The Jean-Marie Tjibaou Cultural Center is located on a narrow strip of land in New Caledonia, a former French colony in the South Pacific. The small island enjoys a temperate climate, with temperatures ranging from 61°F in August and 86°F in January/December (the mean temperature is a balmy 73°F). Humidity ranges throughout the year, but stays around 70%. There are four distinct seasons in New Caledonia, two rainy seasons at the equinoxes and two drier transition seasons. The hot season lasts from December to March and is the time when the island receives torrential rain and winds, sometimes cyclones.

According to the psychrometric chart, the climate of New Caledonia is best suited for natural ventilation. A combination of moderate-to-high temperatures and high humidity make air movement the most efficient way to keep a space cool and dry. Natural ventilation was a natural choice for Renzo Piano in his design, which sought to incorporate elements of Kanak architecture, the native people of New Caledonia. The cultural center was meant to celebrate their culture, but also to be an act of reconciliation between the island nation and the French. Piano chose to use a passive cooling design in the same way as the traditional Kanak building.

Cool, low wind coming off the lagoon is allowed through the permeable bamboo frame. This is the state of the wind 90% of the time. Before a cyclone, under high pressure, the waterproof parts of the building are closed and high pressure air is allowed to escape through the chimney. When there are no breezes coming off the water, the unique shape of the shell harnesses even the slightest breeze to pull hot, stale air out of the buildings. During a cyclone, under low pressure, the waterproof parts of the building are sealed and the chimney allows pressure to equalize.

There are many systems at work within the building. The inner glass shell has many louvres, which allow it to be insulated or ventilated as needed. Most of the time, ventilation is the most important factor in maintaining comfort so they are left open. When they are open, cool, moist air blows in off of a nearby lagoon. The chimneys are powered by the sun, which passes through the glass ceiling of the building, heating the air, causing it to rise up and out and drawing in cool air.