*Teaching Notes - Pico Project: Introduction*

**Overview:**

The purpose of this lesson is for students to familiarize themselves with Pico Mountain – where it is located, its elevation, and characteristics of the mountain – and start to understand why Pico is ideal for studying the free troposphere. Although several websites will give the correct information, try to steer students clear of certain, unscientific, sites. In this case, Wikipedia does provide the correct elevation and characteristics of the mountain.

**The Lesson:**

To start the lesson, use the PowerPoint provided.

* Slide 1 – Picture of Pico Mountain in the Azores
* Slide 2 – Introduction – why this research is being conducted
* Slide 3 – Goals of the unit
* Slide 4 – Purpose – why Pico is being used to help teach climate change
* Slide 5 – The day’s task
* Slide 6 – Approximately 4 minutes – Video introduction to the Pico Project.
* Slide 7 – Google Earth image with part of the hike marked using GPS

Give students ample time to research the answers to the questions on their handout. A time of 20 minutes is suggested, but use more or less depending on your students. At the end of research time, DO NOT go over the answers. The video introduction will also provide some of the answers. If time allows, the video can be shown twice to give time for the students to write down answers they may have missed. If you still have time at the end, go over the answers. They can be found on slides 8-10. It is important for students to understand why research stations, such as ones located on Pico, Mauna Loa in Hawaii, in Germany, are located where they are. If the station was placed further down the mountain, the desired results would not be obtained.

**Answers:**

1. Find the elevation of Pico Mountain (Careful – this is not in the United States!)

***2351 m (7713 ft)***

1. Where is Pico Mountain located? (be specific)

***On the island of Pico in the Azores archipelago; islands are located along the Mid-Atlantic Ridge and are situated on 3 plates in the North Atlantic Ocean (North American, Eurasian, and African)***

1. Describe the mountain.

***Inactive stratovolcano, last eruption was in the 1700s***

***Caldera – summit crater at an elevation of 2225 m (7299 ft)***

***Piquinho (small volcanic cone) – true summit of the mountain***

***(any other descriptions students use regarding slope, size, location on the island, color, etc)***

1. What is the boundary layer in terms of the atmosphere?

***The first cloud layer***

1. What is the free troposphere?

***The air above the first cloud layer***

1. What is the altitude of the marine boundary layer?

***1200 – 1600 m***

Why is Pico Mountain a good place to study the atmosphere?

***(Give students time to explain their answers) The station is above the first cloud layer. The air in the free troposphere carries aerosols from North America and is generally clean. This means it is free from local pollution. Local pollution or pollution created a short distance away does not enter the free troposphere. The aerosols collected on Pico could be from Canada, northern United States, Africa, and possibly Europe. If the particles get swept up into the free troposphere, the jet stream and other wind belts can carry them to Pico.***