A TIDE TO RIDE

Tidal bores produce the world’s longest rides — far from the ocean.

BY JÉRÔME AUCAN

In a handful of places on earth, there is a rare phenomenon that occurs when ocean tides enter wide river mouths. The intersection of waters produces a series of waves — ridable waves. Scientists call this wave transformation a tidal bore. To understand how a tidal bore is created, first we must know the nature of tides.

A tide is composed of crests (peak or highest point of a wave) and troughs (lowest point of a wave), traveling at the surface of the ocean. Tides can extend hundreds of miles in length, reaching up to 50 feet high. They are a result of the gravitational forces of the moon, the sun, and the earth revolving around each other. Tides operate on a 12-hour period that corresponds with the gravitational revolutions. The strength of the tide also follows a two-week cycle that corresponds to the phases of the moon. Tides make the sea level go up and down throughout the various stages of the period, but usually don’t produce any breaking waves.

When tidal bores occur, it has to do with the tidal crest catching up with the tidal trough, very much in the same way as a breaking swell wave. When the tidal trough approaches the river mouth, it will start traveling up the river at a speed that varies depending on the depth of the river water. When the lowest point of the tide has traveled up the river, the peak of the tide approaches the river mouth. If the tide is high enough, and the river is wide and long, there will be a point where the crest will have almost caught up with the trough. This will produce what scientists term a hydraulic jump, which creates several shock waves that are only a few yards apart and can travel up a river for miles. These waves, rare as they are, are surfeable.

This strange transformation from tide to surfing wave has different names. It is called Pororoca on the Amazon River in Brazil, and Mascaret on the Garonne River in the Bordeaux region of France. Tidal bores have also been documented on the Yellow River in China, in shipping waters of India and Malaysia, in a little-known inlet in Alaska and in Nova Scotia, Canada. A tidal bore used to be common on the Thames River in London, before dams were built to contain it. Many cultures have myths that explain the periodic occurrence of tidal bores and the sometimes-catastrophic consequences they have had in the surrounding communities. For surfers, it’s the longest ride they’ll find far away from the ocean.