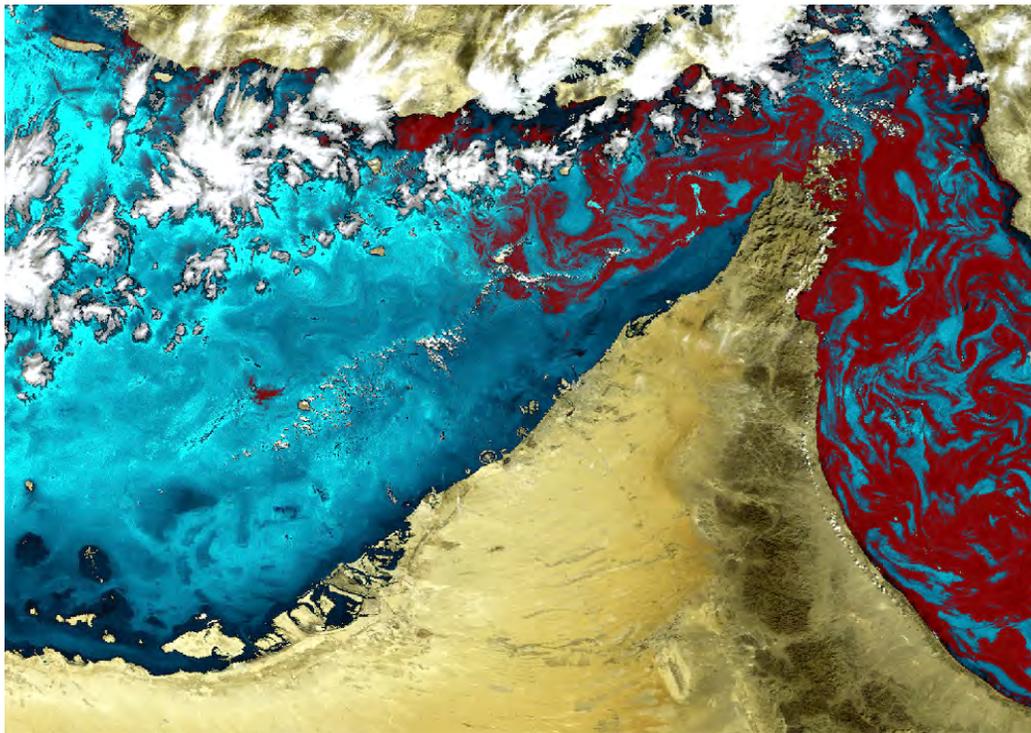


Red Tide and Harmful Algae Blooms (HABs)

Red Tide is a blanket of red algae that can gather on coastlines, beaches and open water that is caused by a massive explosion of algae reproduction and growth. This growth is triggered by warmer water temperatures and a readily available food source. One of the common causes of Red Tide is fertilizer and chemical runoff into streams and rivers and ultimately the ocean. This causes the ocean waters to become fertile environments that can feed rapid algae growth.



Full resolution color image of the Persian Gulf surrounding the UAE as captured by the European Space Agency's Envisat satellite and MERIS instrumentation on November 22, 2008.

Algae occurs in all waters naturally and is a critical component in the "circle of life". Phytoplankton (algae) provide a much needed food source for other aquatic organisms. It is only in times of rapid and explosive growth and reproduction that these microscopic organisms get out of

balance with their normal environment and cause problems. The name Red Tide comes from types of algae that can become so numerous in marine environments that the waters turn a visible red color.

Most algae have a life cycle similar to many land based plants. They are either in a "seed" stage, dormant or a growing very slowly stage that normally occurs in colder, low light winter / off season conditions. However, when warmer "summer" temperatures come with the additional sunlight, plants go through a rapid growth and reproductive stage.

The same is true with algae, they have off seasons (even in the tropics). However, when water temperatures increase, hours of daylight are extended and water conditions become right, algae can multiply very quickly. With the addition of a liquid chemical fertilizer slurry of organic chemicals in the water, the algae populations can explode and become so high that the water can become toxic and the sheer numbers of algae can physically clog water intake pipes and filtration screens on desalination plants and factories. This is the process that leads to "Red Tide" and other HBA's.



A dramatic 'Red Tide' algae bloom at Leigh, near Cape Rodney, New Zealand. New Zealand's National Institute of Water and Atmospheric Research. Photo by M. Godfrey.

The algae can also become so plentiful in the upper layers of water that they effectively block sunlight from traveling further down to other plant and animal life that depends on the light to maintain life functions. Without the natural light, the plant life and animal life either dies or moves to another area with more light.

Red Tide is just one of many HBA's that occur around the globe. Red Tide only occurs in salt or brackish water and in warmer waters. There are also other algae that can form HBA's in colder ocean climates and fresh water algae such as blue-green algae that can be very problematic in freshwater lakes and ponds.

