This image of Princess Charlotte Bay, which lies along the east coast of Queensland's Cape York Peninsula in Australia, was acquired by Landsat 8's Operational Land Imager on April 20, 2013. The scene shows Claremont Isles National Park, where coastal waters are protected as part of the Great Barrier Reef World Heritage Site.

NASA

IMAGERY IN THE NEWS

Landsat Eyes Fragile Coral Reefs from Space

Landsat satellites were designed to gather images of Earth's land surfaces. During the last four decades, however, the satellites also have been useful for observing blue parts of the planet.

Landsat particularly has enriched the study of coral reefs. Scientists used earlier generations of Landsats to create a global image library of coral reefs. They also have been able to do time-series assessments of the health of some reefs.

Now, with the recent launch of Landsat 8, coral reef studies will be more robust than ever. Landsat 8 has better spatial resolution and greater sensitivity to brightness and color than previous missions. The Operational Land Imager image above uses a combination of red, green and shortwave blue light—a special band of wavelengths (0.43–0.45 micrometers) that scientists call "coastal blue"—to better distinguish features in coastal waters.

Near the coast, weather patterns, natural aerosols, air pollutants, waves and currents, and floating material can distort, reflect and refract light signals. The coastal blue band can be compared with other wavelengths to remove this environmental "noise" and better tease out fine structures. The blue band also is similar to wavelengths observed by previous NASA satellite sensors, which lets researchers extend scientific records that go back decades.

"The remote location and massive size of reefs make them an ideal subject for Landsat remote sensing," says Phillip Dustan, a marine biologist at the College of Charleston (South Carolina) who has worked with Landsat to map reefs around the world. "Reef management benefits from satellite imagery through mapping, change analysis and threat assessment. While a single image can be used to provide mapping data, the long-term dataset provided by Landsat makes for powerful time series of images that can probe the dynamics of ecological change."