

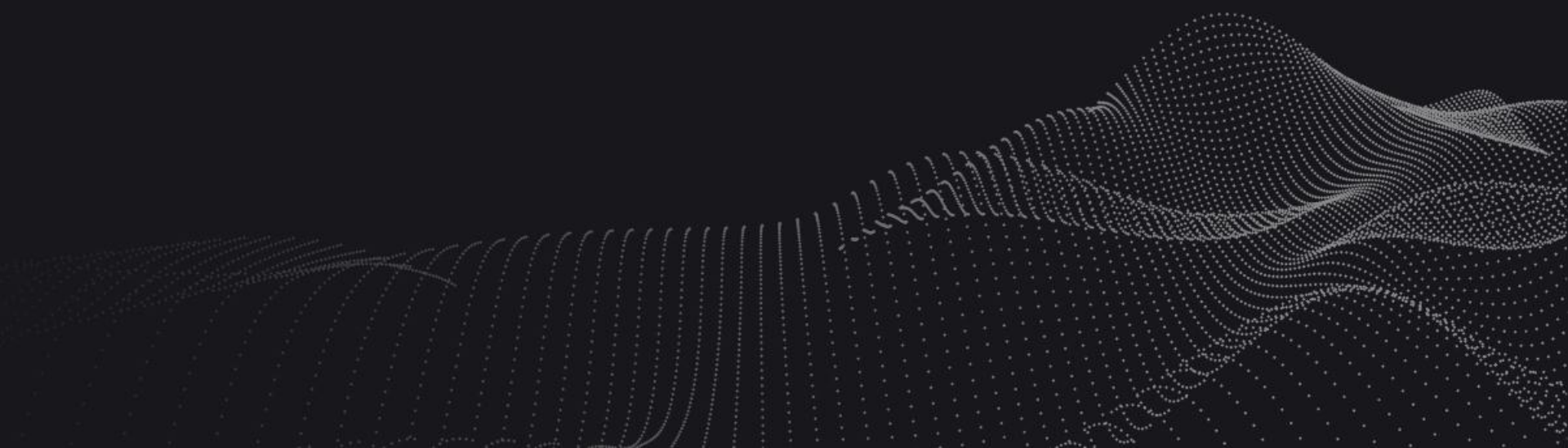
09/07/2025 3D Underwater Mapping from Above and Below

Advanced Bathymetric Survey Using The YellowScan Navigator: Applications in Erosion and Soil Movement Tracking.

Johann Berthelot

YellowScan

Designed to innovate.



Outline

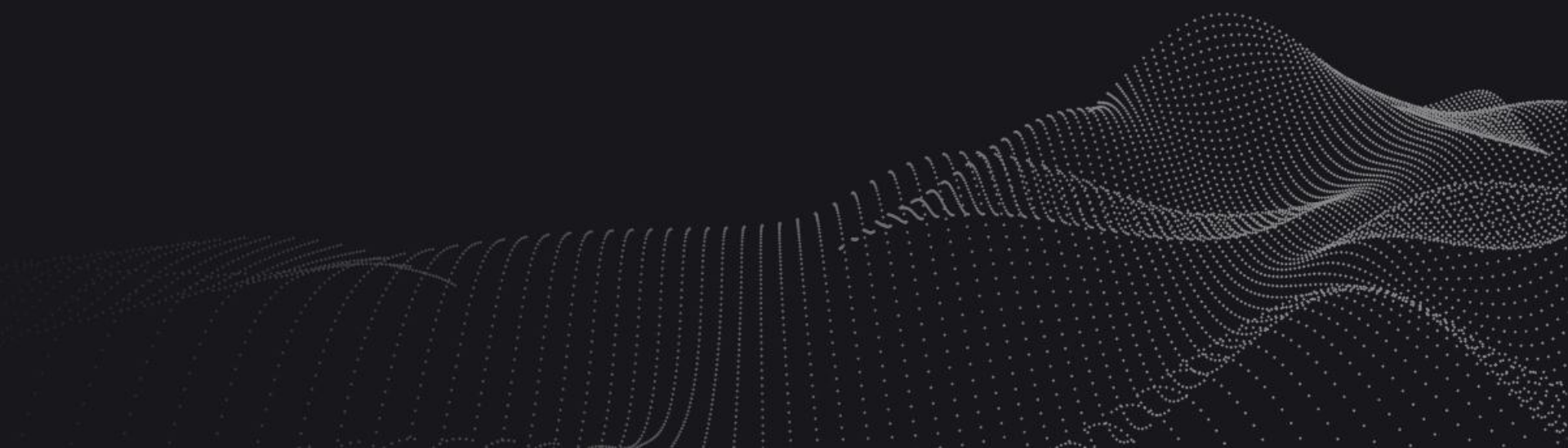


1 / System presentation

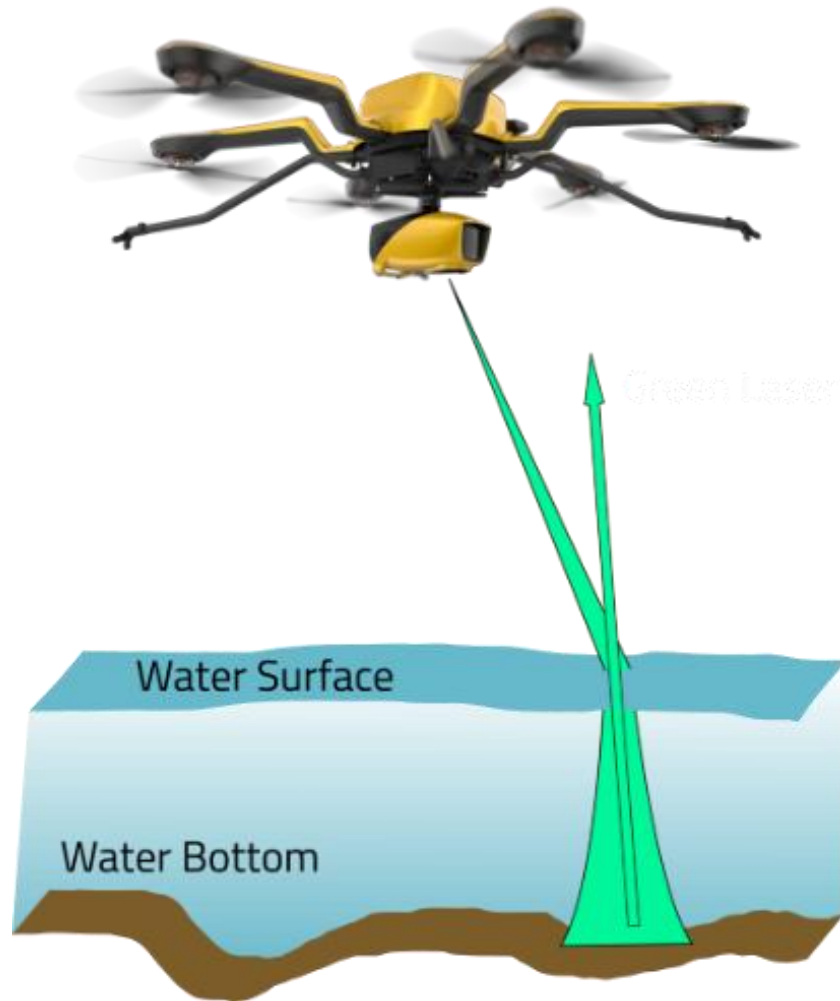
2 / Processing description

3 / Results and discussion

4 / Conclusion and perspectives



The Yellowscan Navigator



Precision	3 cm
Accuracy	3 cm
Max. Depth	2 Secchi
Scan Patterns	Ellipse
Wavelength	532 nm
Operating Altitude	25 to 100 m
Scanner FOV	40°
Mode	Fullwave
PRF	>20 kHz
Weight	4.2 kg (8.7 lbs) battery included
Dimensions	L 35 x W 16 x H 19 cm
Autonomy	45 min. typ.

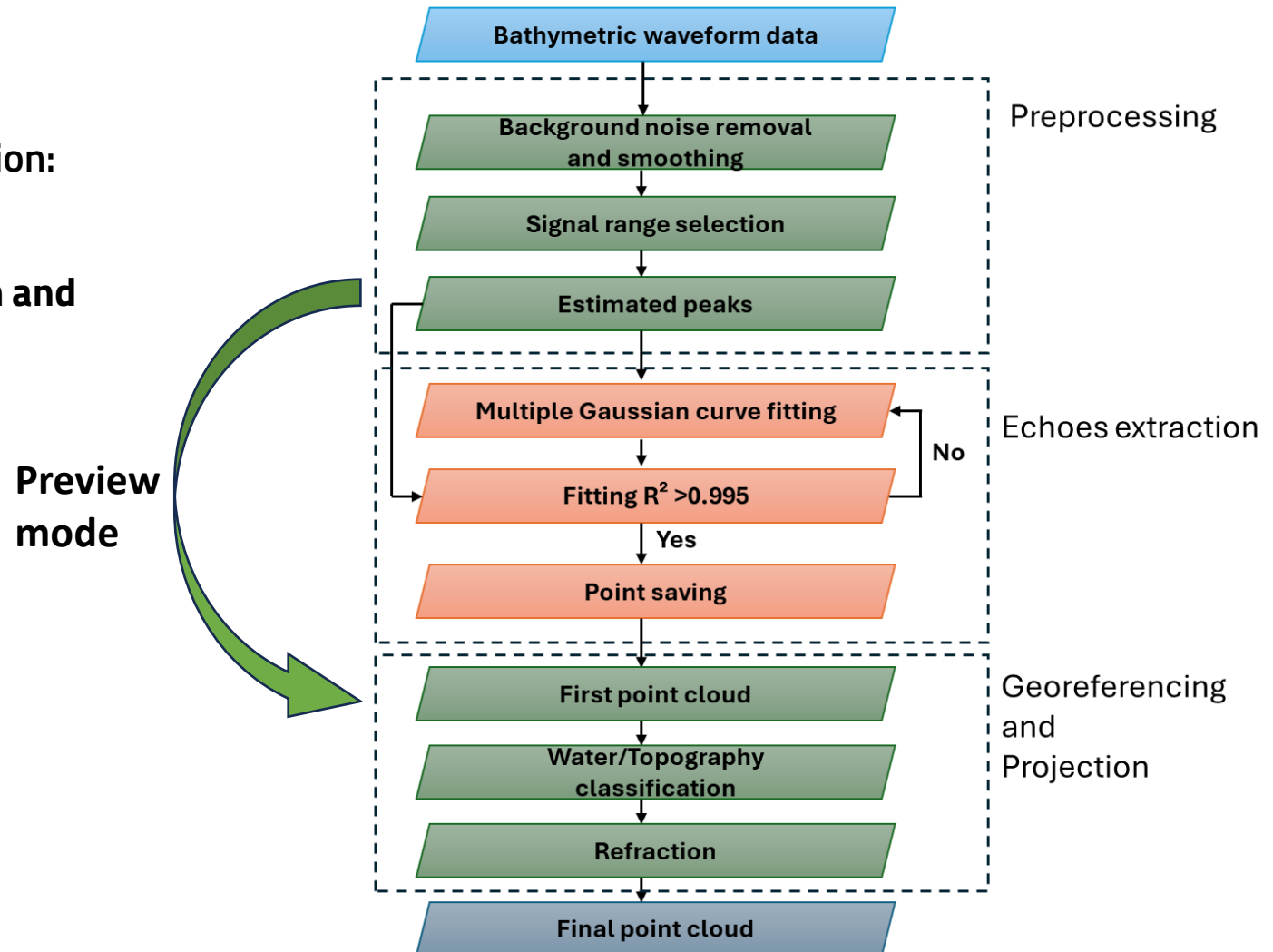
Data processing



All processing is done with CloudStation:

- Fullwave processing
- Automatic Water classification and Refraction
- Export las fullwave

Processing time of **10 min flight**:
Preview mode: **10 min**
Gaussian Fitting mode: **2 Hours**



Study's Objectives

Monitoring River Bed **Dynamics**

Using **Multi-Temporal** Data

Acquired from **UAV**-based

Bathymetric Lidar

In **River** Environment

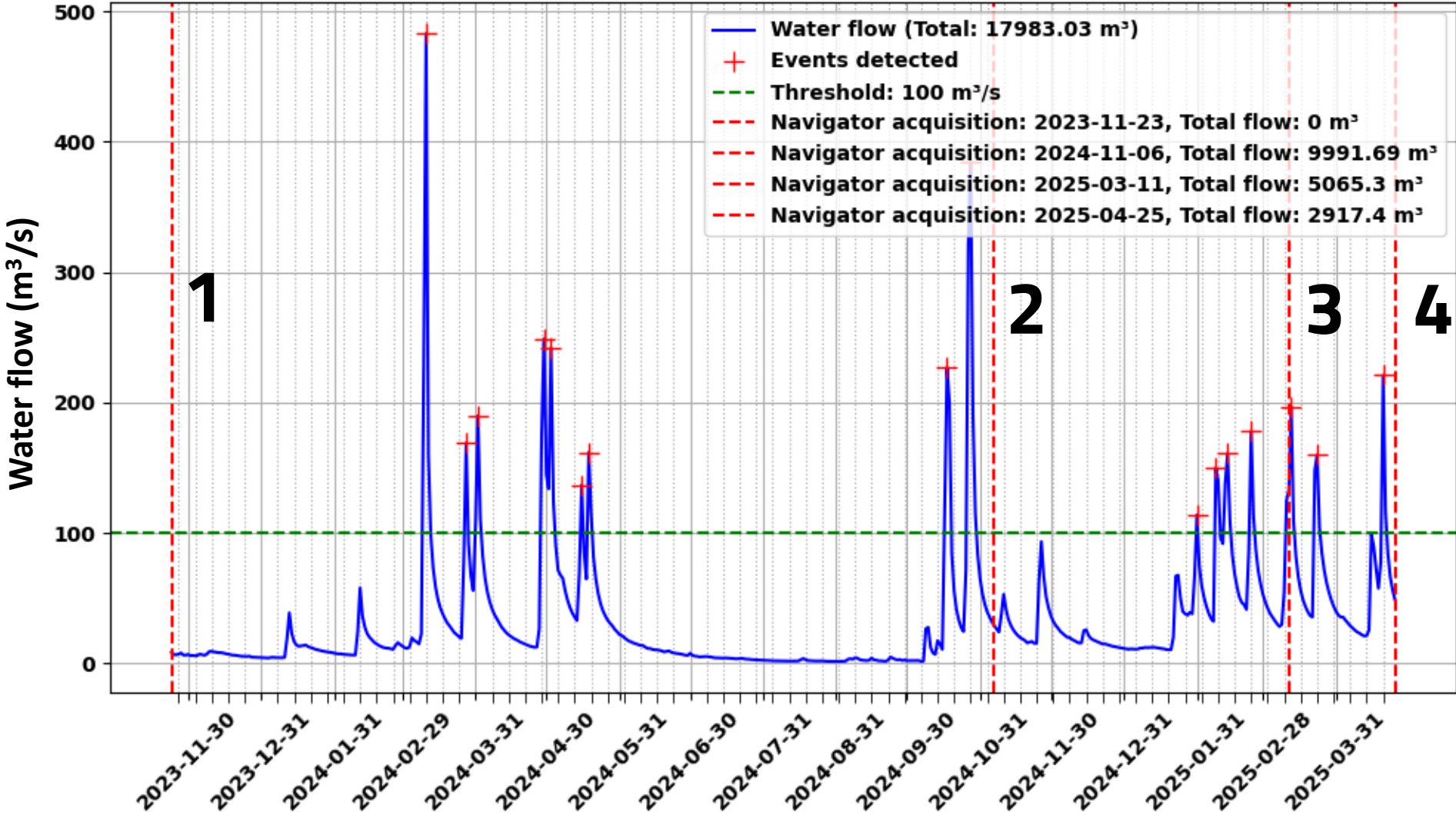


Multi temporal data acquisition

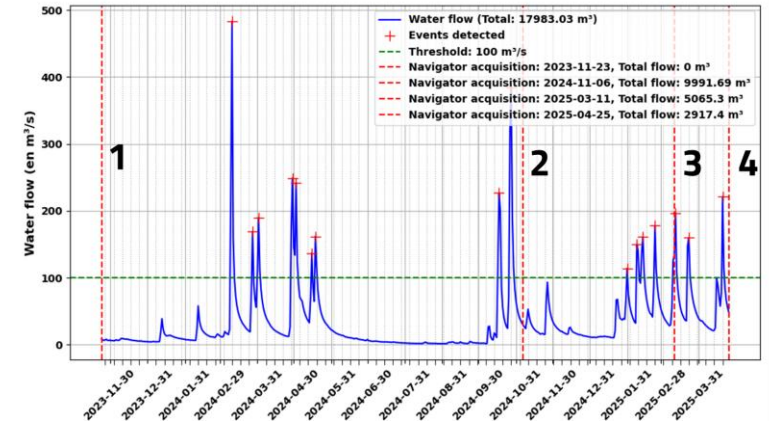
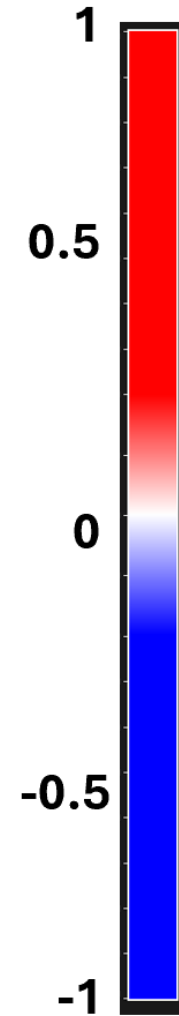
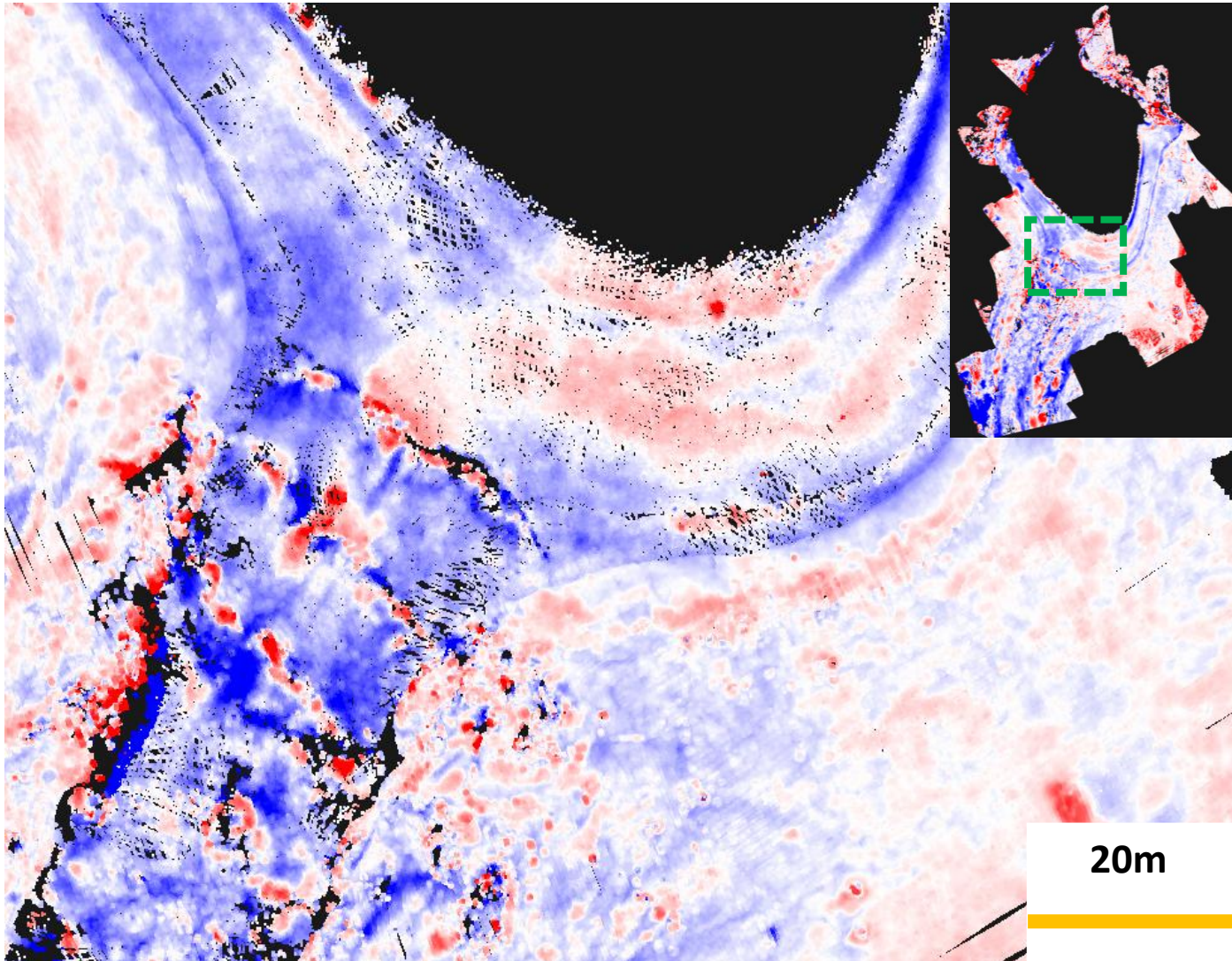




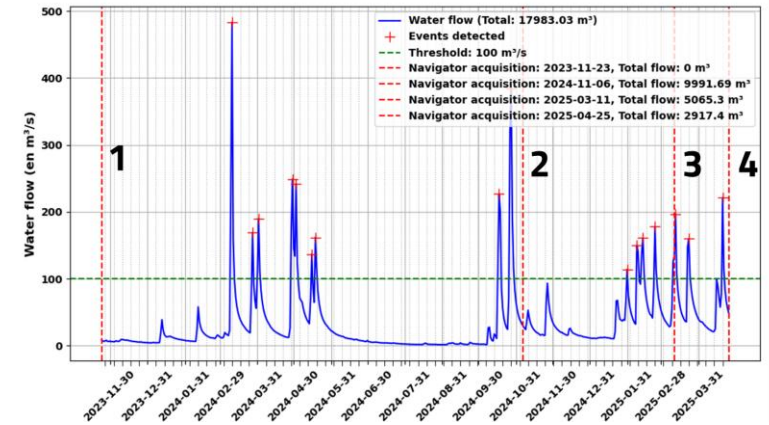
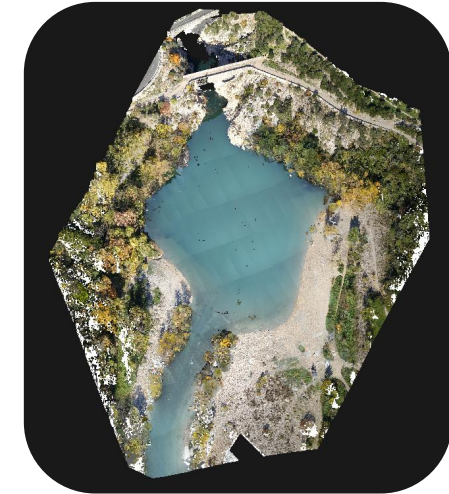
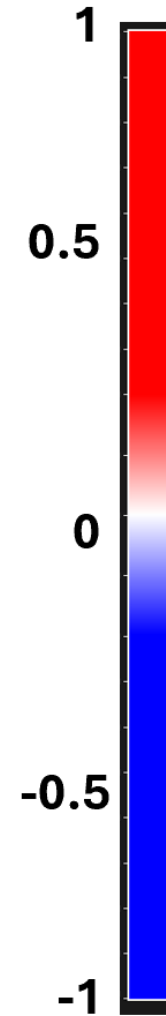
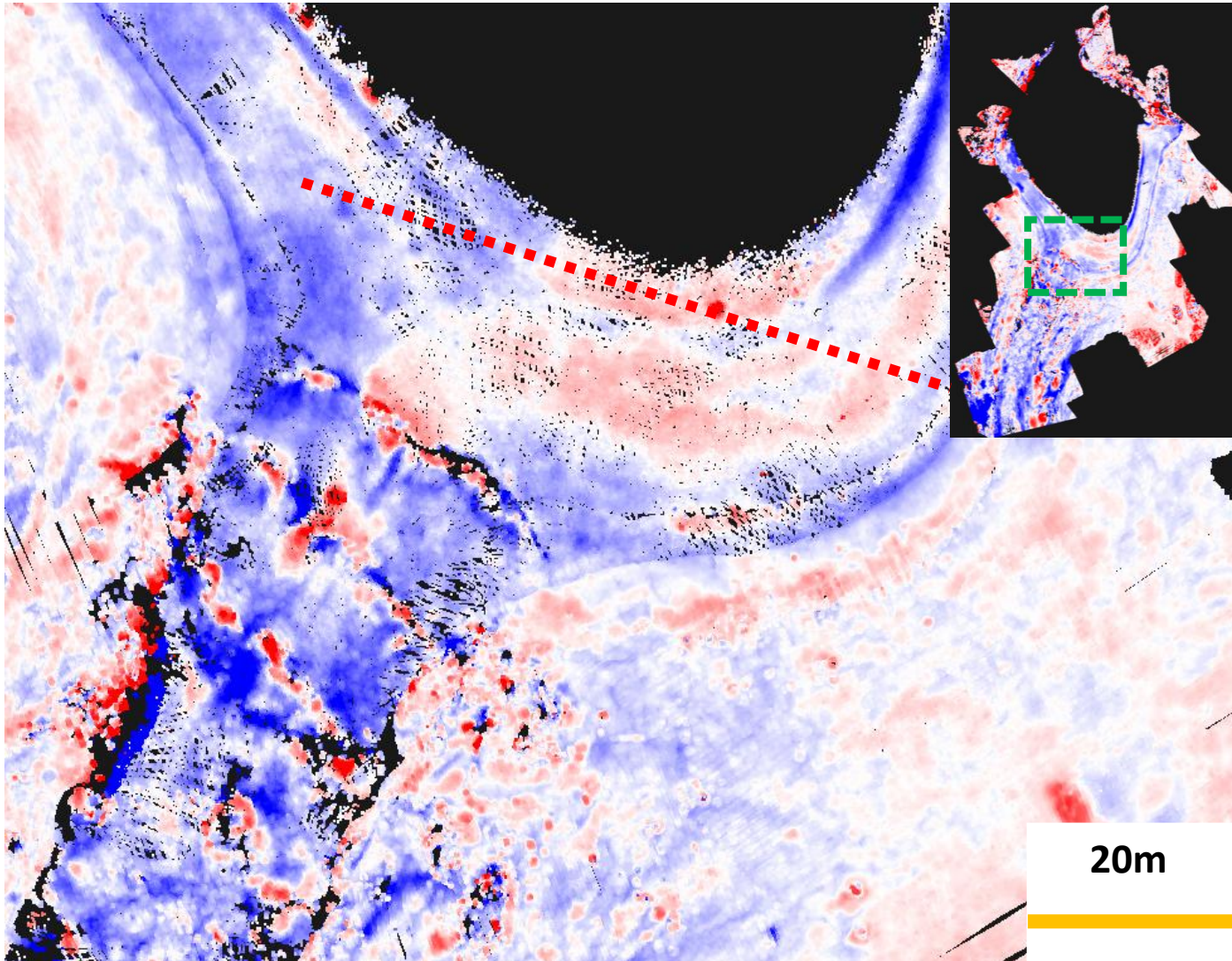
Water flow from 11/2023 to 04/2025



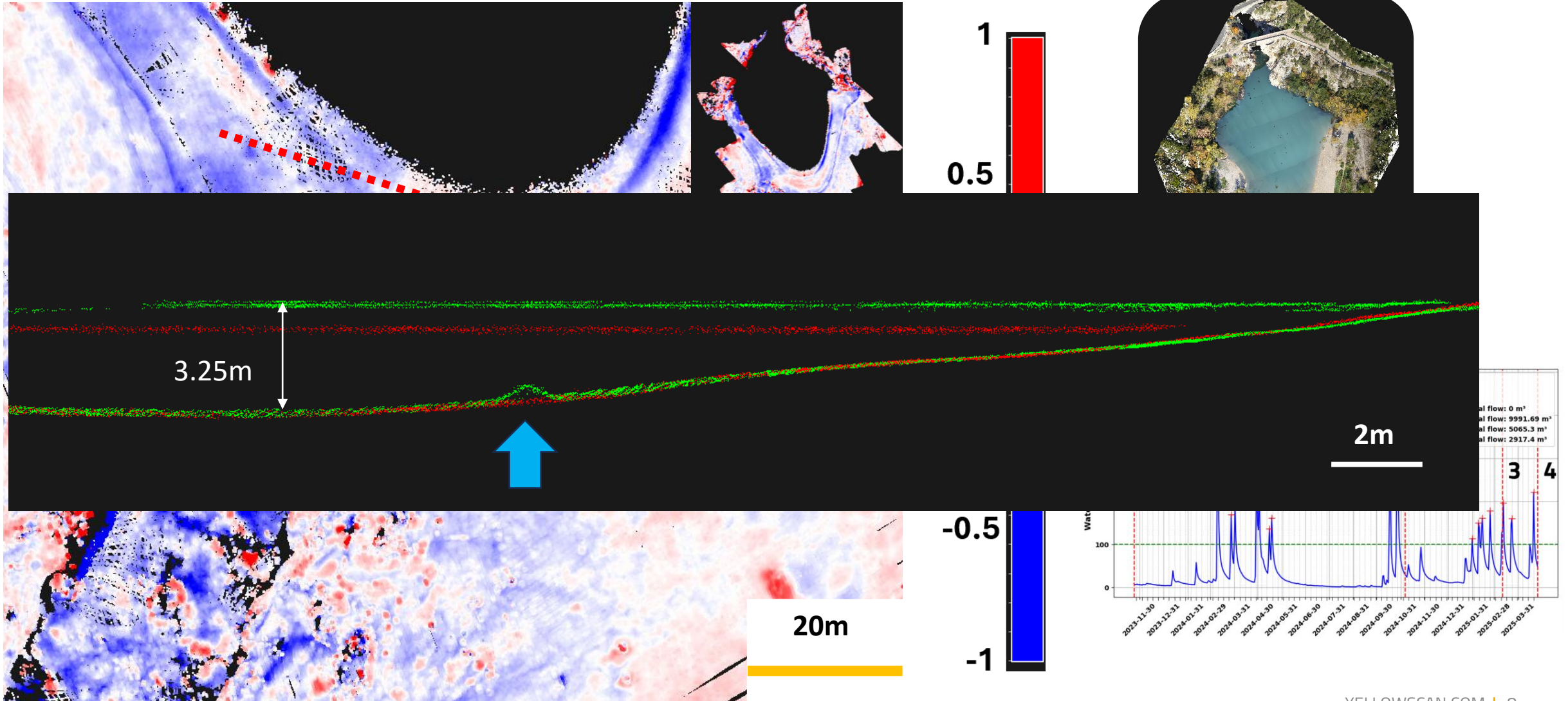
Ground evolution between 1 and 2



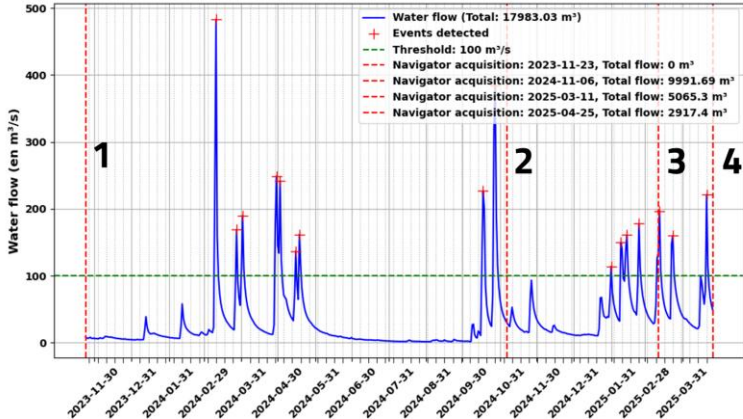
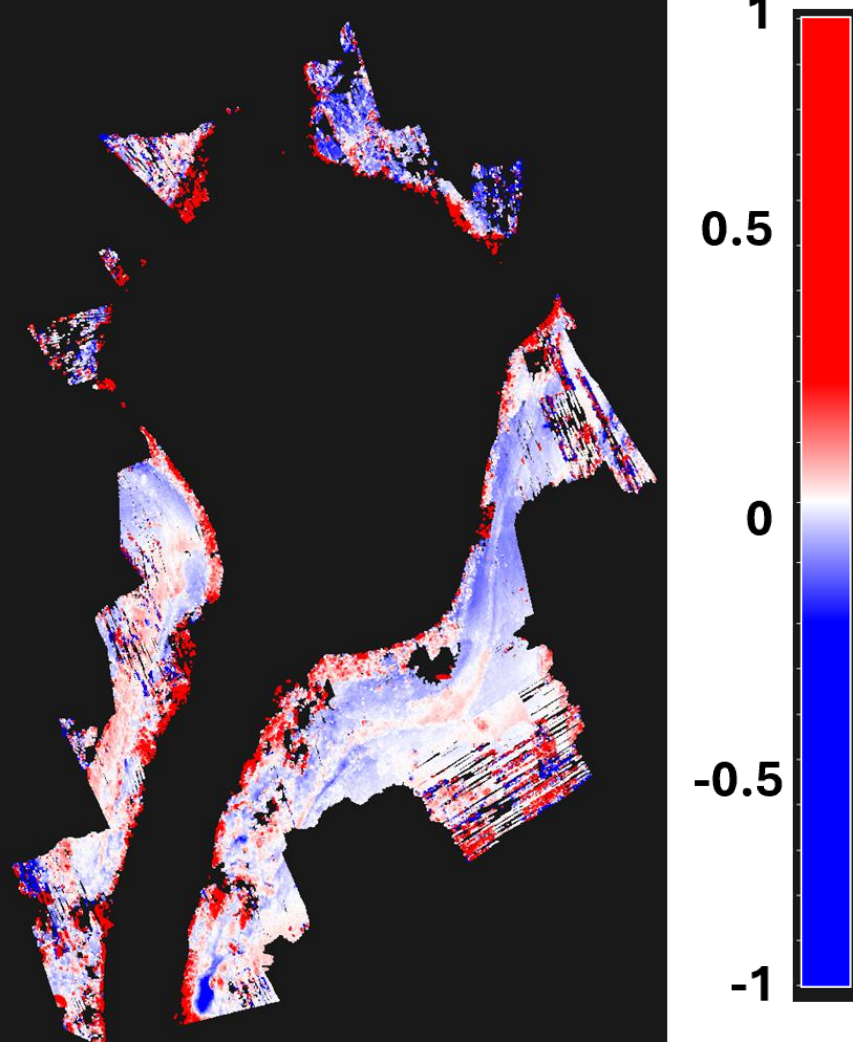
Ground evolution between 1 and 2



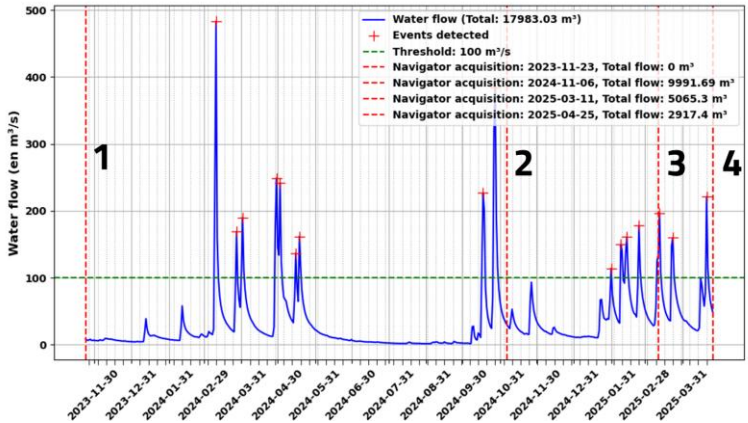
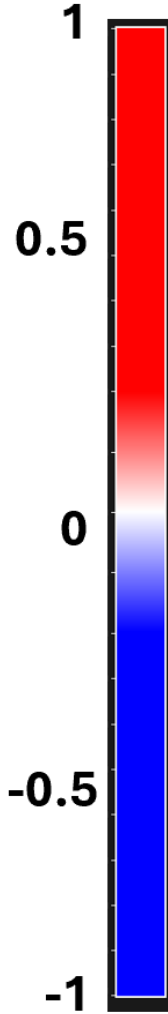
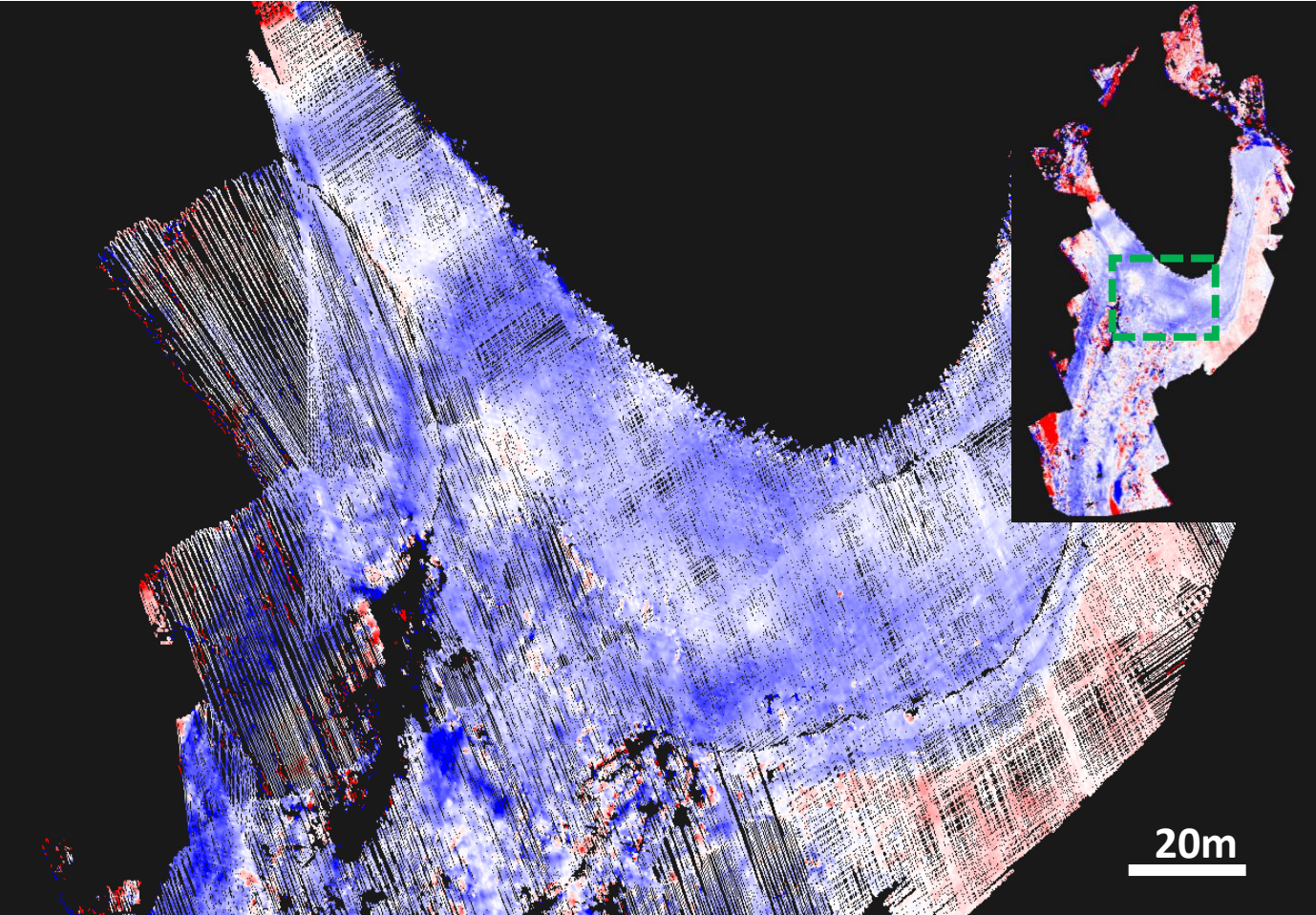
Ground evolution between 1 and 2



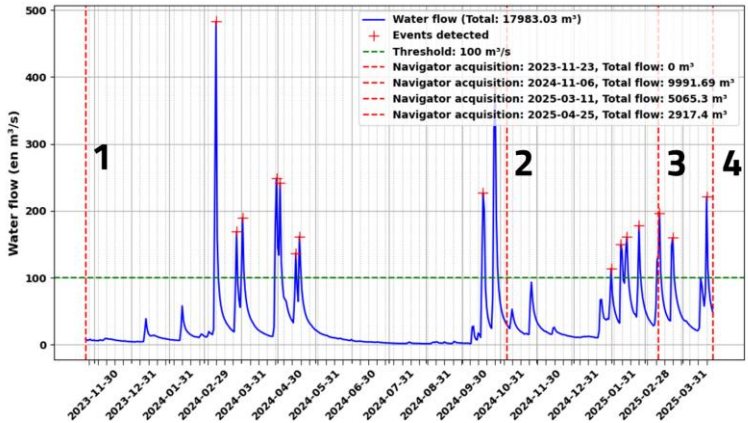
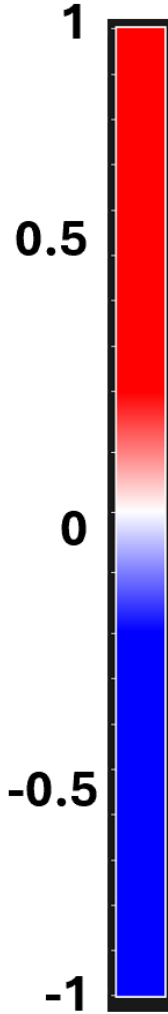
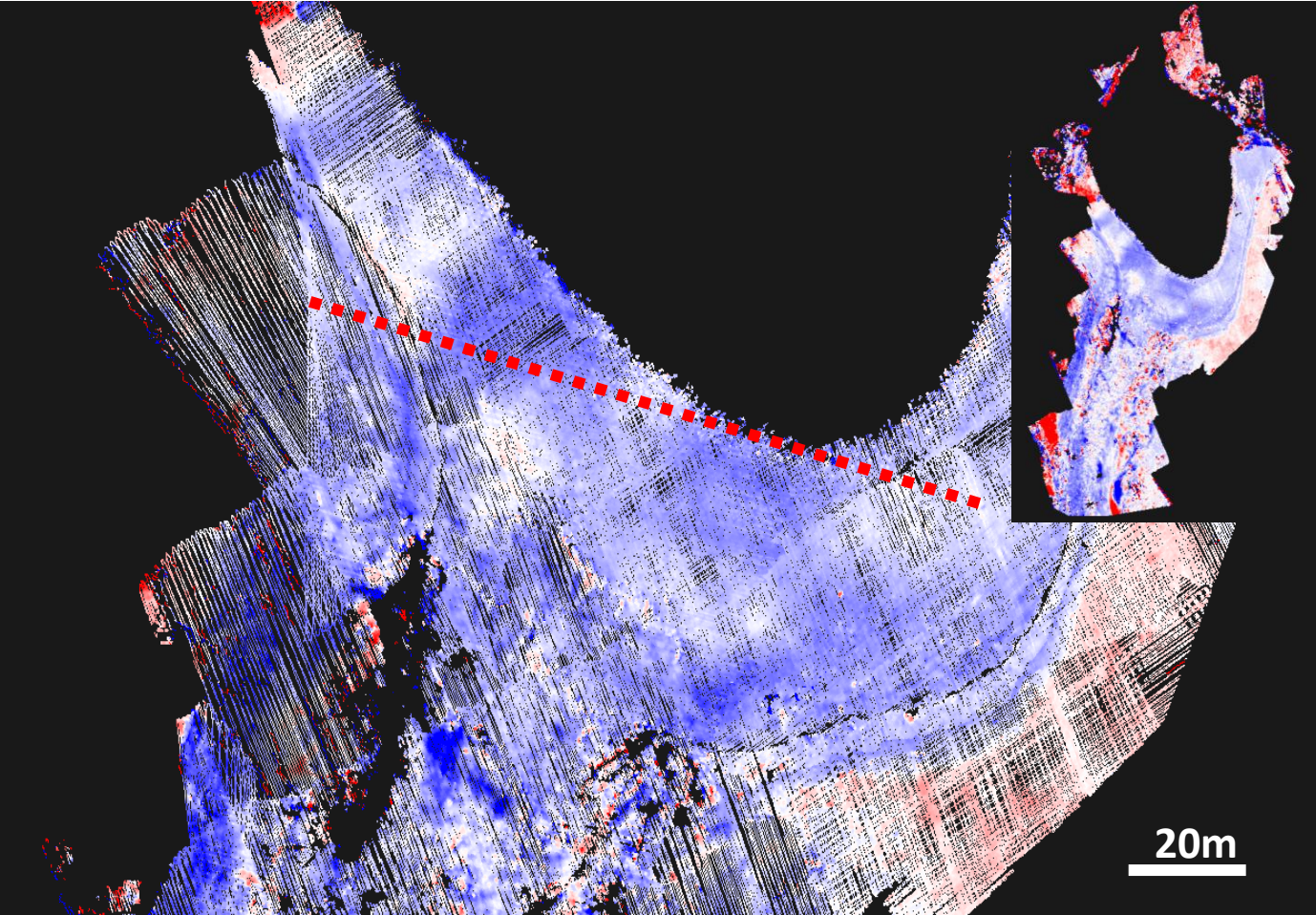
Ground evolution between 2 and 3



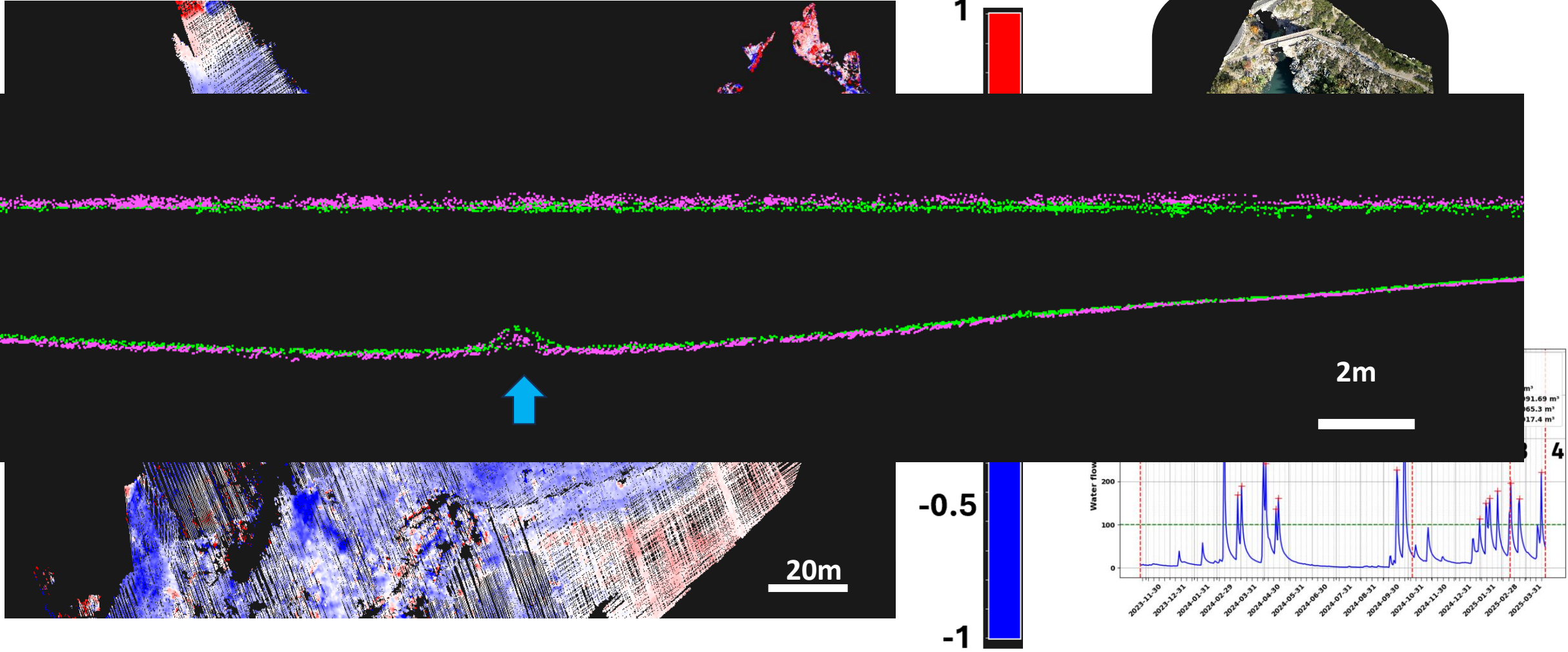
Ground evolution between 2 and 4



Ground evolution between 2 and 4



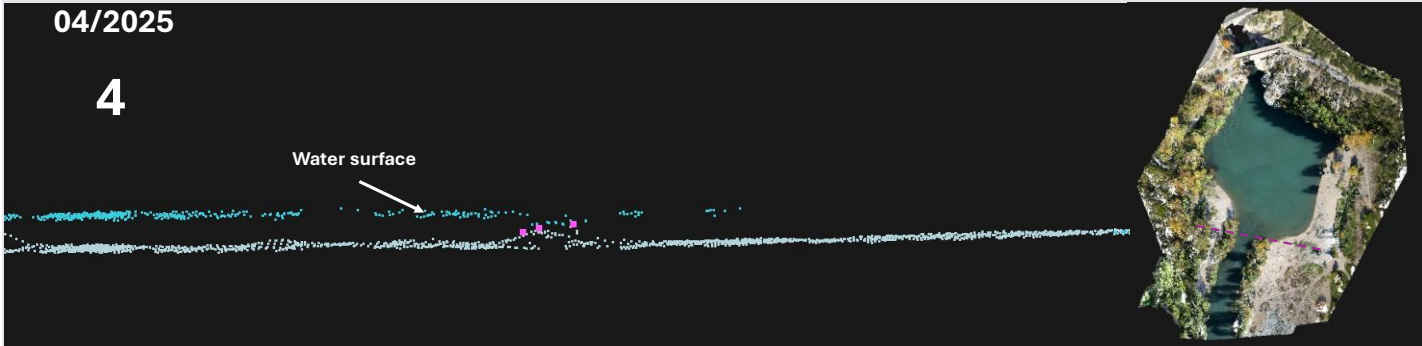
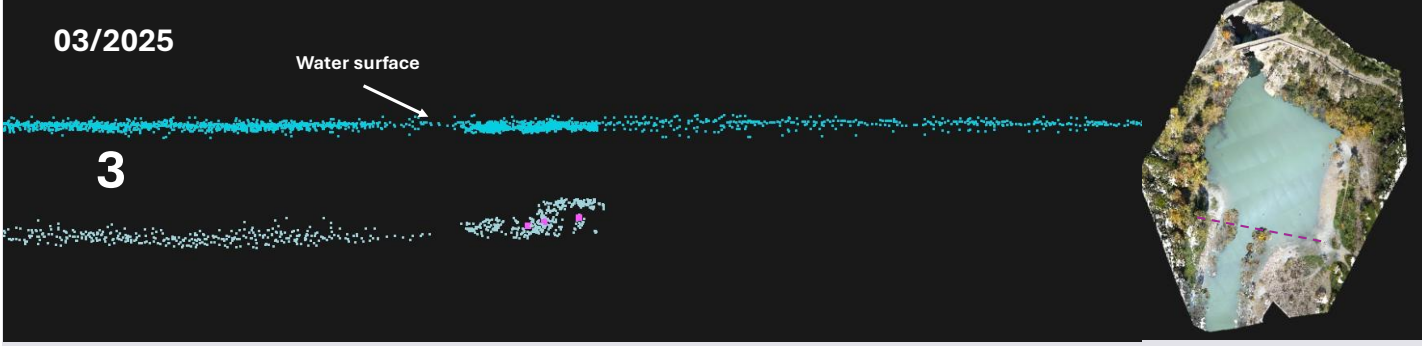
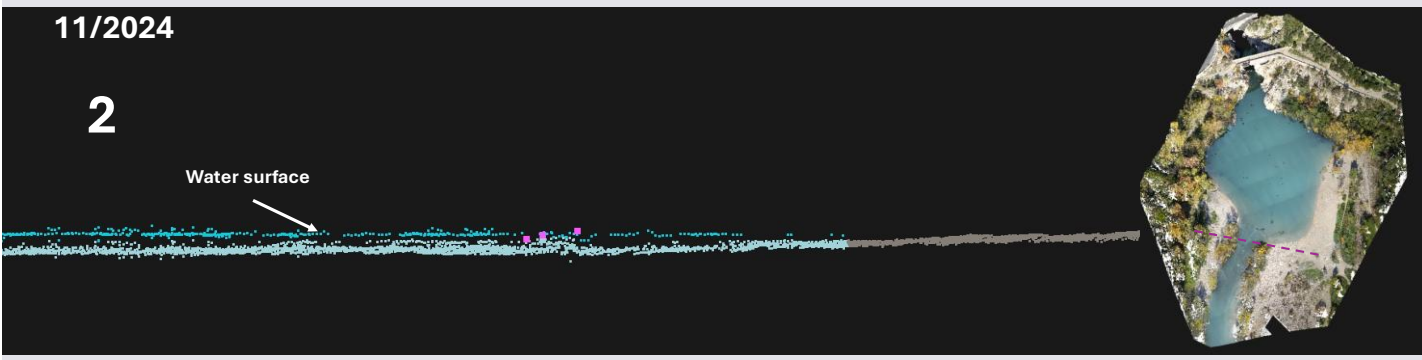
Ground evolution between 2 and 4



Cross sections

1µm wide cross section over the 4 points clouds at the same location

- Ground Controls Points
- Underwater
- Topo
- Water surface





Conclusions and perspectives

Conclusions

- Navigator is adapted to describes and measure erosion and soil movement
- Good reproducibility over several flights
- Fine description of the area

The **YellowScan Navigator** addresses the limitations of traditional **bathymetric** methods by providing **quick, comprehensive, high-resolution**, and **highly accurate mapping** from drones

Perspectives

- Continue the tracking of the place
- Discuss and present data to specialist
- Comparison between topo and bathymetric data





Thank you
