



May 5, 2000



April 19, 2003



Low Water in Lake Mead

Since February 1935, the Hoover Dam has been holding back the waters of the Colorado River, creating the largest reservoir in the United States, Lake Mead. Located at the north-east edge of the Mojave Desert, about 25 miles east of Las Vegas, Nevada, the enormous reservoir holds enough water to flood the entire state of New York under a foot of water.

The reservoir provides Colorado River water to places as far away as San Diego, California. The allocation of such a precious resource to an arid region has been controversial for decades and will only become more so as human populations expand and demand increases.

About 96% of the water in Lake Mead is from melted snow that falls in Colorado, Utah, New Mexico, and Wyoming. The past two years have brought severe drought to the western states, and Colorado River runoff has been far below normal during this period. The effect is a drop in lake levels that is visible from NASA satellites. One of NASA's Earth Science Enterprise research focus areas is the global water and energy cycle governing the precipitation, evaporation, storage and runoff of water. The Earth Science Enterprise Applications Program facilitates the practical use of this knowledge by national and regional decision makers for better management of fresh water resources.

This pair of images shows the Boulder, Virgin, and Gregg basins that comprise the southern portion of Lake Mead. The top image shows the area on May 3, 2000; the bottom image is from April 19, 2003. Water appears dark blue in the images, and the landscape is in shades of brown, tan, and gray.

Noticeable differences in water levels can be seen in the area surrounding Saddle Island in the Boulder Basin. Boulder Island, Little Boulder Island, and Rock Island are barely visible in the May 5, 2000 scene but appear in the April 19, 2003 scene. In the Virgin Basin, water levels surrounding Middle Point Island are lower in the April 19, 2003 scene, as evidenced by the island's increased surface area. In the Gregg Basin, water levels in the Bradley Bay and Twin Coves regions have decreased, leaving the area almost completely dry. Such changes are especially dramatic when you consider the fact that these lake-filled canyons are very narrow and deep; small changes in lake surface area mean an enormous change in the amount of water present.

Both images come from observations from the Landsat 7 Enhanced Thematic Mapper Plus instrument. The color scheme uses observations taken by the satellite in the near-infrared (the part of the electromagnetic spectrum with wavelengths just a little longer than red light) to make the difference between water, land, and vegetation very obvious.

Data courtesy University of Maryland Global Land Cover Facility and Landsat Project Science Office at NASA Goddard Space Flight Center.

