Utilizing Drone Technology to Capture NJ Coastal Aerial Imagery


(2)


(1)


(1)


(2)

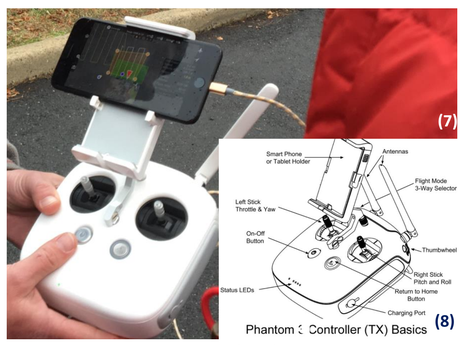
(1)

An **Unmanned Aircraft System (UAS)** or **Drone**, is an aircraft without a human pilot onboard. The UAS is controlled from an operator on the ground. **Drone Applications** include Recreational Use, First Person View, Aerial Photography and Videography, Infrastructure Inspections, Surveying and Mapping, Swarm Intelligence, Science and Research, Search and Rescue, Security and Surveillance, Precision Agriculture, Cargo Systems, Construction, Mining and Aggregates.(9)

Coastal Management's Drone Specifications: DJI Phantom 4 Pro: Weight 1388 g; Max Speed 45 mph; Flight Time 28 mins; Camera 4k, 60 fps; Obstacle Avoid –Yes; Return Home – Yes.(8)

Done Aerial Photography is extremely valuable for coastal and environmental resource management, monitoring and mapping. Aerial photograph that will be acquired from drone monitoring will fill some aerial photography data gaps. Drone aerial photography can be taken within **Tide Stages** and **Leaf On Periods**. Drones can reach areas that are not readily or easily accessible to large scale aerial photo capture projects. **Current Drone Coastal Management Projects** include monitoring the following: 1) Living Shoreline Projects, 2) Shoreline Erosion, 3) Marsh Health, 4) Sea Level Change, 5) Dredge Material Beneficial Use, 6) Coastal Post Storm Assessment, 7) Intertidal and Subtidal Zones. **Future Drone Coastal Management Projects** will utilize data process outputs of 3D Textured Mesh for Visualization, Volumetric Measurements, Change Detection for Built and Natural Environments and Identification of Plant Species.

Drone Systems

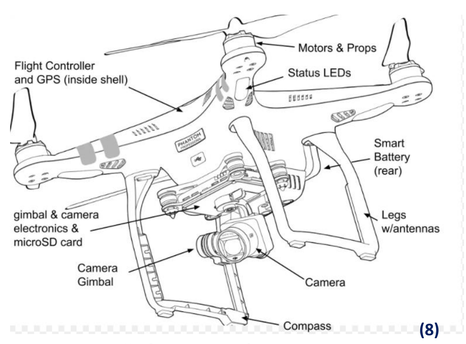


(7) (8)

Transmitter with I phone

(7)

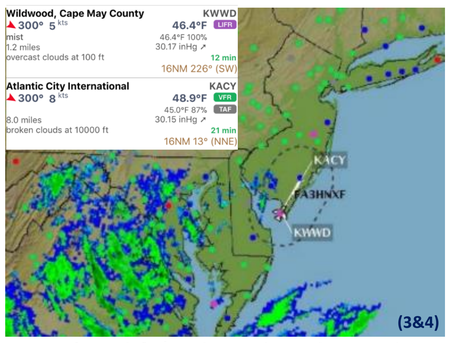
DJI Go Software Flight Control Interface



(8)

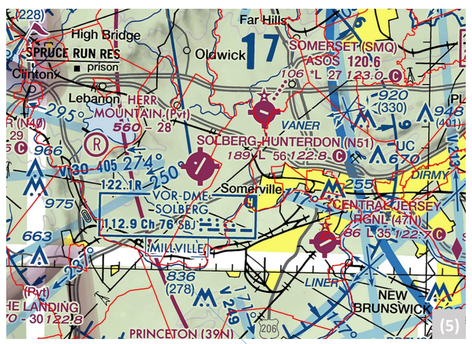
DJI Phantom Basic Parts

Flight Mission Planning



(3&4)

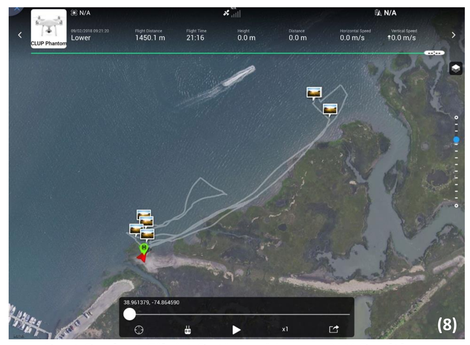
Weather Briefs / Notice to Airmen (NOTAMs)



(5)

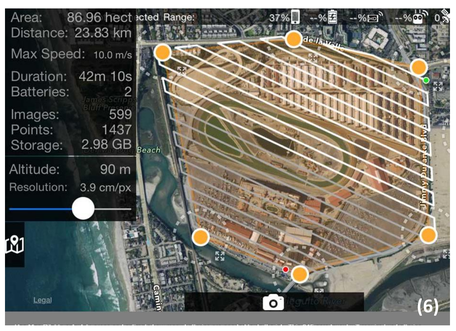
Airspace Class / Temporary Flight Restrictions (TFRs)

Post Process Data Software


(8)

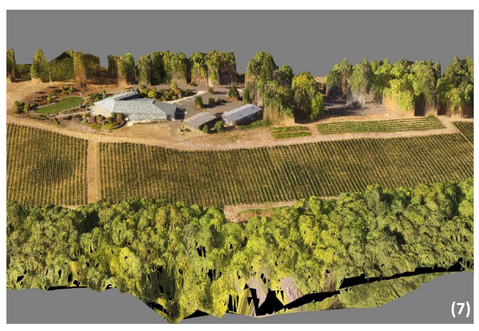
Post Project Flight Path and Image X,Y Positions

Future Application Examples



(6)

Map Pilot for DJI Autonomous Flight Programing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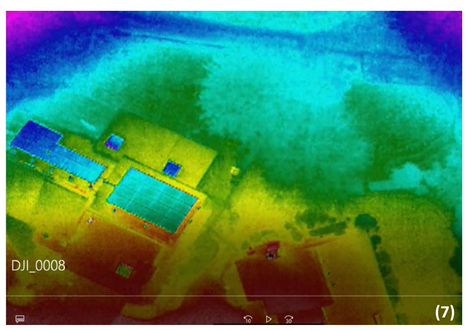
3D Visualization



(7)

Thermal and Multi Spectral Imagery

CURRENT DRONE IMAGERY PROJECTS

Marsh Health Monitoring - Little Egg Harbor Twp., Ocean - Great Bay Blvd.


(2)

Drone Oblique Image


(2)

Drone Nadir Image

Ecological and Living Shoreline Project Monitoring – Stone Harbor Boro., Cape May - Ring Island and Atlantic City, Atlantic - Gardner's Basin


(1)

Drone Oblique Image

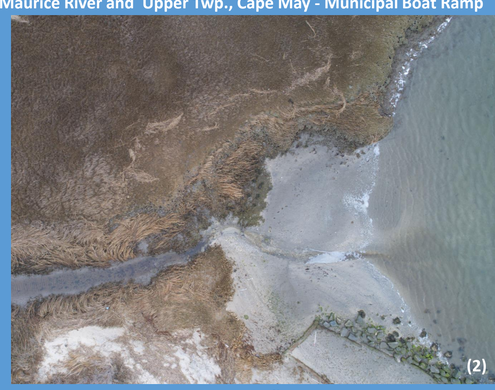

(1)

Drone Nadir Image

Shoreline Erosion Monitoring – Maurice River Twp., Cumberland - Maurice River and Upper Twp., Cape May - Municipal Boat Ramp


(1)

Drone Oblique Image


(2)

Drone Nadir Image

Flying under the FAA's Small UAS Rule (Part 107) (5)

- Fly for recreational or commercial use
- Register your drone
- Get a Remote Pilot Certificate from the FAA
- Fly a drone under 55 lbs.
- Fly within visual-line-of-sight*
- Don't fly near other aircraft or over people*
- Don't fly in controlled airspace near airports without FAA permission*
- Fly only during daylight or civil twilight, at or below 400 feet*

* These rules are subject to waiver.

Drone Flight Safety

- Continuous Risk Assessments
- Aeronautical Decision Making
- Situational Awareness
- Flight Crew Management

Web Posting of Drone Projects on NJ Coastal Atlas

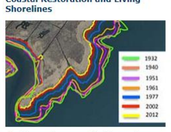
New Jersey Coastal Atlas
Interactive Mapping and Planning Tools

The New Jersey Coastal Atlas provides online interactive maps, photos, videos, and data downloads for the exploration of New Jersey's ocean and coastal zones. Themes presented include: 1) Coastal Hazards, 2) Coastal Restoration and 3) Ocean and Coastal Planning.

Coastal Hazards

The interactive maps in this section provide flood hazard spatial information.

Coastal Restoration and Living Shorelines



The interactive maps in this section provide spatial information on living shoreline and ecological solutions.

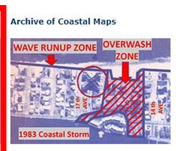
Ocean and Coastal Planning

The interactive maps in this section contain ocean and coastal planning spatial information.

Drone Coastal Mapping and Monitoring

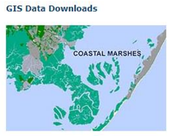
New Jersey Coastal Management Drone field photos, videos and maps.

Archive of Coastal Maps



Historical maps and spatial information from New Jersey Coastal Management archives.

GIS Data Downloads



- NJDEP Data Downloads
- NJ Coastal Data

Poster Development: Dave DuMont, NJDEP OCLUP

References:

1) Drone Field Photos - Steve Jacobus, NJDEP OCLUP
2) Drone Field Photos - Dave DuMont, NJDEP OCLUP
3) 1800 WX Brief
4) Aero Weather
5) Federal Aviation Administration
6) Map Pilot for DJI
7) Eric Gakstatter – GPS Mapping
8) DJI
9) www.dronenodes.com

APRIL 2018

NEW JERSEY COASTAL MANAGEMENT PROGRAM