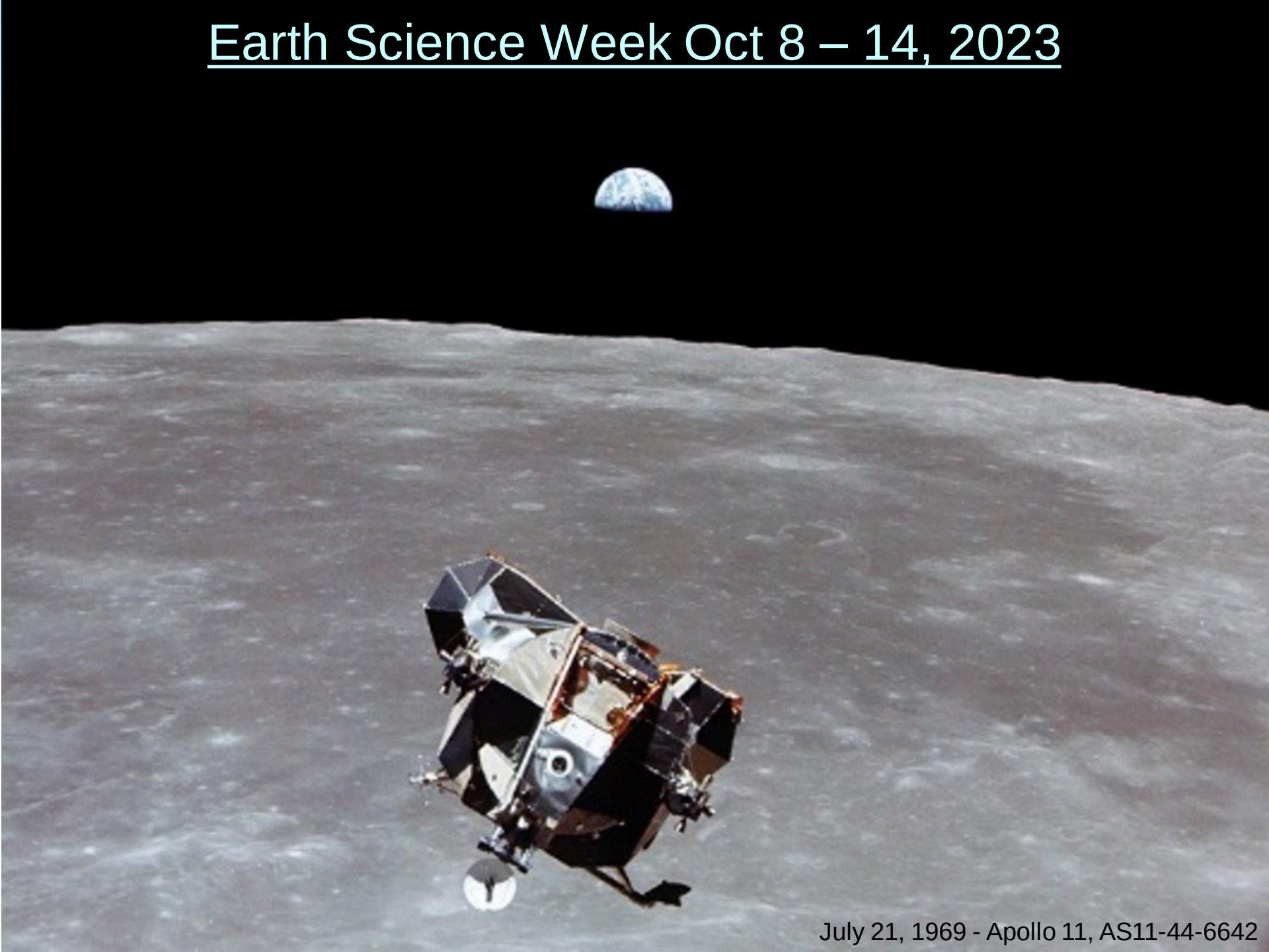
AEROKATS

Geoff Bland (NASA/GSFC/613)

AEROKATS and ROVER Education Network (*AREN*/Ogiemwonyi)

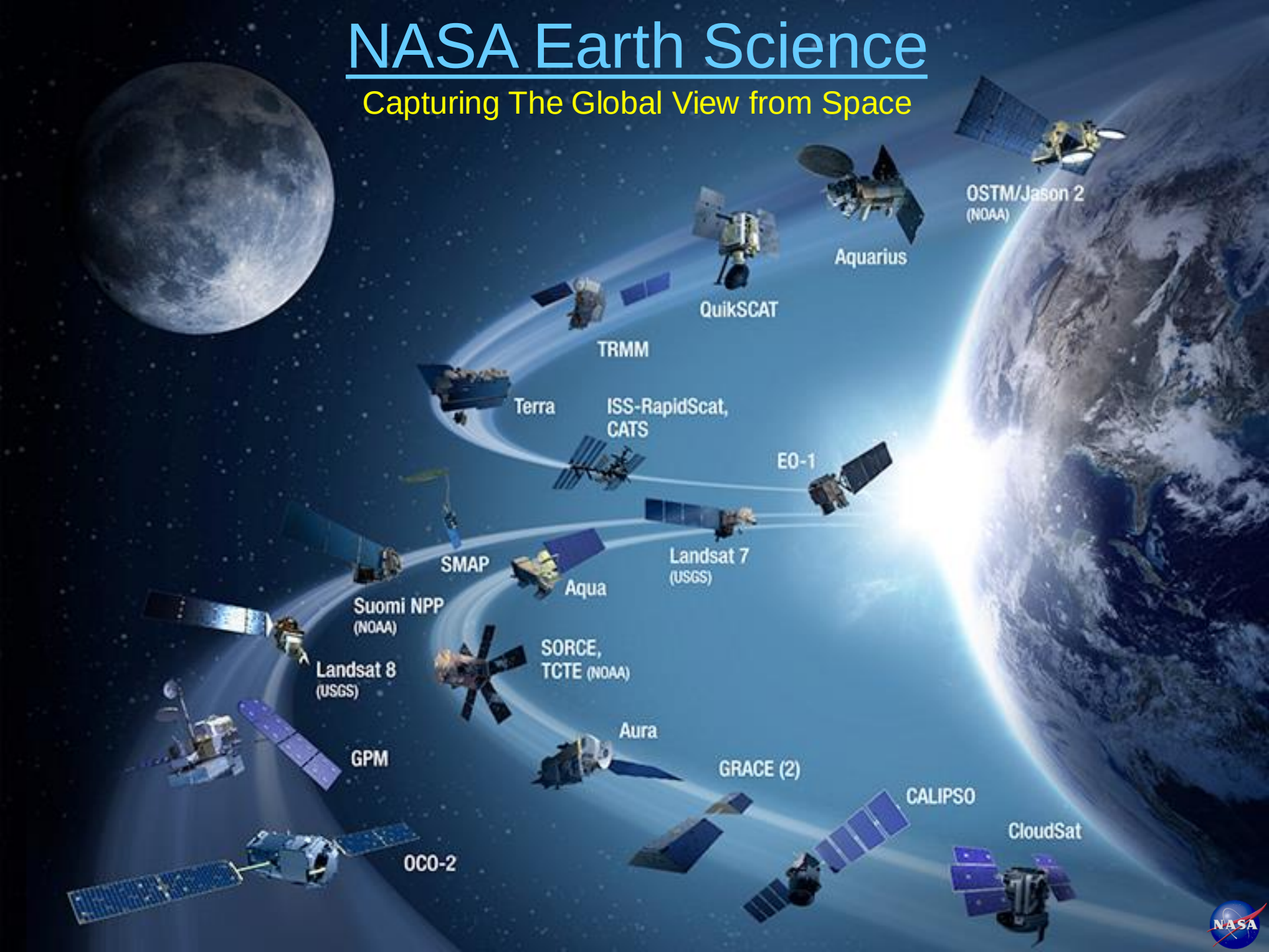
Earth Science Week Oct 8 – 14, 2023

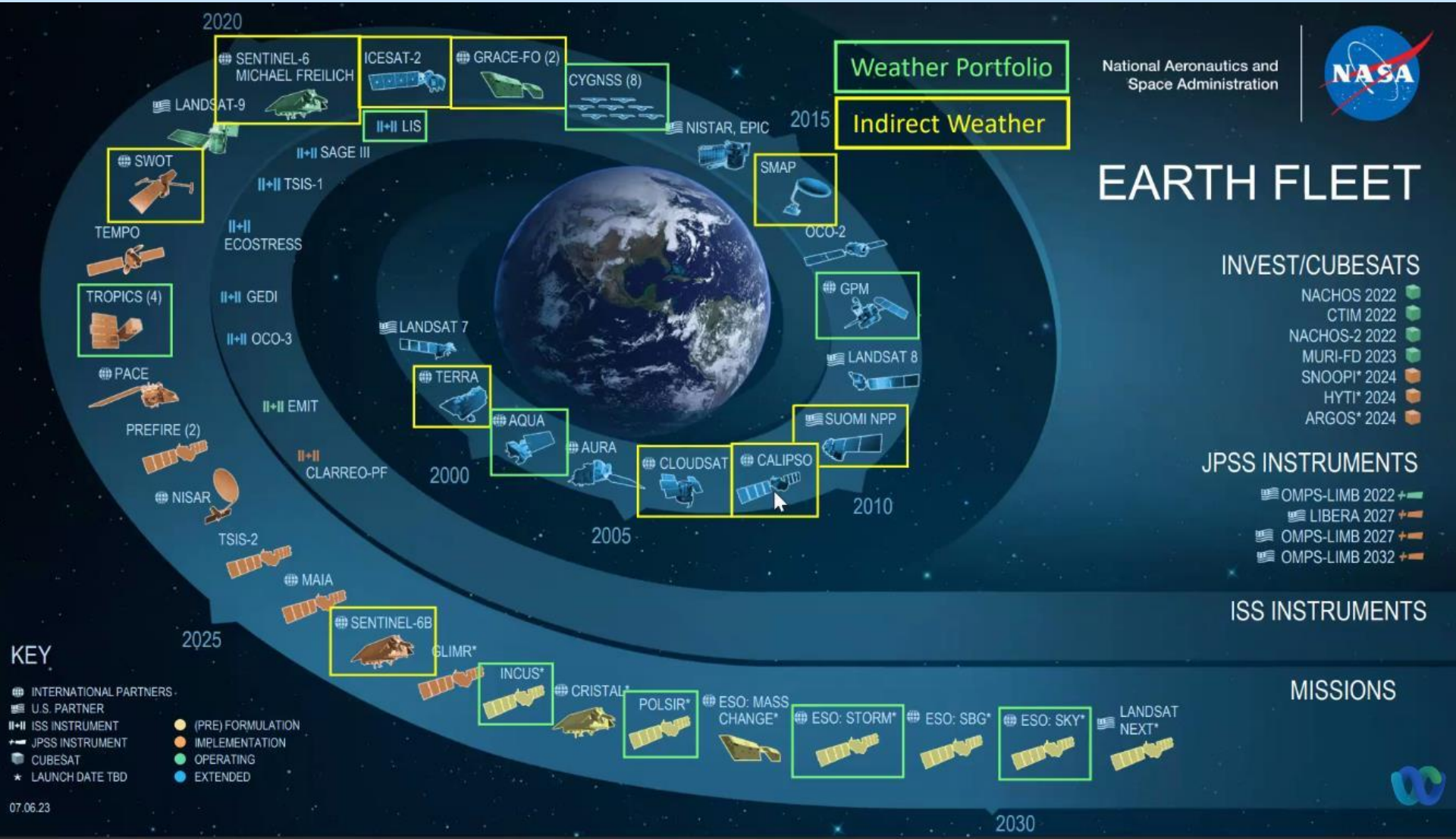


July 21, 1969 - Apollo 11, AS11-44-6642

NASA Earth Science

Capturing The Global View from Space



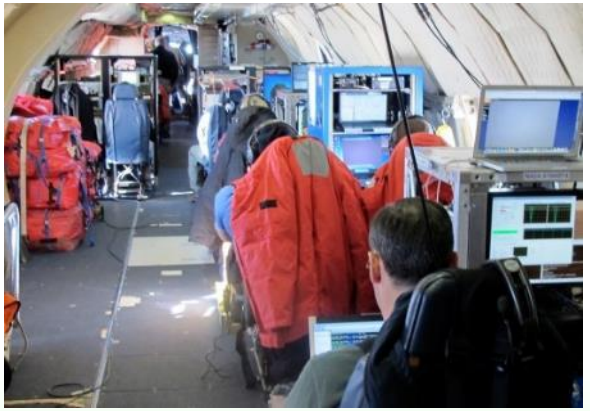


Unmute Start video Share

Will McCarty (NASA HQ)

NASA Airborne Science Program

A Detailed Perspective



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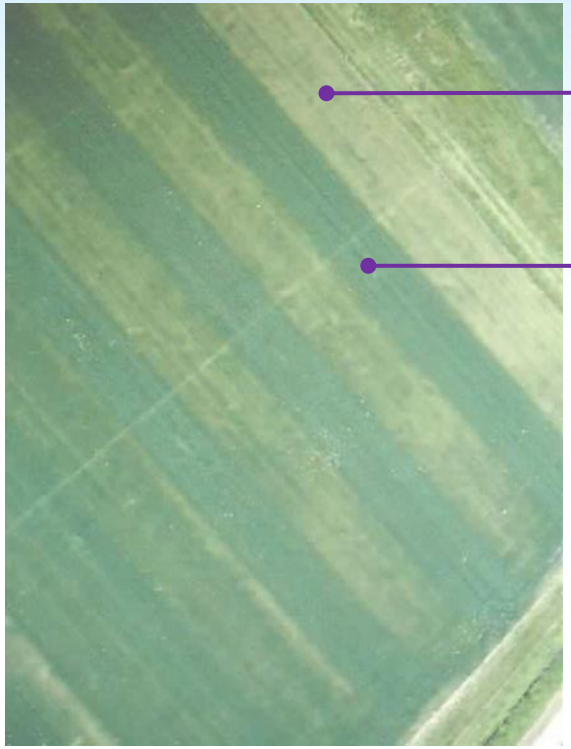
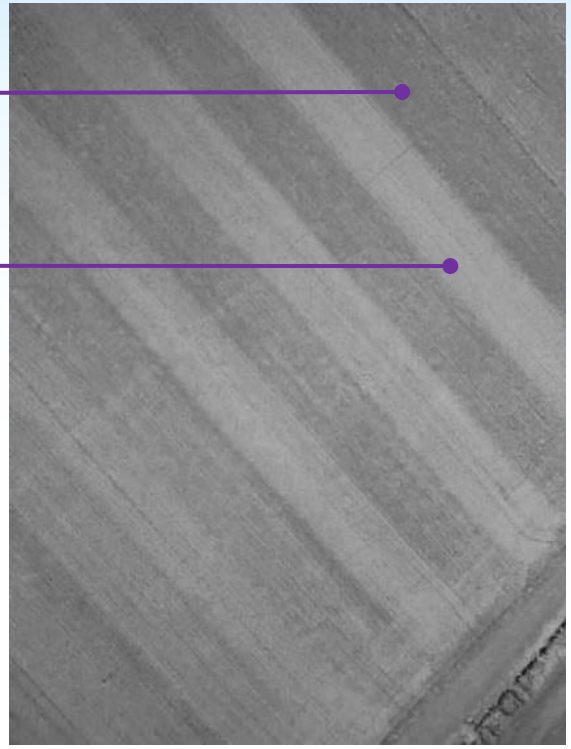
TwinCam – Near Infrared Imaging





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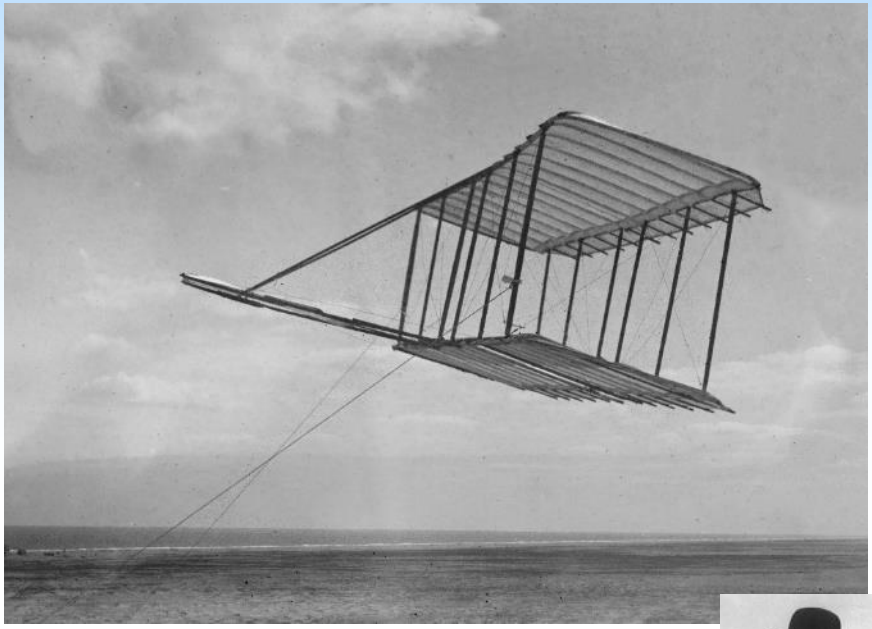

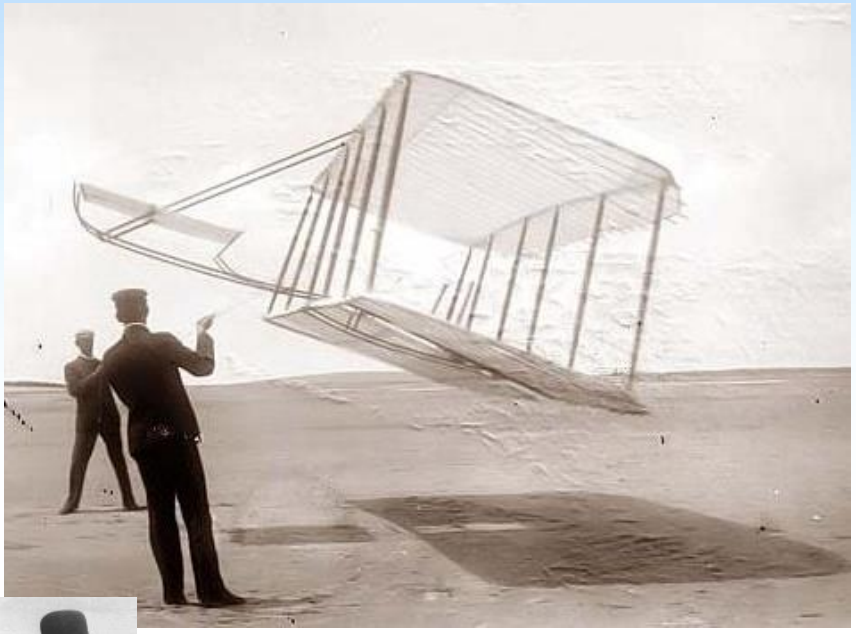

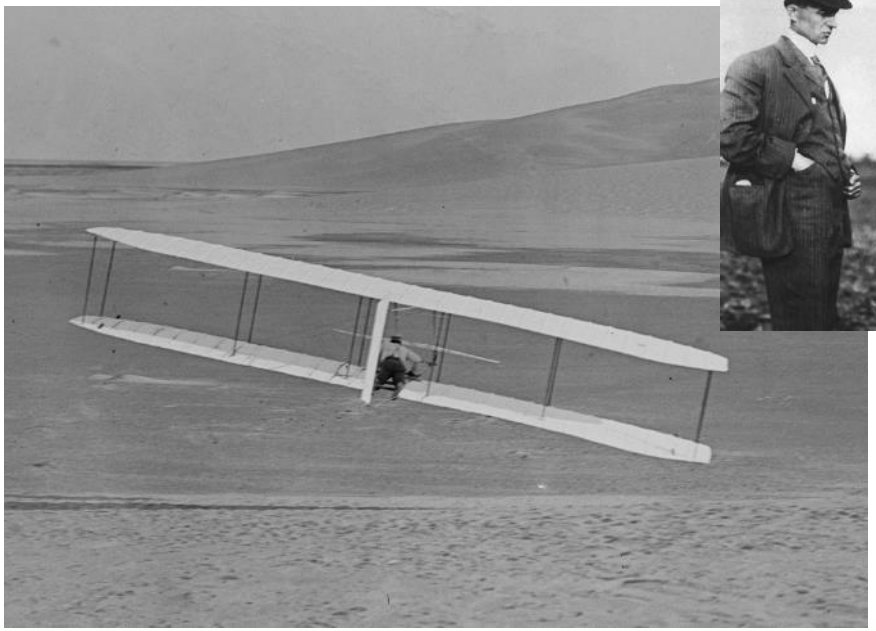

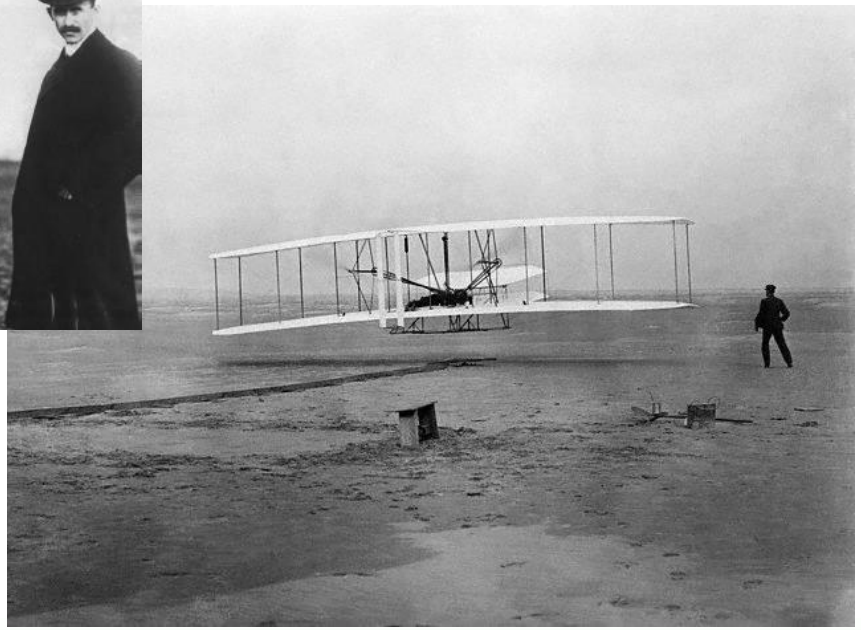

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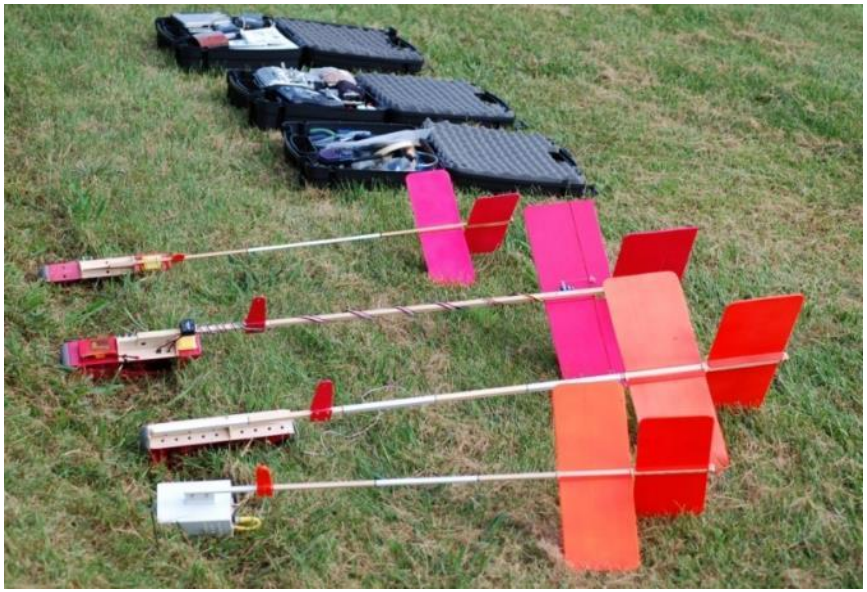
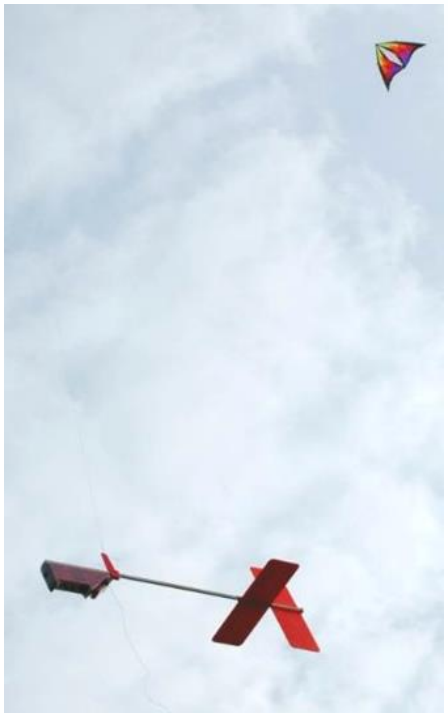
1912: *Picavet;* 2012: *Aeropod* - a NASA Technology





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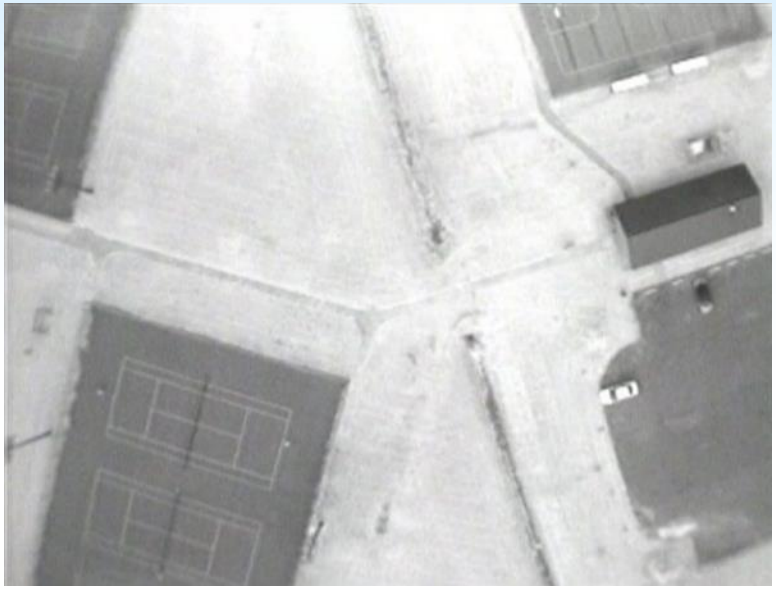
MultiPod



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Aeropod

Aerodynamically Stabilized Instrument Platform

US Patent # 8,196,853, 2012

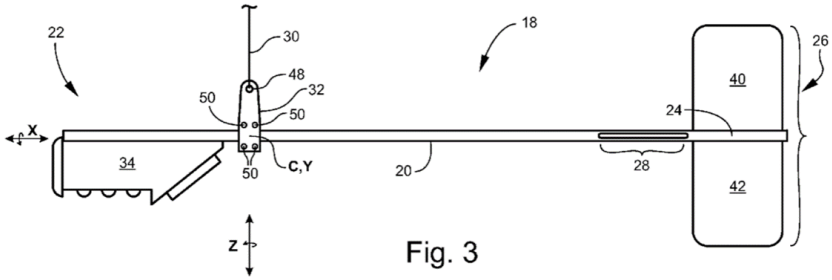


Fig. 3

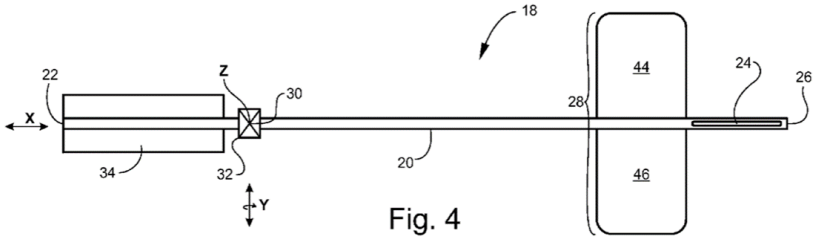
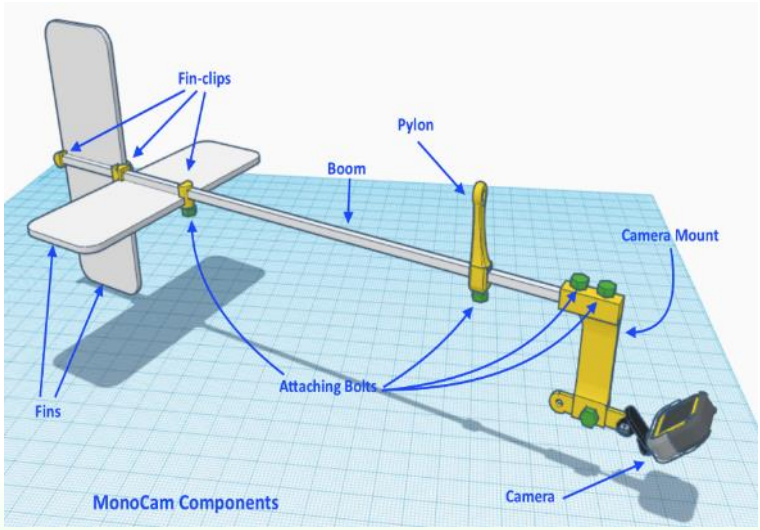
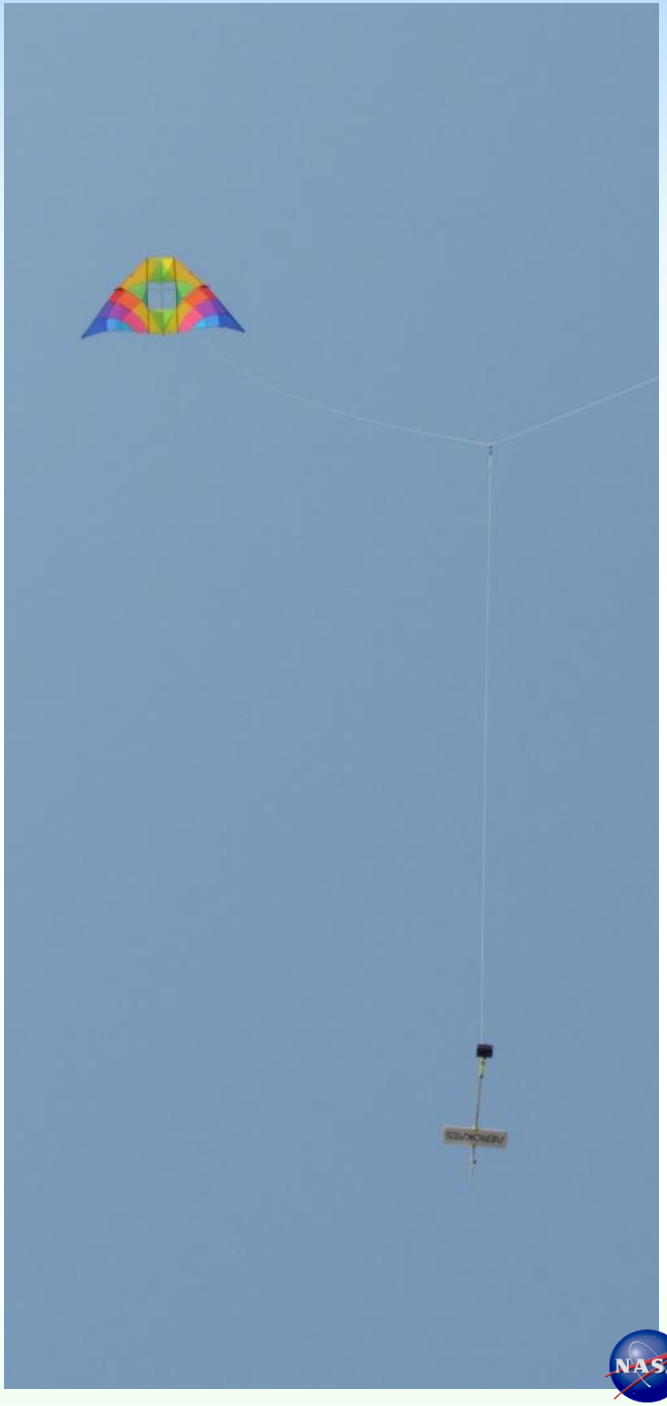


Fig. 4





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The Kite attaches directly to the line with a a ball bearing swivel at the *tow point* on the kite. The tow point on the ITW delta kites is fabric. The tow point on many delta conyne kites is string.

Kite

Kite Tow Point

Ball Bearing Swivel

Kite line

150-225 ft line to kite

The *Brooxes Hang-up* assembly attaches between 150 and 225 ft from the kite, depending on wind conditions.

Line to Kite

Brooxes Hang-up®

Line to Spool

Small Carabiner*

Ball Bearing Swivel*

15 ft. Aeropod Leader

The Aeropod attaches to the *15 ft Aeropod Leader*. That leader attaches with a *ball bearing swivel* to the *small carabiner*, which is attached to the kite line using a *Brooxes Hang-up®*.

15 ft. Aeropod Leader

Aeropod

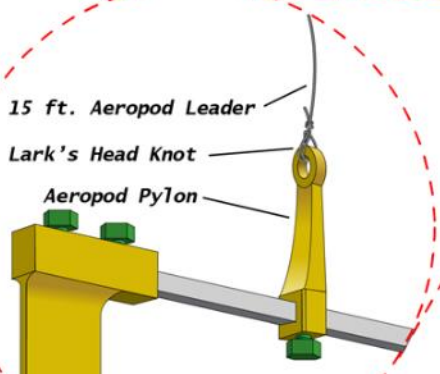
Line to Spool

Line Spool

15 ft. Aeropod Leader

Lark's Head Knot

Aeropod Pylon



** Note: The small carabiner and ball bearing swivel pictured above are used to help prevent line twists and allow quick attachment. You can attach the line directly to the rings in the Brooxes Hang-up® with a lark's head knot if you prefer.*

NOTE: Drawing not to scale

KITE, LINE, AND AEROPOD CONNECTIONS

AEROKATS

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Schmidt Ocean Institute R/V *Falcor*

Images Captured by Stephanie Uz (NASA)

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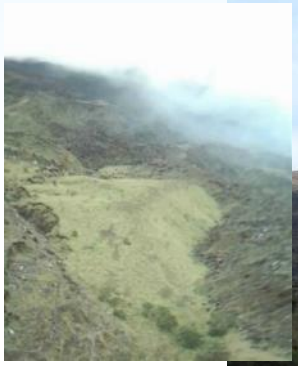
Arenal & Turrialba Volcanoes

w/ David Pieri (JPL), Andres Diaz (Univ. Costa Rica)



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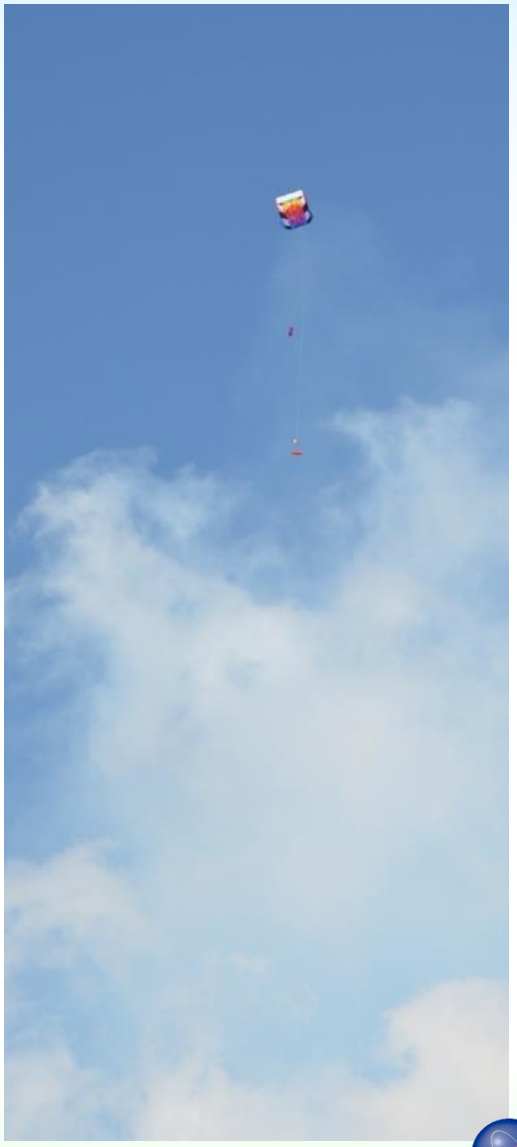
VEREX

Volcanic Retrievals Emissions Experiment

Pieri, et al (2017)



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Andy Henry/Wayne County Regional Educational Services Agency (RESA)

NNX16AB95A

https://science.nasa.gov/learners/science-activation-teams

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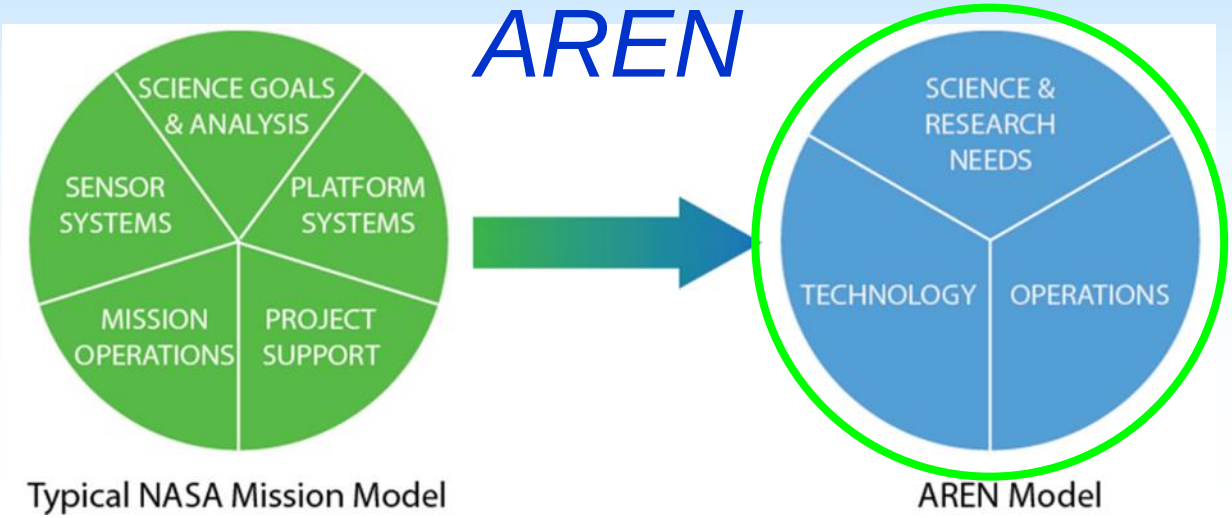
AEROKATS and ROVER Education Network

AREN



Typical NASA Mission Model

AREN Model

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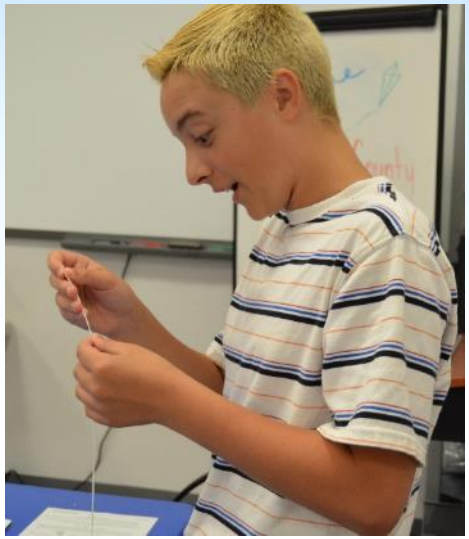
AEROKATS – Getting Started …



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NASA
F=ma

MonoCam

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MonoCam

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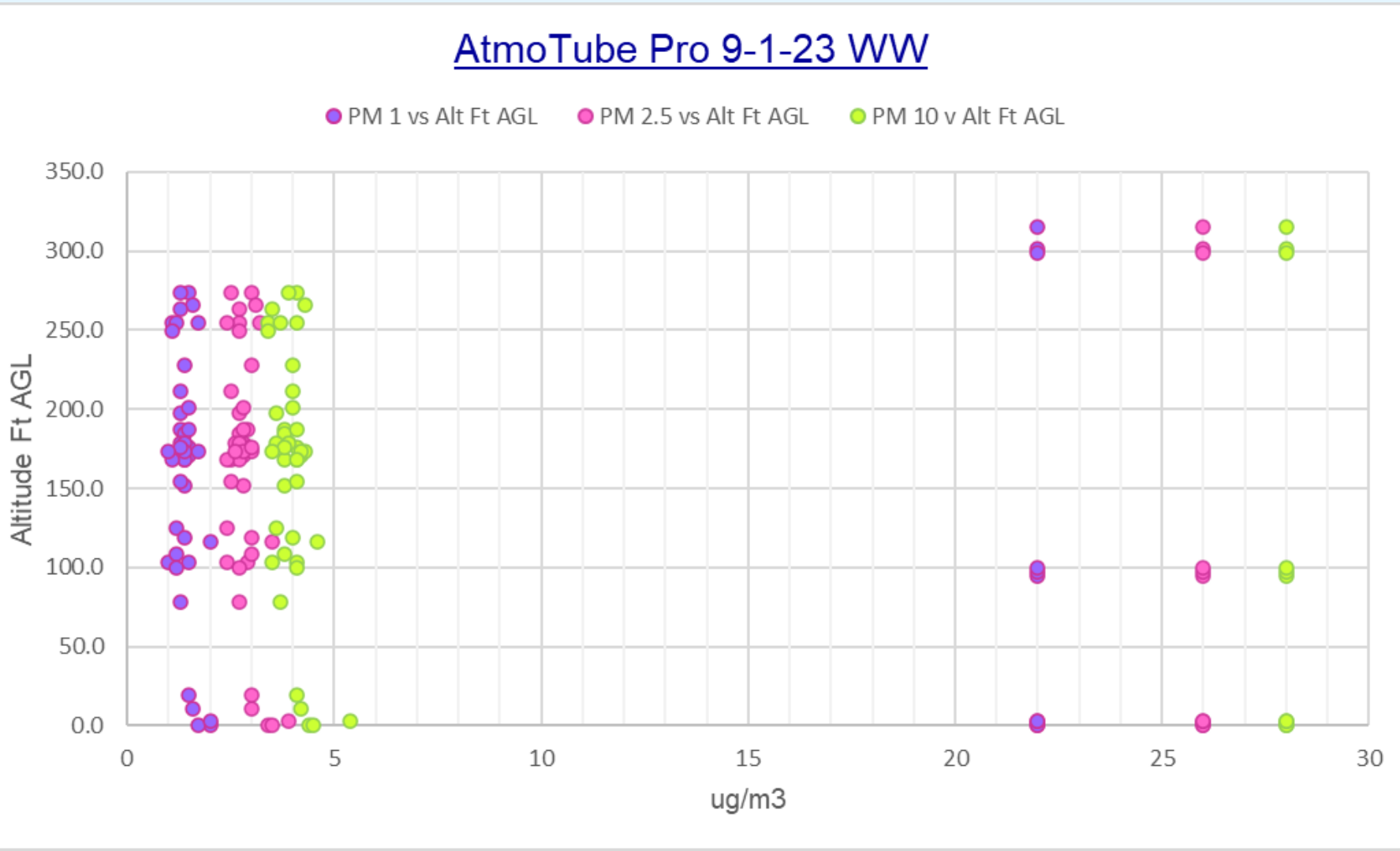
Profiler

geoff.bland@nasa.gov



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What Kite will fly a ~~25~~ 40 g Aeropod?

MiniCam developed and produced by Ted Miles/Black Swift Technologies

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MiniCam developed and produced by Ted Miles/Black Swift Technologies

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2022 Workshop co-presented with Rich Cairncross and DJ Viray

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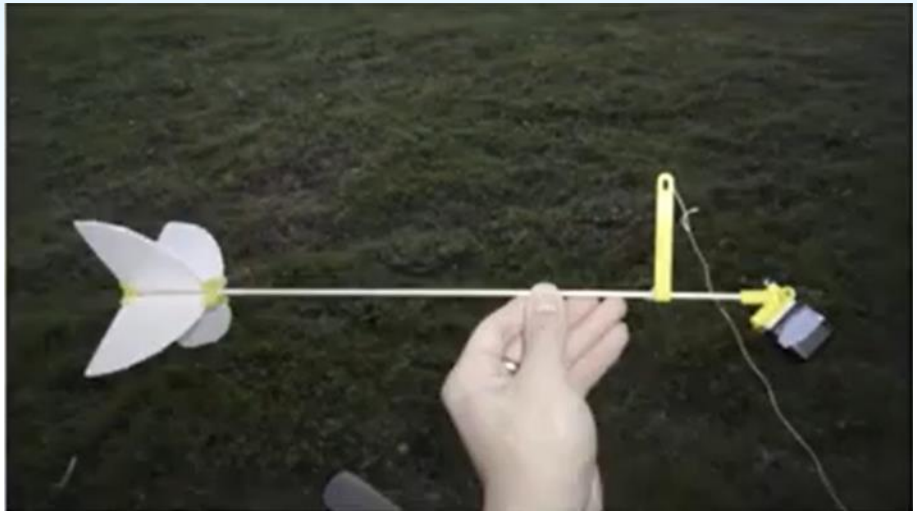
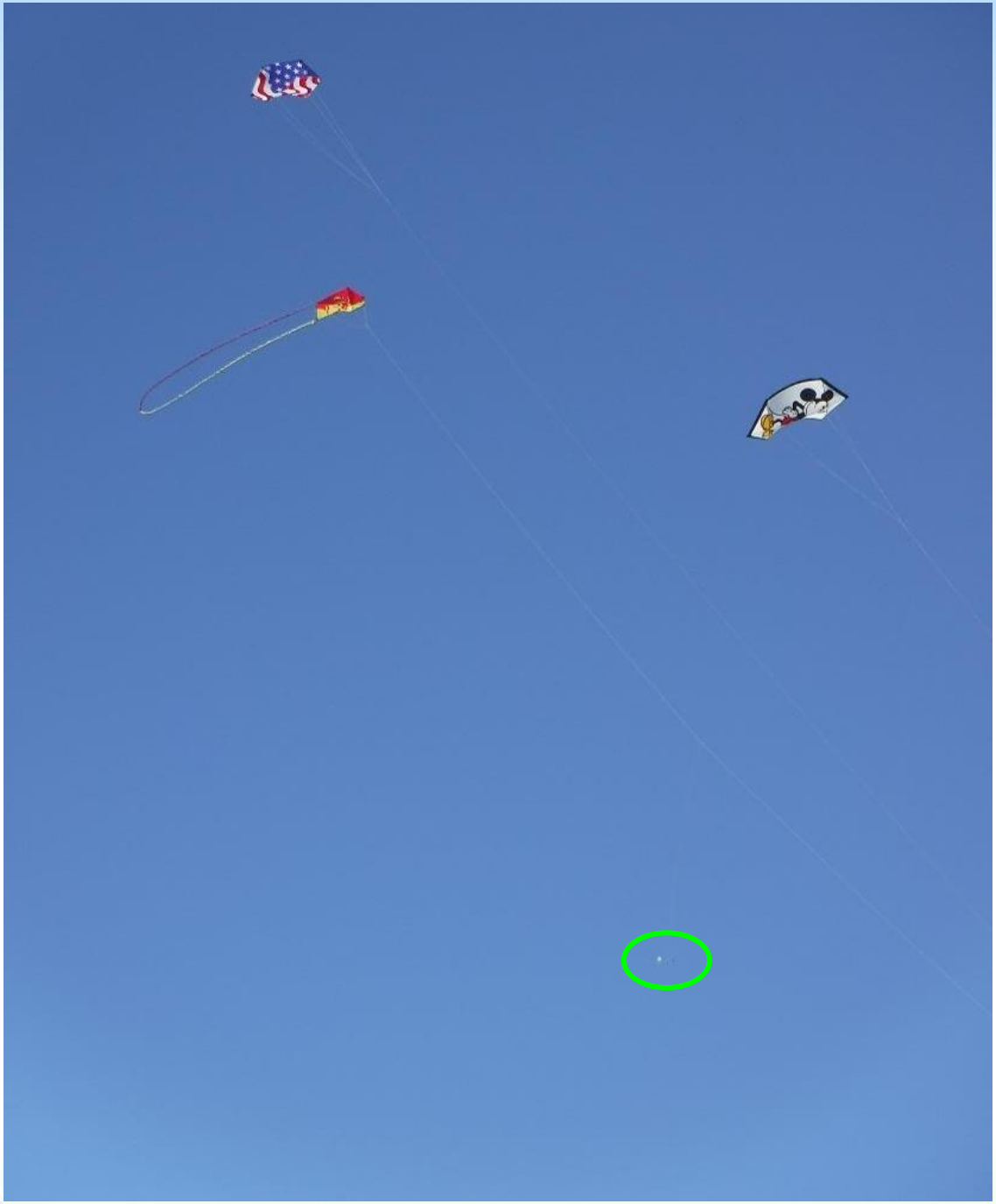
Rich and DJ Flights

(Drexel University)





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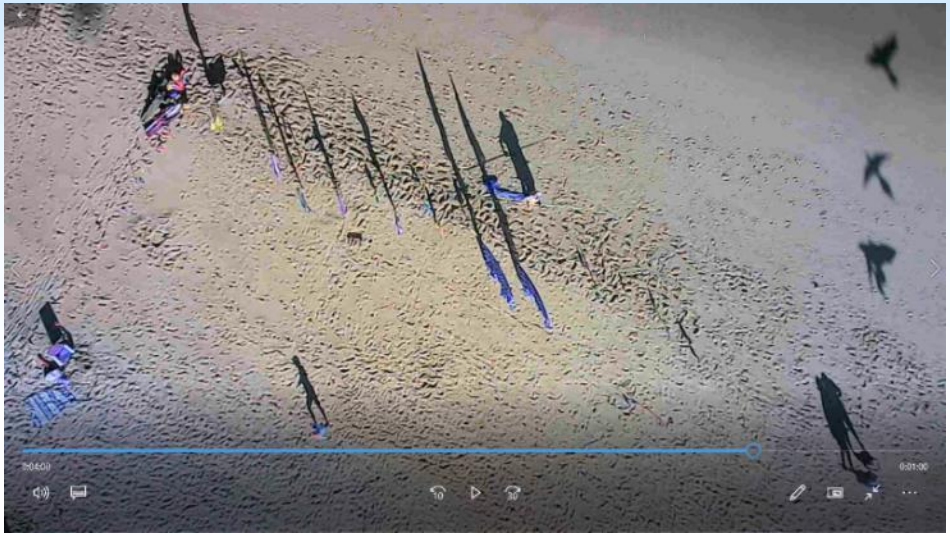
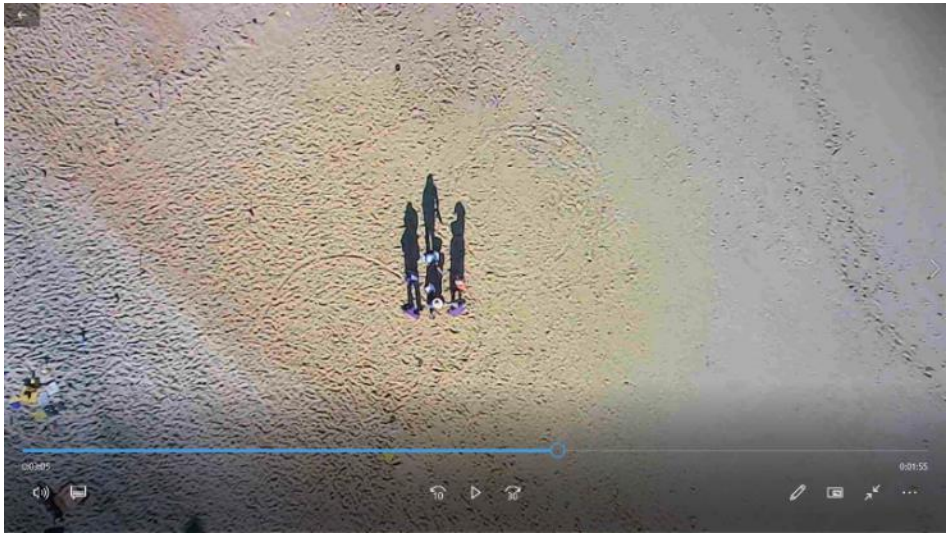
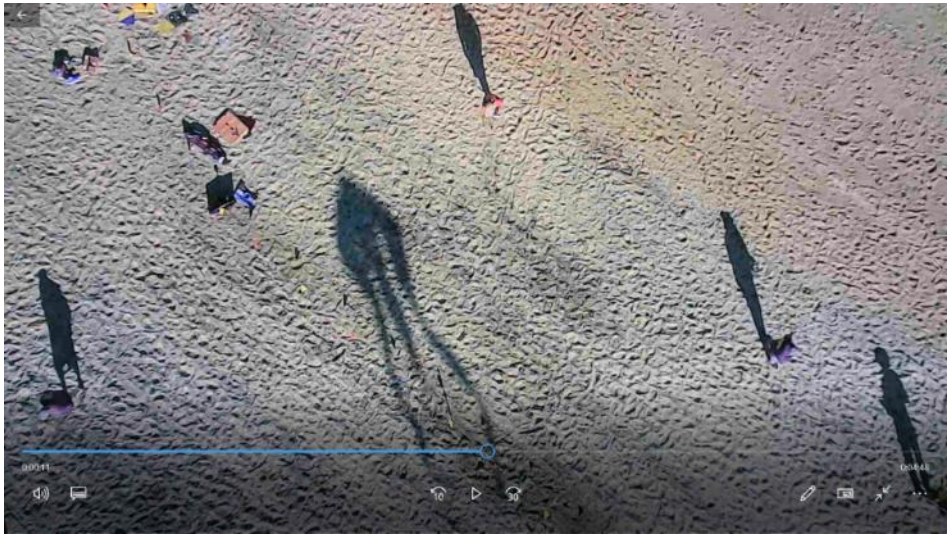
... from 2022 Ocean City MD ....







Still Images via “ *Prt Sc*” (Print Screen) from Video

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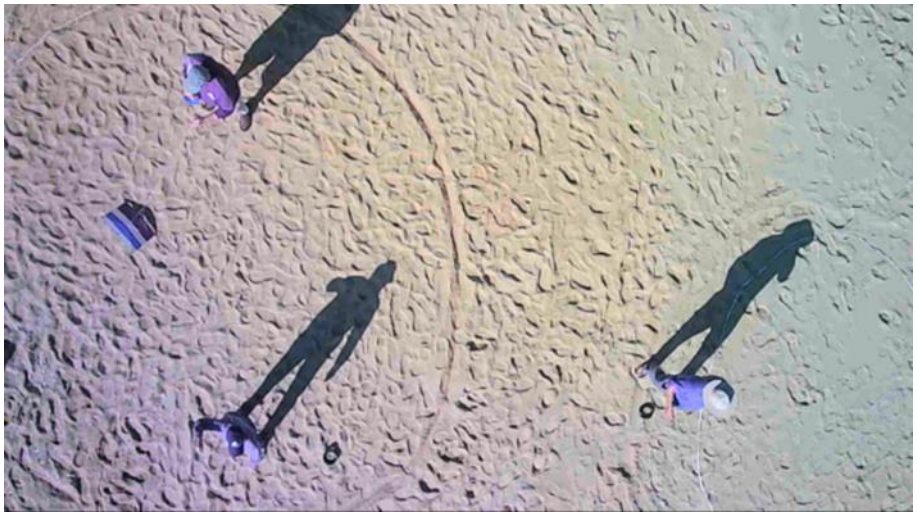

Kay Brassell

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Mitch Cordover

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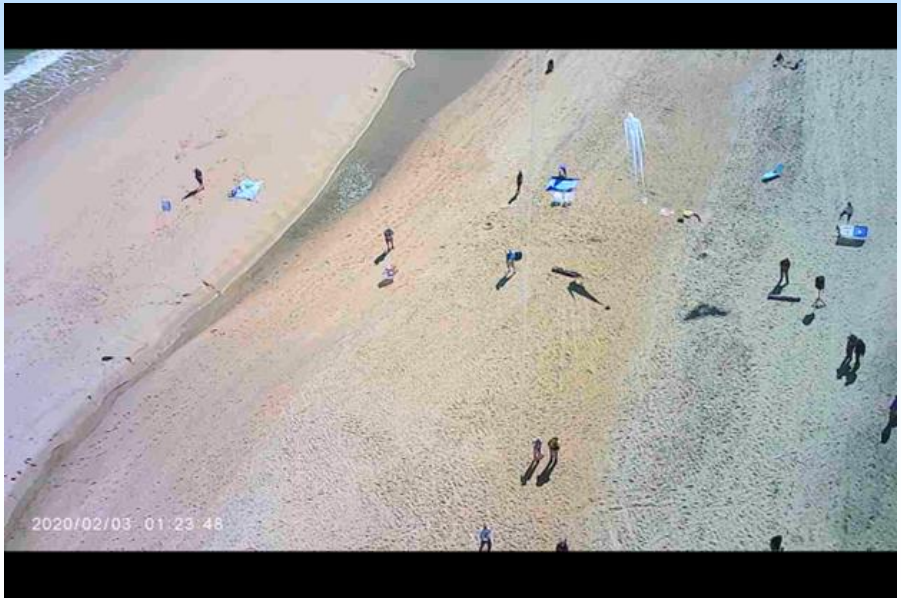
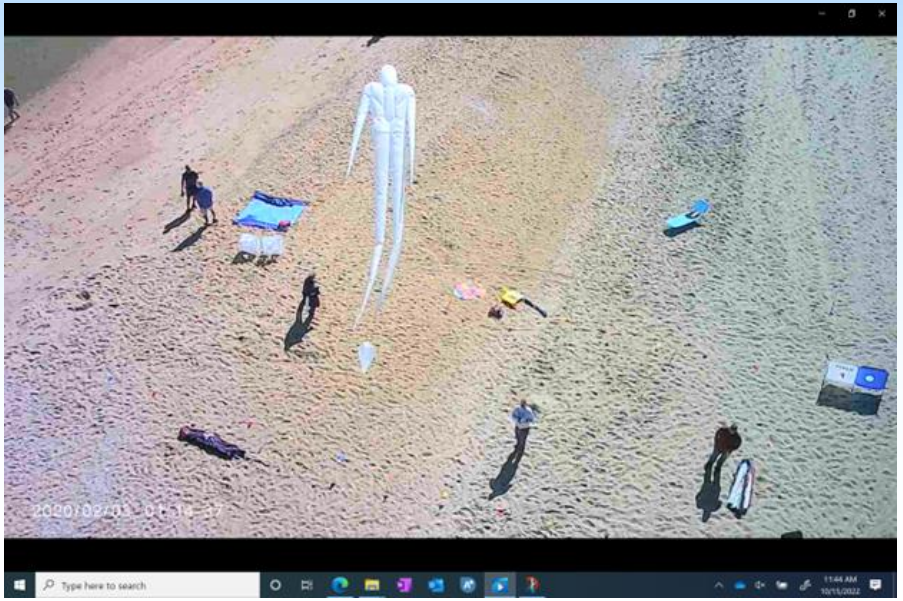
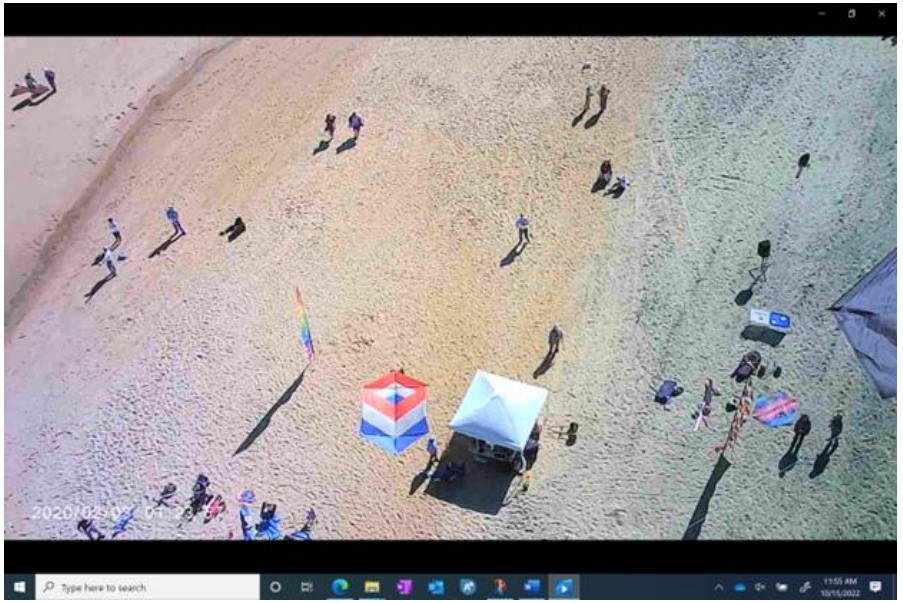
Mark Ledvina

geoff.bland@nasa.gov





Chuck Jones



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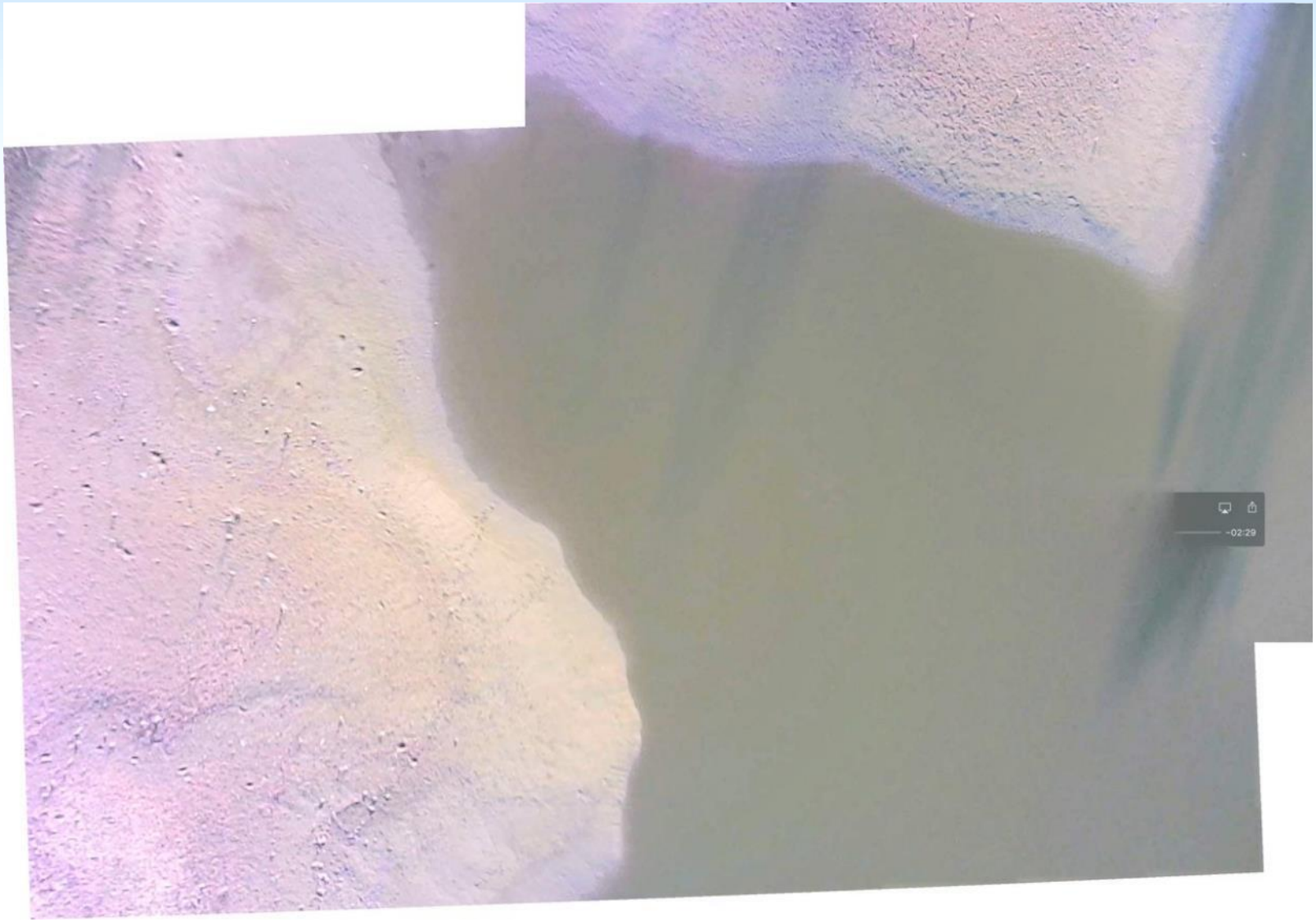
Mitch Cordover “Stack”... via *Affinity Photo 2*



newly flooded area ... note wildlife tracks

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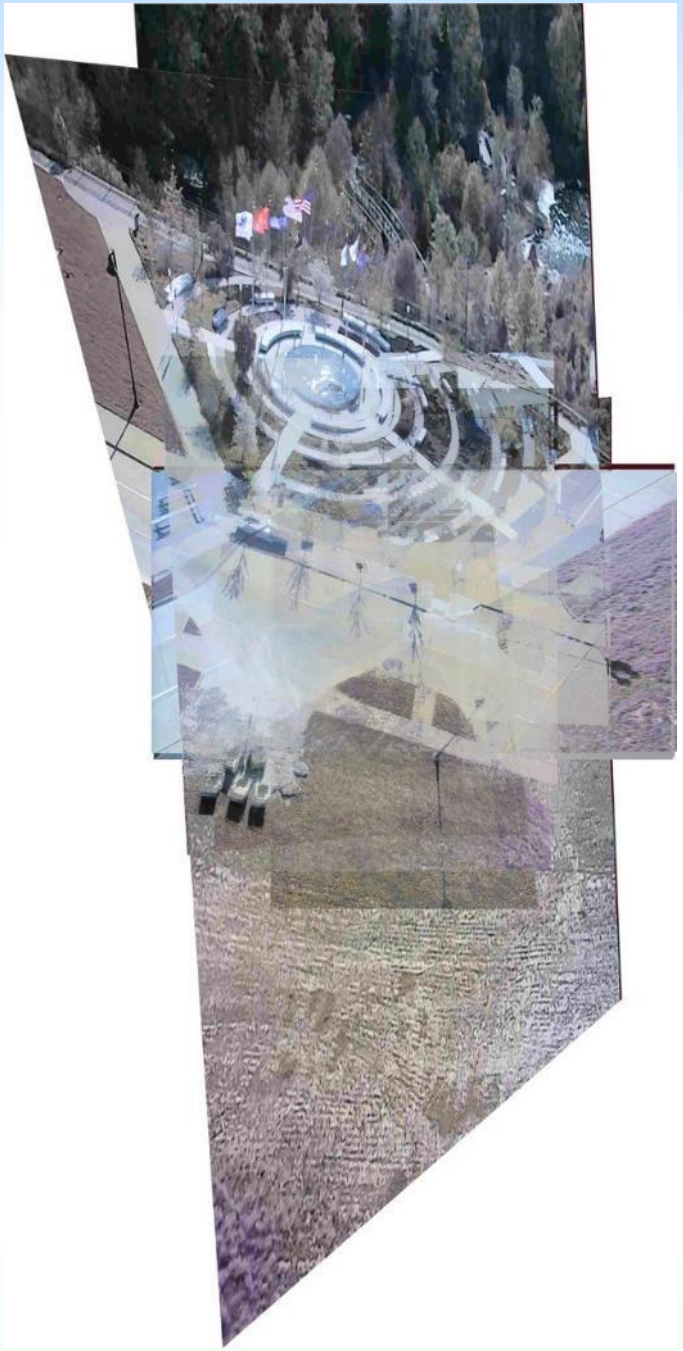
Mitch Cordover “Stack”... via *Affinity Photo 2*



newly constructed public arena

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Mitch Cordover “Stack”... via *Affinity Photo 2*

invasive species in an area that could not be mowed

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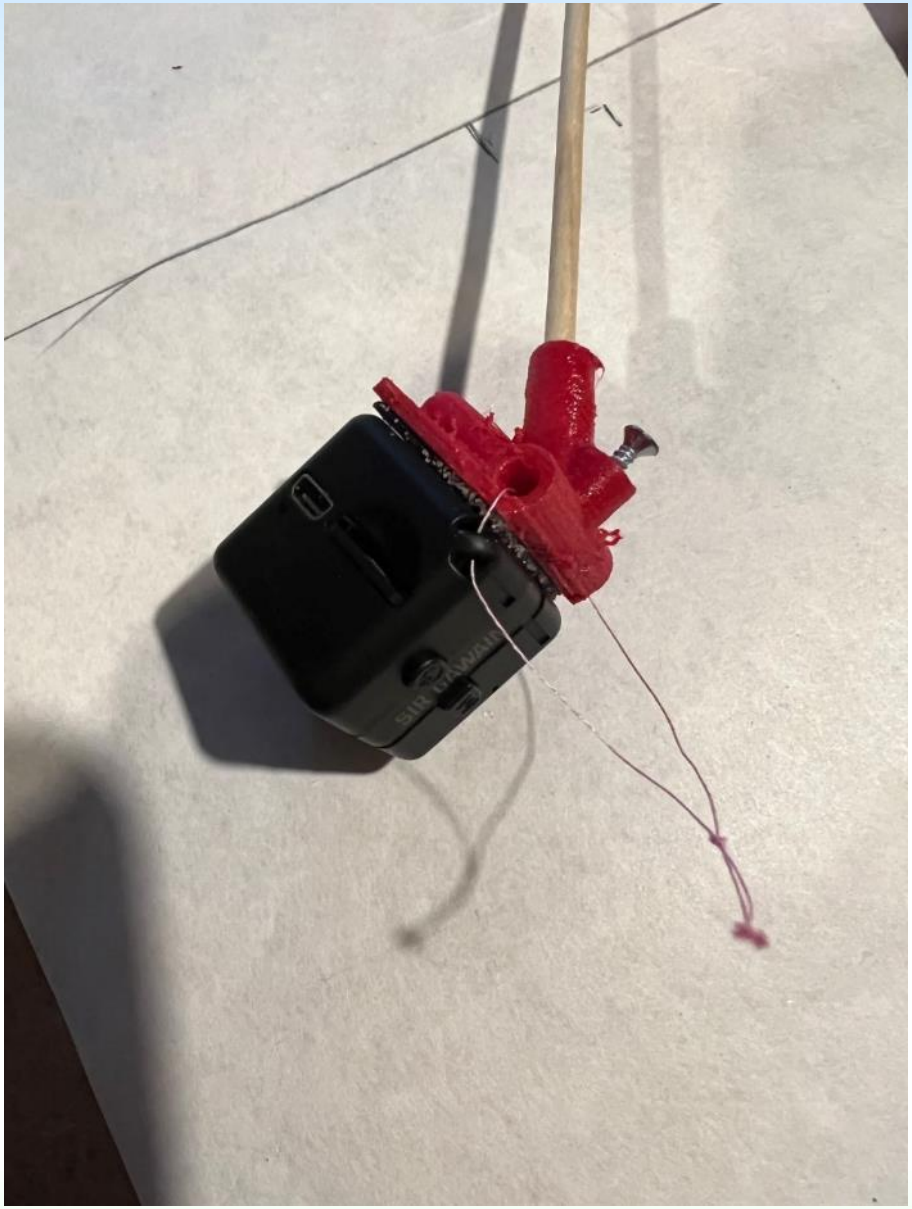
Richard Hawkins and Steve Clarke Mounting Fixes



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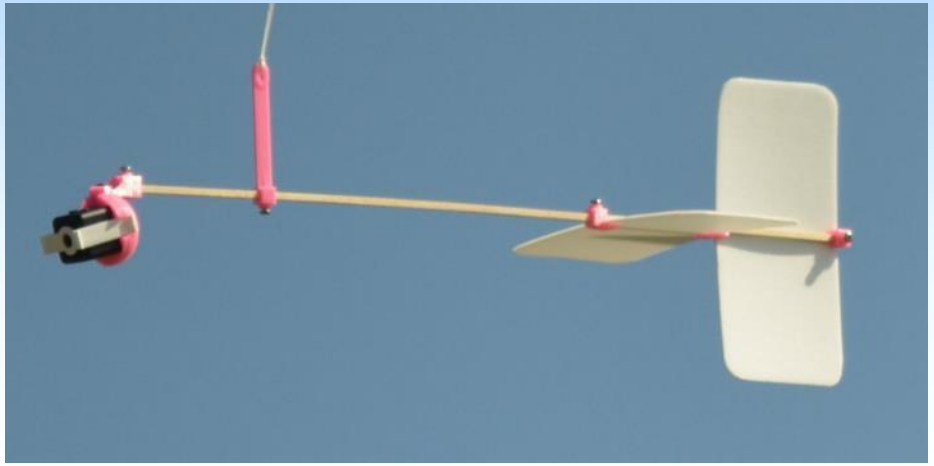

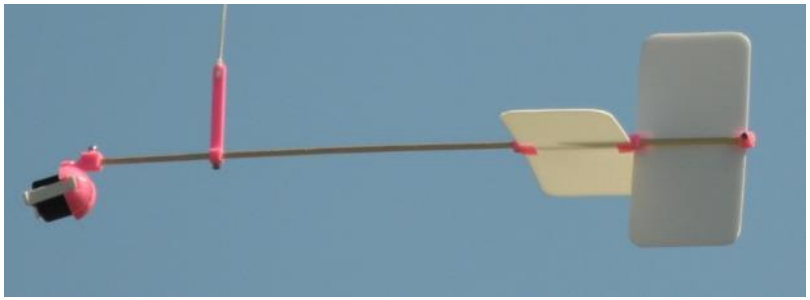

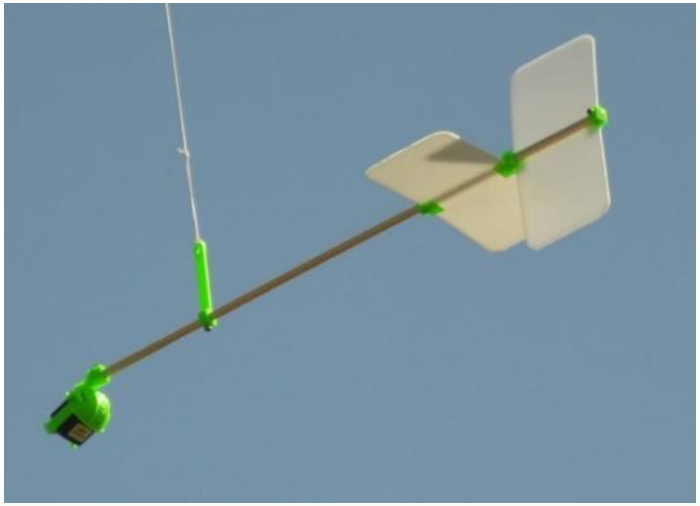

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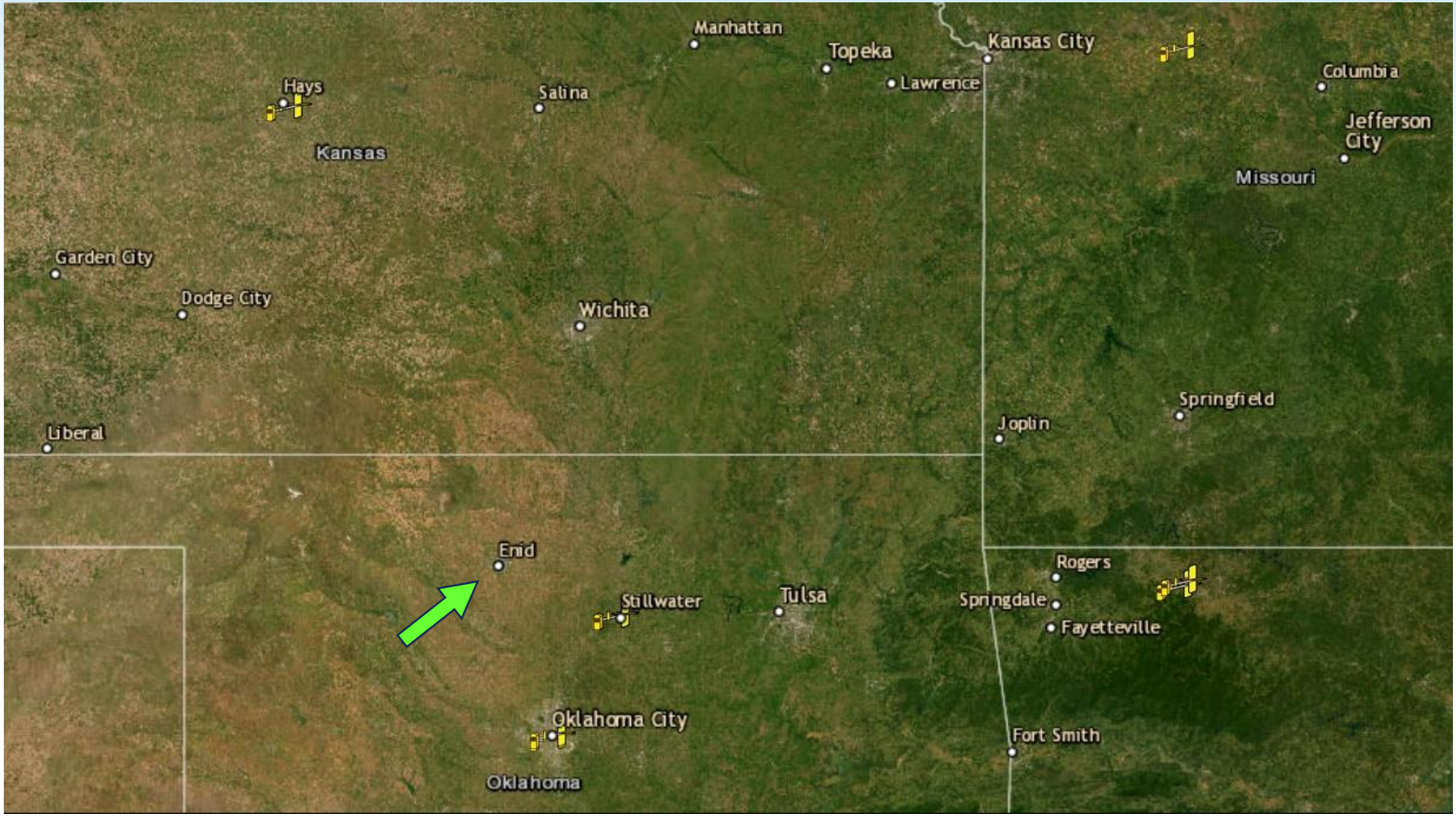

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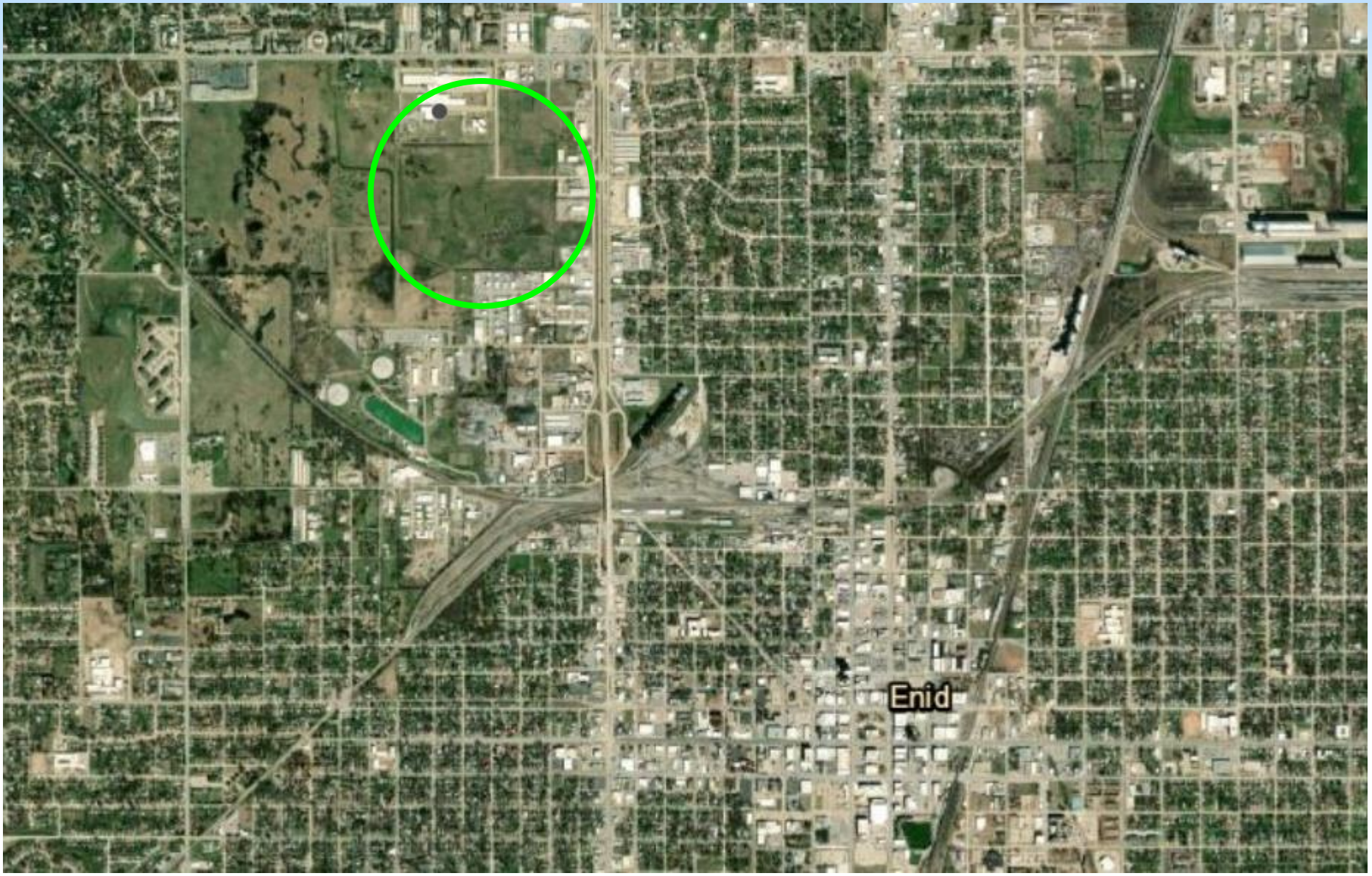

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MiniCam CAMERA CHARGING AND FILE ACCESS

(Ted Miles/BST/AREN)

If charging the camera using a USB power adapter, be sure to remove the data card to prevent the camera auto-starting and recording which would completely fill the card and not allow the camera to charge properly.

The card can be left in the camera if charging from a computer/device with the provided USB charge/data cable and will also allow access to the video files stored on the card. After confirming a successful copy of the video files from the data card, delete the files from the card in preparation for the next mission.

The user is encouraged to review the USER MANUAL to get better acquainted with the camera's features and operation.

***MiniCam* CAMERA INSTRUCTIONS**

(Ted Miles/BST/AREN)

1. To TURN ON the camera, PRESS AND HOLD the **ON/OFF** button until the BLUE LED light turns on. If the LED is BLUE, the camera is in STANDBY mode for 720p.

2. To change to Full HD 1080p, MOMENTARILY PRESS the **MODE** button once. The LED will change from BLUE to **BLUE/RED**, indicating STANDBY mode for 1080p.

3. While in STANDBY mode with the BLUE OR BLUE/RED on all time, MOMENTARILY PRESS ON/OFF button once to begin video recording. The LED will flash 3 times, then turns OFF. The camera will record video in LOOP mode until stopped or the battery runs out.

4. MOMENTARILY PRESS the ON/OFF button again to stop video recording. The LED will return to the STANDBY mode.

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***MiniCam* CAMERA INSTRUCTIONS**

.... Continued

5. To TURN OFF the camera, make sure the camera is not recording, then PRESS AND HOLD the ON/OFF button for 6 seconds. If left in STANDBY mode, the camera will automatically shut down after 1 minute of inactivity.

6. The camera has many modes described in the manual which can accidentally be activated by improper operating sequence. If at any time there is confusion as to the state of the camera, PRESS AND HOLD the ON/OFF button for 6 seconds to TURN OFF, then start over with STEP 1.

Please Note:
AKA has an Educational Use License for Aeropods!
(2020)

NONEXCLUSIVE NON-ROYALTY BEARING EDUCATIONAL PATENT LICENSE AGREEMENT

This License Agreement ("AGREEMENT") is entered into between the National Aeronautics and Space Administration (NASA), an agency of the United States, hereinafter referred to as LICENSOR, having its headquarters in Washington, D.C., and American Kitefliers Association, Inc. (AKA), a non-profit organization, having its principal place of business at 11550 Alpine Way, Nevada City, CA 95959, hereinafter referred to as LICENSEE, as of the date of execution of the last PARTY hereto.

Kindly send pics, info, questions, etc. to:
geoff.bland@nasa.gov
cc: Lisa Ogiemwonyi: ogiemwl@resa.net ; Ted Miles ted59@msn.com


Thank You!
from the *AEROKATS and ROVER Education Network*
(*AREN*/Ogiemwonyi/NNX16AB95A)
https://sites.resa.net/aerokats/
https://www.globe.gov/ru/web/aren-project/overview/aerokats/data-collection

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AEROKATS

Geoff Bland (NASA/GSFC/613)

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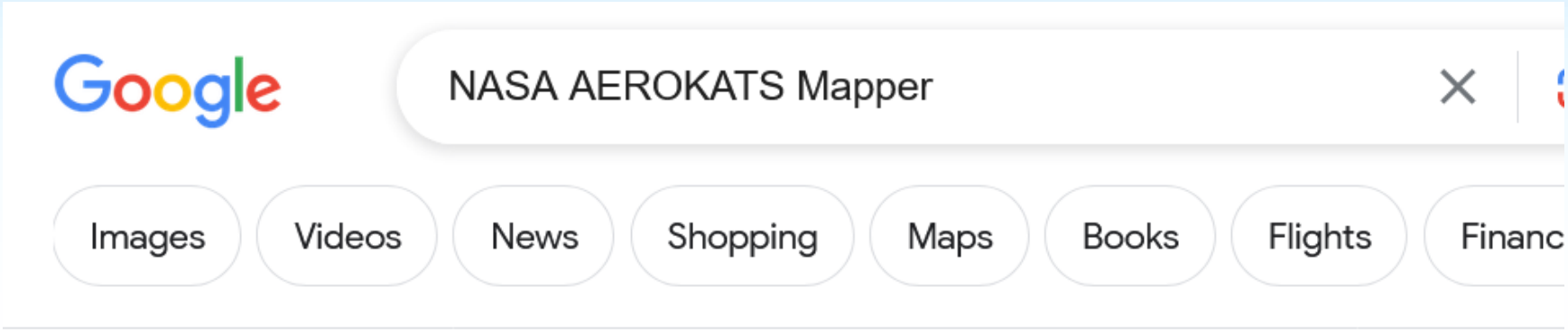

https://sites.resa.net/aerokats/map/

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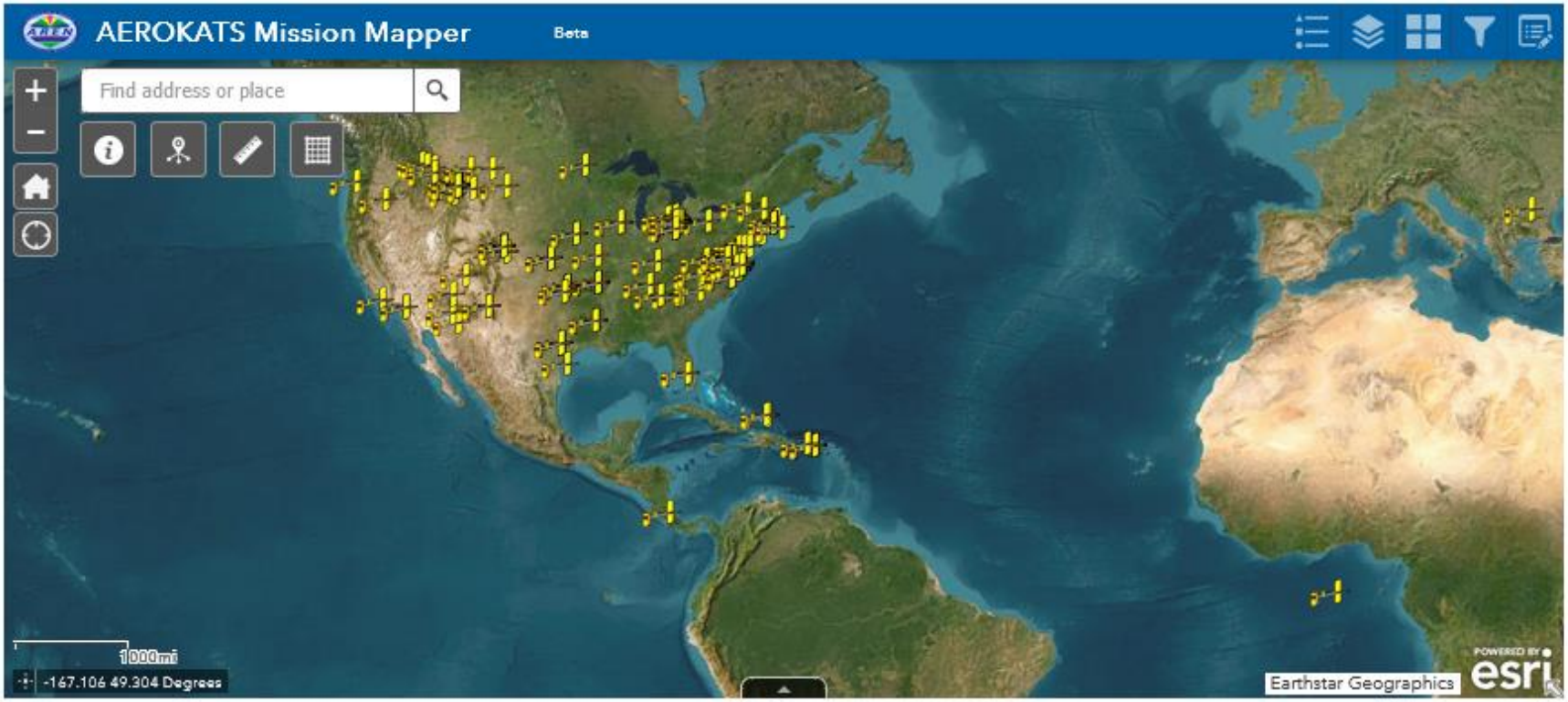
AEROKATS
Advancing Earth Research Observations with Kites and Atmospheric/Terrestrial Sensors

Technology Science Operations Map Participate

AEROKATS Mission Mapper



Upload AEROKATS Field Data

geoff.bland@nasa.gov

My Survey

Mission Details

Mission ID*
Short identifier for the mission/flight

Date*
Date of the Mission

MM/DD/YYYY

School or Group
School, Organization or Group name

Site Name/Description*
Name or description of mission location

Mission Objective*
What do you intend to accomplish with this mission

Equipment

Kite Type*
What kite format are you using (shape/style)

- Delta
- Delta-Conyne
- Diamond/Hata
- Parafoil
- Sled
- Rokkaku
- Roller
- Other

Kite Model*
Specific kite model (if known)

Wingspan (ft.)*
What is the kite wingspan (long edge)

Aeropod Model*
Select from list

- MiniCam

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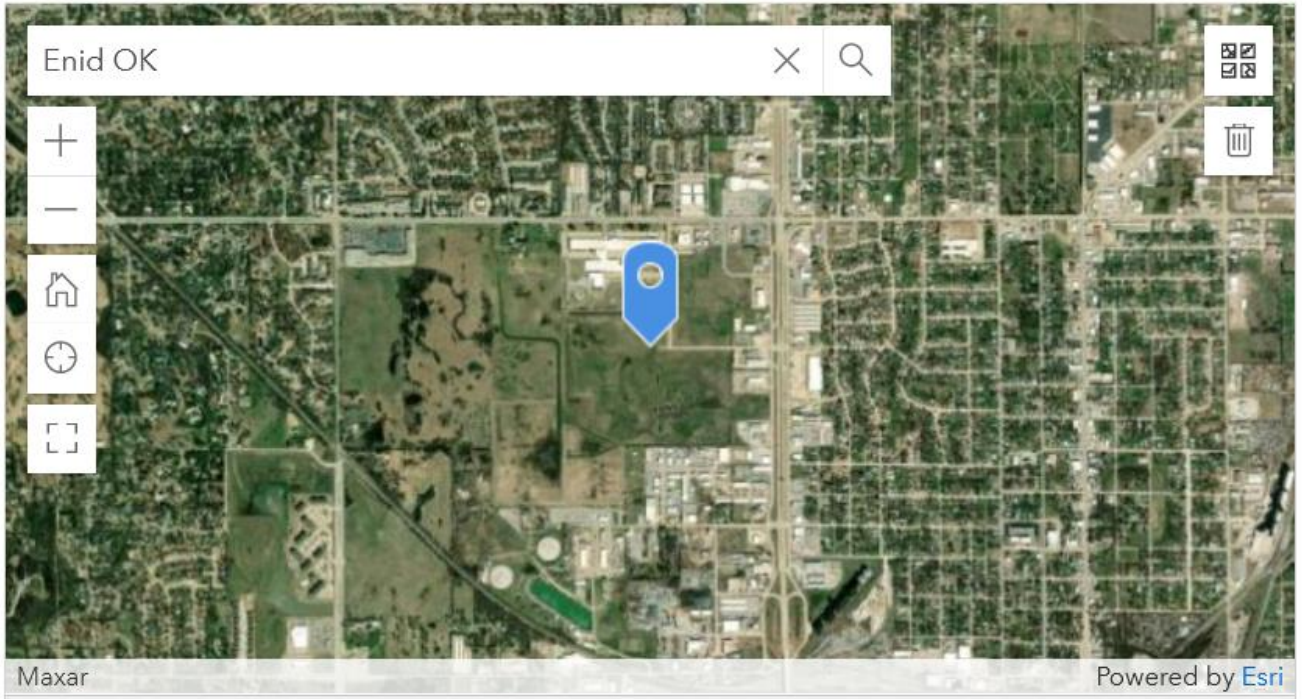
Location Lon/Lat*

Use map to locate



Lat: 36.415768 ° Lon: -97.895653 °

Flight Details

Time of Launch - Kite*

hh:mm

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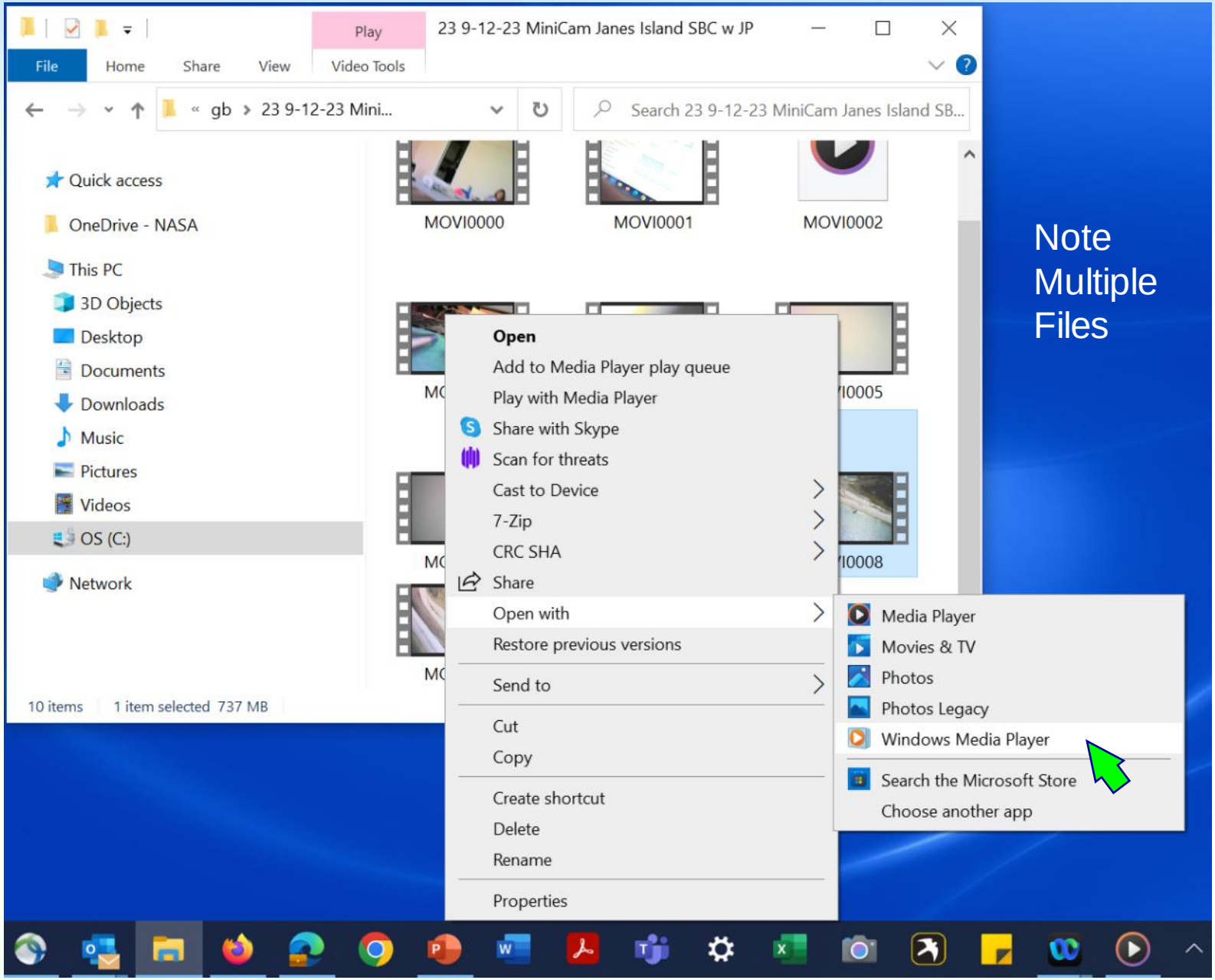
1) Open Video in application such as Windows Media Player



Note Multiple Files

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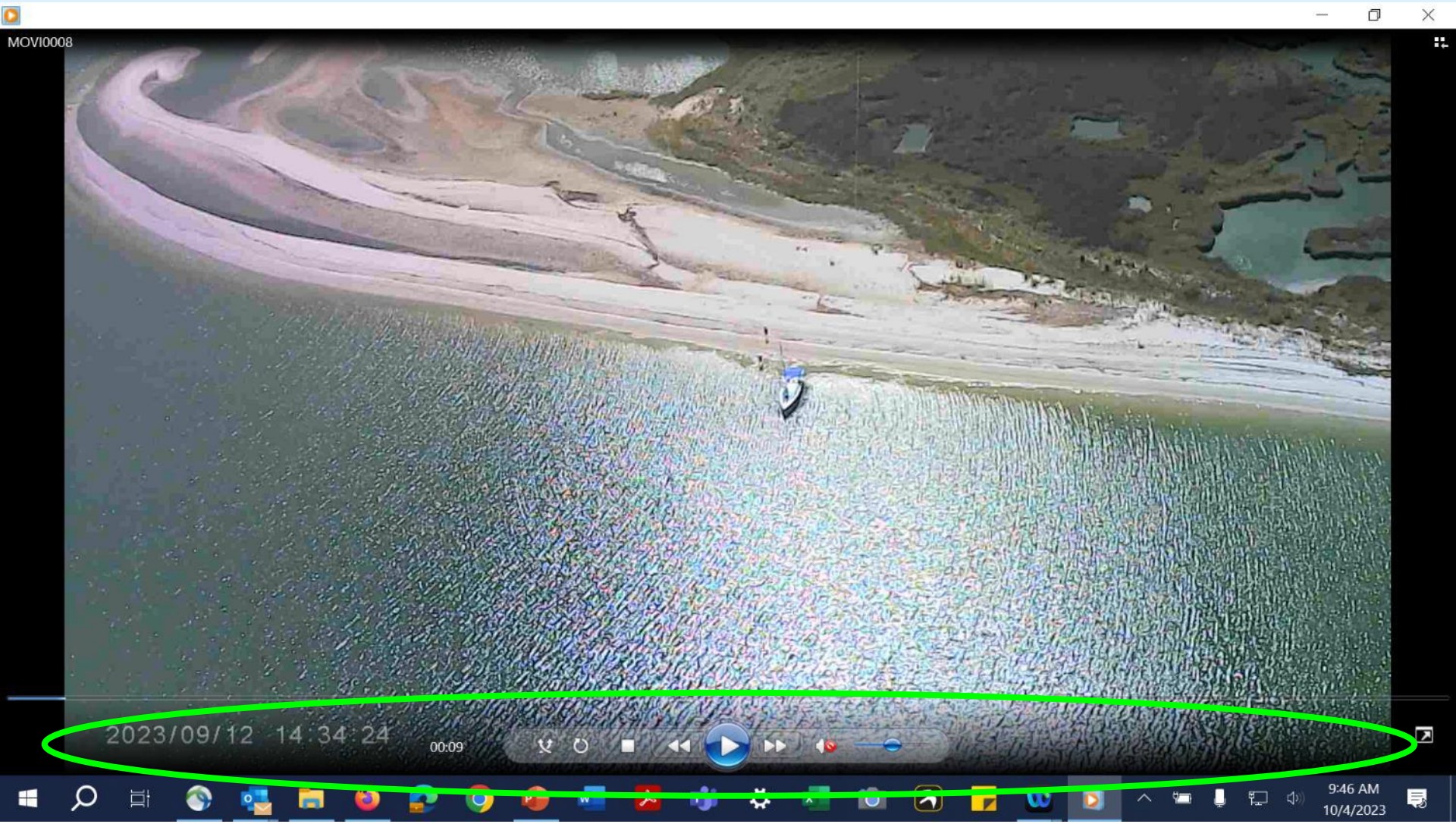
2) Play or Scroll and Pause .... note Controls Might Remain Visible for a moment



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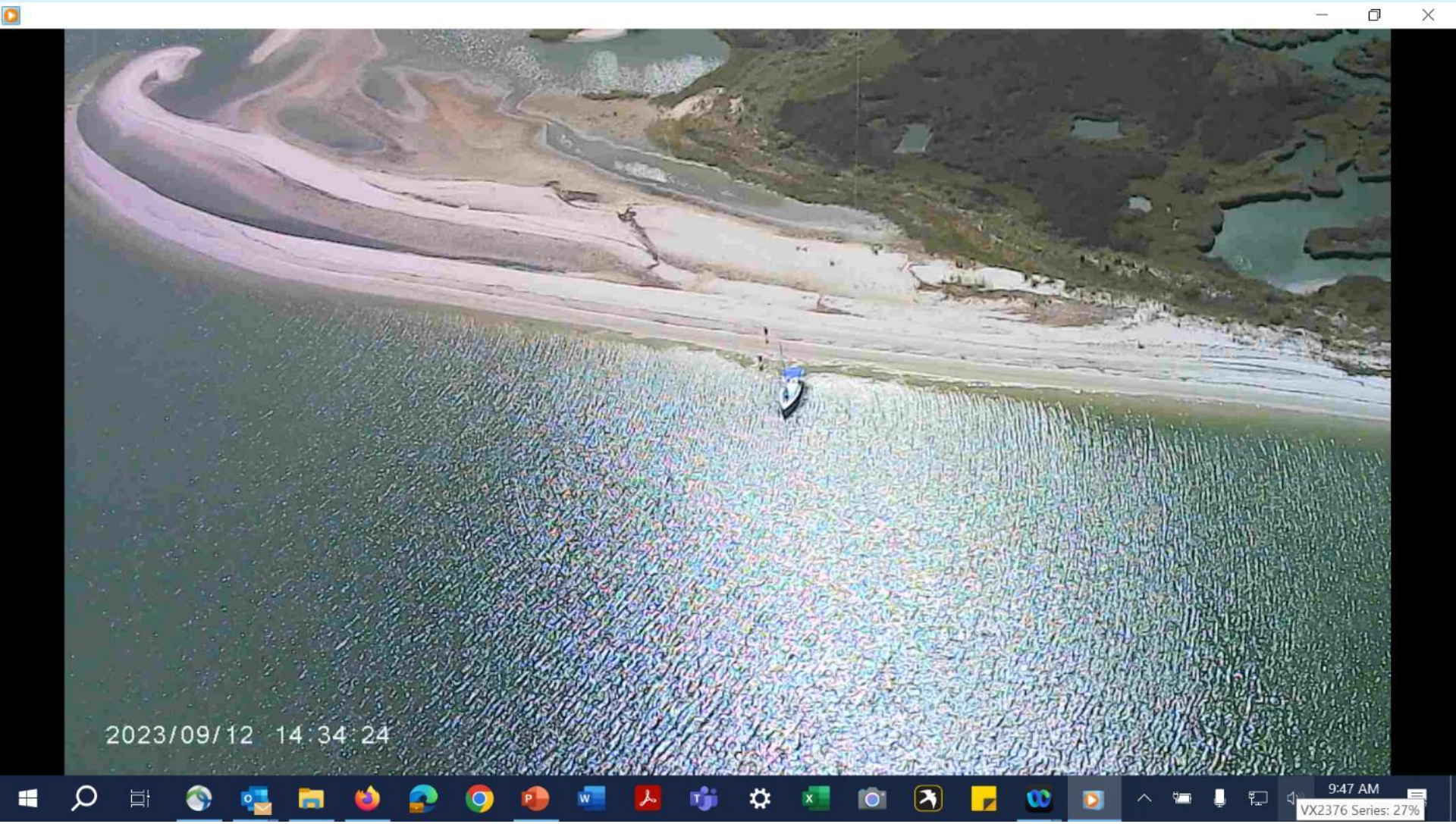
3) Controls may disappear if cursor is moved off of page



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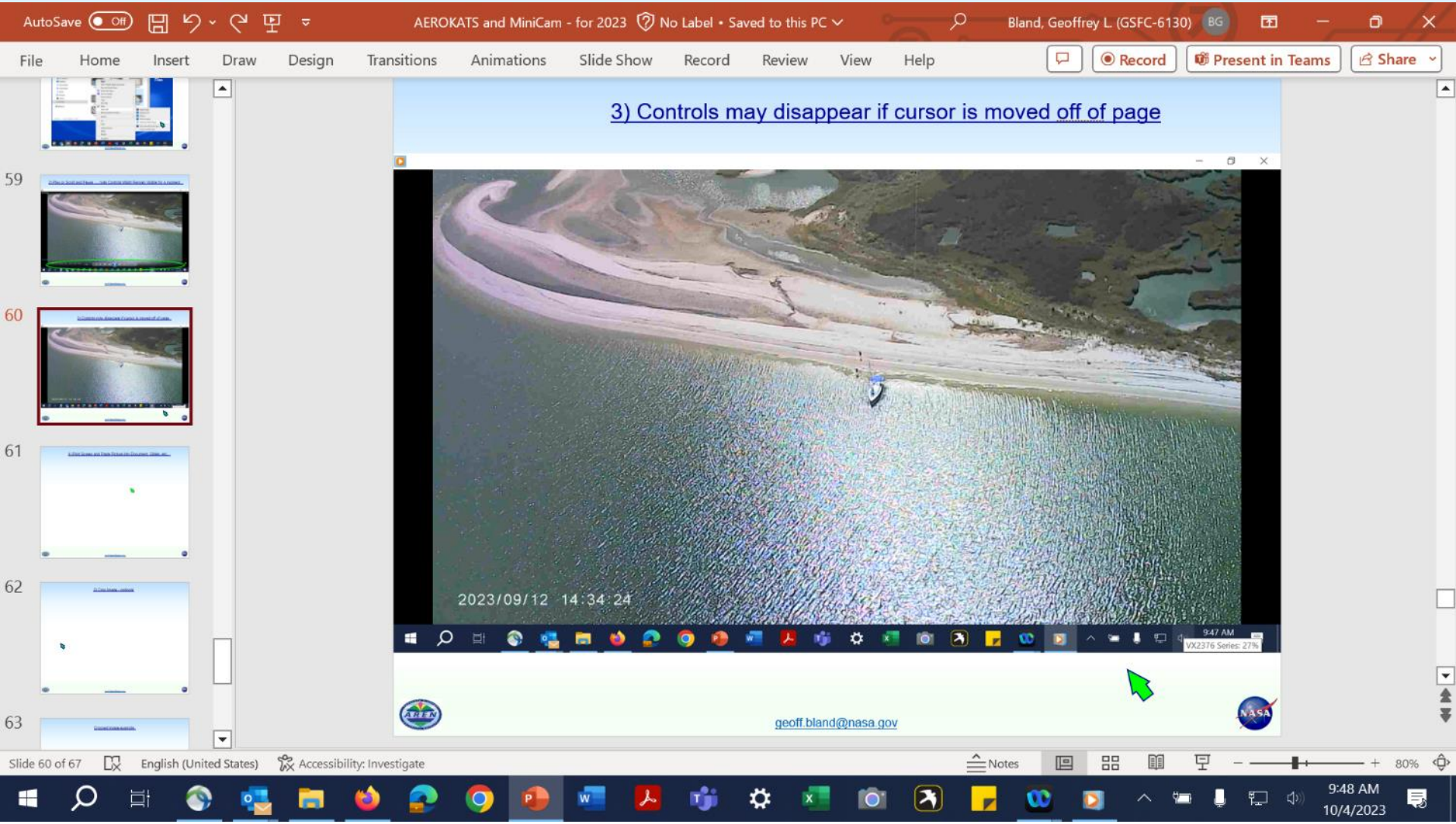
4) Print Screen and Paste Picture into Document, Slides, etc.



5) Crop Image - optional

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Cropped Image Example

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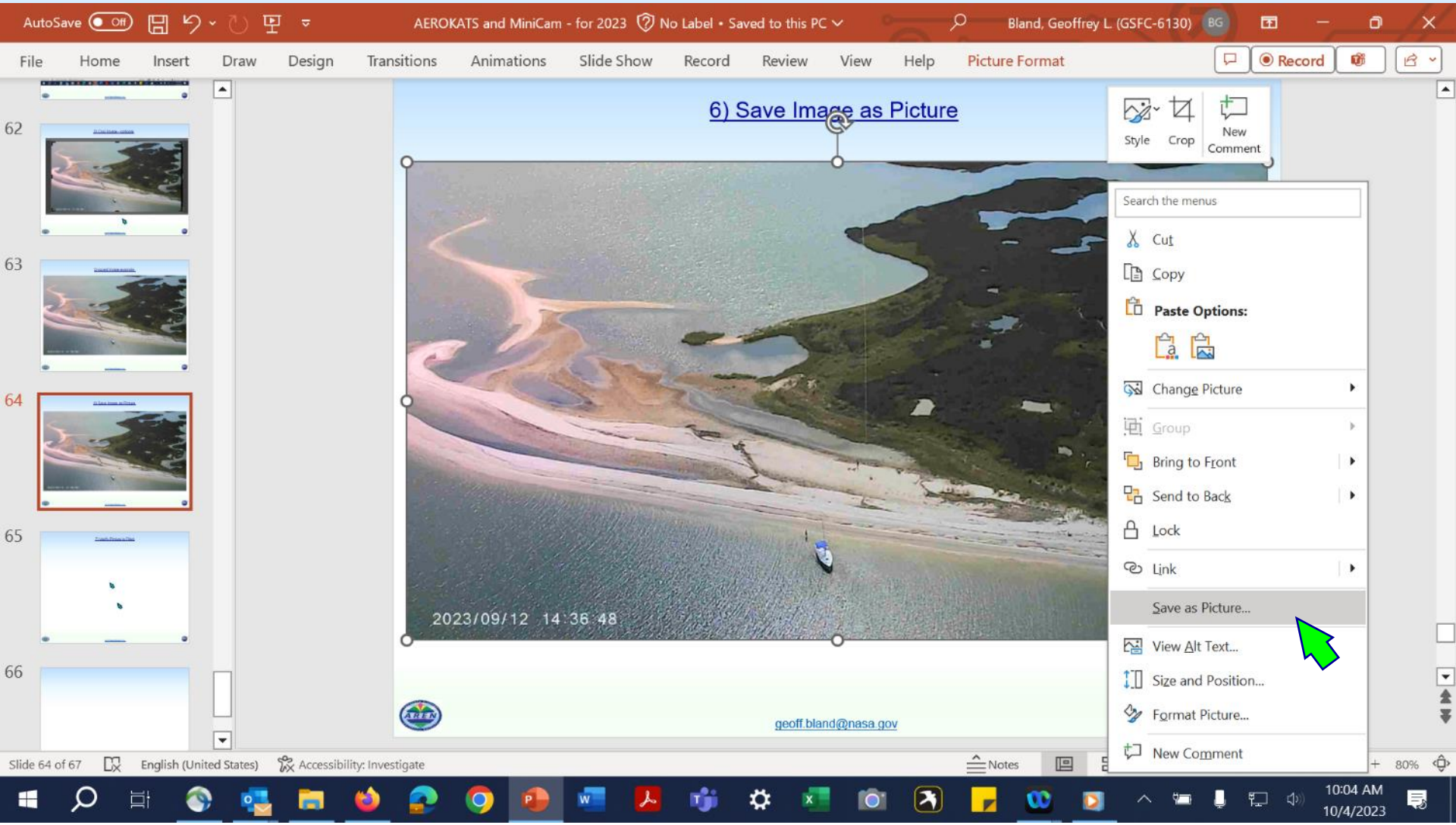
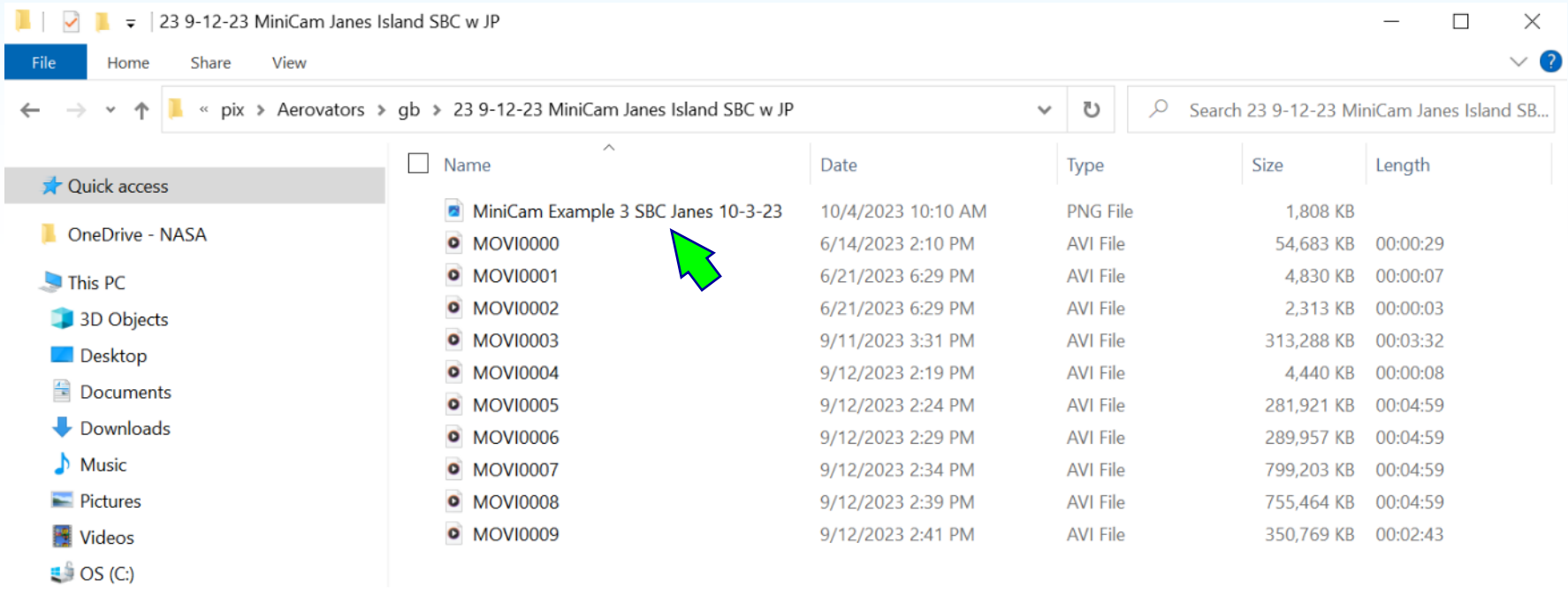
6) Save Image as Picture (Windows - Right Click)



7) Verify Picture is Filed



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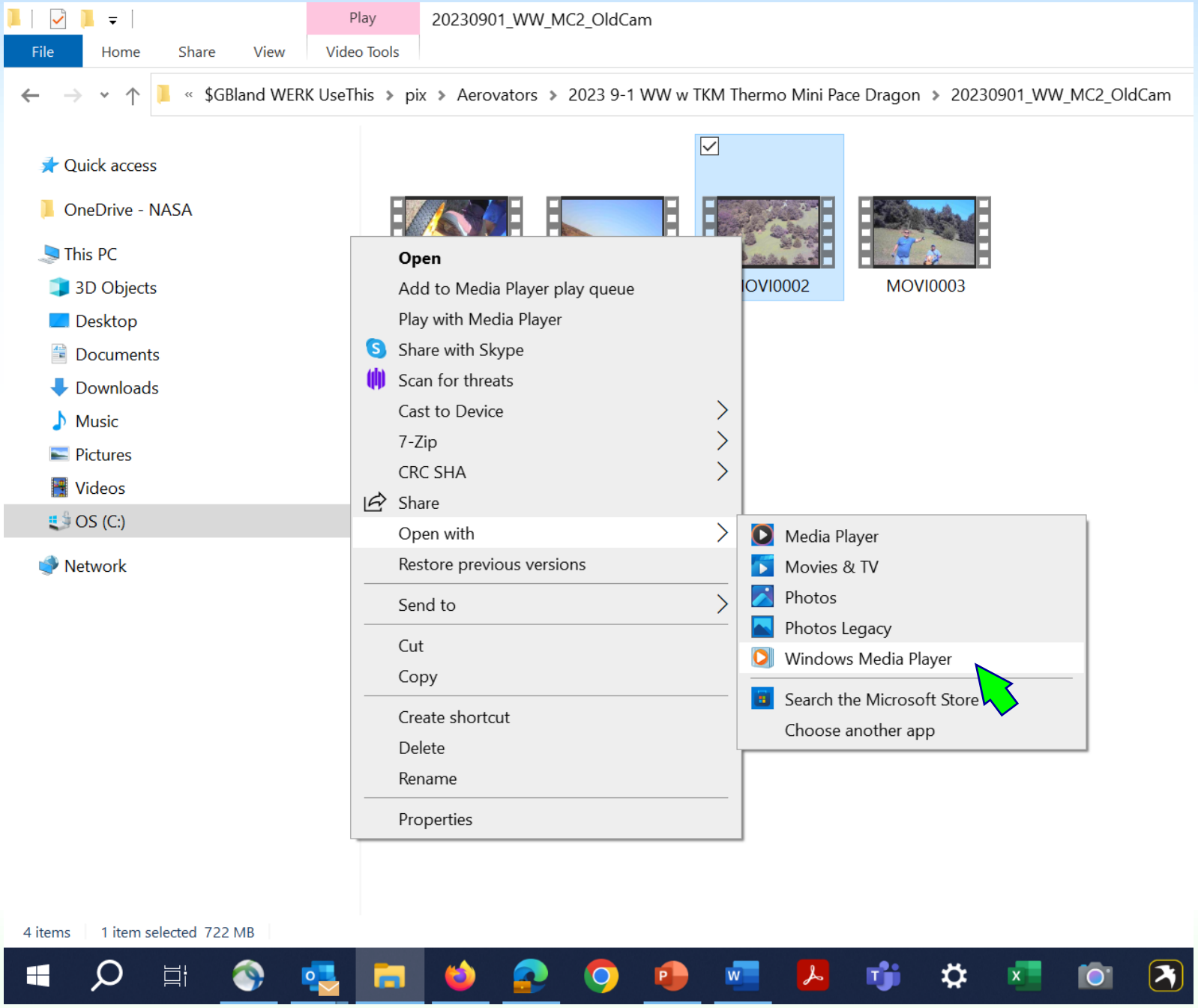
1) Open Video in application such as Windows Media Player



2) Play or Scroll and Pause .... note Controls Might Remain Visible for a moment

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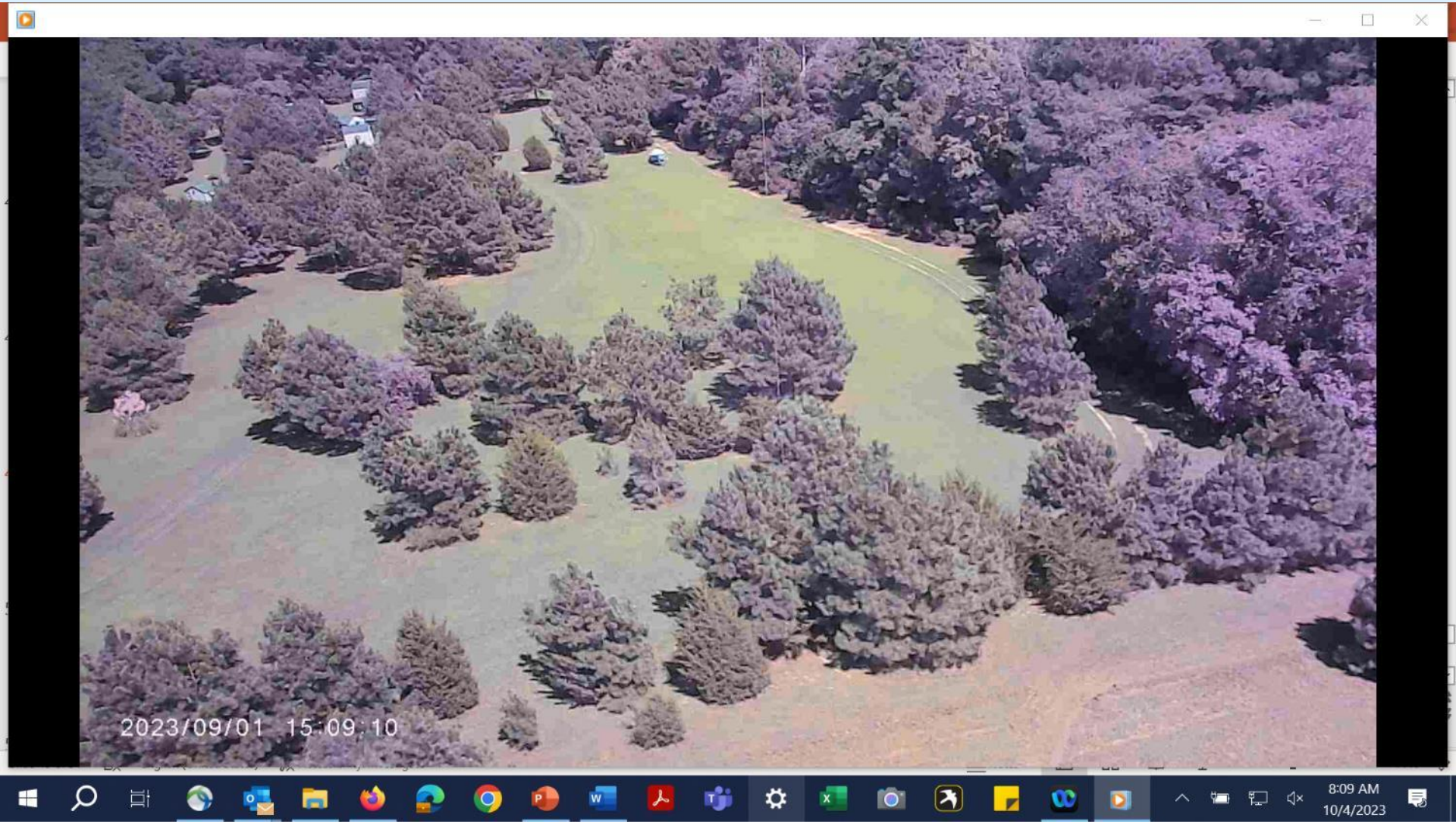
3) Controls may disappear if cursor is moved off of page



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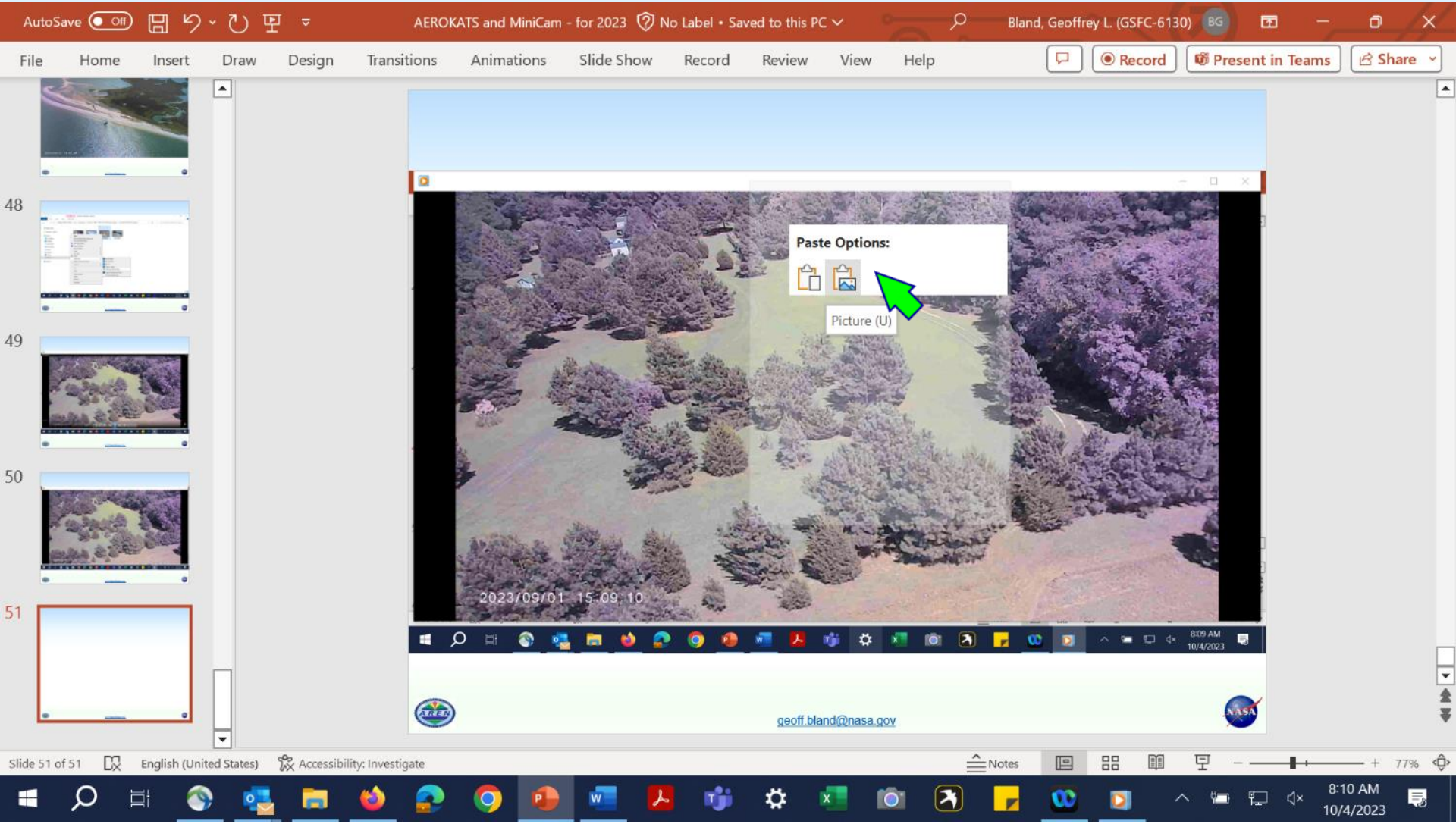

5) Crop Image - optional

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Cropped Image example

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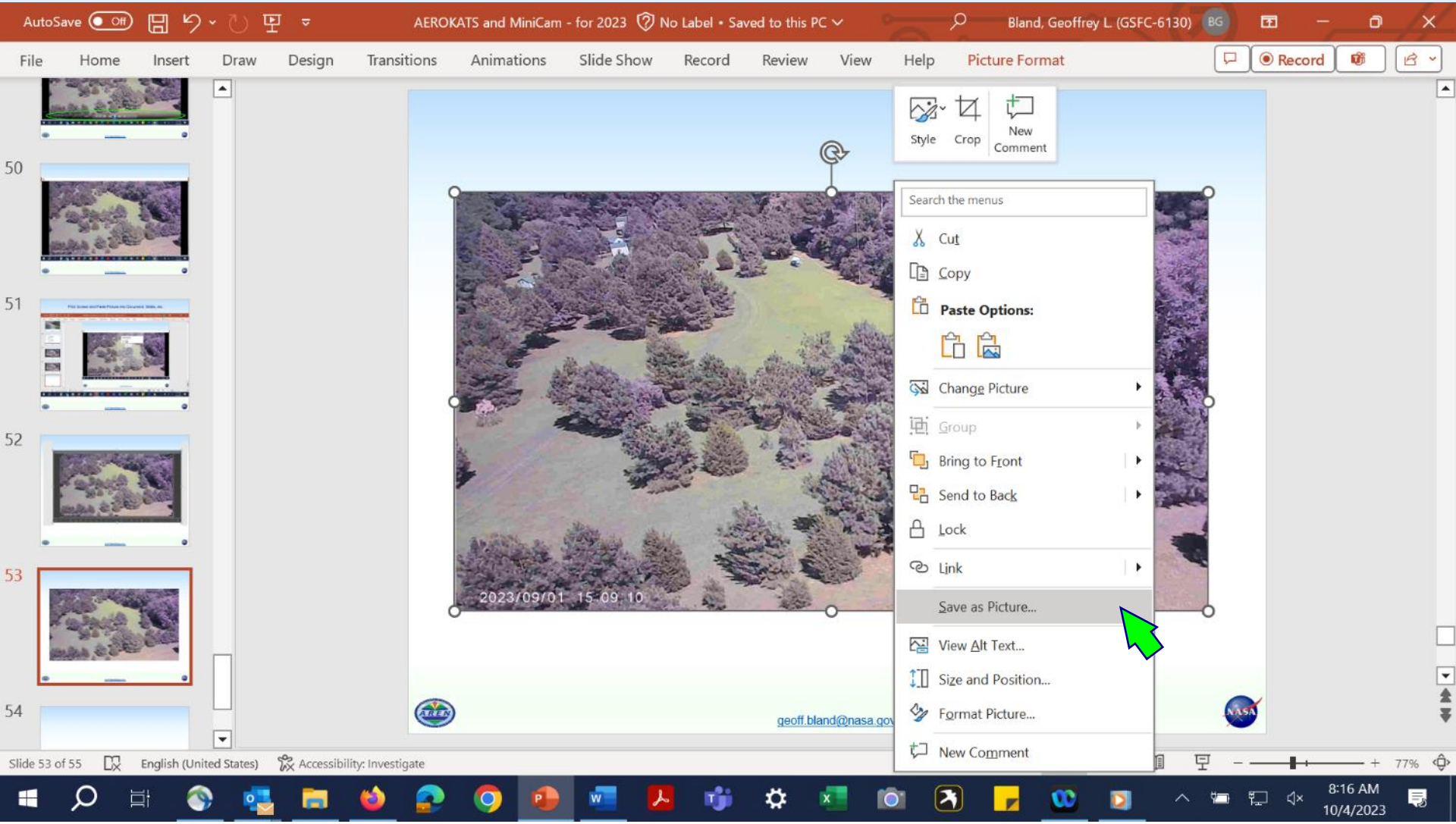
6) Save Image as Picture



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7) Verify Picture is Filed

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Organize ▾ New folder

- Quick access
- Microsoft PowerPoint
- OneDrive - NASA
- This PC
  - 3D Objects
  - Desktop
  - Documents
  - Downloads
  - Music
  - Pictures
  - Videos
  - OS (C:)
- Network

Name	Date modified	Type	Size
20230901_WW_DTV3AeroPod	9/5/2023 10:18 AM	File folder	
20230901_WW_MC2_OldCam	9/1/2023 7:51 PM	File folder	
20230901_WW_MC3_NewCam	9/1/2023 7:46 PM	File folder	
20230901_WW_PacePod	9/1/2023 7:47 PM	File folder	
20230901_WW_ThermoPod	9/5/2023 1:58 PM	File folder	
FUJI gb 9-1-23 WW	9/7/2023 8:00 AM	File folder	
MiniCam selects	9/7/2023 6:49 PM	File folder	
NIKON gb 9-1-23 WW	9/7/2023 7:49 AM	File folder	
Example MiniCam 2 pic	10/4/2023 8:17 AM	PNG File	815 KB

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