

Geoscience Innovating for Earth and People

Drones for Earth Science

Unmanned aerial vehicles (UAVs), also known as drones, can be utilized in geoscience work and are part of unmanned aerial systems (UAS). Drones can take pictures or have equipment attached to collect other data or samples. They are usually flown on flight paths that are planned out for specific reasons. As you look at the images, think about why and how each drone is being used.



A drone equipped with a multispectral sensor flies over a Nebraska cornfield. It is capturing images to generate a vegetation index map. Credit: Laura Thompson, UNL



USGS personnel prepare for a UAS take-off at night in Hawaii. Credit: Chris Holmquist-Johnson, USGS Fort Collins Science Center



A magnetic survey is conducted in Colorado using a UAS-enabled magnetometer to locate buried orphaned wells and buried pipelines. Credit: Nathan Campbell, EDCON-PRJ. Jack Davis, Juniper Unmanned



A fixed-wing drone named *Vanilla*, flies over sea ice in the Arctic to survey snow depths under NASA ICESat-2 ground tracks. Credit: Toby Woods, 70 North LLC



Engineers observe an autonomous UAV surveying an underground mine. Credit: Richard Bishop, SME



Interested in piloting a drone? Learn more about the requirements and

desirable skills to become a drone pilot at Firsthand (<https://bit.ly/ESW-dronepilot>) and the Federal Aviation Administration (FAA, <https://bit.ly/40MHUo9>). Also look into drone piloting programs, such as Alcorn State University's drone certification classes, which help bring drone technology to rural areas and to small farmers and ranchers. Typically, drone pilots have degrees in aviation, engineering, or unmanned aircraft systems operations.

Above, an Alcorn State University student pilots a drone during a drone-certification course. Credit: Alcorn State School of Agriculture and Applied Sciences

At right, a drone survey is conducted near Castleton Tower, Utah, to create a 3-dimensional outcrop model and investigate stratigraphic questions. Credit: Nicholas Perez for AGI's 2017 Life as a Geoscientist contest

www.earthsciweek.org

©2023 American Geosciences Institute

AGI american geosciences institute
connecting earth, science, and people

EARTH SCIENCE WEEK