CHC-NSC 2018

www.chc-nsc2018.ca

Victoria, B.C. March 26-29, 2018 | Victoria, C.B. 26 au 29 mars 2018

Land and Sea Shaping the World
Terre et Mer Façonnant le Monde

Comparing the Automatic Boresight Calibration against the Patch Test

Burns Foster

#chcnsc2018

***Patch test*:** **Visual/manual** alignment of point clouds on a line overlap, **for each angle independantly**

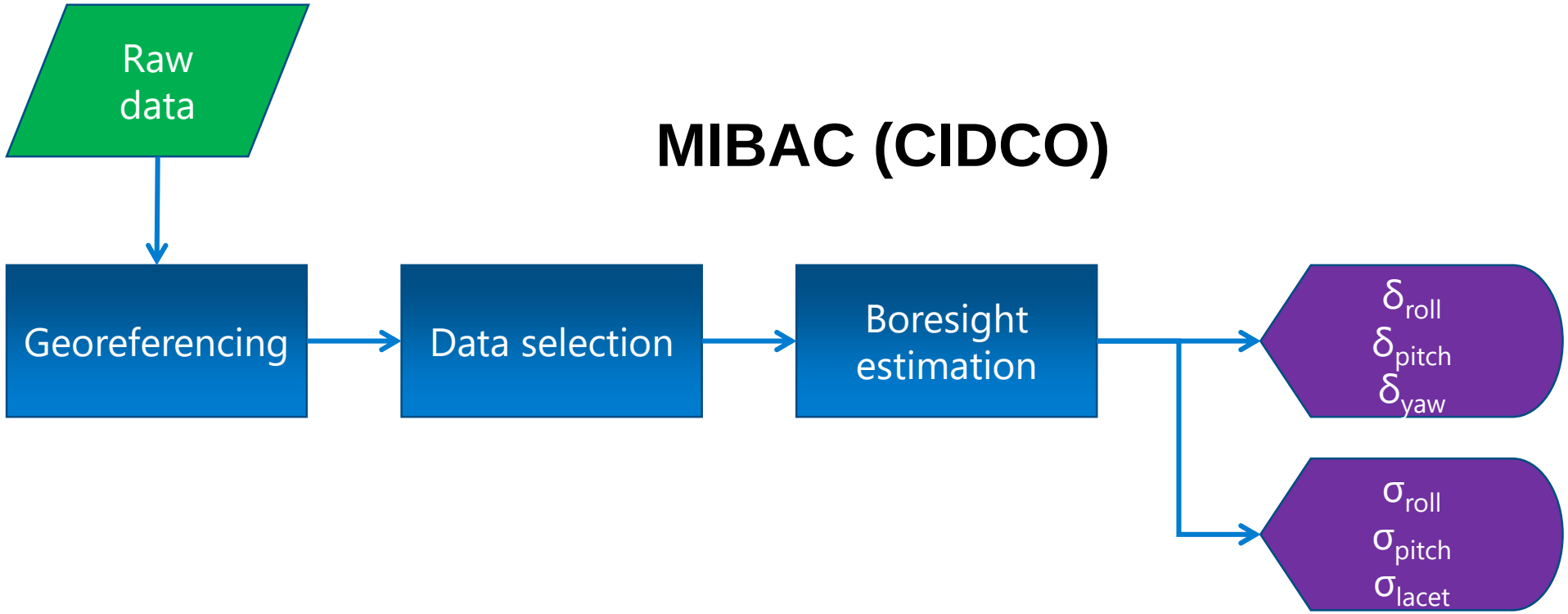
Subjective **Expensive**

Decoupled

Goal - Provide a IMU-sonar calibration method that is:

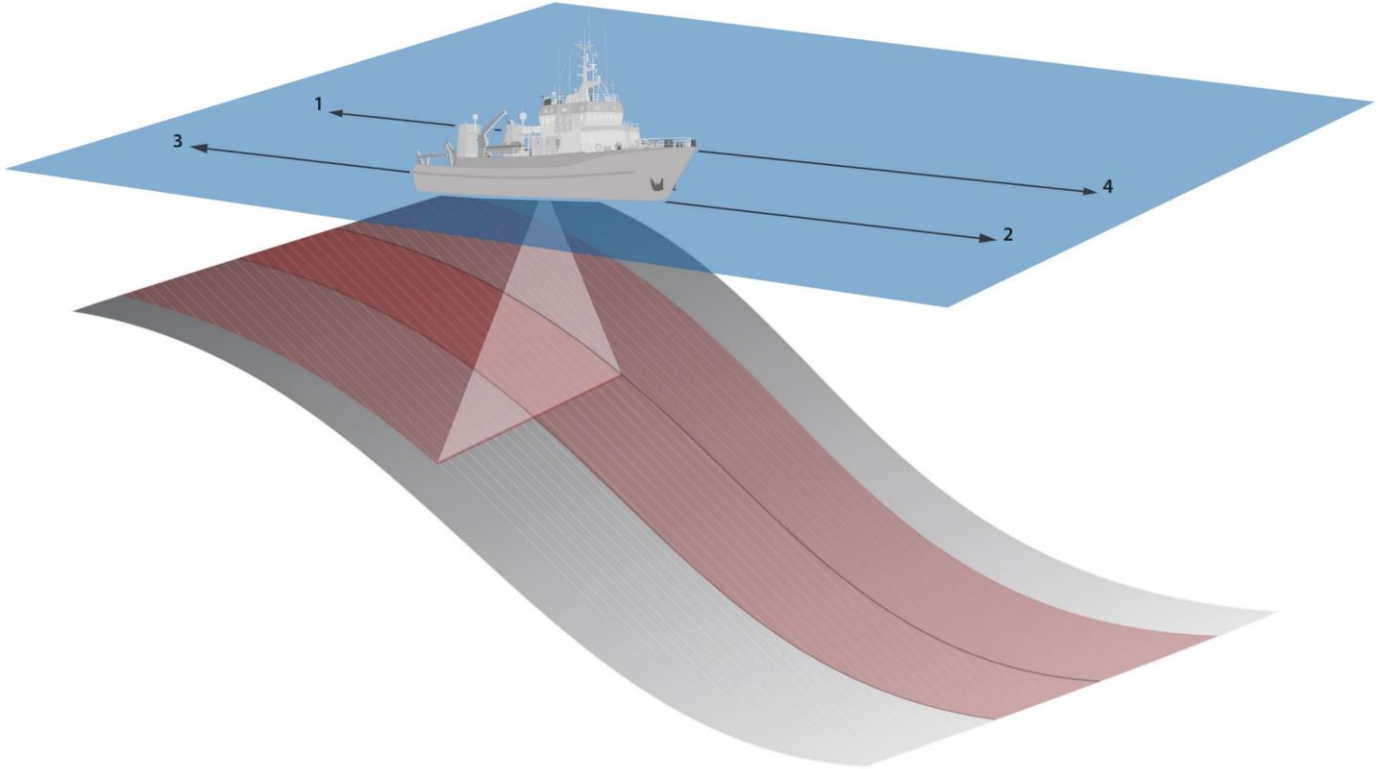
- Automatic
- Objective
- Easy to use
- Integrated

MIBAC (CIDCO)


Raw data
Georeferencing
Data selection
Boresight estimation
δ_{roll}
δ_{pitch}
δ_{yaw}
σ_{roll}
σ_{pitch}
σ_{lacet}

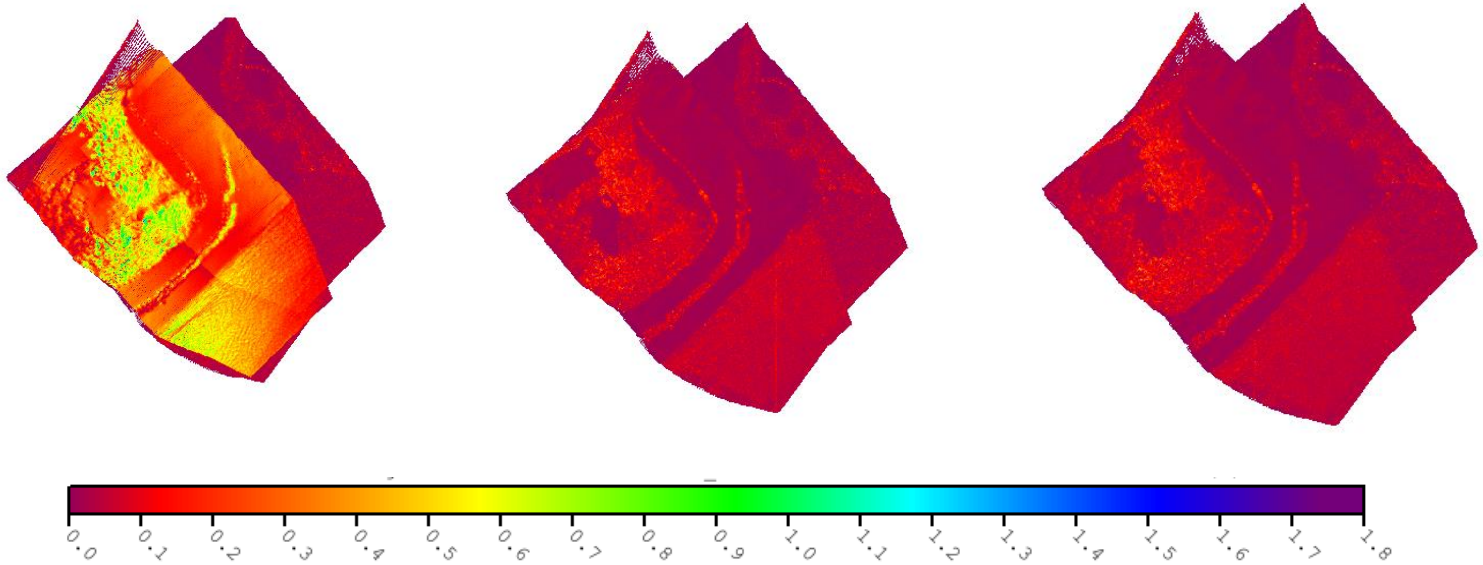
Optimal Line Pattern

- Unique site
  - Smooth slope
  - Min. 10°
- 2 pairs of lines
  - Opposite direction
  - Up/down slope
- Overlap nadir and swath edge



Results – Reson 7125

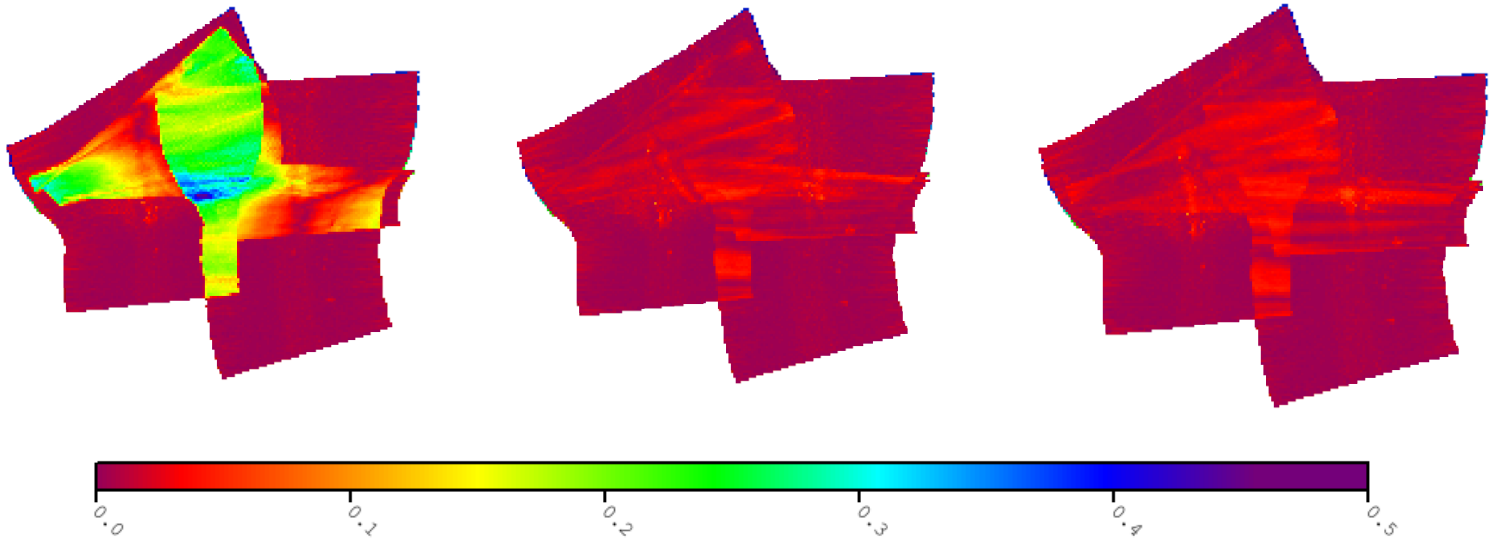
No Calibration **Manual** **Auto**



	Manual	Auto
Pitch	**0.600**	**0.632**
Roll	**0.500**	**0.533**
Yaw	**0.310**	**0.243**
Time	**10:00**	**00:42**
Mean RMS	**0.044**	**0.044**

Results – R2Sonic 2022

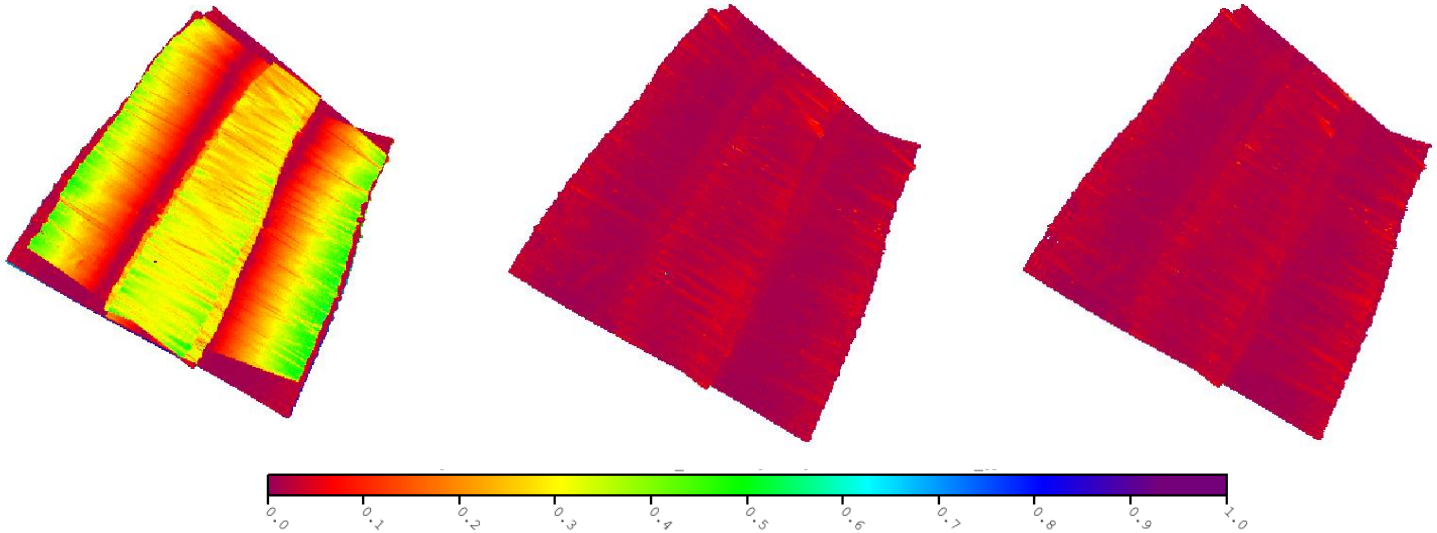
No Calibration **Manual** **Auto**



	Manual	Auto
Pitch	**1.600**	**1.740**
Roll	**0.600**	**0.666**
Yaw	**2.350**	**1.930**
Time	**10:00**	**00:04**
Mean RMS	**0.011**	**0.012**

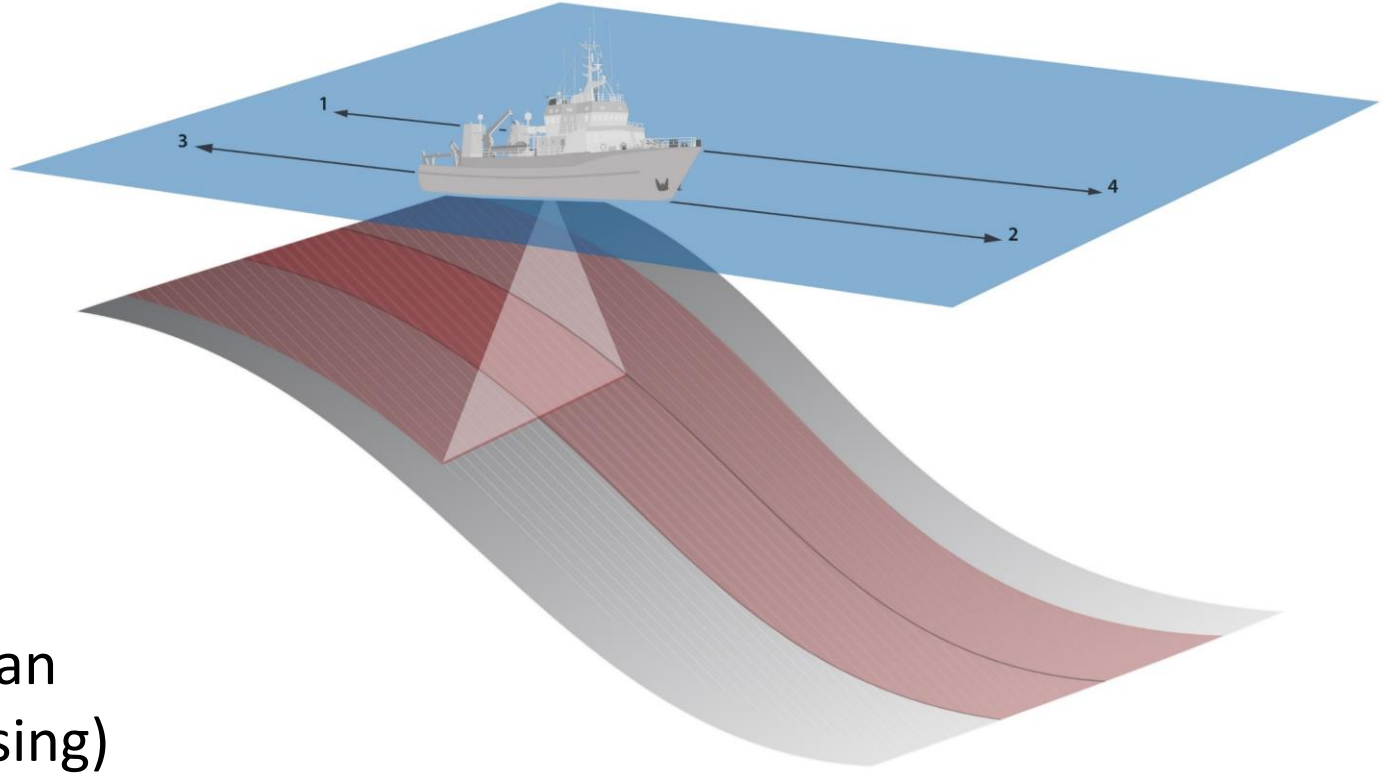
Results – EM2040C

No Calibration **Manual** **Auto**



	Manual	Auto
Pitch	**0.770**	**0.809**
Roll	**0.830**	**0.887**
Yaw	**0.540**	**1.031**
Time	**15:00**	**00:19**
Mean RMS	**0.022**	**0.024**

Conclusion

- Automatic ✓
- Objective ✓
- Easy to use ✓
- Integrated ✓

- Bonus:
  - Results consistent with human
  - Fraction of the time (processing)