

# Teaching Climate Change Science

## Day 1: Introductions

- Instructor Introduction
- Climate Change Course Overview
- Participant Introductions

# Teaching Climate Change Science

- Place-Based Education: Tropical Pacific Islands
- Understanding weather/climate and the causes and impacts of climate change
- Exploring strategies to increase resilience to the impacts of climate change
- Practicing different ways to teach science in general, and climate change in particular
- Adjusting educational resources and lessons to local conditions and audiences

# Participant Introductions

- Write your name and birth place (village or island) on your index card. Make a quick drawing of your favorite place when you were a child.
- Form groups of 2 or 3 people who do not know each other very well. Use your card to introduce yourself. Include why you chose that place, and what or who made it special for you.
- Each person in a group is introduced to the whole class by one of the partners in the group. Include information about their drawing.

# Place-Based Education

An Overview

# Why Place & PBE?



- **Place** = People + Our Environment
- **Place-Based Education (PBE)** = Engaging students in learning from and about their places

# Why Place & PBE?

Direct Observation



Investigation

## Place-Based Education

*Students learning from and about their places*

## Resources for Learning

*elders, legends, songs, historical books, community events, observations of environment*

Application of Knowledge



# Why Place & PBE?

*Place* in education changes how we organize our lessons, choose resources, and design learning and assessment tasks



# PBE: Four Big Ideas

- **Big Idea #1:** Place includes both the environment and its people. A place is rooted in culture and shapes self-identity.
- **Big Idea #2:** The study of place requires the combination of intellect and experience.
- **Big Idea #3:** Place, by definition, is specific and contextual
- **Big Idea #4:** A place is a living, dynamic system and is part of other systems.



# PBE Big Idea Activity

- Form groups of 3 to 5 people. There should be at least four different groups.
- Each group is assigned one of the four PBE Big Ideas. Instructor provides background information for each group.
- Each group discusses the information they have received about their PBE Big Idea.
- Groups take turns sharing what they discussed about their PBE Big Idea with the whole class.
- Instructor distributes copies of PCEP's resource: *Place-Based Education: Elements of Design*.

# Big Idea #1: Place includes both the environment and its people. A place is rooted in culture and shapes self-identity.

Our **culture** (beliefs, customs, daily practices) are *influenced* by our places and changes in our places.

Further, our culture *influences* our place and changes it.



Big Idea #1: Place includes both the environment and its people. A place is rooted in culture and shapes self-identity.



*What are some examples of how your community's daily practices or customs have been impacted by changes in the environment? In technology?*

Big Idea #1: Place includes both the environment and its people. A place is rooted in culture and shapes self-identity.

**Self-identity** = how we define ourselves and our roles in our community/world

Self-identity is shaped by:

- Personal beliefs
- Roles in customs and daily practices
- Memories and sense of belonging to our places

# Big Idea #1: Place includes both the environment and its people. A place is rooted in culture and shapes self-identity.



- *Think back to that place that was special to you as a child. How has that place influenced your identity?*
- *Refer to your responses to the first question. Do these changes have an impact on identity?*

## Big Idea #2: The study of place requires the combination of intellect and experience.

Students need to engage in discovery, data collection, and sharing

Observing, experimenting, and experiencing place allows us to pay attention to **patterns** and see **changes**



## Big Idea #2: The study of place requires the combination of intellect and experience.

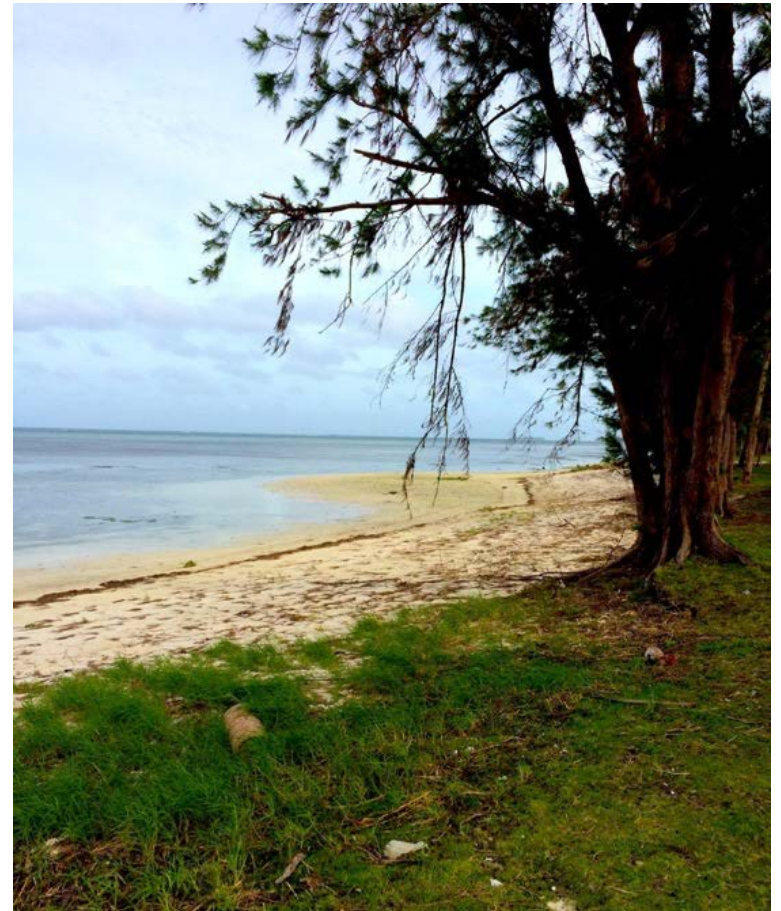


- *What are some sources of knowledge in your community?*
- *How can you create opportunities for students to observe patterns that are occurring in your place? Which patterns can they observe?*

## Big Idea #3: Place, by definition, is specific and contextual.

We can use our **physical senses** such as sight, smell, and sound to engage with the natural and built aspects of a place

- *Are there special places in your community that have specific and familiar sights, smells, or sounds?*





## Big Idea #3: Place, by definition, is specific and contextual.



Our memories and senses of belonging are reinforced through **cultural practices and traditions.**

- *Give an example of a special community event or ceremony that occurs regularly (each year, month, or season).*

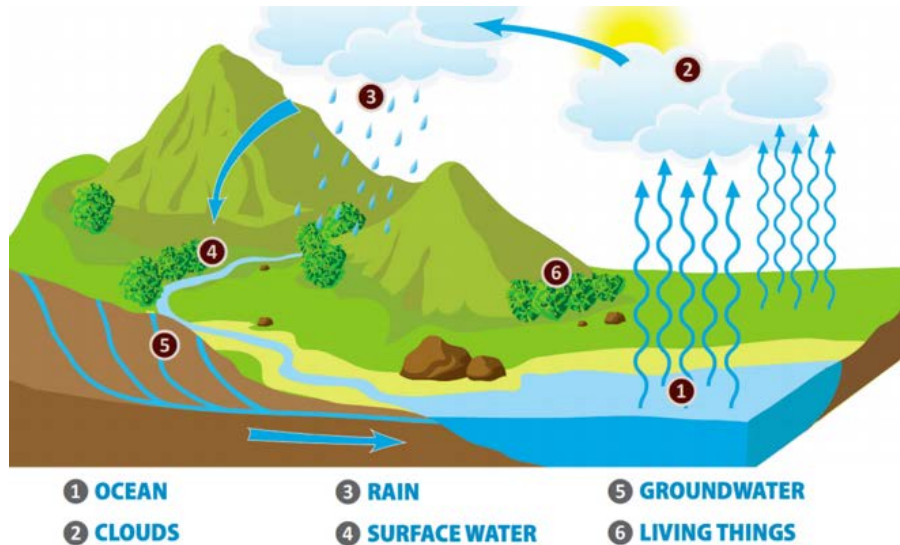
# Big Idea #4: A place is a living, dynamic system and is part of other systems.

Places are **systems** made up of interacting parts working together to form a whole.

- ***Natural systems*** = water, energy flow, food webs
- ***Human systems*** = roads, economy, telecommunications



# Big Idea #4: A place is a living, dynamic system and is part of other systems.



Parts of our places (systems) are interconnected.

- **Changes in one part affects the whole system**
- How it behaves, its results, ability to survive
- When a system changes, its parts need to adapt.

## Big Idea #4: A place is a living, dynamic system and is part of other systems.

- *How would you describe your community as a system?*
- *How has your community (as a system) adjusted to changes in the past?*



# Comparing Island Environments

- Each participant receives a poster and book about their type of island environments.
- Participants form four different groups to read about and discuss their assigned type of island environment.
- Each environment type has multiple examples (e.g., different types of Forests on high islands or different types of Reefs on low islands)

# Groups of High Island Environments

- **Environments with Trees:** Agroforest, Valley Forest, Upland Forest, and Cloud Forest
- **Coastal Environments:** Seagrass Beds, Mangrove Swamp, Karst, and Beach
- **Environments with Fresh Water:** Wetland, River, and Estuary
- **Ocean Environments:** Reef, Lagoon, and Small Island

# Groups of Low Island Environments

- **Environments with Trees/Plants:** Atoll Forest, Agroforest, Villages, and Taro Patch
- **Shore Environments:** Lagoon-Facing Shore, Ocean-Facing Shore, Island Without People
- **Large Water Environments:** Lagoon, and Open Ocean
- **Reef Environments:** Lagoon-Facing Reef, Patch Reef, and Ocean-Facing Reef

# Compare Two Environments within Your Group

- Any two environments within your group probably have some of the same features and some different features. Examples are high island Agroforest and Upland Forest, or low island Patch Reef and Lagoon-Facing Reef.
- In teams of 2 people, write a paragraph that compares two environments within your group.
- Share your paragraphs with other teams in your group. Discuss within your group any suggestions to improve each other's paragraph.



# Teaching Scientific Comparison Writing

- There are tools that can help students write better scientific comparisons:
- Venn diagrams are one tool.
- Chart of comparison words is another tool
- A handout can provide a paragraph outline:
  - Topic Sentence
  - Similarities
  - Transition Sentence
  - Differences
  - Conclusion

Name \_\_\_\_\_ Date \_\_\_\_\_

## Scientific Comparison Writing

Title of book: \_\_\_\_\_

\_\_\_\_\_  
(Topic sentence)

\_\_\_\_\_  
(Similarities)

\_\_\_\_\_  
(Transition sentence)

\_\_\_\_\_  
(Differences)

\_\_\_\_\_  
(Conclusion)

# Write a New Paragraph

- Write a new paragraph comparing your two readings by following the directions below:
- 1) Create a Venn diagram from your two readings and share it with your partner.
- 2) Individually look over the “Comparison Words” handout for words you might want to use in your new paragraph.
- 3) Individually use the “Scientific Comparison Writing” handout to write a new paragraph.
- 4) Share your new paragraph with your partner and discuss how it might be better or worse than the first paragraph that you wrote. Also discuss if and how these comparison writing tools would help your students.

# Pre-Test

- Please answer this Pre-Test as much as you can. We expect that many questions may not be familiar to you.
- This test has **no effect** on your course grade.
- The same test will be given after you have learned the material in this course.
- The test helps us teach the course better and evaluate how we can improve the course.
- After you hand in the test, you will be given a book that you can read while others finish the test.