



Chubasco

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The great coastal deserts of the world—the Namib in southern Africa, Atacama in Chile, the coastal desert of Morocco in the African Sahara, and Baja California in Mexico—lie on the western margin of the American and African continents. They are associated with the cold currents that flow towards the equator on the eastern side of the Atlantic and the Pacific: the Benguela and the Humboldt currents in the southern hemisphere, and the Canaries and California currents in the northern one. Baja California is arid because the cold California Current runs along its Pacific coast, and the cold waters bring stability to the atmosphere, preventing the formation of large low-pressure centers, which bring rain.

But the peninsula is so long that the seasonality of rains changes dramatically from north to south. The north Pacific coast receives storms from December to March, when the prevailing northwesterly winds enter the winter-cooled coast condensing their moisture and discharging it over the land in seemingly endless days of gray skies and incessant showers. In the south, on the other hand, storms are brought by the late summer *chubascos*, when the tropical Pacific, heated up by the intense summer temperatures, starts to evaporate water into the atmosphere forming immense centers of low pressure over the ocean—the dreaded tropical cyclones. Most cyclones travel westward, away from Mexican coasts, fueled by the warm waters of the equatorial currents, but some head for the continent where they hit the coastal communities like a true wrath of nature. In southern Baja California's arid deserts, these late

Tropical storm Julio unleashes its full force on Baja California Sur on August 25, 2008 (MODIS satellite image, Goddard Space Flight Center, NASA).

summer downpours are the only significant source of water. Like a blessing in disguise, they unleash their fury of winds and rains only to disappear shortly after, leaving behind a trail of destruction in the form of floods, eroded fields, flooded cities, and mudslides; but also leaving oases filled with life, refilled springs, water-saturated soils, and a flowering desert whose greenness will last three or four months until once again everything dries up and life resumes its daily arid routine.

The sea whose cold currents bring aridity to the earth is the same one that brings the late summer chubascos. In Baja California, the desert and the sea depend on one another; without oceanic variations there would be no humidity on land, and without the occasional water pulses that drench the desert, the rivers and lagoons would run dry, mangroves would decline, and the life cycles of the coast would lose the vital inflow of nutrients that arrive to the sea with each storm.

On the morning of August 24 black clouds began to gather on the horizon just at the time when one of our groups was starting a SCUBA dive in the San Marcial reef and another was beginning an immersion in the submersible to explore the deepest part of the seamount. Two hours later the forecast was clear: A tropical storm was approaching Los Cabos and would travel north afterwards. The 2008 downpours were starting early, before the end of August. Prudently, Captain Mora decided to cancel the rest of the day's activities and seek refuge in Puerto Escondido, where we arrived around five o'clock in the middle of heavy rainfall.

At dawn the next day the wind gradually picked up, and by ten in the morning the tropical storm Julio had unleashed its full force upon the coast. Water cascaded impressively down from the high cliffs of the Sierra de la Giganta, and ran in torrents and floods towards the coastal plains in a ritual that nature repeats year after year. Chubascos and hurricanes, source of destruction and ravages, are also part of the life cycle of this incredible ecosystem.

As tropical storm Julio approaches the Gulf of California, the DeepSee submersible seeks refuge in its landing dock on the mother boat. Photo © Lorenzo Rosenzweig.



After the fury of tropical storm Julio had passed, giant waterfalls kept descending from the cliffs of Sierra del Tabor replenishing aquifers and feeding the coastal wetlands and mangrove lagoons of the Gulf of California. Photo © Paula Ezcurra.



