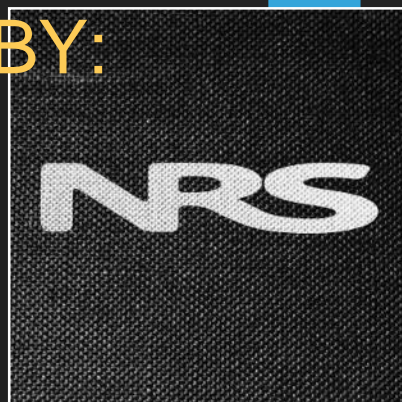




ANTARCTIC KAYAK EXPEDITION

SPONSORED BY:





1000 KM
4
EXPLORER
S
2 MONTHS
1 EPIC
ADVENTUR

OVERVIEW

- ▶ A team of 4 (+2 filmmakers) will undertake a journey to navigate the Antarctic Peninsula by sea kayak for science and exploration.
- ▶ Along the way, the team will collect data using:
 - ▶ Ocean surface layer data, shallow CTDs
 - ▶ UAV flights for aerial imagery, coastal terrain data, ice cover analysis, etc
 - ▶ Ice floe tracking and mapping
 - ▶ Portable AWS (automated weather station) for Met. Data
 - ▶ Passive acoustic sampling
- ▶ And have the adventure of a lifetime!

GOALS

- ▶ Demonstrate that we can conduct high-quality science in a low-impact and low cost way
- ▶ Navigate to the Antarctic circle and back
- ▶ Locate and assess locations for potential future field camp
- ▶ Create a documentary film about the expedition

ANTARCTIC SCIENCE – THE TRADITIONAL WAY

- ▶ Large, expensive ships (\$30-100k/day!)
- ▶ Very high overhead costs (lots of staff)
- ▶ Limited science scope
- ▶ Guarded data – not openly available



ANTARCTIC SCIENCE – THE TRADITIONAL WAY

- ▶ Carbon-heavy
- ▶ High fuel use
 - ▶ Idle: 800gal/day
 - ▶ 1500-3500gal/day



ANTARCTIC SCIENCE – OUR WAY

- ▶ Environmentally friendly (low impact)
 - ▶ Sail-powered support vessel
 - ▶ Human powered and sustainably powered data collection
- ▶ Relatively low cost
- ▶ Open access to all data



ANTARCTIC KAYAK EXPEDITION

THE TEAM



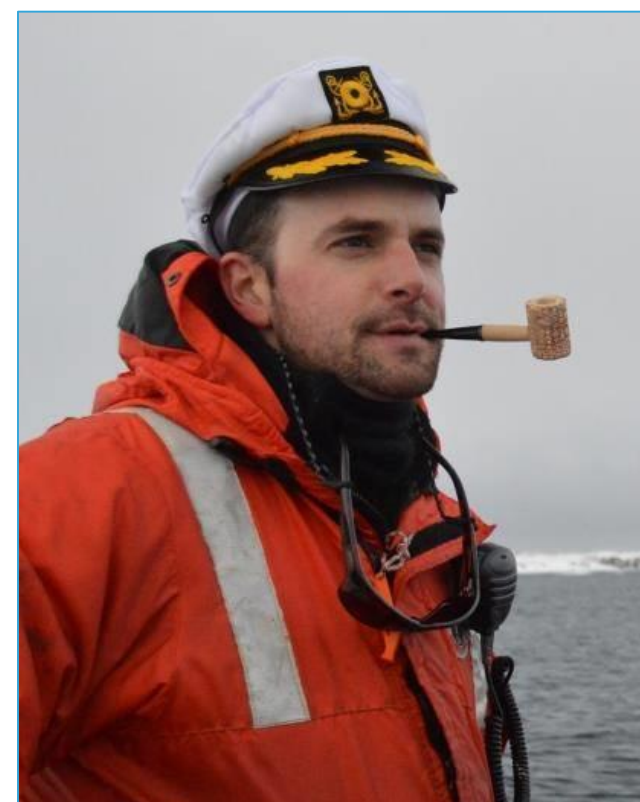
Lance,
Expedition Leader
Weatherman



Hannah,
Science Tech
Geologist



Chris,
Physician
Ice Climber

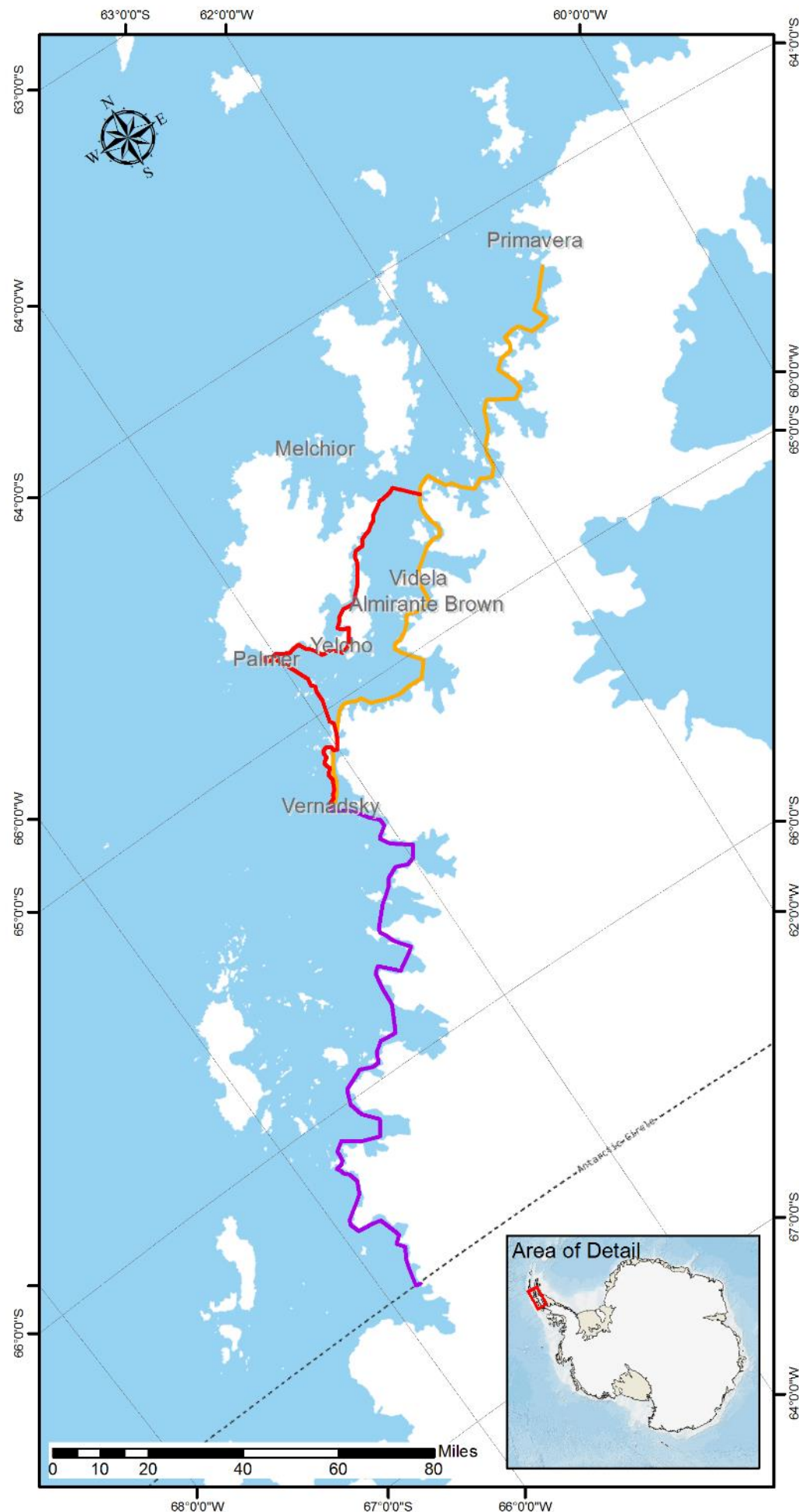


Julian,
Electronics Guru
Water Rescue

EXPEDITION ROUTE



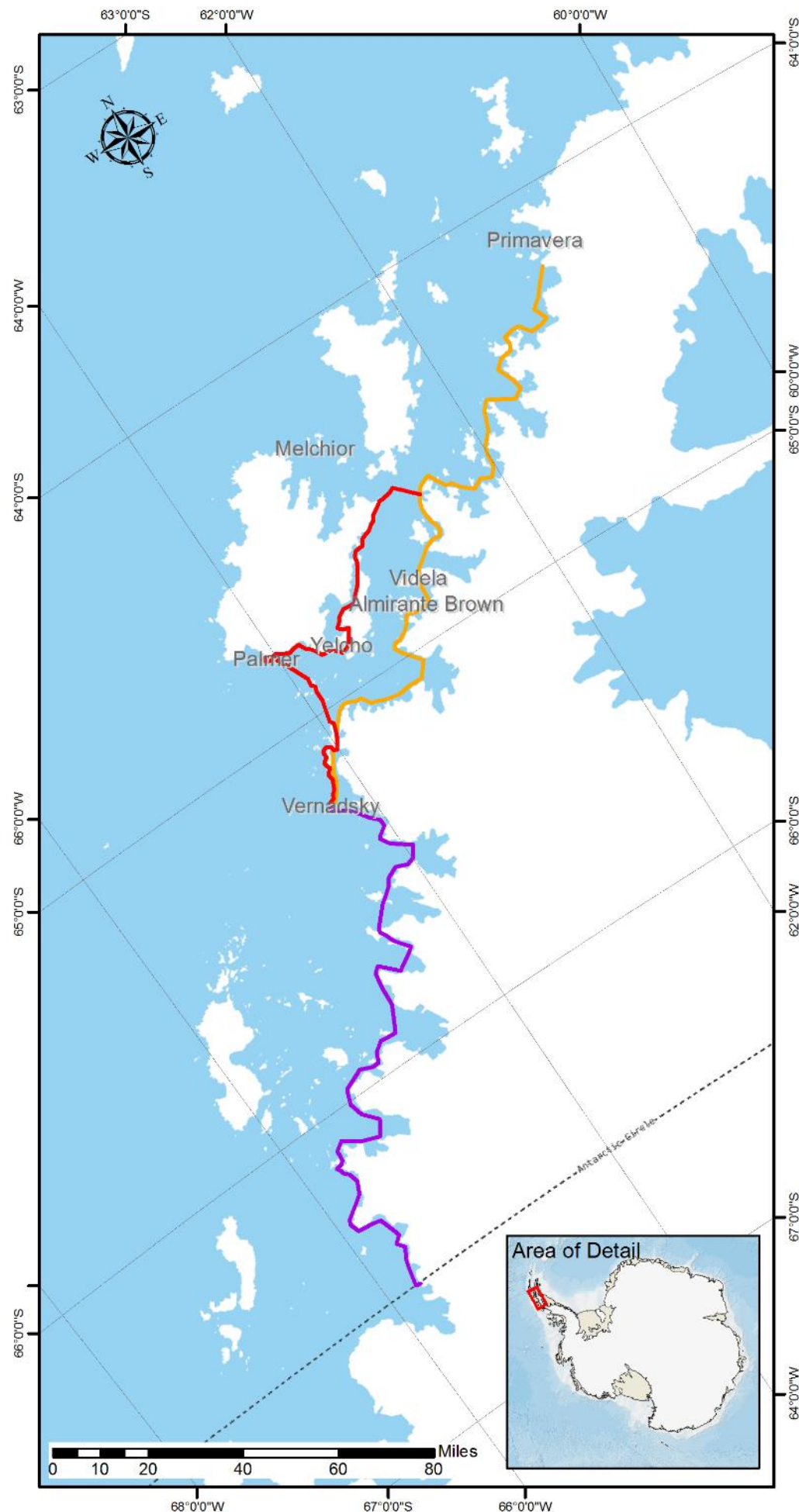
EXPEDITION ROUTE



- ▶ Start at the Northern end of the Peninsula near Primavera base (Argentina)
- ▶ Travel the mid-Peninsula region, down the Gerlache Strait to Vernadsky base (Ukraine)
- ▶ Push South to the Antarctic Circle, and return to the Vernadsky area
- ▶ Paddle North towards Palmer Station (USA), take the Neumeyer Channel towards Brabant Island, stopping at Port Lockroy (UK)
- ▶ Finish back near Twin Hummock Is.
- ▶ 2 months paddling covering approx. 1000 km

EXPEDITION ROUTE

- ▶ Considerations:
 - ▶ Abide by the Antarctic Treaty
 - ▶ Avoid ASMA / ASPAs
 - ▶ Coordinate with Antarctic Bases for visits
 - ▶ Coordinate with Cruise Ship operators
 - ▶ Be safe but have fun



OBLIGATORY WILDLIFE PHOTOS



OBLIGATORY WILDLIFE PHOTOS



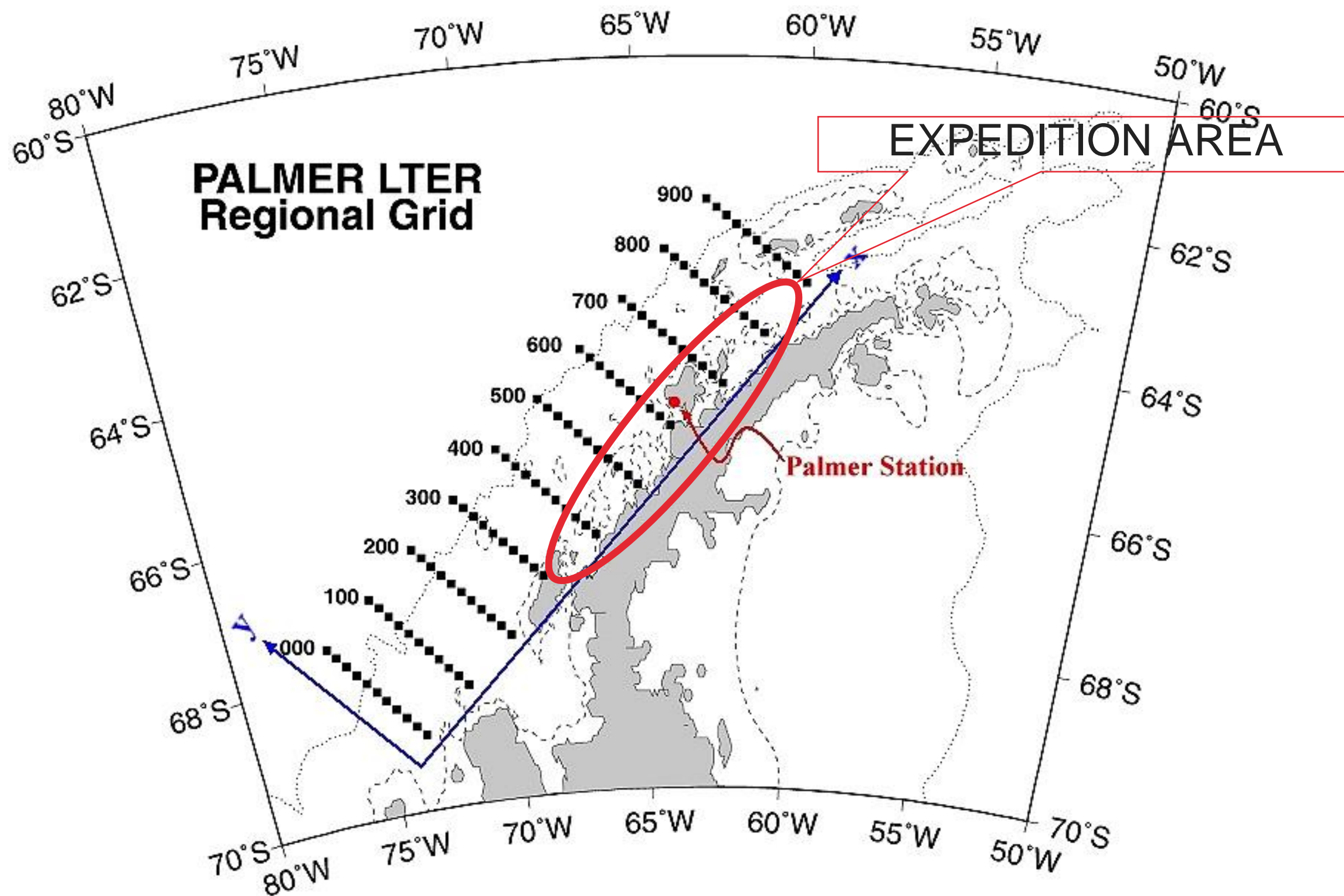
ANTARCTIC KAYAK EXPEDITION



SCIENTIFIC DATA COLLECTION

- ▶ Oceanographic data collection via continuous sensor data
 - ▶ Temp/Conductivity + Discrete CTD casts
- ▶ Coastal terrain and aerial imagery via fixed-wing UAV flights
- ▶ Antarctic Heritage Site documentation via multi-rotor UAS flights (not yet agreed upon)
- ▶ Meteorological (AWS) station deployments
- ▶ ‘Science of Opportunity’
 - ▶ Buoy deployments, ice flow tracking, acoustic recording
- ▶ Data made available to researchers under the Open Data License (opendatacommons.org)

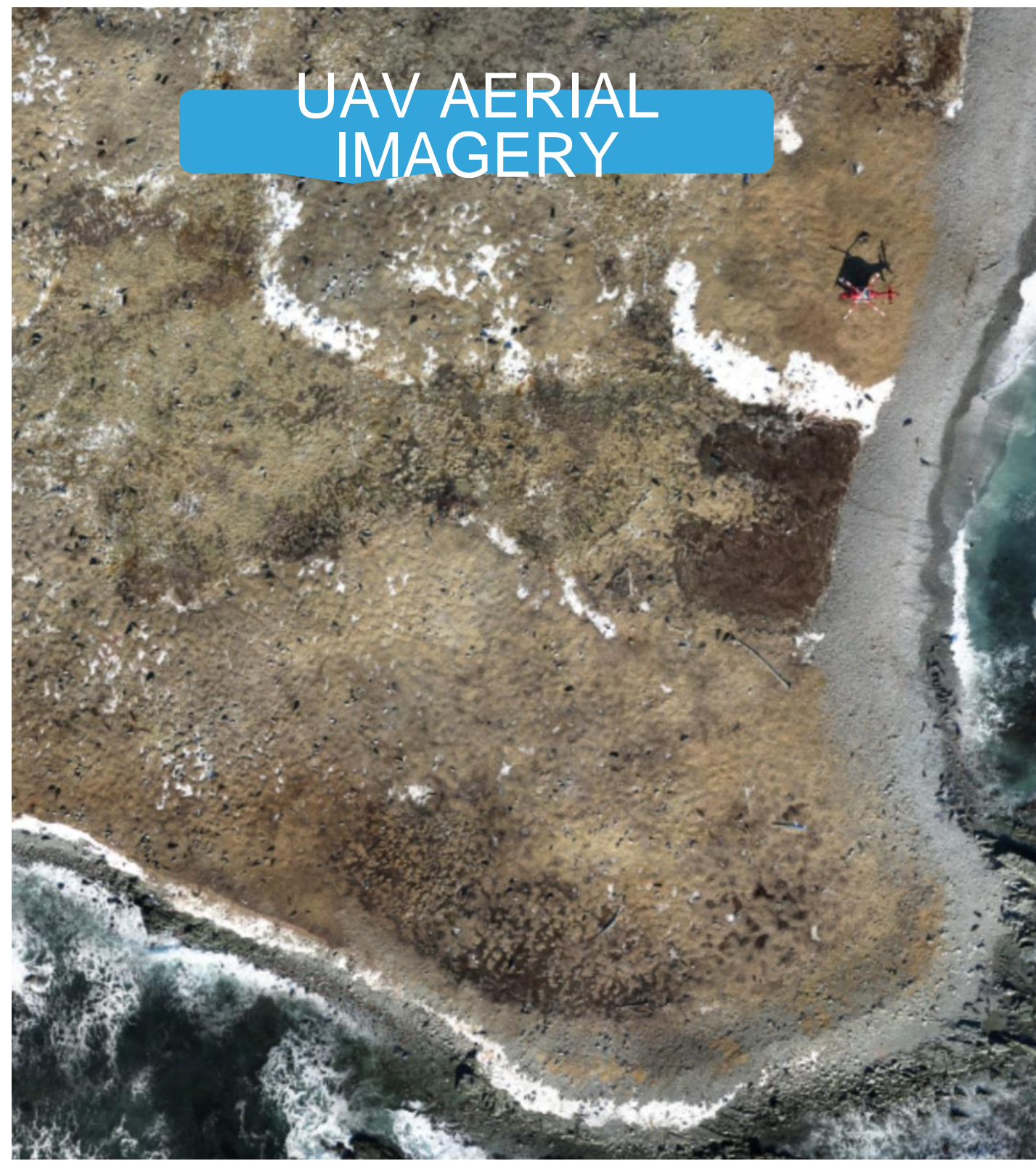
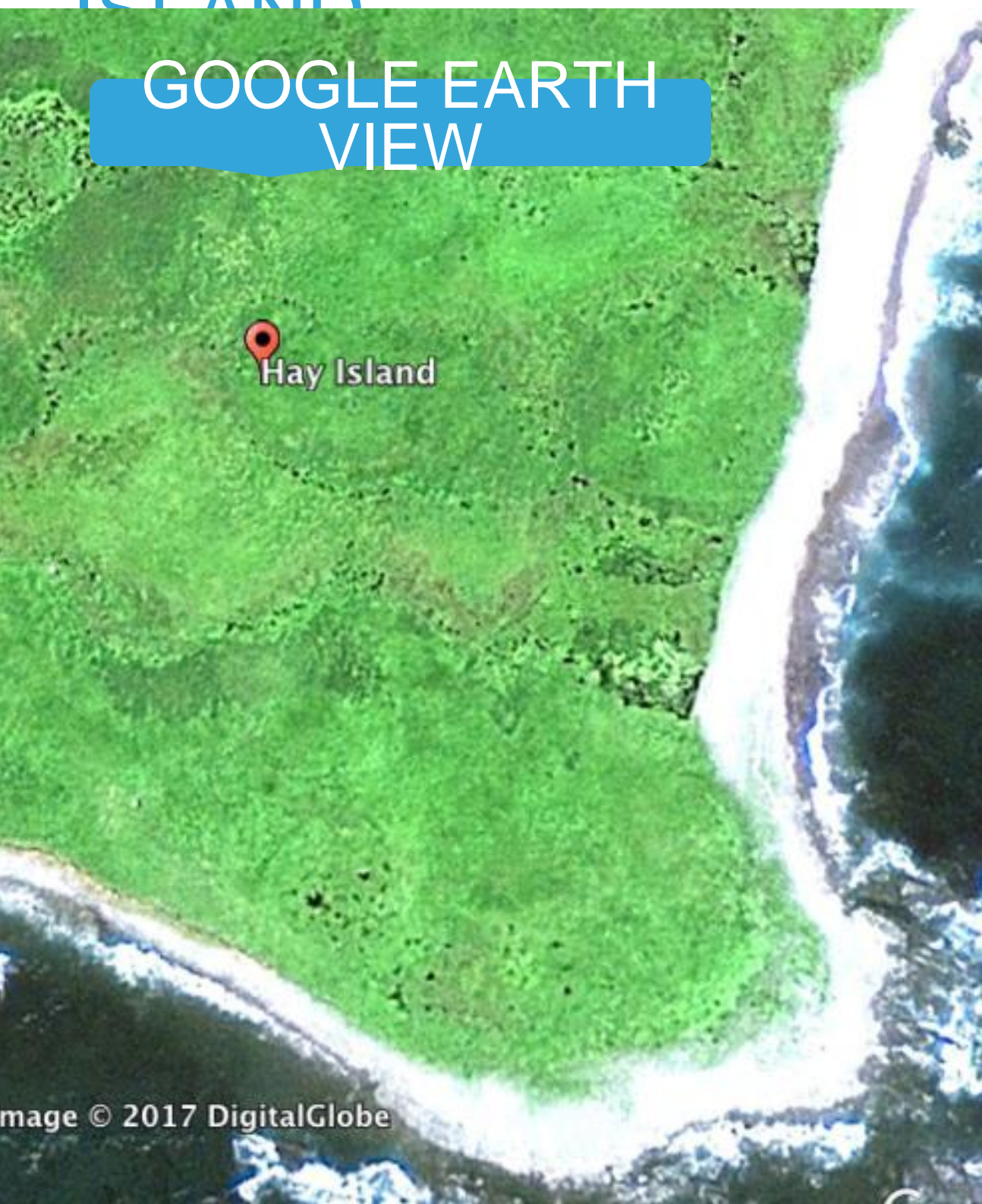
SCIENTIFIC DATA COLLECTION



UAV DATA COLLECTION

- ▶ Using Fixed-Wing and Multi-rotor (quadcopter) UAVs to collect aerial imagery
- ▶ What can we do with it?
 - ▶ High-resolution maps
 - ▶ 3D terrain models
 - ▶ Image analysis - population studies, ice cover %, etc.
 - ▶ Real-time decision-making support

UAV DATA COLLECTION - AERIAL MAPS: HAY ISLAND



UAV DATA COLLECTION - AERIAL MAPS: HAY ISLAND

Images courtesy of Duke Marine Lab



UAV DATA COLLECTION - EXAMPLE: AVIAN ISLAND, ANTARCTICA



ANTARCTIC KAYAK EXPEDITION

UAV DATA COLLECTION - EXAMPLE: AVIAN ISLAND

Video courtesy Duke Marine Lab



UAV DATA COLLECTION - KAYAK LANDING SITES

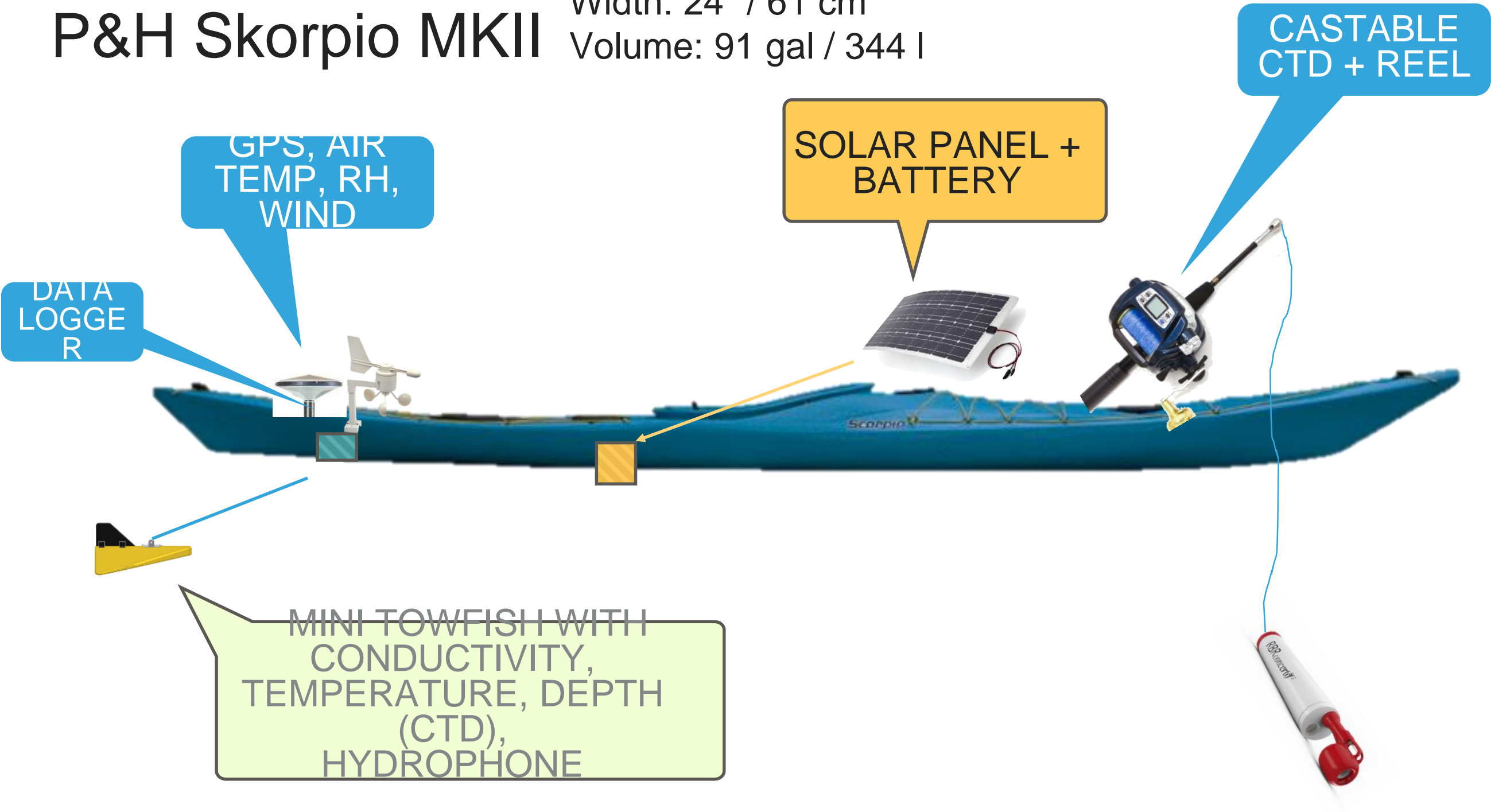
EXAMPLE: PROSPECT POINT, ANTARCTICA



THE BOATS

P&H Skorpio MKII

Length: 17' 7" / 535 cm
Width: 24" / 61 cm
Volume: 91 gal / 344 l



HOW TO HELP

- ▶ Seeking sponsors and partners
 - ▶ Currently backed by NRS, P&H Kayaks, Soylent, RBR
 - ▶ Sharing data with DUMML & Rutgers RUCOOL
- ▶ Do you have science/adventure ideas for our trip?
- ▶ 501(c)3 non-profit – Donate to our cause!
- ▶ Visit www.paddlethepeninsula.com for more info

www.paddlethepeninsula.com

QUESTIONS?

