

Intro to Agriculture Drones

AVI 1200

UAS FLIGHT OPERATIONS

DJI MAVIC MINI AND PHANTOM 4

UAS HISTORY, TERMINOLOGY, AG SENSORS, PRE-FLIGHT PROCEDURES

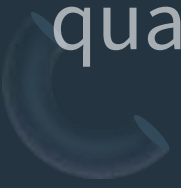


FLIGHT OPS OVERVIEW

- UAS technology
- UAS platform orientation
 - Platforms, components, operating parameters
 - Control unit
 - Sensors
 - Crew



FLIGHT OPS GOALS AND OBJECTIVES

- At the end of this flight ops section you will be able to:
 - Talk the talk (UAS terminology)
 - Describe components and how they operate
 - Describe UAS platforms and flight characteristics
 - Describe normal and emergency procedures for UAS quadcopter aircraft
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FLIGHT OPS GOALS AND OBJECTIVES

- At the end of this flight ops section you will be able to:
- Describe applicable regulations, safety requirements, and weather effects for flying UAS aircraft
- Fly DJI Mavic mini and phantom 4 aircraft safely and proficiently
- Develop, brief, fly, and de-brief a mission plan.



FLIGHT OPS – SOME QUESTIONS TO ANSWER

- What is an unmanned aerial system?
- Why do we use UAS?
- How does flying a UAS differ from flying a manned aircraft?
- What is a mission plan?
- How will i benefit by using a UAS?



FLIGHT OPERATIONS

- What is a UAS?
- UAS – any sensor carrying or payload delivery platform that operates above the earth's surface or independent of mechanical support from the surface that does not have an operator or pilot on board

FLIGHT OPERATIONS

- What is a UAS?
- Early UAS aircraft originated in China-
 - Kites
 - Balloons
 - Chinese general Zhuge Liang (180-234 ad)

FLIGHT OPERATIONS

- Confusion in what unmanned aircraft systems should be called-
 - Aerial torpedos
 - Radio controlled aircraft (RCA)
 - Remotely piloted vehicle (RPV)
 - Autonomous control
 - Pilotless vehicle
 - Unmanned aerial vehicle (UAV)
 - Unmanned aerial system (UAS)
 - Drone

FLIGHT OPERATIONS

- The faa has added to the confusion with their official titles-
 - UAS – unmanned aerial systems - 2016
 - UAS – unmanned aircraft systems - 2019
 - UAS – uncrewed aircraft systems - 2022




FLIGHT OPERATIONS

- UAS – unmanned aircraft systems
 - The system has six elements – it's not just the aircraft
 - Human component – pilot/crew
 - The aircraft
 - Payload
 - Command and control
 - Data link/communications
 - Launch and recovery



DRONES IN AGRICULTURE

- In Agriculture, we use drones to:
 - Collect images
 - Collect samples
 - Collect data points
 - Spray chemicals
 - Spread seed
 - Crop Scouting
 - Crop Monitoring
 - Herding
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DJI Agras Platform



DJI Agras Platform



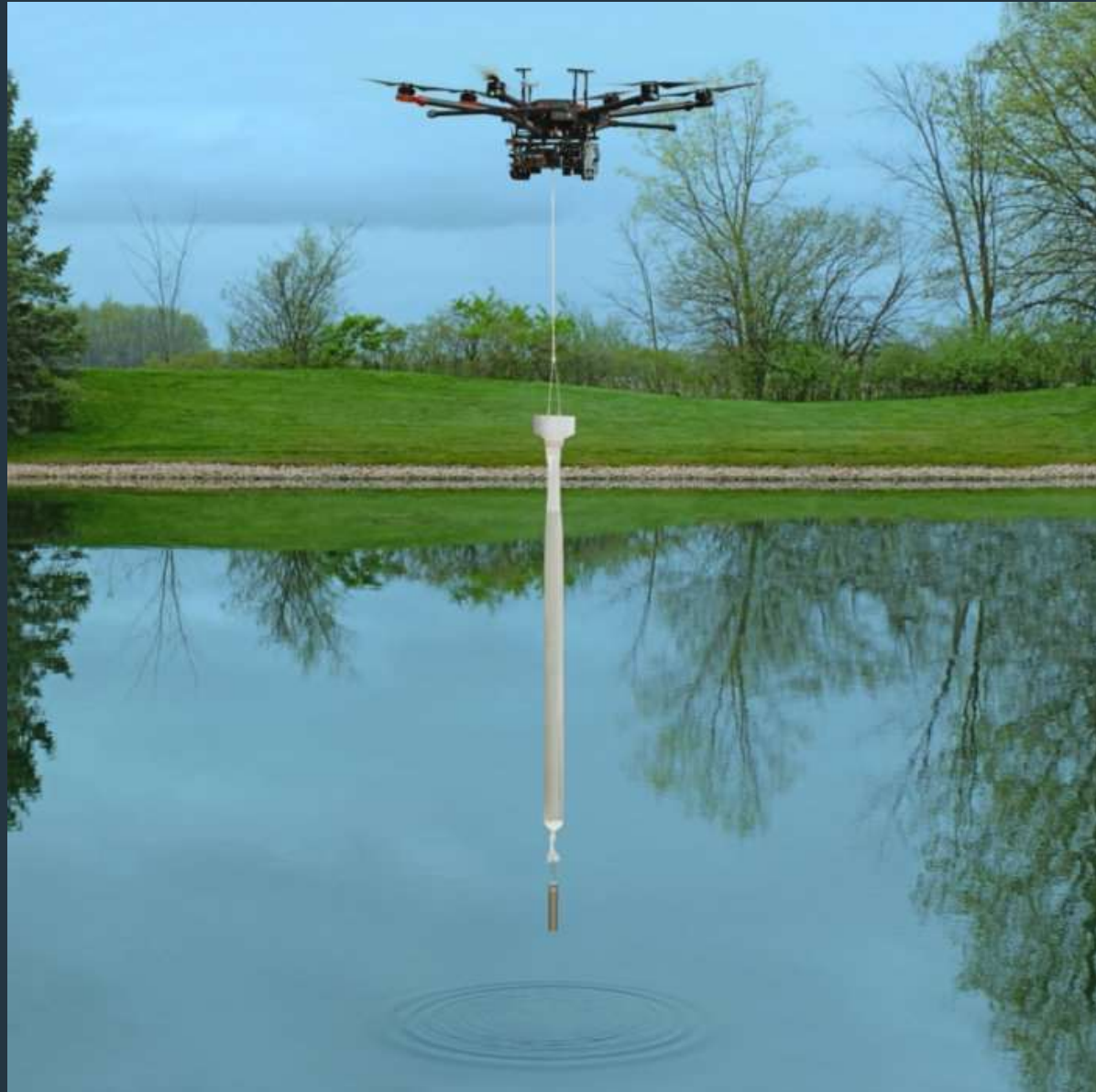
Its 40-liter tank significantly improves spreading efficiency

DJI Mavic Enterprise

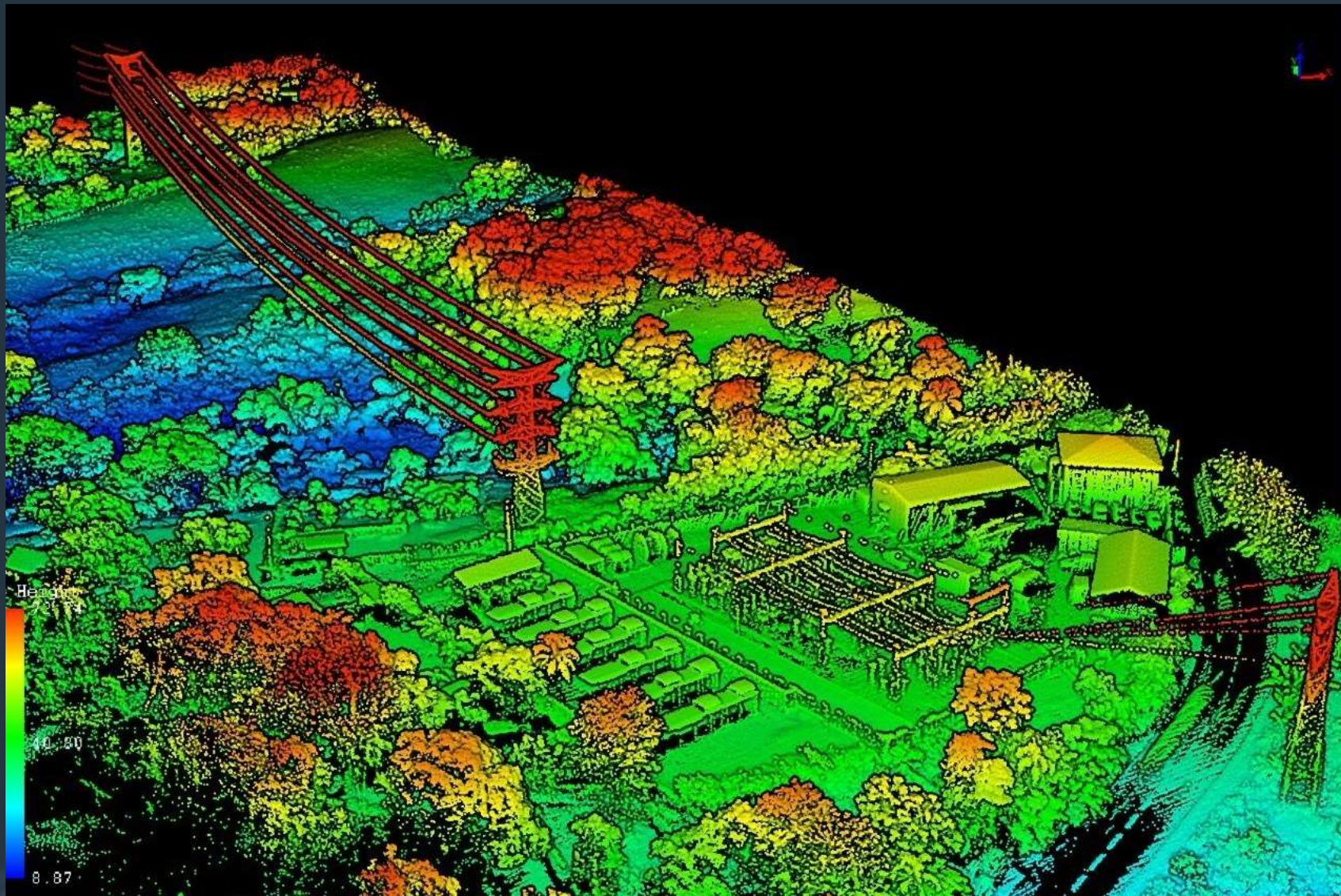


DJI Phantom 4 Multispectral with RTK









Part 137...



Part 137...

- Under 14 CFR Part 137, the following aircraft operations are considered agricultural by nature:
 - Dispensing any [economic poison](#):
 - The FAA defines an economic poison as any substance that acts as a pesticide, plant regulator, or defoliant.
 - The FAA considers chemicals used as disinfectants for viruses to fall in the category of economic poisons as defined in [part 137.3](#).
 - Dispensing any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control.
 - Engaging in dispensing activities directly affecting agriculture, horticulture, or forest preservation.
 - Note: Dispensing of live insects is not included.

