

# Climate Science/Oceanography Misconceptions

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**Pre/Post Assessments:** A Pre/Post Assessment is a short test given twice to students, often on the first and last days of class. It is different than an exam in that students do not receive a grade and the methods of choosing and targeting questions differ. The purpose of these assessments is to determine how much of the material students understand before the course and compare that with their level of mastery at the end of the course.

## These assessments can be used for:

- Determining if the course goals were met and whether the course is set at an appropriate level.
- Identifying misconceptions students have coming into and exiting the course.
- Demonstrating that students have learned something as a direct result of the course.
- Tracking student learning over semesters as to evaluate new teaching methods.

**Method:** Through classroom observations, student interviews, and exam answers we identified common misconceptions in a large first year Oceanography class. We wanted to determine how many students had these misconceptions and if the course was addressing them. We developed a pre/post test based on specific misconceptions and corresponding course goals.

## Examples:

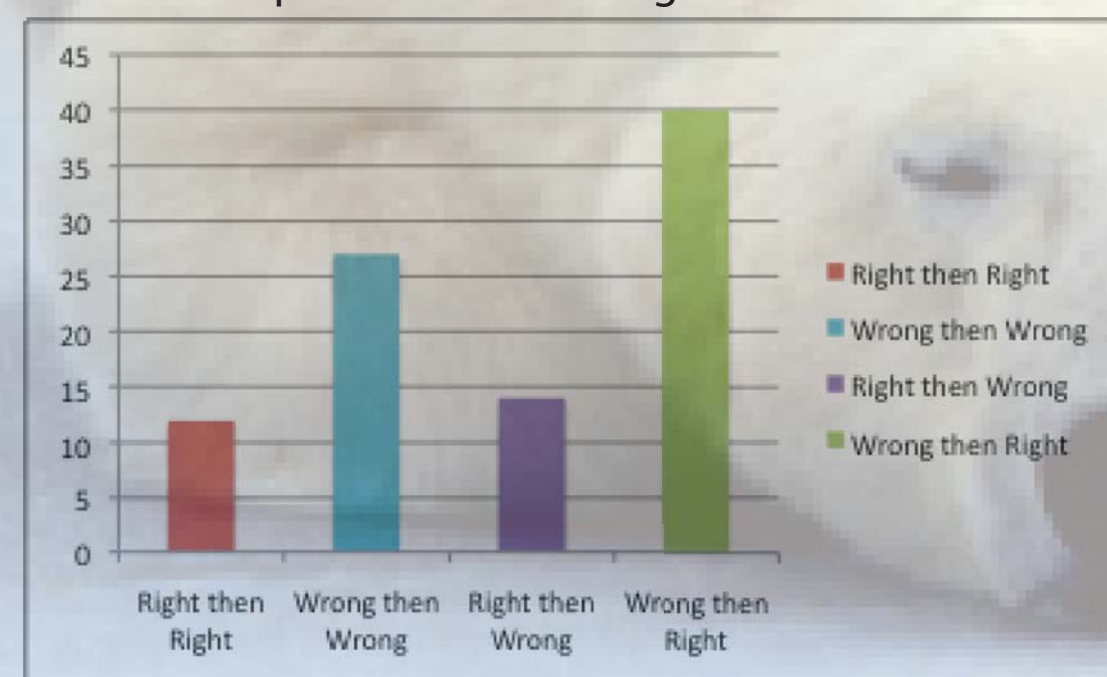
**Question 1:** With increased water vapor content, air becomes:

- A. More dense
- B. Less dense
- C. Density does not change



**Question 2:** Coastal upwelling is a result of mainly:

- A. Deep-water layers warming and rising
- B. Deep-water layers losing their salinity and rising
- C. Wind-driven offshore water
- D. Dense deep-water overturning



## Future Directions:

- 1.) Target misconceptions by adding active learning opportunities
- 2.) Validate and modify test questions through student interviews
- 3.) Conduct further pre/post assessments to evaluate course progress

Answer Key: Q1: B, Q2: C