



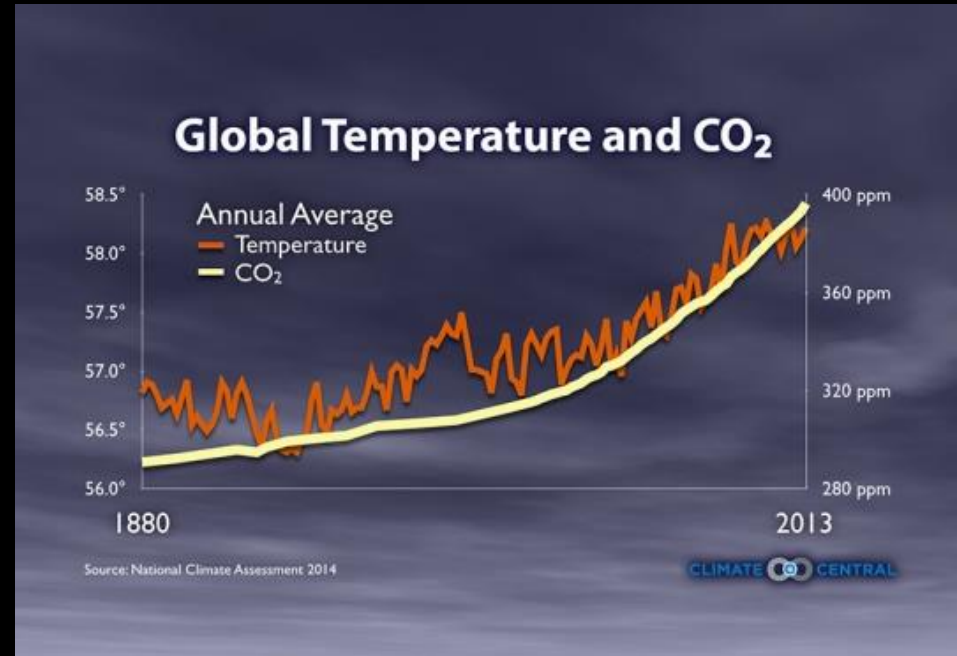
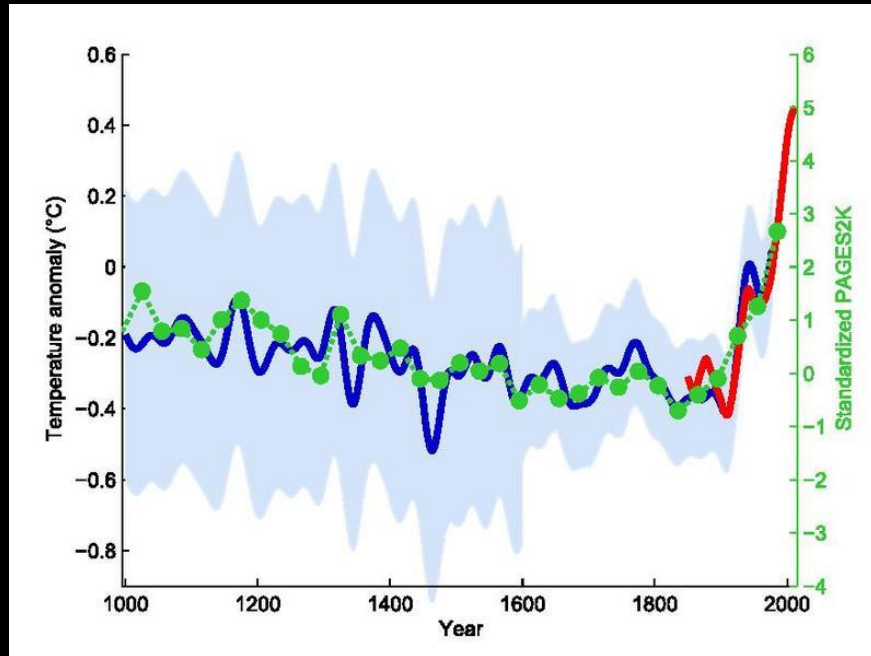
- Annual minimum and maximum extent of Arctic sea ice are both shrinking
 - *Prediction: No Arctic sea ice in the summer*
- Glaciers are receding

Long-term Data

17 of the 18 warmest years have occurred since 2001 (based on 130+ years of data)



Identify The Cause



- Carbon Dioxide (CO₂) Emissions
 - A well-known heat retaining gas (greenhouse gas)
 - Spike after the industrial revolution

Consequences of CO₂ Increase

1. Rise in global temperature → Climate Change
 - Uncertainty in agricultural systems
 - Sea level increase
2. Rise in Ocean acidity → Loss of Ocean Life
 - Loss of Coral Reefs and Fisheries

- Disruption of economies and livelihoods
- Increase in political conflict



Economy vs and Environment

Identify Solutions

A Global Effort for a Global Problem

United Nations – IPCC

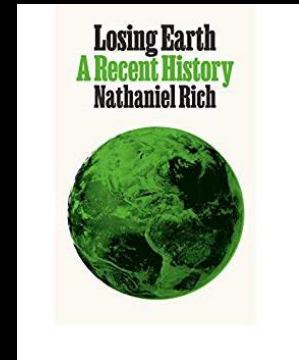
(Intergovernmental Panel on Climate Change)

- Established in 1988
- Consolidate scientific assessments
- Issue “Assessment Reports”
- Recommends actions
- Hold meetings periodically
 - Conference of the Parties (COP)
 - Many meetings since the first one in Rio in 1992
 - Kyoto Protocol to Paris Accord and ...

Identify Solutions

National – Local - Individual

- **USA:**
 - No significant legislation yet
 - Executive Orders that change with administrations
- **States:** California's Global Warming Solutions Act of 2006 (AB 32)
- **Regional:** Western Climate Initiative
- **Cities:** Climate Action Plans
- **Organizations:** Sustainability Action Plans
- **Individuals:** What can you do?
 - Be an “Agent of Change”



Class 2

Focus on Stewardship and Students



Each of you is
special

And bring
unique skills!



Institutionalize Environmental Stewardship into California's Educational System



“ . . . working for the common environmental good,
through its democratic institutions
at all educational and professional levels. . . ”

Excerpt from the California Education Code Section 8701

The Foothill-De Anza Community College District

Kirsch Center for Environmental Studies



*California
Biodiversity*

*Environmental
Resource
Management
Systems*

*Energy
Management
Systems*

Mission Statement:

The Kirsch Center for Environmental Studies commits to environmental protection as a fundamental objective and integral part of educating our students and the public. Through an interdisciplinary approach we will partner with industry, government, utilities and other academic institutions.



Kirsch Center

“A building that teaches”

More information available at:
<http://environmentalstudies.deanza.edu/es/kirsch/>

Cheeseman Environmental Study Area



More information available at:
<http://environmentalstudies.deanza.edu/es/esa/>

Focus on Local Environment

Use California and Local Community as a
“Laboratory” in Career Technical Education

Career pathways at the Kirsch Center:

- *Wildlife Science Technician*
 - *Alicia de Toro*
- *Environmental Resource Management and Pollution Prevention*
 - *Jeff Staudinger*
- *Energy Management and Building Science*
 - *Bill Roeder*

Sustainability Goals

Ten Step Approach to Sustainability:

1. **View** ecology and economy as mutually dependent
2. **Reduce** consumption of energy, land, water and other resources
3. **Minimize** waste and pollution
4. **Create** healthy and productive classrooms and work spaces
5. **Demonstrate** energy efficiency and renewable energy technologies
6. **Encourage** use of environmentally sustainable products
7. **Promote** use of transportation alternatives
8. **Optimize** operational and maintenance practices through education and training
9. **Foster** a team approach to understanding and addressing changing environmental issues
10. **Encourage** policies and procedures for schools and colleges to achieve a leadership position with regard to environmental stewardship

Video: The Story of Stuff

Team Activity 1:

- Discuss with your team and list 5 takeaways from the video
- Include any disagreements or questions

Team Activity 2: Kirsch Center for Environmental Studies

- *Use the KCES “Treasure Hunt” handout: Answer at least 10 questions*
 - *Notice, read & understand information on walls*
 - *Key terms to think about in a “green building”:*
 - Energy efficiency Resource conservation Renewable energy*
 - Sustainability Stewardship Team work*
 - *More information available at:*
<http://environmentalstudies.deanza.edu/es/kirsch/>

Team Activity 3: Cheeseman Environmental Study Area

- *Complete the questions on the handout*
 - *Observe this special place, it represents California’s immense biodiversity*
 - *More information available at:*
<http://environmentalstudies.deanza.edu/es/esa/>