

# Lesson Plans: Climate in the Pacific Region

## Objective

The objective is to enable students to understand the main features of the climate of the Tropical Pacific region: high temperatures with little seasonal change during the year, steady trade winds, heavy rainfall associated with the tropical cyclones. They must also realize that the Tropical Pacific is a great storehouse of heat energy for the rest of the planet. It is the firebox that drives

## Materials

Each student or group of students will need the following:

- Wall map of the Pacific
- Smaller copies of the Pacific region map
- Chart or map showing the tracks of one or more recent cyclones

## Important Points to Understand

Most of the small islands in the Pacific Ocean lie between the Tropic of Cancer and the Tropic of Capricorn, in the Southwestern part of the ocean. In the tropical Pacific, temperatures are high, and because so much of the surface is covered in water (which has a moderating effect on temperature), there is not a lot of seasonal change. The tropical Pacific is dominated by the trade winds, which move towards the equator from the northeast (northern hemisphere) and from the southeast (southern hemisphere). Running through the middle of the Pacific is the Inter-Tropical Convergence Zone (ITCZ), where the trade winds meet and the hot, moist air rises, producing vast quantities of cloud and rain. There is another, minor, convergence zone, known as the Southern Pacific Convergence Zone (SPCZ), that branches off from the ITCZ in a southeastern direction from about 160 degrees east. Tropical cyclones (hurricanes or typhoons) generally begin on the edges of the ITCZ during the hottest time of the year, and move away from the equator.

The most important aspect of the Tropical Pacific is that it receives more radiation than it emits. The excess heat energy is transported away from the tropics by means of tropical cyclones and through ocean currents.

## Procedure

1. On the blackboard, the teacher can build up a map to show the atmospheric conditions during January, with the position of the ITCZ, the SPCZ (which must be briefly explained), and the winds.
2. Another map can be built up to show atmospheric conditions during August.
3. The teacher can discuss and summarize the correct answers.

## Questions

1. On the map of the Pacific region given:
  - Draw in lines to show the equator, the Tropic of Cancer (23 $\frac{1}{2}$  degrees north), and the Tropic of Capricorn (23 $\frac{1}{2}$  degrees south).
  - Color in the part of the Pacific Ocean that is in the Tropics.
  - Mark clearly the position of your own island (or country)
2. Study the maps of the southwestern part of the Pacific given, and answer these questions:
  - What is meant by a convergence zone?
  - Why is a convergence zone associated with rain?
  - What are the names of the two convergence zones found in the southwestern Pacific?
  - Tropical cyclones generally begin at the edge of the ITCZ. For countries south of the equator, they mostly occur during December and March. For countries north of the equator, they mostly occur during June and November. On either the January or the July map (depending on which hemisphere the cyclone was in), show the track of one tropical that has affected any part of the Pacific in recent years using the map of cyclone tracks.