

# **An Update on the Alabama Underwater Forest: A Time Capsule from the Last Ice Age**

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## **Abstract**

In 2004, Hurricane Ivan passed through the northern Gulf of Mexico and made landfall as a category 3 hurricane in Alabama, exposing what we now know as the Alabama Underwater Forest. This site is a well-preserved Late Pleistocene (dated to 76-52 ka) terrestrial landform that exists on the northern Gulf of Mexico continental shelf, where stumps of bald cypress trees are now exposed on the seafloor. Research into the origins of these remarkably well-preserved tree stumps began in 2012 with bathymetry, side scan, and subbottom data being collected in 2015 and 2016. Then, in 2020 Hurricane Sally passed directly over the same area and made landfall as a category 2 hurricane. Following Sally several more exposed tree stump locations were identified in the initial study area. In 2021, a third comprehensive geophysical survey was completed to 1) reoccupy the initial exposure site to determine changes since Sally, 2) expand the survey area to adjacent sites with similar bathymetric characteristics to locate new stump exposures, and 3) verify and document the locations of newly discovered exposed trees. Using bathymetry, side scan, and subbottom sonar data, this study compares the 2015-2016 and 2021 data sets as well as interprets new data collected at a similar isobath, both to the east and west of the original site. Results show that the preserved Pleistocene surface is more widespread than initially assumed, is presenting in a predictable pattern along the isobath, and is impacted by shore-oblique Holocene sand ridges.