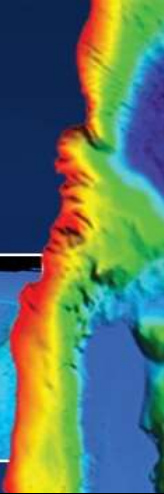
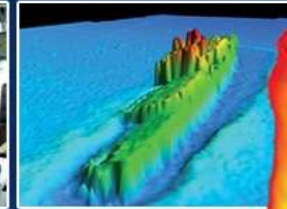
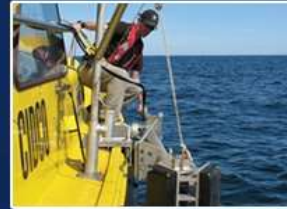




CIDCO

Centre interdisciplinaire de développement
en cartographie des océans

Interdisciplinary Centre for the Development
of Ocean mapping



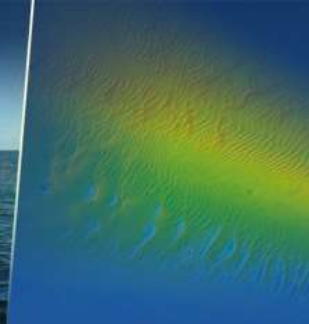
Development and Test of a Towed Hydrographic Survey Platform for Compact MBES Deployment

UTS San Diego 2015

Mathieu Rondeau (CIDCO)



CIDCO



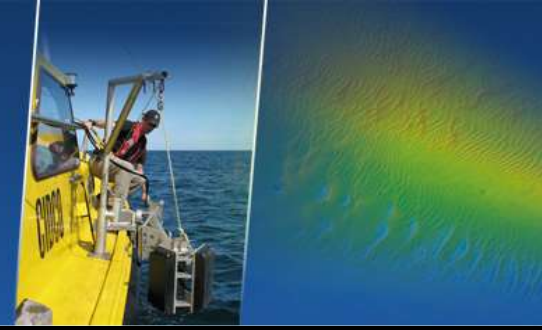
The Interdisciplinary Centre for the Development of Ocean Mapping (CIDCO) is a not for profit organization in marine geomatics based in Rimouski (Qc), Canada.



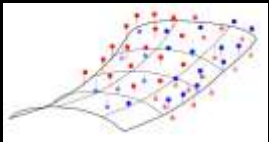
Source: GEBCO world map



CIDCO's main active projects



Infrastructure inspection expertise centre



Automatic calibration (boresight and latency) method



SBES and MBES bathymetric surveys in non-traditional environments



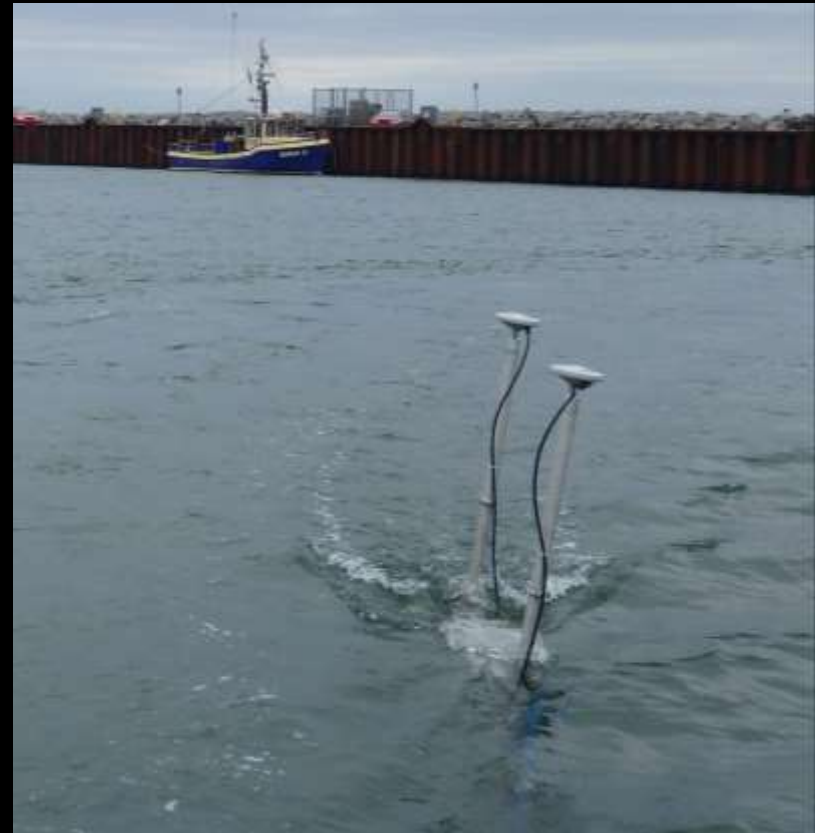
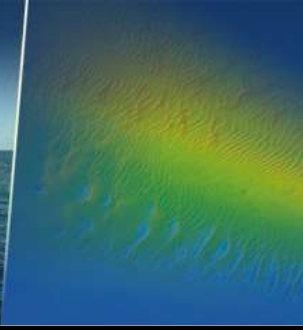
Self-reliant QC algorithms for USV platforms



Course in Hydrographic Surveying category B programme

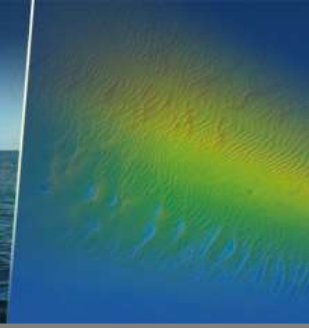


THIS is a Towed Hydrographic Survey Platform





The challenge



MBES / SBES
IMU & GPS
SV probe

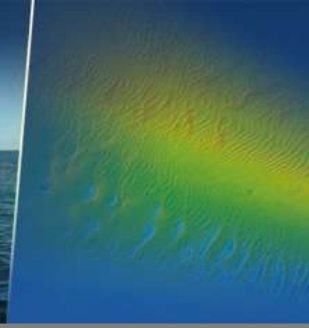


Boat





What people do



MBES / SBES
IMU & GPS
SV probe



Imagination
Pipes / flanges
Straps
Tools
...

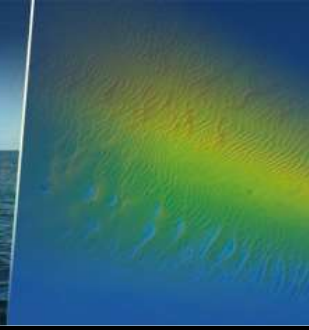


Boat



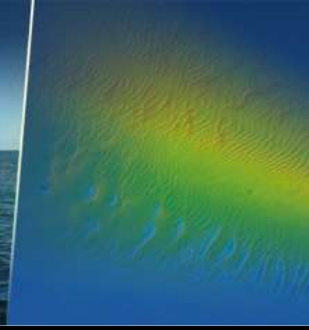


We did it several times





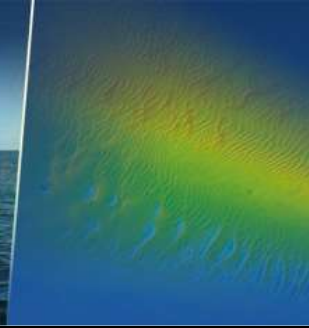
We did it several times



Teledyne Reson - HydroBat Composite



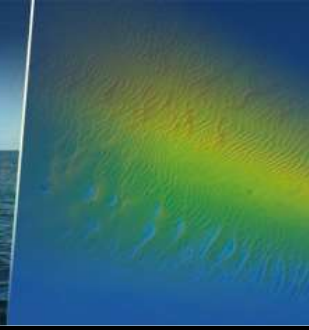
We did it several times



Teledyne Reson – SeaBat 7125



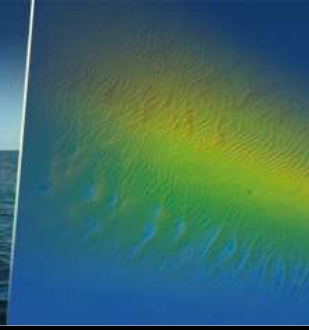
We did it several times



Teledyne Reson – SeaBat 7125 SV2



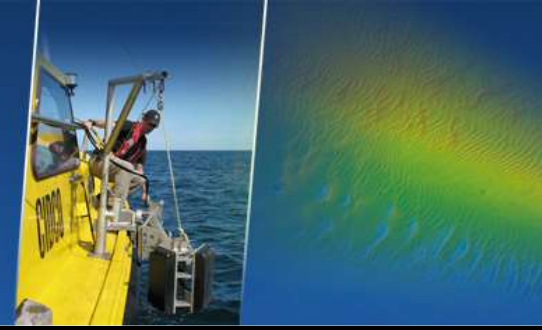
We did it several times



Teledyne Reson – SeaBat T20-P



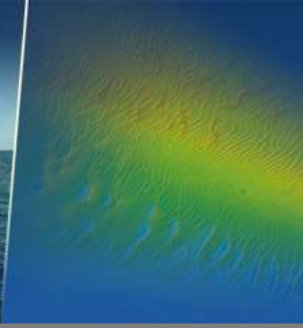
Conclusion



The universal sonar mount
does not exist !



Paradigm shift



MBES / SBES
IMU & GPS
SV probe



Towed
Hydrographic
Survey Platform

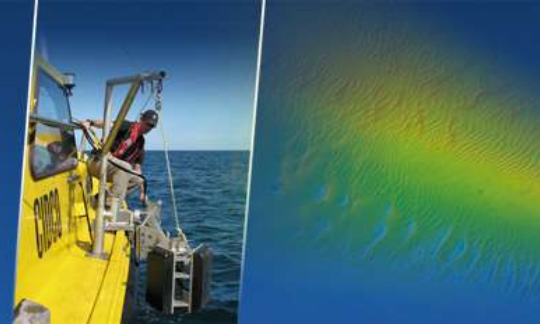


Boat





HydroBall™



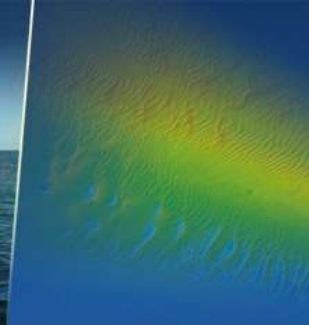
A robust spherical shell casing (7kg – 40cm diam) encloses:

- A single beam echosounder
- A L1/L2 GPS receiver
- A digital compass (heading, pitch, roll)

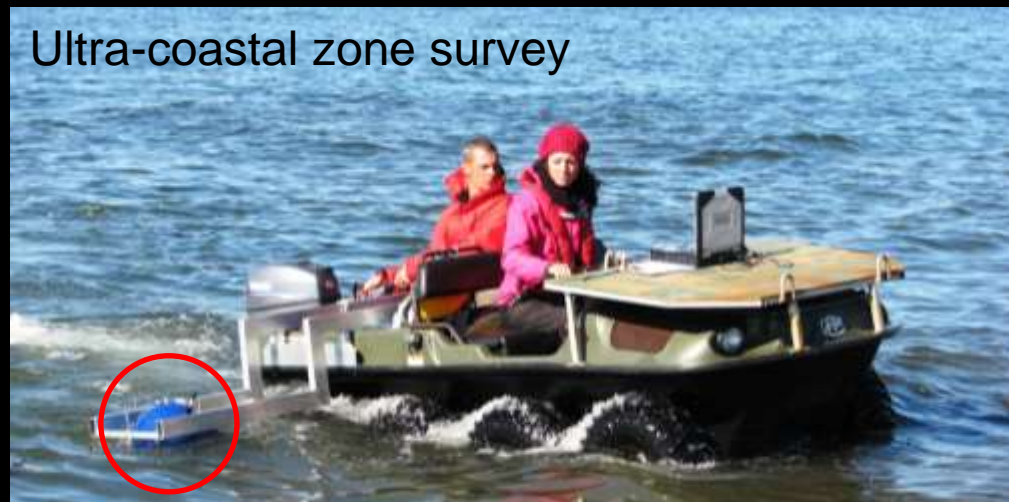




HydroBall™



Difficult to access
zone survey



Ultra-coastal zone survey



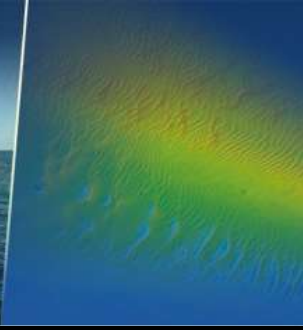
Riverbed survey



Traditional hydrographic survey



Towed Hydrographic Survey Platform



Waterproof caisson

Sonar & IMU
mounting plate

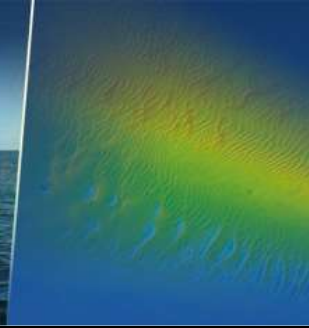
GNSS antennas'
masts

Floats

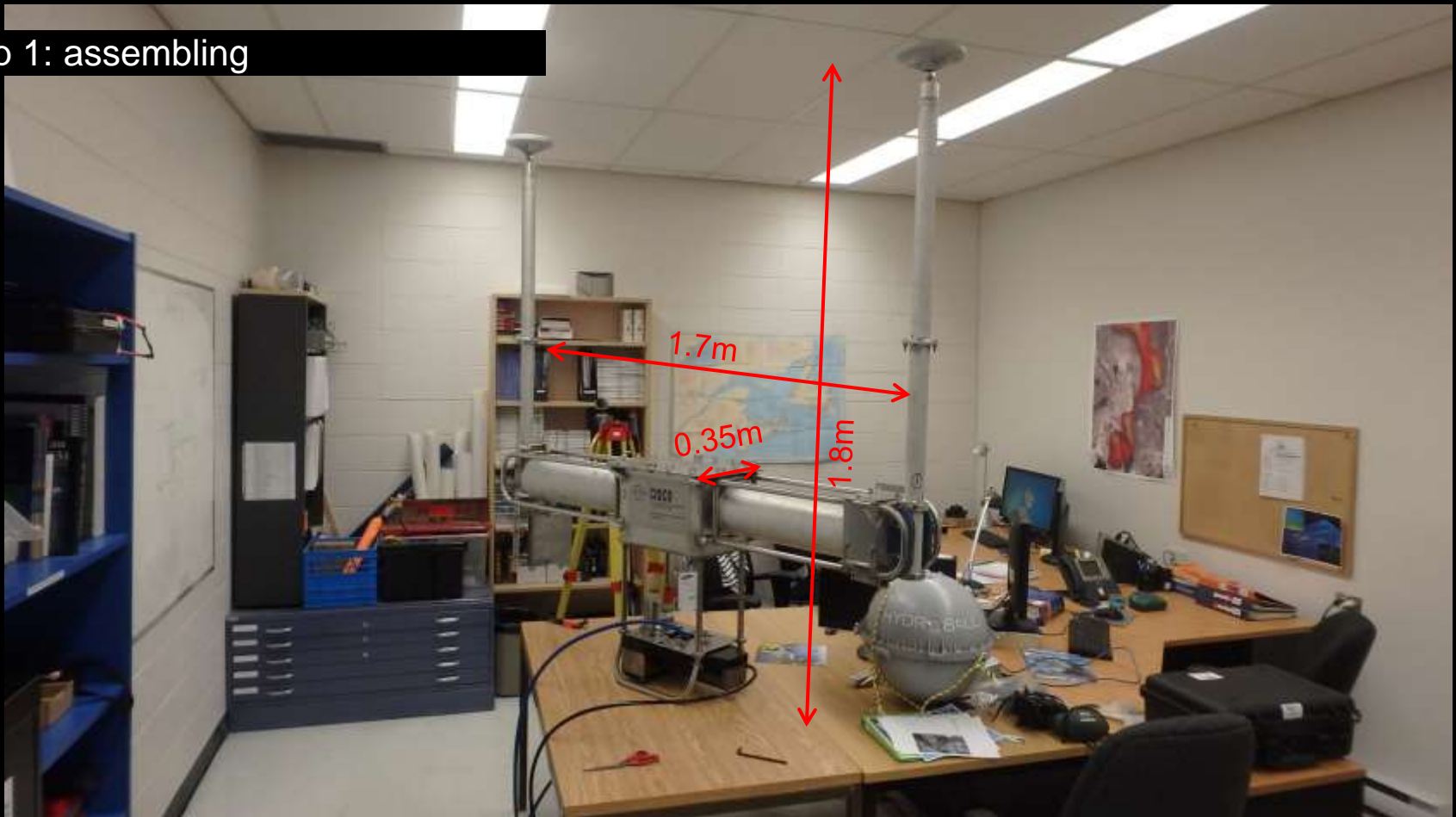
All can be carried
into 2 cases



Towed Hydrographic Survey Platform

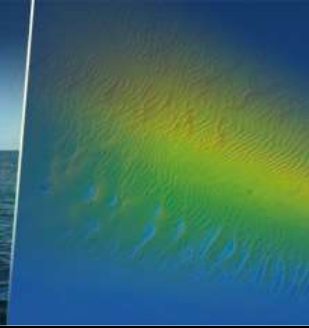


Step 1: assembling





Towed Hydrographic Survey Platform

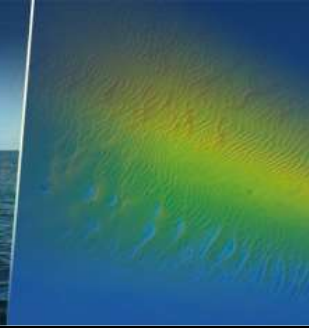


Step 2: static calibration





Towed Hydrographic Survey Platform

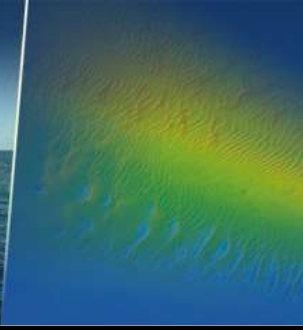


Step 3: transport on site





Towed Hydrographic Survey Platform

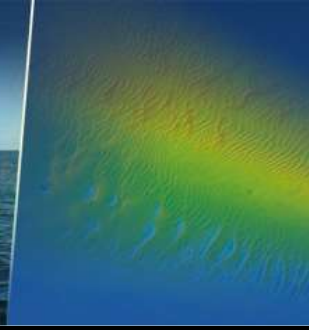


Step 4: balancing





Towed Hydrographic Survey Platform

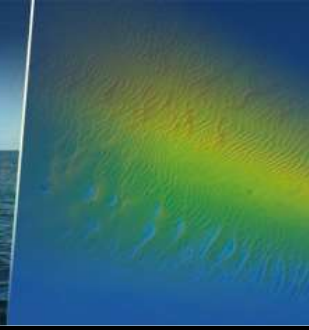


Step 5: surveying

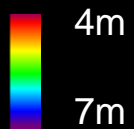
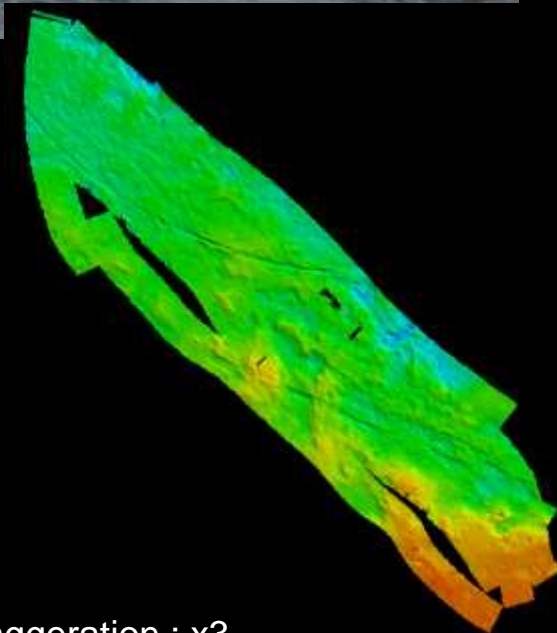
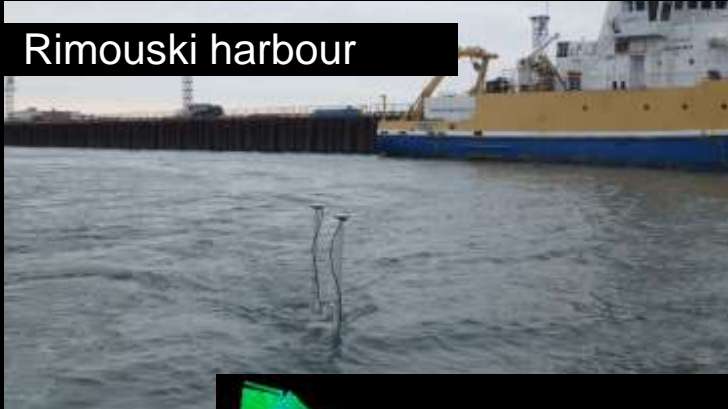




3 short surveys

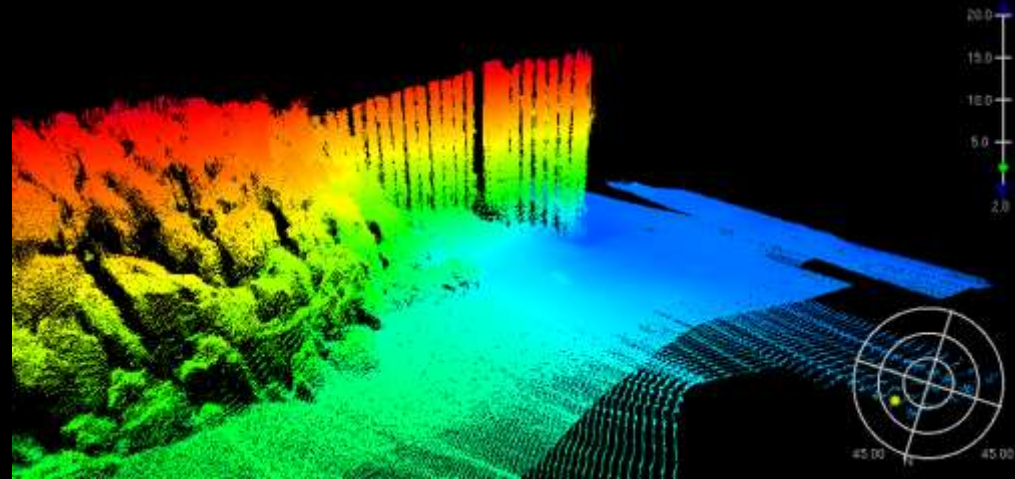


Rimouski harbour



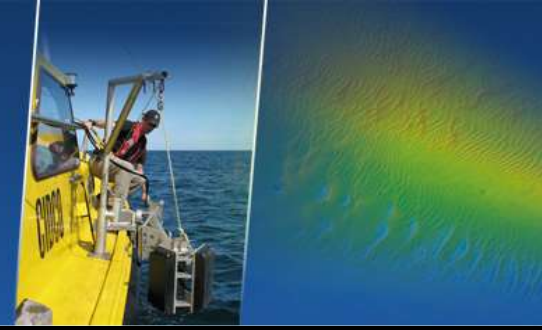
Vertical exaggeration : x3

CIDCO's Infrastructure Test Bench





Data processing

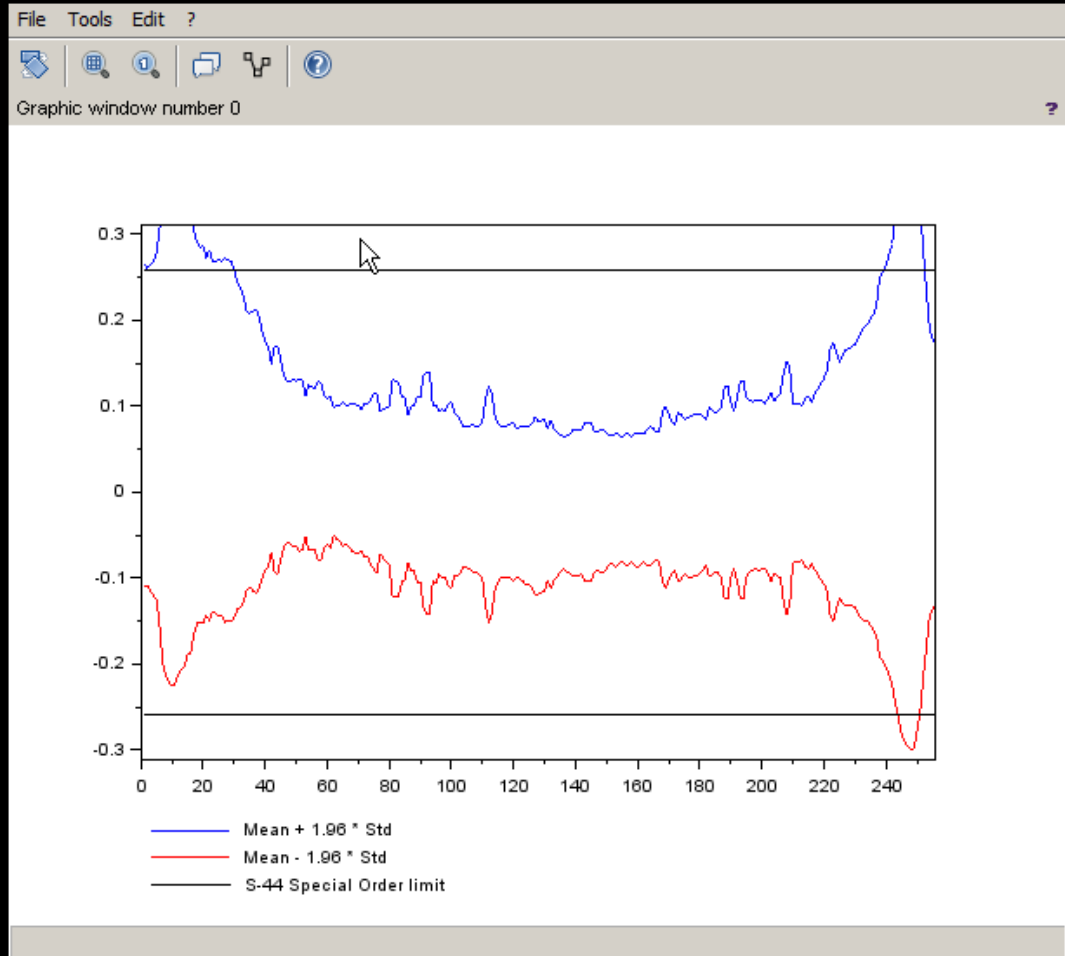
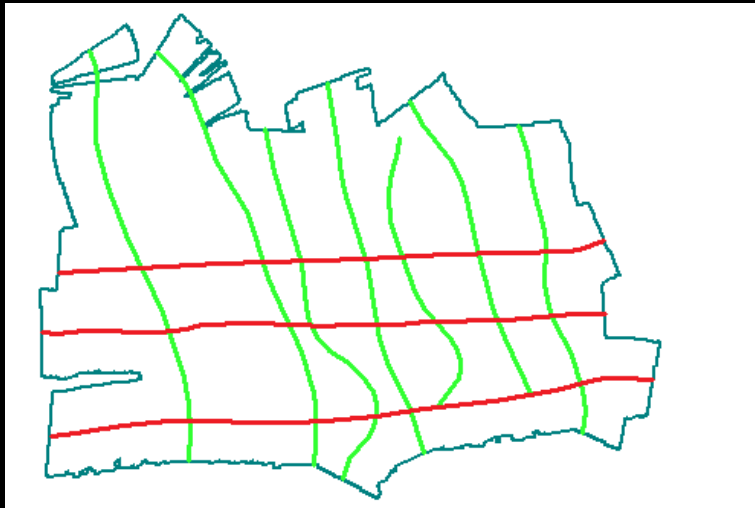
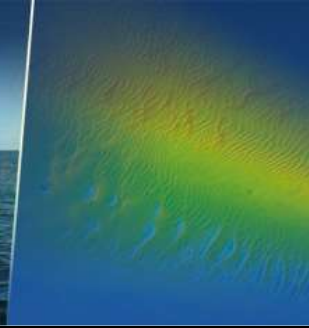


HIPS processing workflow :

- VesselFile definition
- Sound velocity correction
- Water level correction
- Soundings editing
- Merge
- Base surface creation

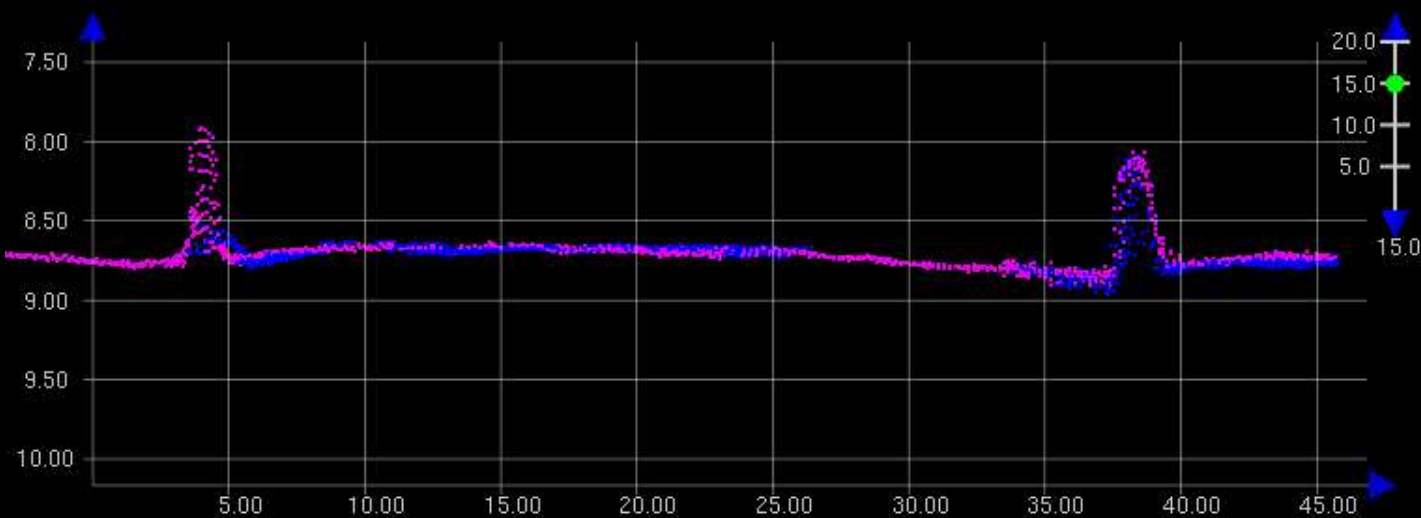
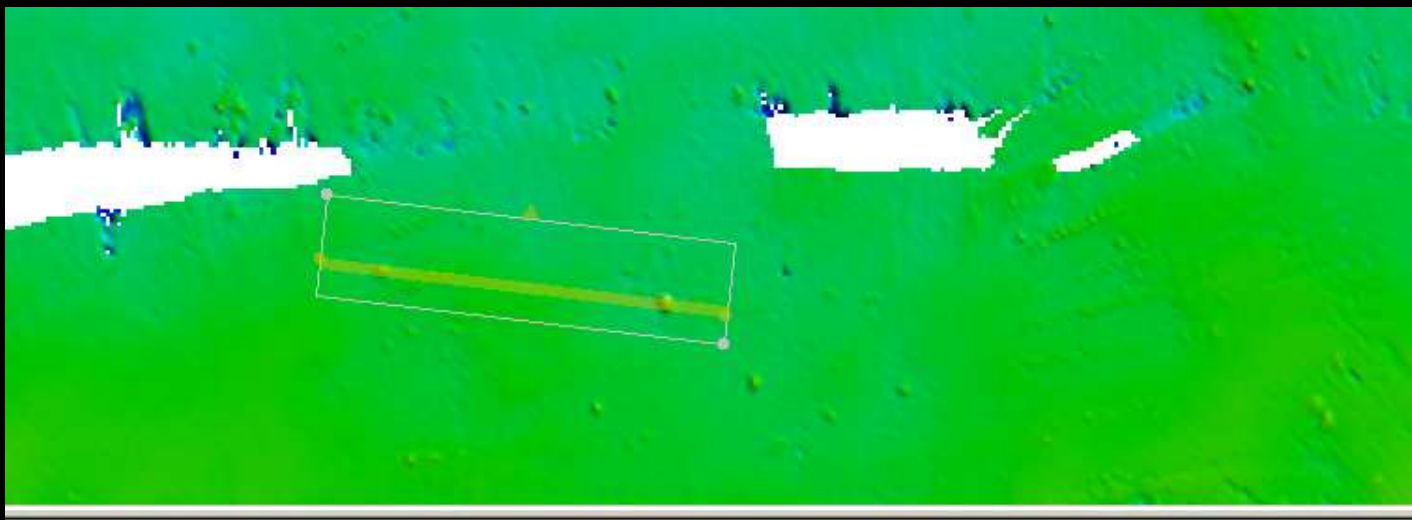
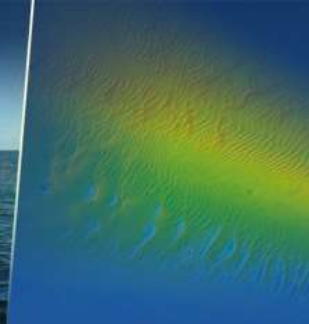


QC / vertical precision



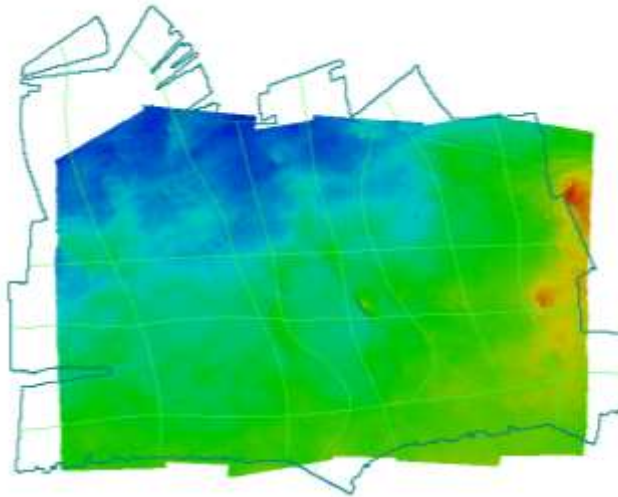
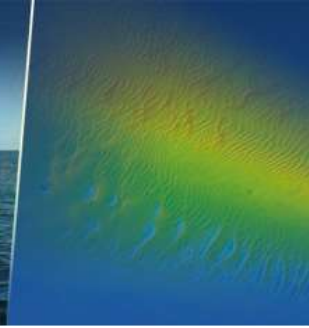


QC / horizontal precision

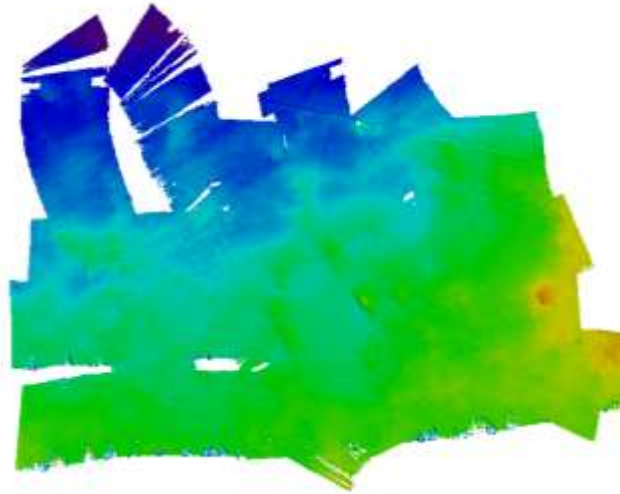




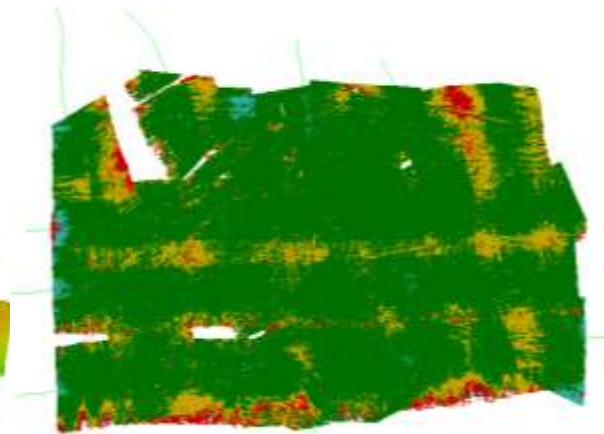
QC / survey accuracy



Ref surface: 7125SV2 boat mounted



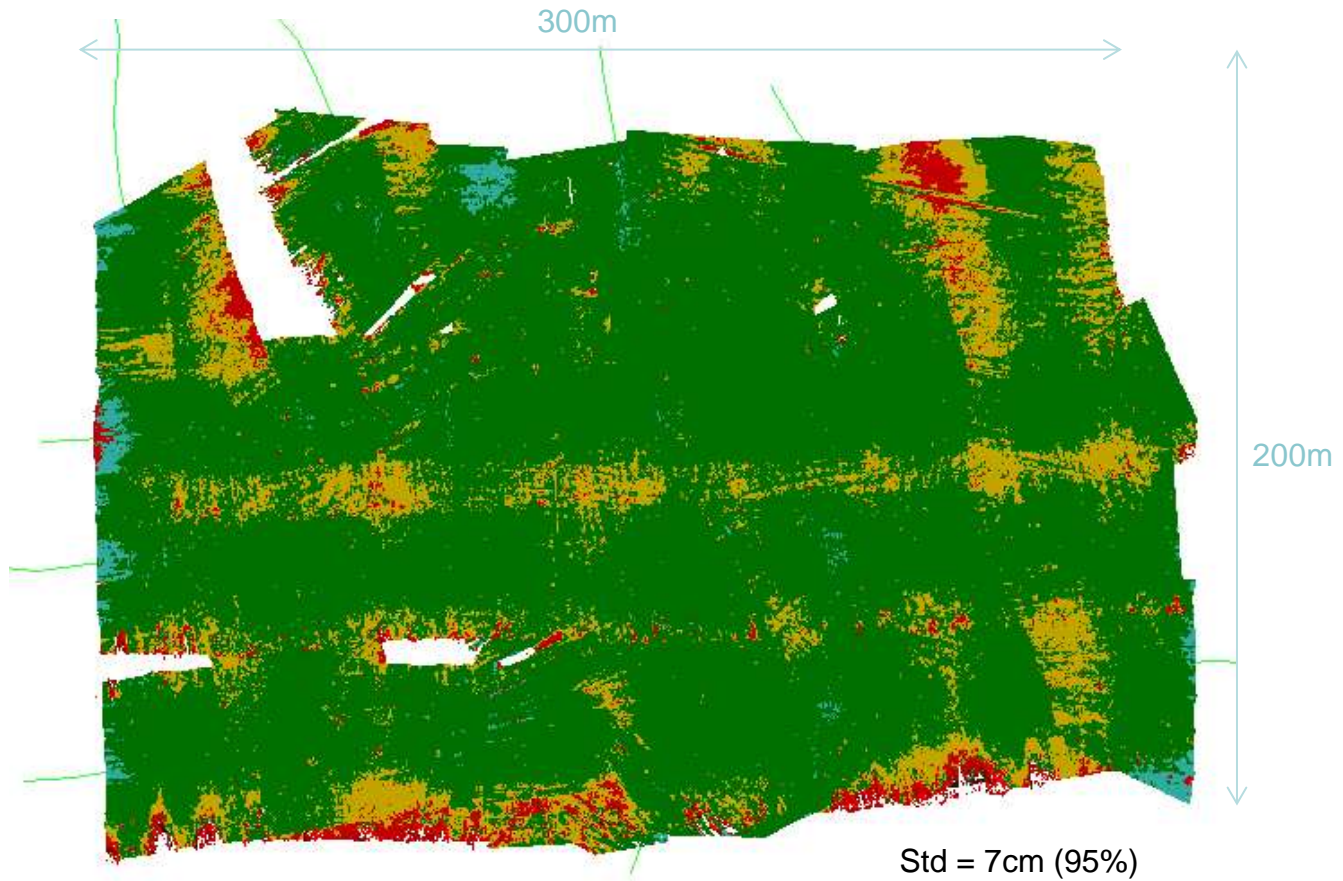
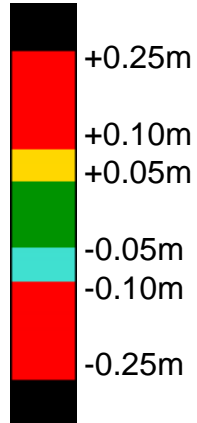
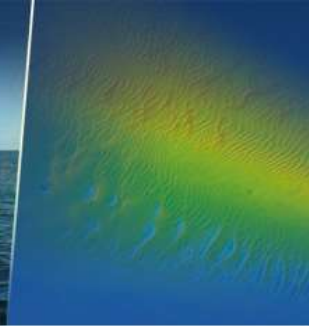
Eval surface: T20-P towed



Diff surface

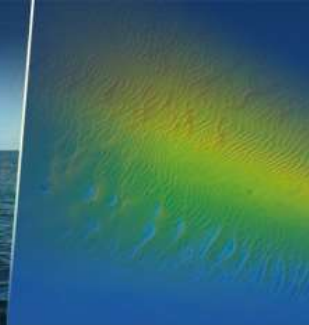


QC / survey accuracy





Conclusion



Teledyne Reson – SeaBat T20-P



ENL – WASSP WMB-3250

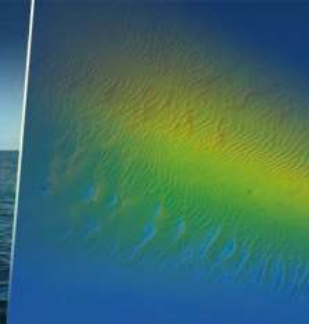


Sonartronic – Norbit WBMS





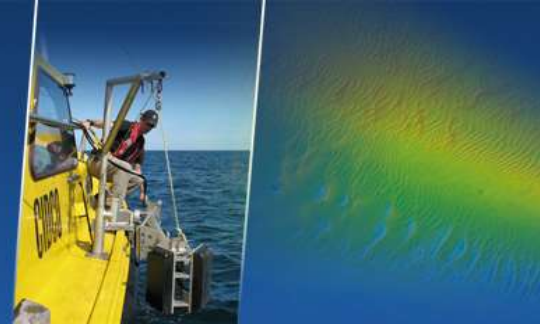
Conclusion



**EXPEDITION
READY**



Contact



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C.P. 3300, Rimouski (Qc) G5L 3A1
CANADA

Telephone: 418 725-1732

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