Drones for Teaching: Taking Fieldwork to a (Literally) Higher Level

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http://bit.ly/STC2019_drones

Expanding availability of drones (UAVs, UASs)

“Hot” consumer item in recent years

- Decreasing price
- Increasing capabilities
- Increasing ease of operation
- Cameras and other sensors

Educational uses of drones

Aeronautics
Robotics
Coding

Agriculture
Archeology
Wildlife ecology
GIS
Geology

Civil engineering
Construction
Campus facilities

Filmmaking
Dance
Theater

FAA resources

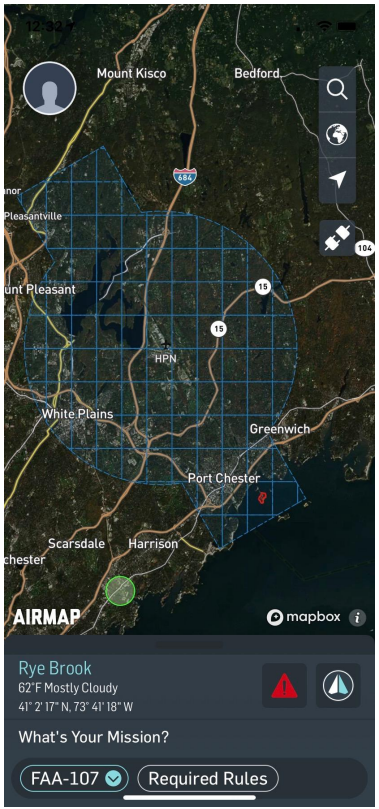
Getting Started

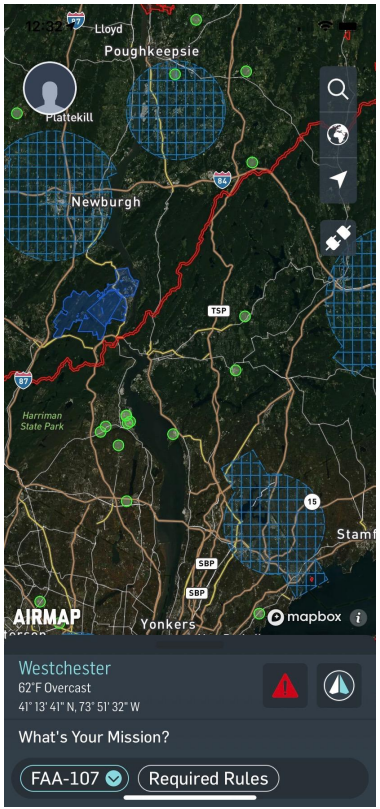
Register Your Drone

User Identification Tool

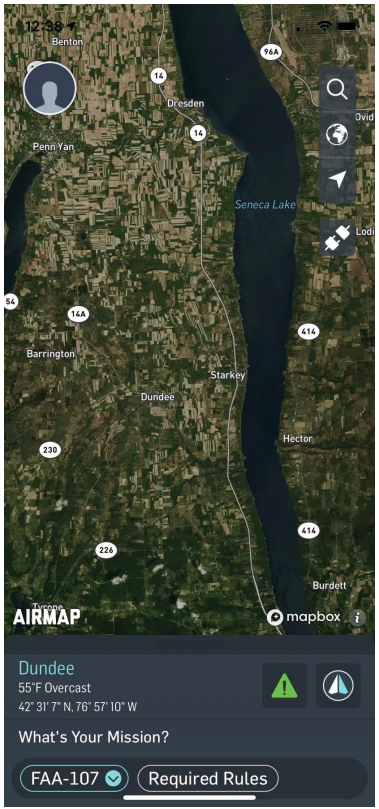
Become a Drone Pilot

Flight restrictions





AirMap demo



The drone I’ve been using

- Quadcopter
- Gimbal-mounted camera
- Controller
- Battery packs
- Flight times

ENV 2720 Geology

- “Sophomore-level”
- ENV majors
- Fall 2016
- Lecture / lab course
  - Field component important
  - How to use drones to support fieldwork?

Field study of formations and landforms

Palisades on the Hudson - access issues

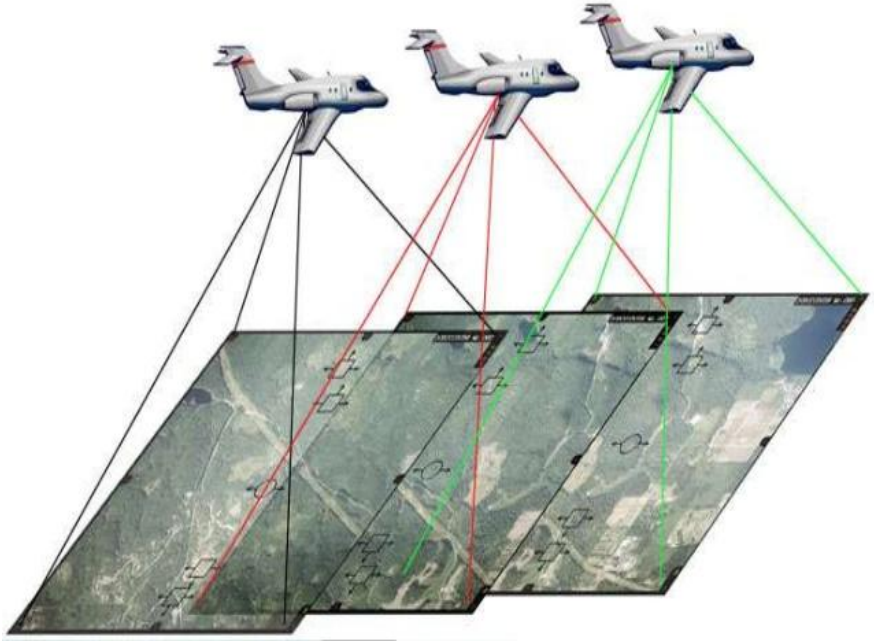
Access issues 2

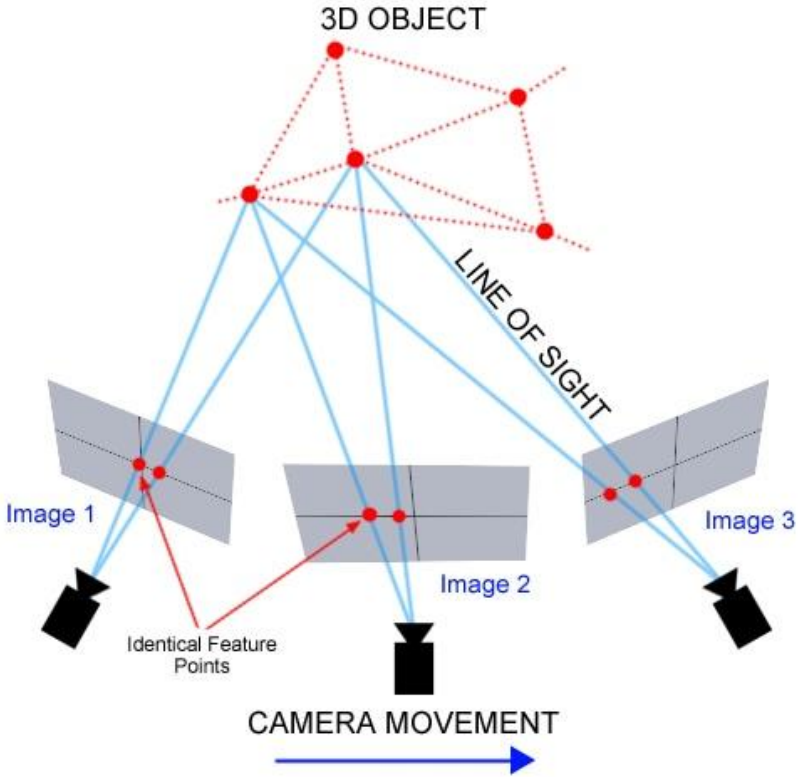
Unique perspectives

More perspective

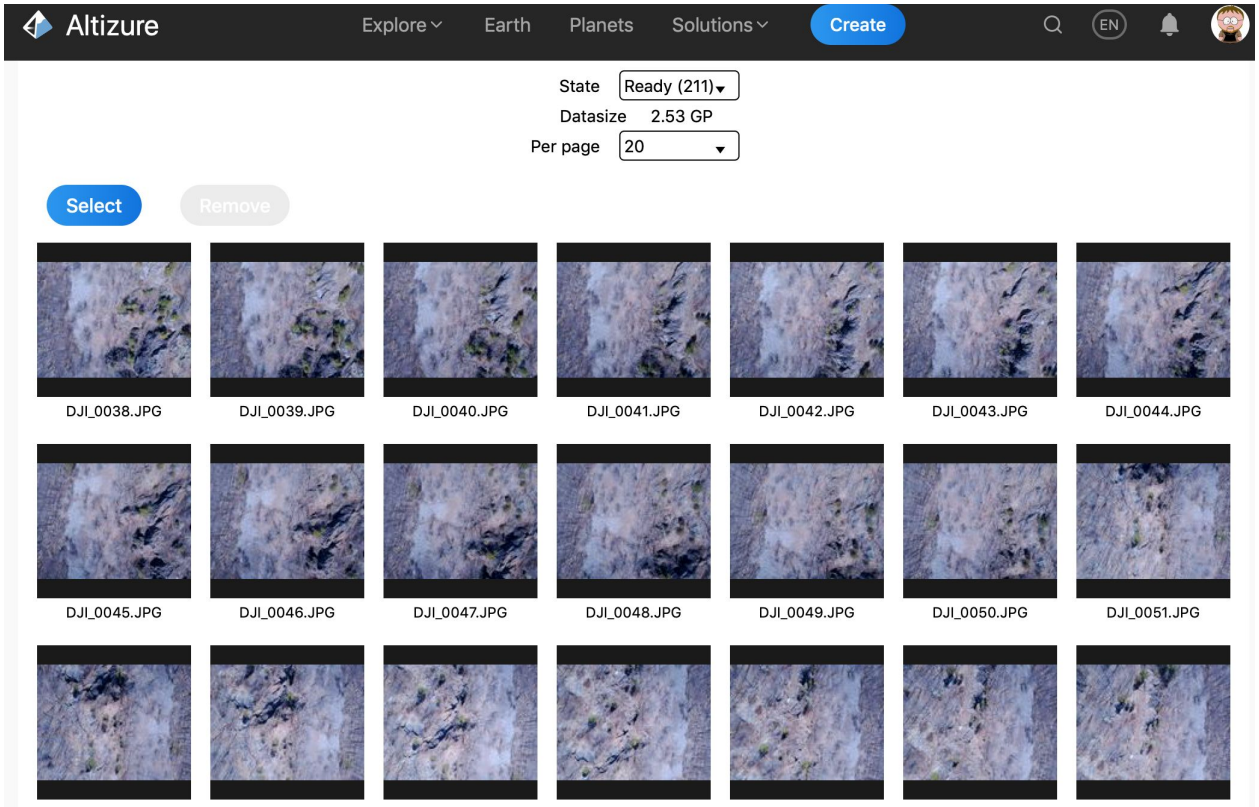
(photo collection)

Photogrammetry

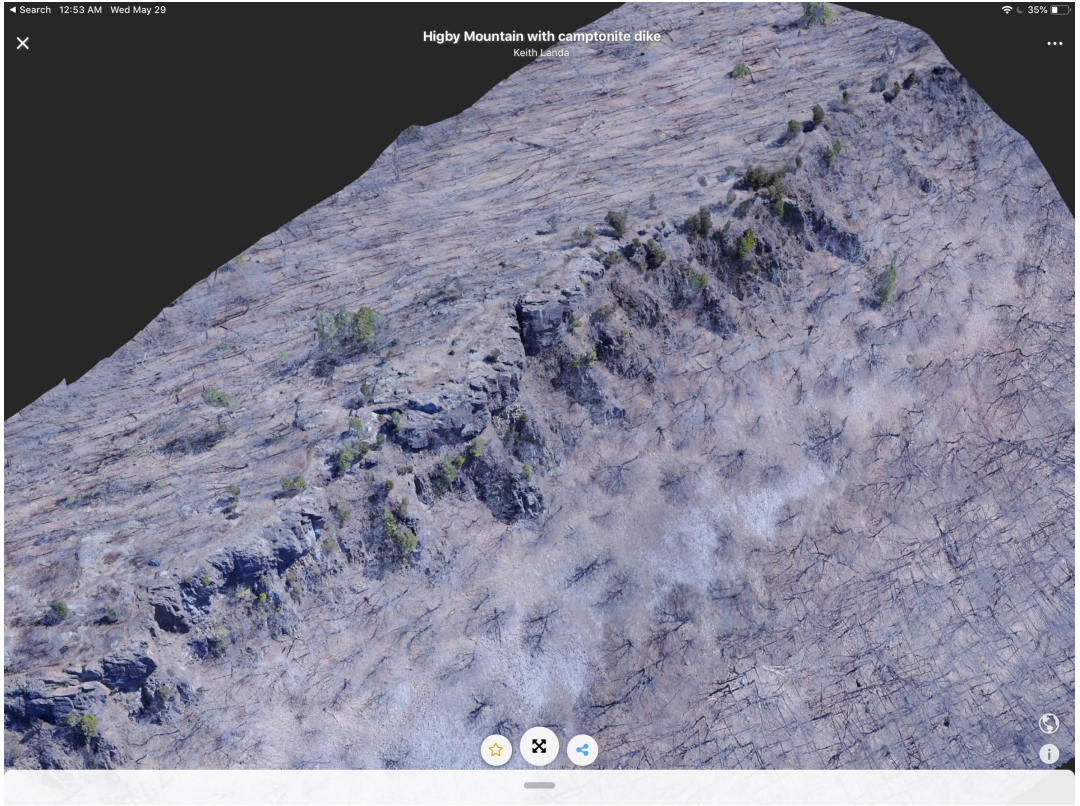




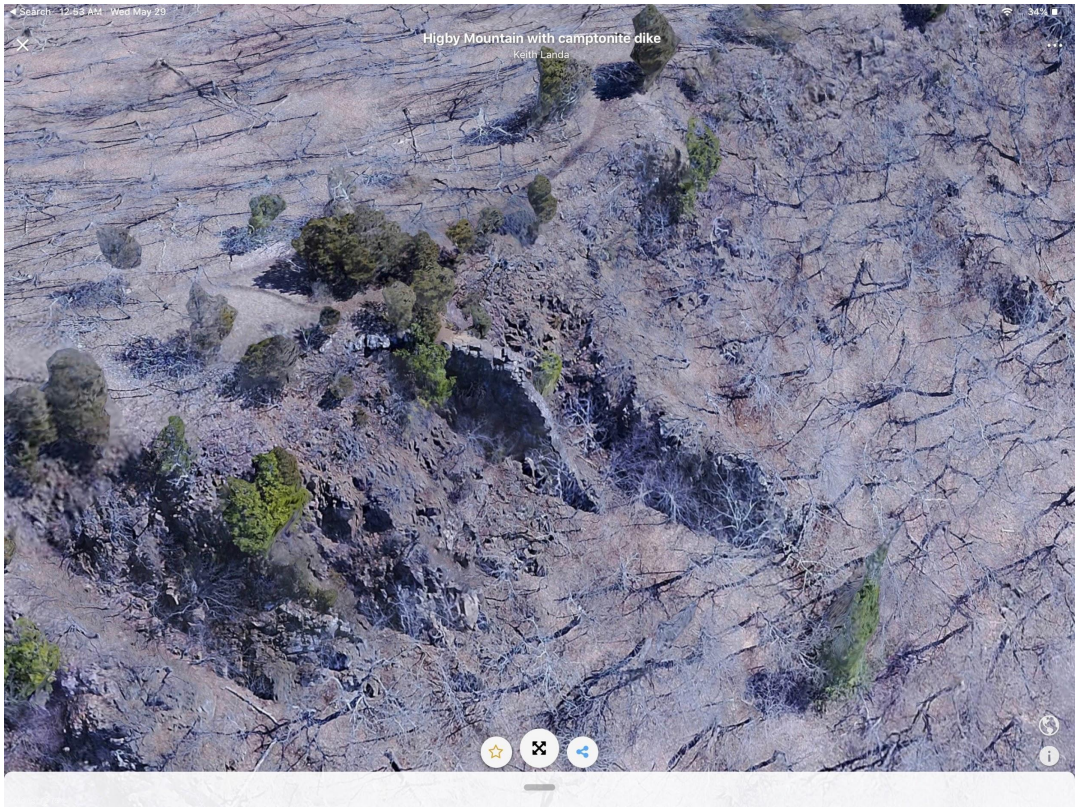
Higby Mountain example - raw images



Higby Mountain example - 3D model



Higby Mountain example - camptonite dike



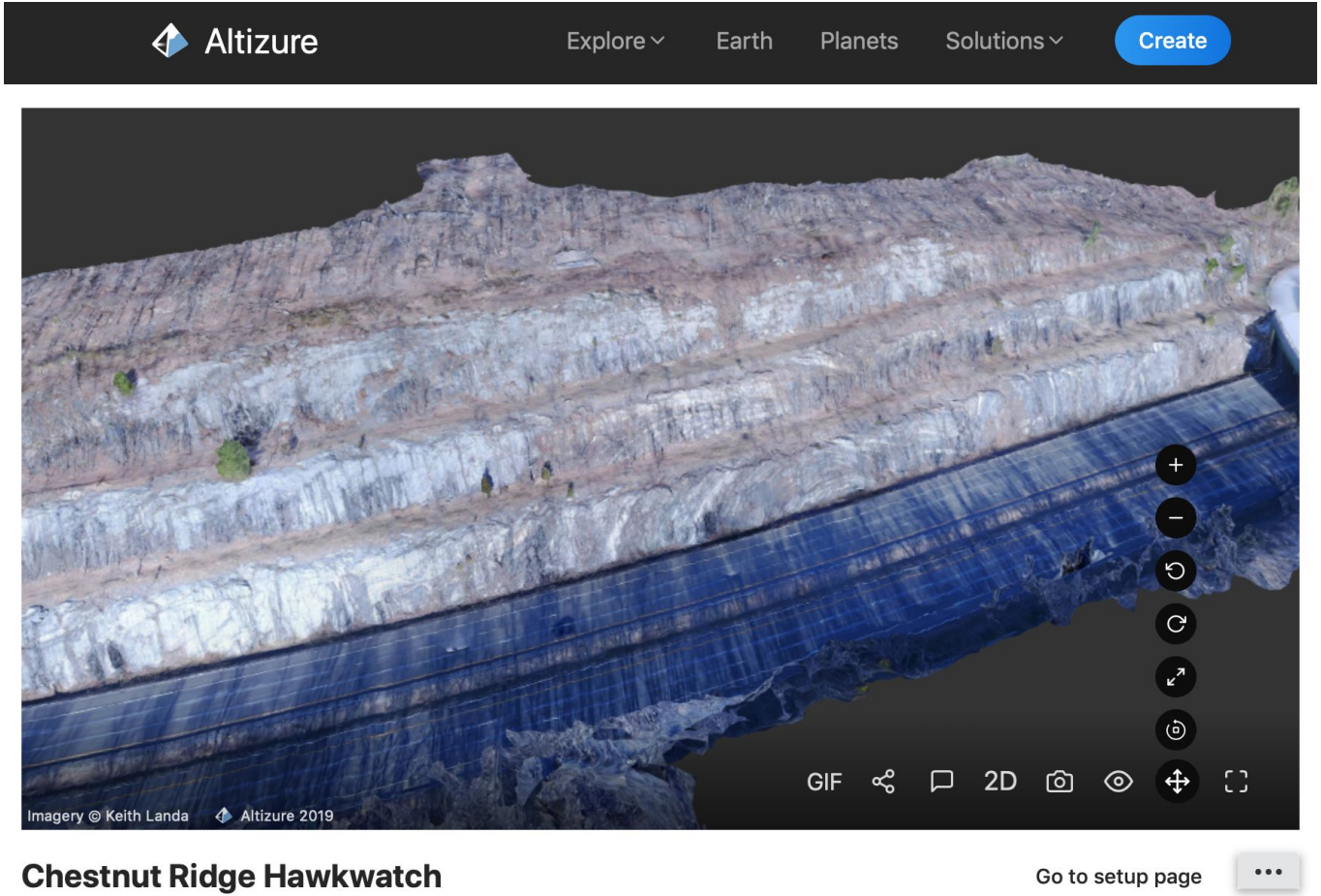
Altizure demo

Web vs. app

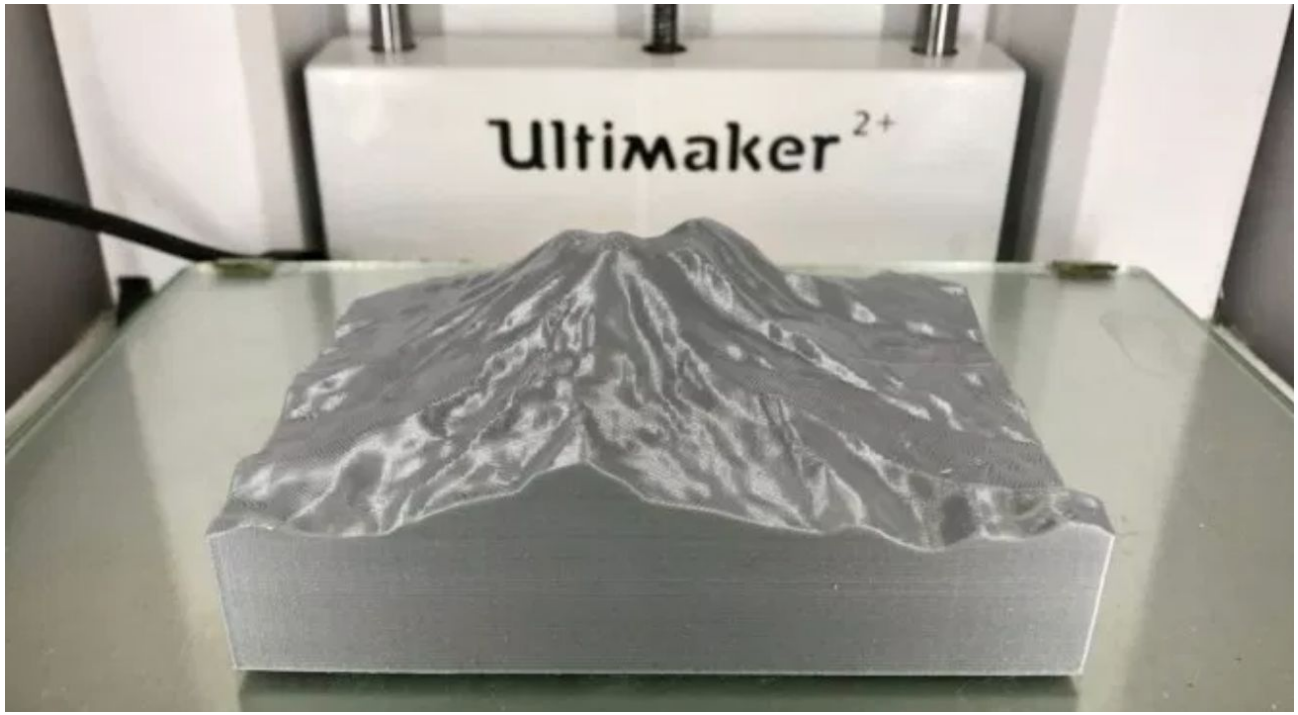
Higby Mountain model

Chestnut Ridge model

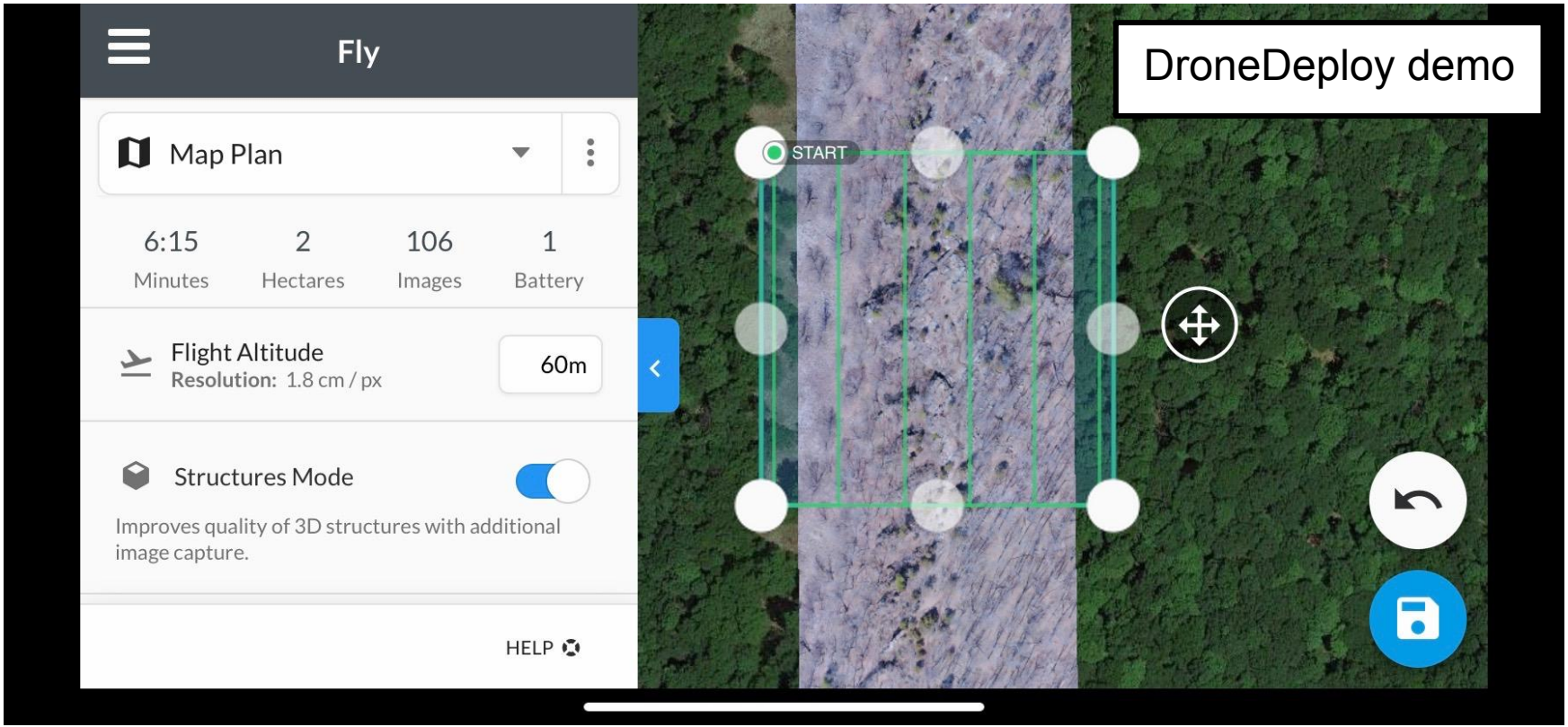
I-684 roadcut



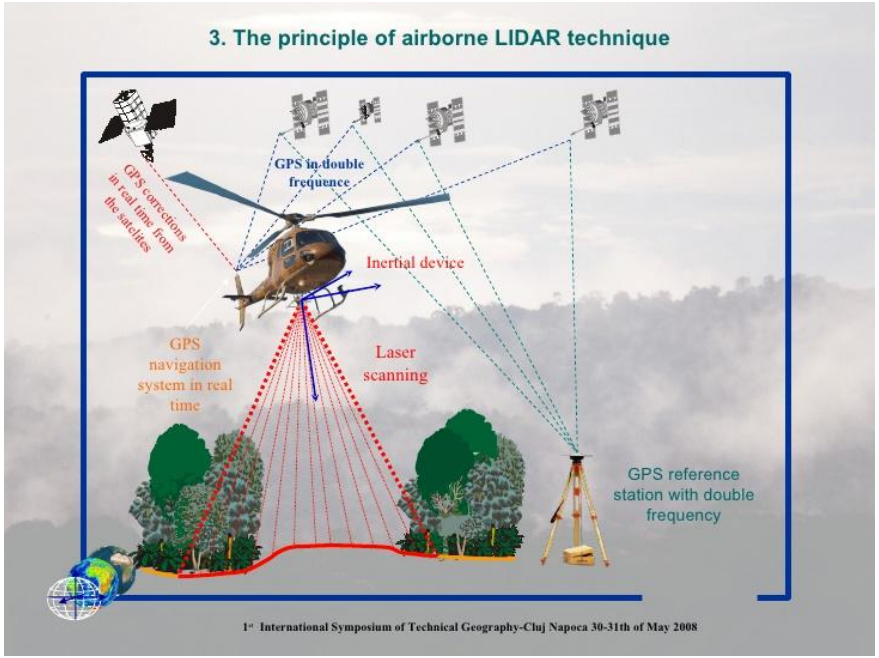
3D Printout of DEMs

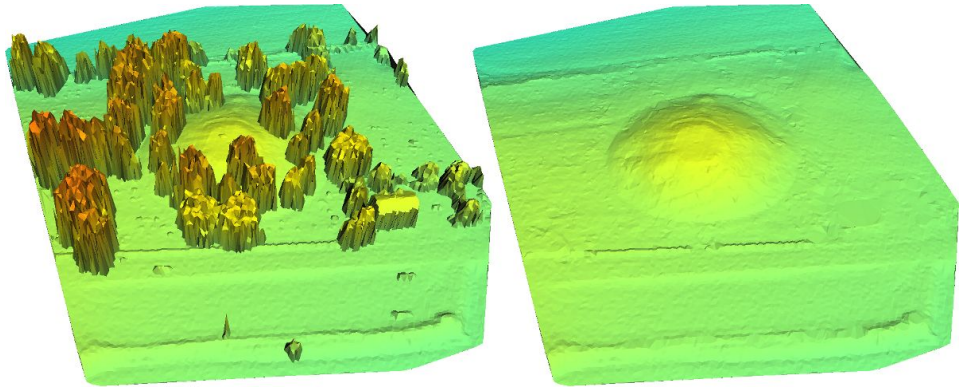


Flight control apps

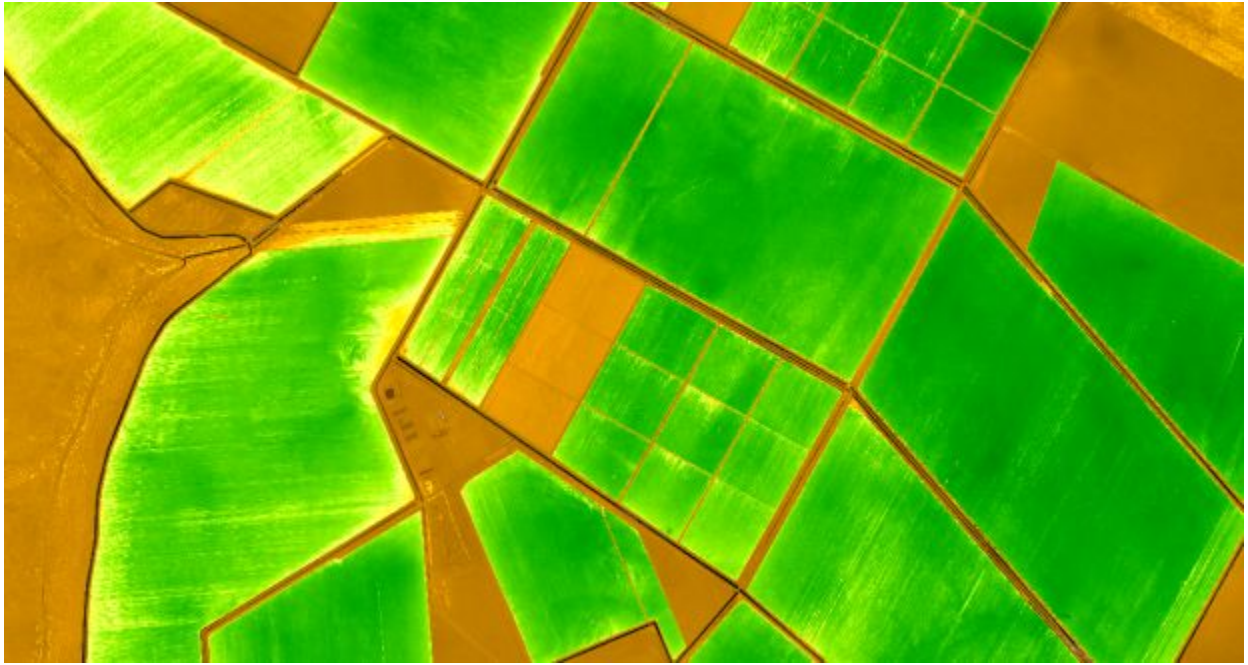


Lidar mapping





Multispectral mapping



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