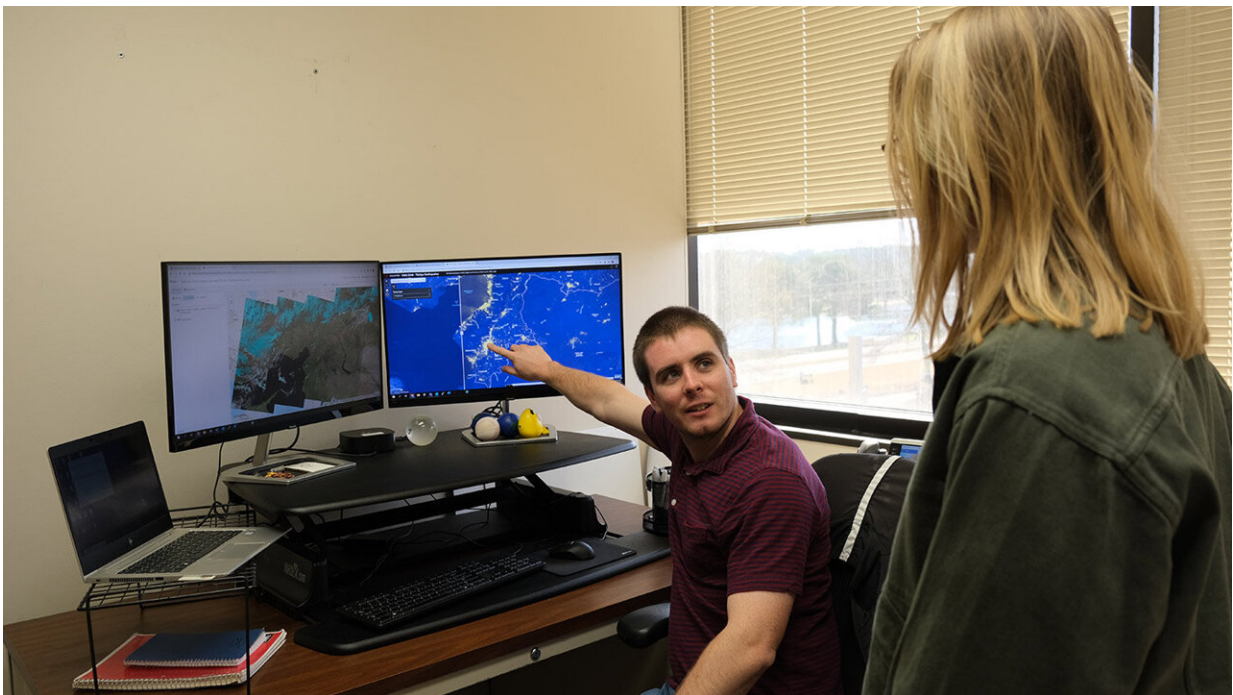


# Researchers use Earth observations to identify damage, impacts from earthquakes in Turkey

March 29 2023, by Liz Junod

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UAH ESSC Principal Investigator Ronan Lucey (center) and UAH ESSC Research Associate Kaylee Sharp (right) assess power outages in Turkey from the earthquakes that occurred on February 6, 2023. Credit: Liz Junod

The country of Turkey is still reeling from a 7.8 and a 7.5 magnitude earthquake and thousands of aftershocks that occurred in February,

causing widespread destruction to infrastructure and human life. To aid response and recovery efforts, two researchers from the University of Alabama in Huntsville (UAH) Earth System Science Center (ESSC) are using Earth observations to help those on the ground in Turkey make informed decisions.

"Earthquakes provide no advance warning of when or where they will occur," says Ronan Lucey, Principal Investigator in the ESSC at UAH, a part of The University of Alabama System. "People don't have time to prepare. Search and rescue efforts need resources to help assess where damage and impact from these earthquakes occurred."

Lucey, along with ESSC Research Associate Kaylee Sharp, work with NASA scientists from the Marshall Space Flight Center (MSFC) Earth Science Branch through a cooperative agreement between MSFC and UAH. Known as the NASA Disasters Program, the initiative collaborates with domestic and foreign government agencies, non-profits and universities to demonstrate the value of utilizing free, open-source Earth observation-derived products for informed decision making during disastrous events.

"The NASA Disaster Program creates derived products from Earth observation data that are freely available to the public in [geographic information systems](#) (GIS) format," Lucey explains. "NASA supports open science, education and making the information more accessible."

Using [satellite data](#) from clear, cloud-free days before and after the earthquakes, Lucey and Sharp have produced enhanced optical data products derived from NASA's Landsat 8 and 9 and the European Space Agency's Sentinel-2 satellites in conjunction with other high-resolution imagery sources to support the program. These data provide situational awareness of large-scale changes, and the imagery can also support other important efforts, such as the detection of landslides and flooding.

The two researchers also created an interactive slider tool available on the NASA Disasters Program website to intuitively highlight the difference in nighttime lights as seen from the NASA Visible Infrared Imaging Radiometer Suite instrument aboard the Suomi National Polar-orbiting Partnership satellite before and after the earthquakes in the most heavily impacted area of Turkey.

The work of the NASA Disasters Program, including contributions from the UAH team, will continue beyond the initial response phase of the disaster. The program remains in close contact with end users and stakeholders utilizing NASA's Earth Observation data products to further their efforts into the recovery phase of the event.

"Needs are constantly evolving as the response goes on," Lucey notes. "Search and rescue efforts are transitioning to studying the long-term effects these earthquakes will have on the country of Turkey."

Provided by University of Alabama in Huntsville

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