Australia and Oceania: Physical geography

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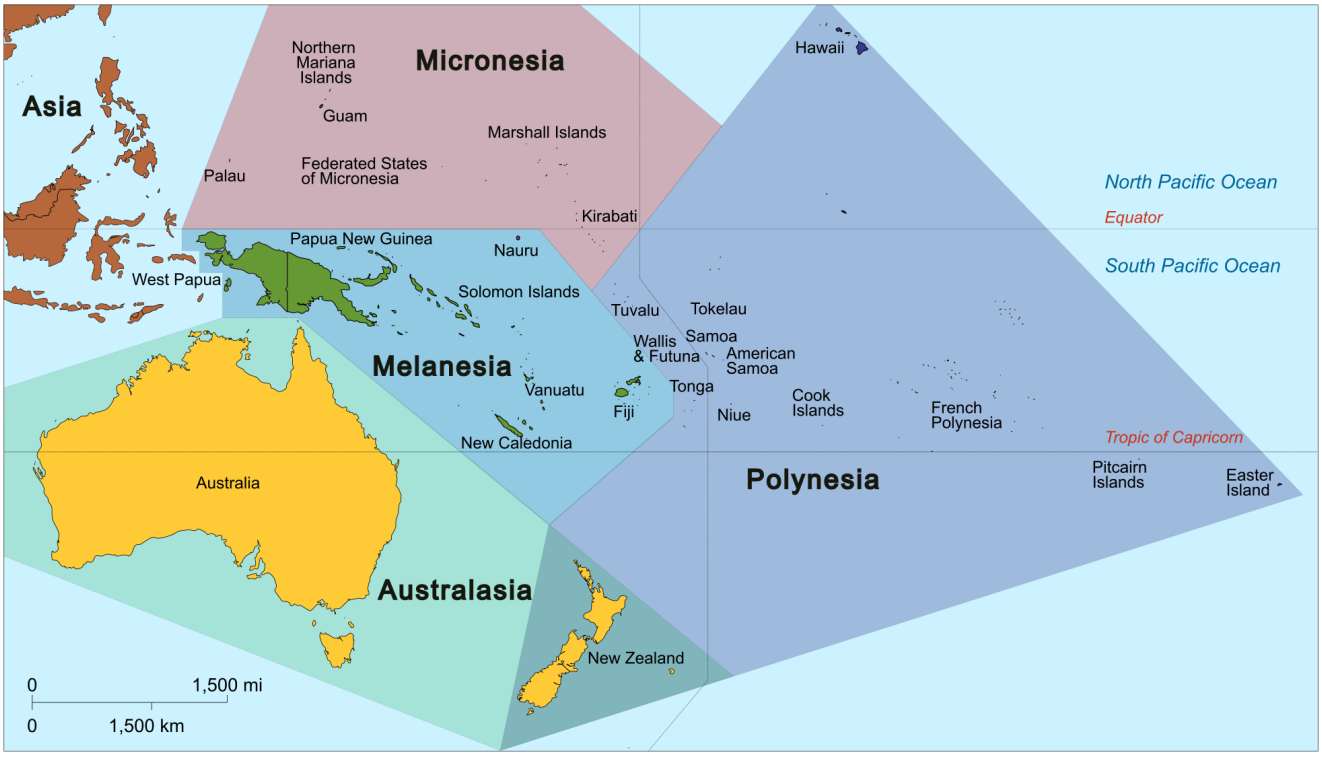
The Emerald Lakes seen from the Red Crater. This is about halfway on the Tongariro Alpine Crossing, one of the most impressive walks in New Zealand. Photo by: Marcus Holland-Moritz/Wikimedia.

The name “Oceania” is a hint to this continent's defining characteristic: the Pacific Ocean.

Oceania is a region made up of thousands of islands throughout the Central and South Pacific Ocean. It includes Australia, which is the smallest continent in the world in terms of total land area.



Most of Australia and Oceania is under the Pacific. This vast body of water is larger than all the Earth's continental landmasses and islands combined.

Oceania is dominated by Australia. There are two other major landmasses of Oceania. One is the microcontinent of Zealandia, which includes the country of New Zealand. Much of Zealandia is formed by rocks that are underwater. The other large land area in Oceania is the island of New Guinea. It contains the country of Papua New Guinea; the rest of the island is ruled by Indonesia.

Oceania also includes three island regions: Melanesia, Micronesia and Polynesia, which includes the U.S. state of Hawaii.

Oceania can be divided into three island groups: continental islands, high islands and low islands. The islands in each group are formed in different ways and are made up of different materials.

Continental Islands

Continental islands were once attached to continents before sea level changes and tectonic activity isolated them. Tectonic activity refers to the movement and collision of different sections, or plates, of the Earth's crust.

Australia, Zealandia and New Guinea are continental islands. All three have mountain ranges or highlands, which were created as tectonic plates pressed together and pushed land upward. New Zealand and Papua New Guinea also have volcanic features as a result of tectonic activity.

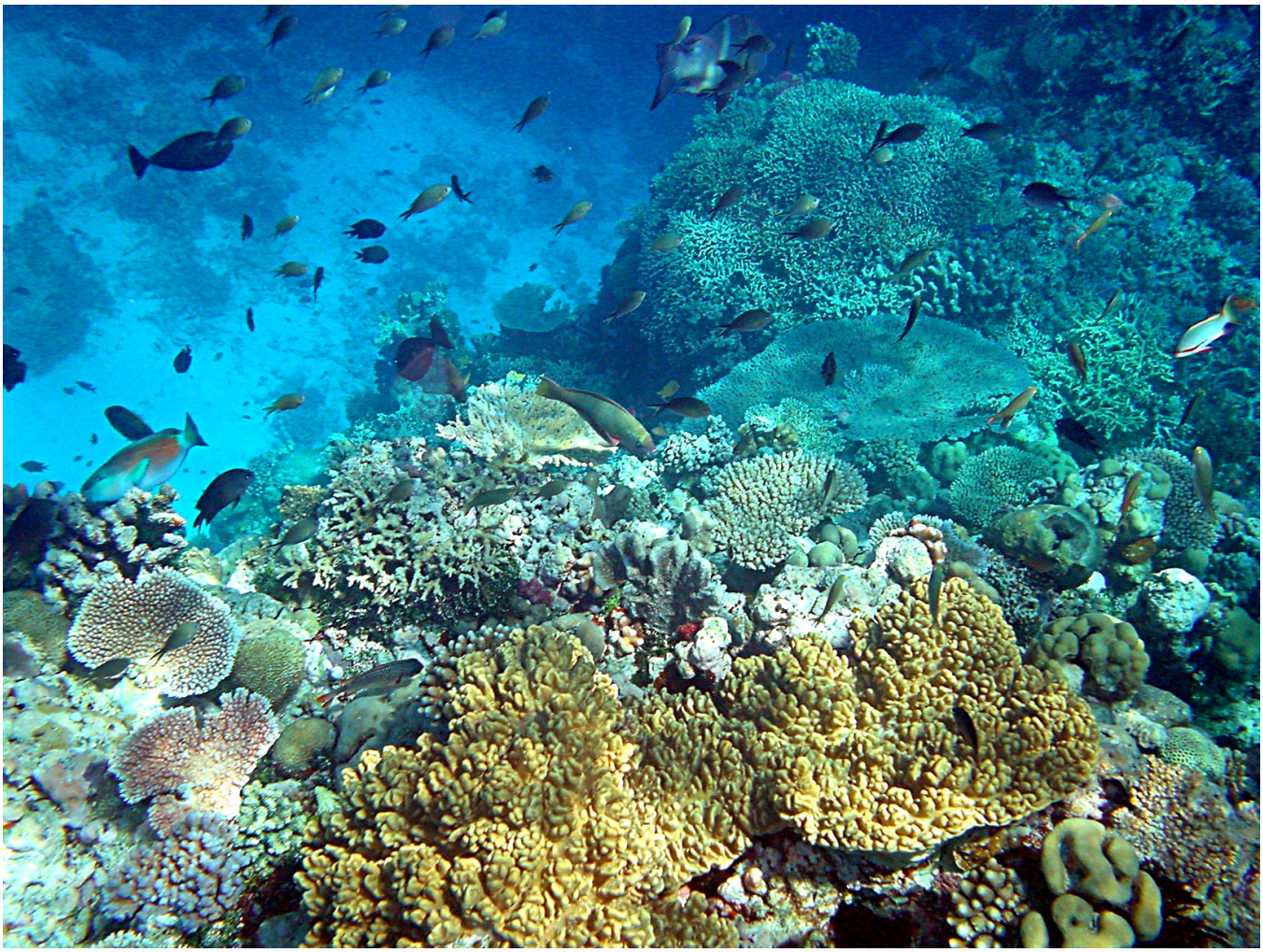
Australia's landscape is dominated by the Outback, a region of deserts and semi-arid land. New Zealand has glaciers, a result of the islands' high elevations and being around cool, moist winds. Papua New Guinea, meanwhile, has highland rainforests; it's located right below the warm Equator.

High Islands

High islands, also called volcanic islands, are created as volcanic eruptions build up and over time. These eruptions begin underwater, when hot magma is cooled and hardened by the ocean. Over time, this activity creates islands with a steep central peak, surrounded by ridges and valleys that expand outward toward the coastline.

The island region of Melanesia contains many high islands. It is a major part of the “Ring of Fire,” a string of over 400 volcanoes around the boundary of the Pacific Ocean. This is a convergent plate boundary, where two plates in the Earth's crust move toward each other and cause earthquakes. Almost 90 percent of all earthquakes occur along the Ring of Fire.

Low Islands



Low islands are also called coral islands. They are made of the skeletons and living bodies of small marine animals called corals.

Low islands often take the shape of a ring of very small islands, called an atoll, which surround a lagoon. An atoll forms when a coral reef builds up around a volcanic island, then the volcanic island erodes away, leaving a lagoon.

The island regions of Micronesia and Polynesia have many low islands. The Kwajalein Atoll in the Marshall Islands, for example, is composed of 97 islands that surround one of the largest lagoons in the world, with an area of 839 square miles. The nation of Kiribati is composed of 32 atolls and one lone island, spread over 1.35 million square miles of the Pacific Ocean.

Island Flora And Fauna

The evolution of wildlife across the islands of Australia and Oceania is unique. Australia and Oceania is very isolated from the rest of the world, and has an incredibly high number of species that are found nowhere else on Earth.

Many plants and animals reached the islands from southern Asia, thousands of years ago at a time when sea levels were low enough to allow for travel. After sea levels rose, the species were stuck in their new islands and adapted to the environment of each. This produced multiple species that evolved from a common ancestor.

Plants traveled between islands by riding wind or ocean currents. Birds carried the seeds of fruits and plants and spread them between islands with their droppings. Ferns, mosses and some flowering plants rely on spores or seeds that can stay airborne for long distances. Coconut palms and mangroves, common throughout Australia and Oceania, produce seeds that can float on salty water for weeks at a time.

Birds are very common in Australia and Oceania because they are one of the few animals mobile enough to move from island to island. There are more than 110 native bird species in Australia and Oceania, including many seabirds. Many flightless birds, such as emus, kiwis, cassowaries,

wekas and takahes, are native to Australia, Papua New Guinea and New Zealand. The Pacific Islands have more than 25 species of birds of paradise, which exhibit colorful plumage.

Lizards and bats make up the majority of Australia and Oceania's native land animals. Lizard species include the skink and bearded dragon. Australia and Oceania has more than 100 different species of fruit bats.

The few native land animals in Australia and Oceania are unusual. Australia and Oceania is the only place in the world that is home to monotremes —mammals that lay eggs. All monotremes are native to Australia and Papua New Guinea. There are only five living species: the duck-billed platypus and four species of echidna.

Many of the most familiar animals native to Australia and Oceania are marsupials, including the koala, kangaroo and wallaby. Marsupials are mammals that carry their newborn young in a pouch. Almost 70 percent of the marsupials on Earth are native to Oceania.

In Australia and Oceania, marsupials did not face threats from large predators such as lions, tigers or bears. The red kangaroo, the world's largest marsupial, can grow up to 6 feet tall and weigh as much as 220 pounds. In the Americas, marsupials such as possums are much smaller.

Marine Flora And Fauna

The sea around Australia and Oceania is overflowing with life. The region is made up of three marine realms: Temperate Australasia, Central Indo-Pacific and Eastern Indo-Pacific. Marine realms are large ocean regions where animal and plant life are similar because they share environmental and evolutionary factors.

The Temperate Australasia realm includes the seas surrounding the southern half of Australia and the islands of New Zealand. This realm is one of the world's richest areas for seabirds. Its cold, nutrient-rich waters support a diversity of plants and fish that seabirds feed on. These seabirds include different species of albatross and shearwater, as well as the rockhopper penguin.

The Central Indo-Pacific realm includes the seas surrounding the northern half of Australia, Papua New Guinea, Solomon Islands, Vanuatu, New Caledonia, Fiji and Tonga. This marine realm includes the world's two largest coral formations: Australia's Great Barrier Reef and the New Caledonia Barrier Reef. The Great Barrier Reef, a UNESCO World Heritage Site off the coast of northeast Australia, is 133,000 square miles — almost the total size of California.

The Great Barrier Reef and the New Caledonia Barrier Reef have a very diverse group of plants and animals. The Great Barrier Reef is home to 30 species of whales, dolphins and porpoises; six species of sea turtles; 215 species of birds; and more than 1,500 species of fish. The New Caledonia Barrier Reef is home to 5,500 species of mollusks, 5,000 species of crustaceans and at least 1,000 species of fish.

The Eastern Indo-Pacific realm surrounds the tropical islands of the central Pacific Ocean, extending from the Marshall Islands through central and southeastern Polynesia. This realm is also known for its tropical coral formations. A variety of whale, tortoise and fish species also live here.

Quiz

1 Which paragraph from the article BEST describes the highly diverse geographic features found in Australia and Oceania?

(A) Oceania is a region made up of thousands of islands throughout the Central and South Pacific Ocean. It includes Australia, which is the smallest continent in the world in terms of total land area.

(B) Oceania is dominated by Australia. There are two other major landmasses of Oceania. One is the microcontinent of Zealandia, which includes the country of New Zealand. Much of Zealandia is formed by rocks that are underwater. The other large land area in Oceania is the island of New Guinea. It contains the country of Papua New Guinea; the rest of the island is ruled by Indonesia.

(C) Oceania can be divided into three island groups: continental islands, high islands and low islands. The islands in each group are formed in different ways and are made up of different materials.

(D) Australia’s landscape is dominated by the Outback, a region of deserts and semi-arid land. New Zealand has glaciers, a result of the islands’ high elevations and being around cool, moist winds. Papua New Guinea, meanwhile, has highland rainforests; it's located right below the warm Equator.

2 Which piece of evidence BEST explains the cause of a majority of earthquakes in the Pacific Ocean?

(A) Continental islands were once attached to continents before sea level changes and tectonic activity isolated them. Tectonic activity refers to the movement and collision of different sections, or plates, of the Earth’s crust.

(B) Australia, Zealandia and New Guinea are continental islands. All three have mountain ranges or highlands, which were created as tectonic plates pressed together and pushed land upward.

(C) The island region of Melanesia contains many high islands. It is a major part of the “Ring of Fire,” a string of over 400 volcanoes around the boundary of the Pacific Ocean.

(D) This is a convergent plate boundary, where two plates in the Earth's crust move toward each other and cause earthquakes. Almost 90 percent of all earthquakes occur along the Ring of Fire.

3 Read the selection from the section "Island Flora And Fauna." Then, fill in the blank.

> *Many plants and animals reached the islands from southern Asia, thousands of years ago at a time when sea levels were low enough to allow for travel. After sea levels rose, the species were stuck in their new islands and adapted to the environment of each.*

The word "adapted" in the sentence above tells the reader that the species ____.

(A) is found nowhere else

(B) slowly changed

(C) arrived long ago

(D) belongs there

4 Read the sections "High Islands" and "Low Islands." What is the term for a string of coral islands that surrounds a body of water?

(A) volcanic islands

(B) Ring of Fire

(C) atoll

(D) lagoon