

TOOLIK GIS REPORT

OCT 1, 2021 - SEPT 30, 2022

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TOOLIK FIELD STATION

GIS



OVERVIEW



Requests Fulfilled

Website Usage & Metrics

Project Support Snapshot & Highlights

Future Drone/Sensors?

REQUESTS FULFILLED



2018: 207 Requests from 33 Projects

2019: 197 Requests from 32 Projects

2020: 115 Requests from 23 Projects

2021: 88 Requests from 23 Projects

2022: 110 Requests from 39 Projects

WEBSITE USAGE – METRICS



Rank	Webpage	Views	Users
1	GIS Equipment	776	677
2	TFS GIS & Remote Sensing Homepage	722	434
3	GIS Data Download	646	489
4	TFS Maps	358	226
5	Interactive Mapping	225	126
6	(unlisted)	212	135
7	Satellite Imagery	160	126
8	Maps: General	159	120
9	Online Maps	141	81
10	Permits and Regulations	113	87

PROJECT SUPPORT SNAPSHOT



Provided support to 54 research groups, PIs, students, and agency staff

Site selection & permitting support for 20 projects

UAS flights and processing for 19 projects

High-accuracy GPS surveys for 10 projects

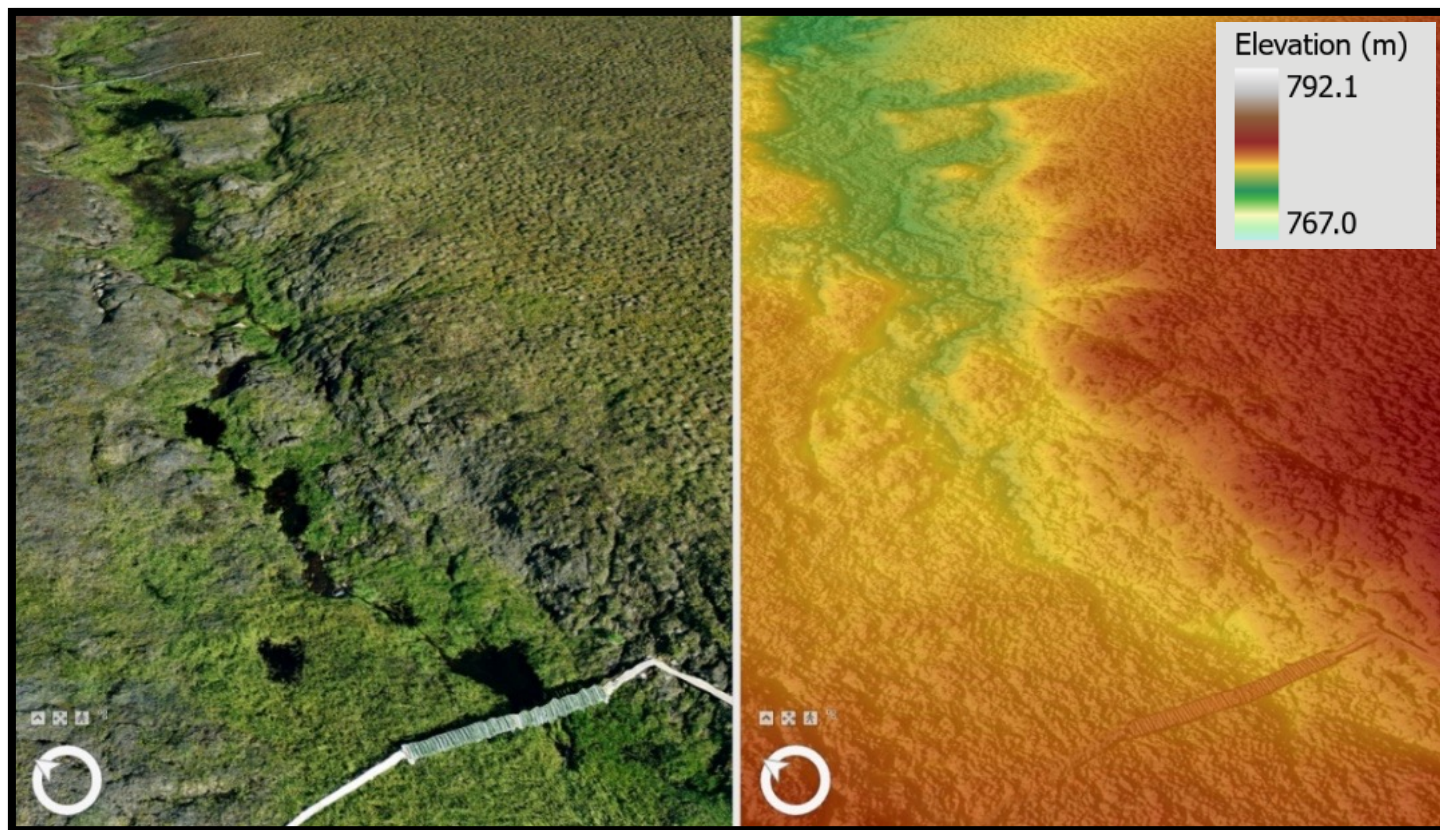
PROJECT SUPPORT: HYDROLOGY OF WATERTRACKS AND GULLIES

Pls: Evans, Godsey, Crosby, Chew

High-resolution UAS images and 3D
terrain models for Toolik River
Thermokarst during summer 2022

Additional flights and products for their
Galbraith site are planned for summer
2023

Pls approved co-authorship for GIS Team
for future papers that include UAS
products



Real-color image of the southern end of
the TRTK research site.

Colorized and hillshaded 3D terrain model of
the same area

PROJECT SUPPORT: THARCPEAT-2 (INTERACT)

PI: Grau

Investigating variety and variability of permafrost characteristics across features (low- and high-centered polygons) on Alaska's North Slope

Produced high-resolution orthophotos, digital elevation models, and NDVI maps

Required quick turn-around: completed 9 flights at 2 sites on Aug. 3 and provided products in time to support researcher's field campaign in Sept.

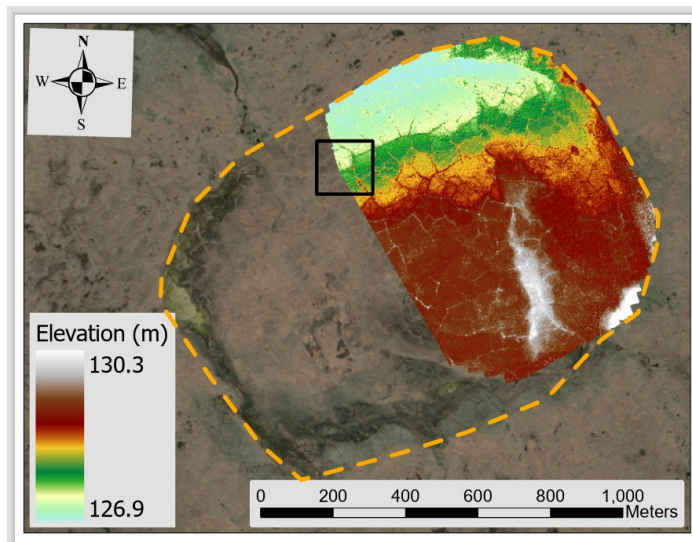


Fig. 1

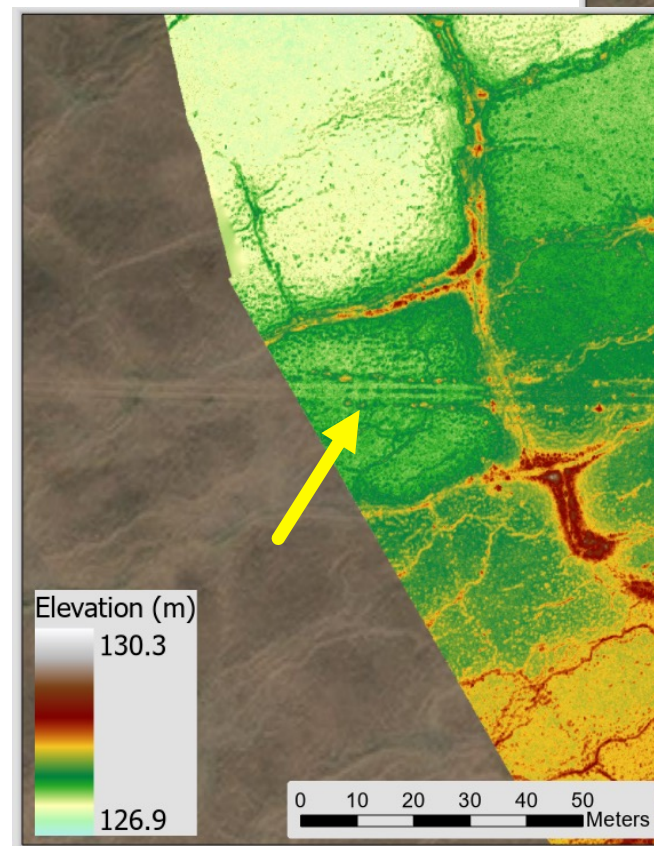


Fig. 2

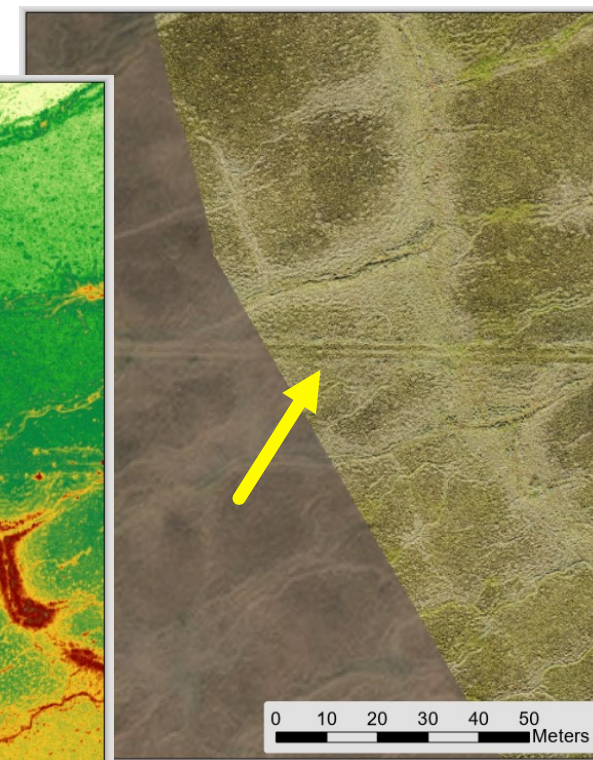


Fig. 3

FUTURE DRONE PLATFORM & SENSORS?



A growing # of researchers have requested high detail imagery over large areas (≥ 50 ha).

Our current fleet of propeller-driven drones are good for small plot areas, like the LTER plots (0.15ha), but our fleet can not safely and efficiently complete large area requests.

VTOL (Vertical Take Off and Landing) fixed-wing drones are particularly suitable for our areas around Toolik.

Leading candidate: WingtraOne:

Est. cost: \$21,000

Sensors?

Thermal, Methane, Carbon Dioxide, others?

VUE TZ20-R: High resolution, Radiometric Gimbaled Thermal Zoom Drone Payload



\$7,150.00



U10 Methane Detector

A dedicated methane detector for DJI drones.

- Detects Methane (CH₄)
- Up to 100m Detection Distance
- 25ms Response Time
- 5ppm.m Stationary Detection Limit
- 720p visual camera
- Compatible with DJI M300 RTK, DJI M200 Series V2 & V1

