

ADCP Kongsberg CP300

Preliminary results from PIRATA-FR34 cruise records

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Ref. ASTI-2024-347

CP300 ADCP specifications

- 4 individual piston transducers
- Beams in Janus configuration, pointing **25°** from vertical
- Expected range : **~110m**
- Expected STD : **5cm/s** in BB, **16cm/s** in NB
- Recommended cell size by Kongsberg : **~4m**

- **WBT** transceiver for power and digitization
- **EK80** software for data acquisition



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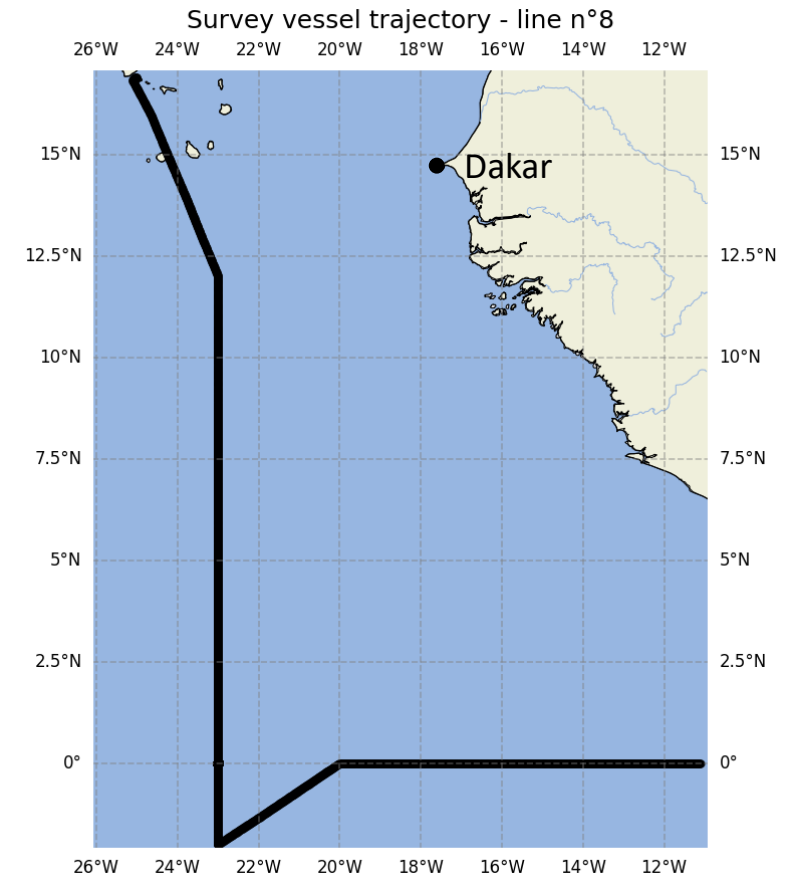
ADCP Kongsberg CP300

Preliminary results from PIRATA-FR34 cruise records

Context

- A CP300 prototype has been kindly lent to Ifremer for evaluation from February 2024 to April 2024
- In cooperation with IRD* and Genavir, the sensor has been integrated onboard R/V Thalassa for PIRATA-FR34 cruise
- The CP300 sensor could not be accurately calibrated due to time constraints (only rough heading bias estimate)

**Data courtesy of Pierre Rousselot, French National Research Institute for Sustainable Development*



Setup onboard R/V Thalassa for PIRATA-FR34 cruise



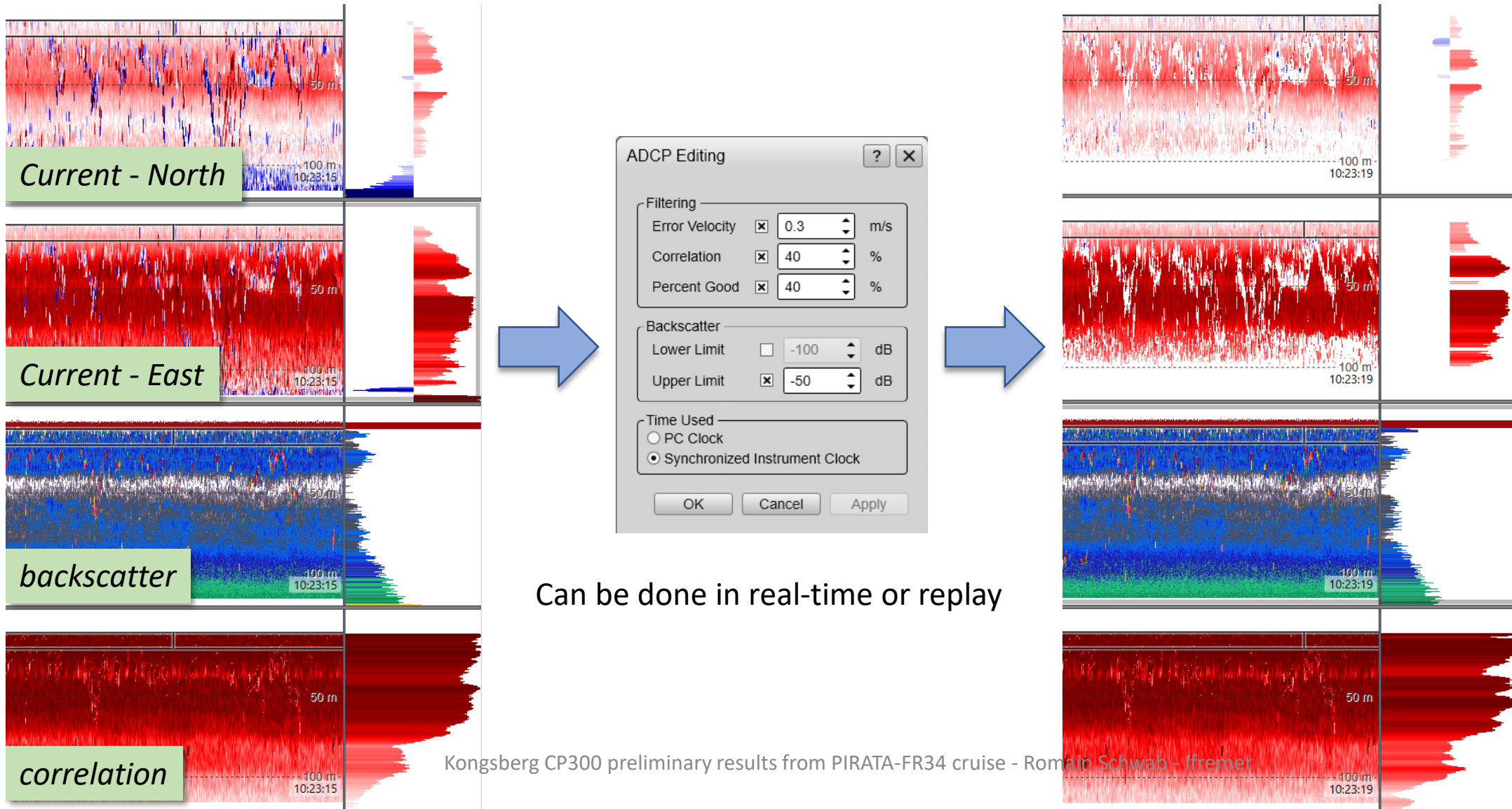
Mounting plate (PEHD1000) for CP300



TVO Ø500mm R/V Thalassa

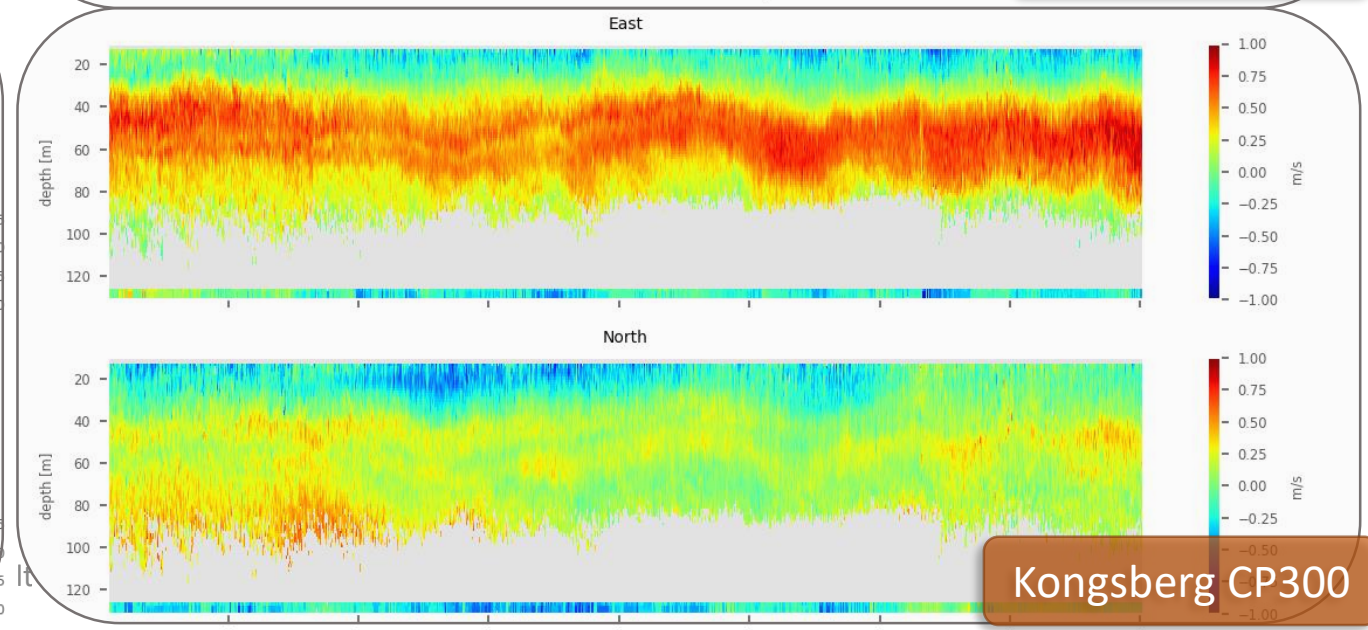
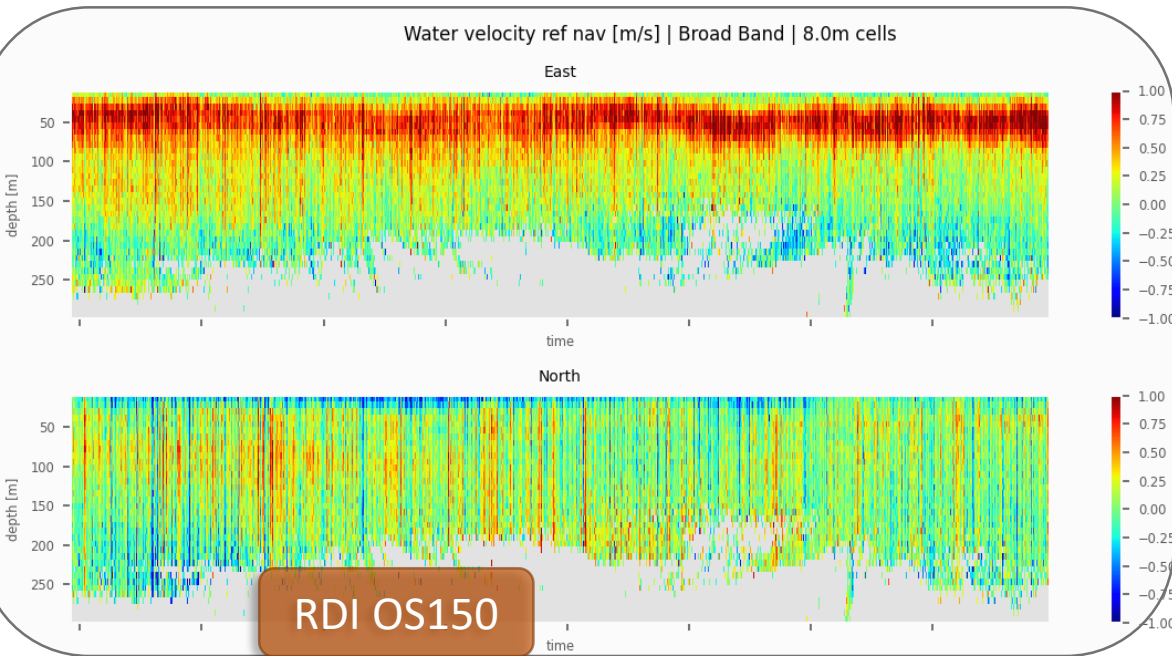
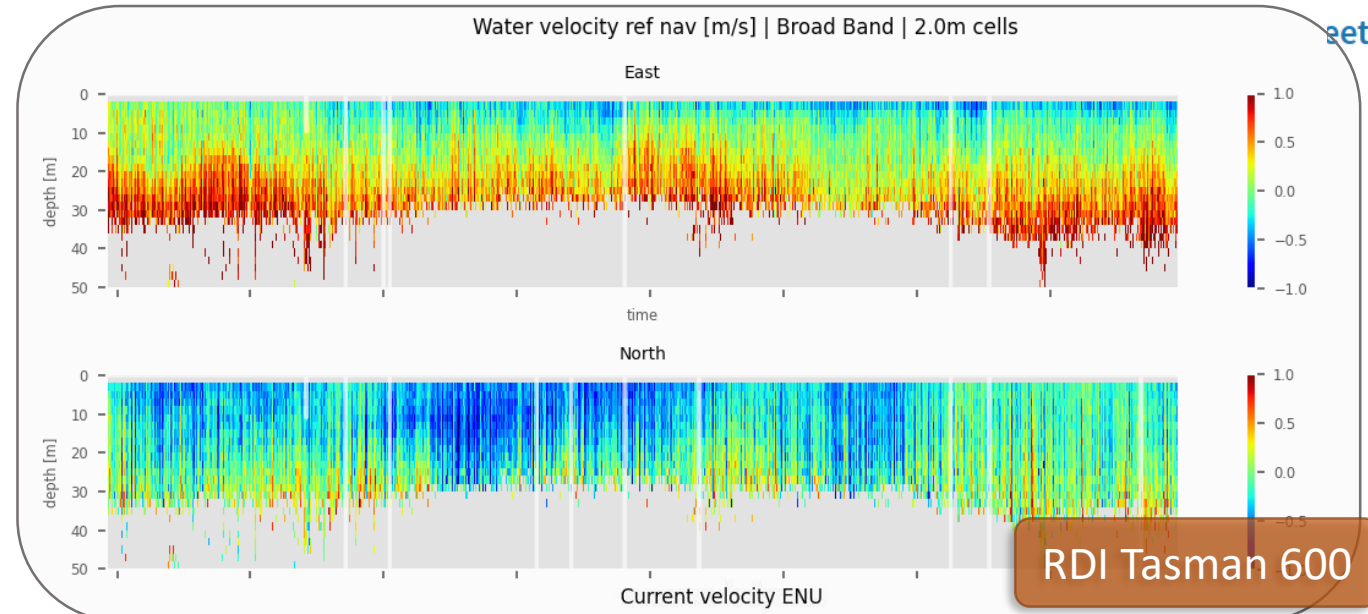
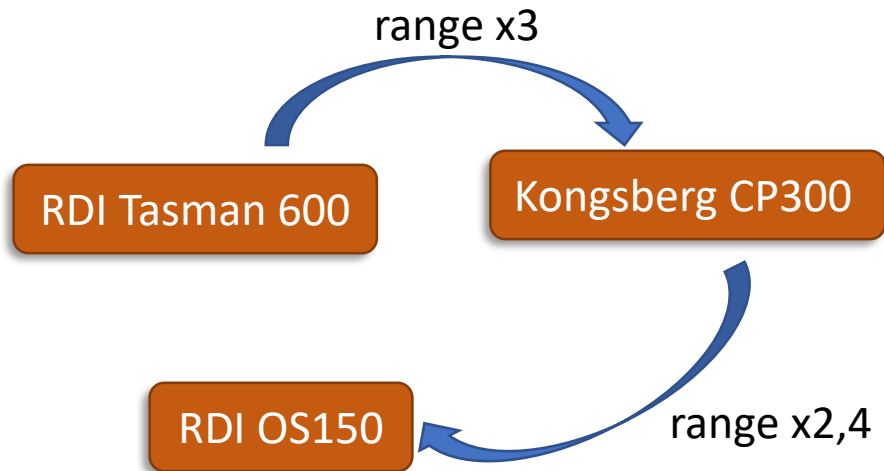
Kongsberg CP300 installed flushed, ~6m below sea-surface

Integrated tool for fish rejection



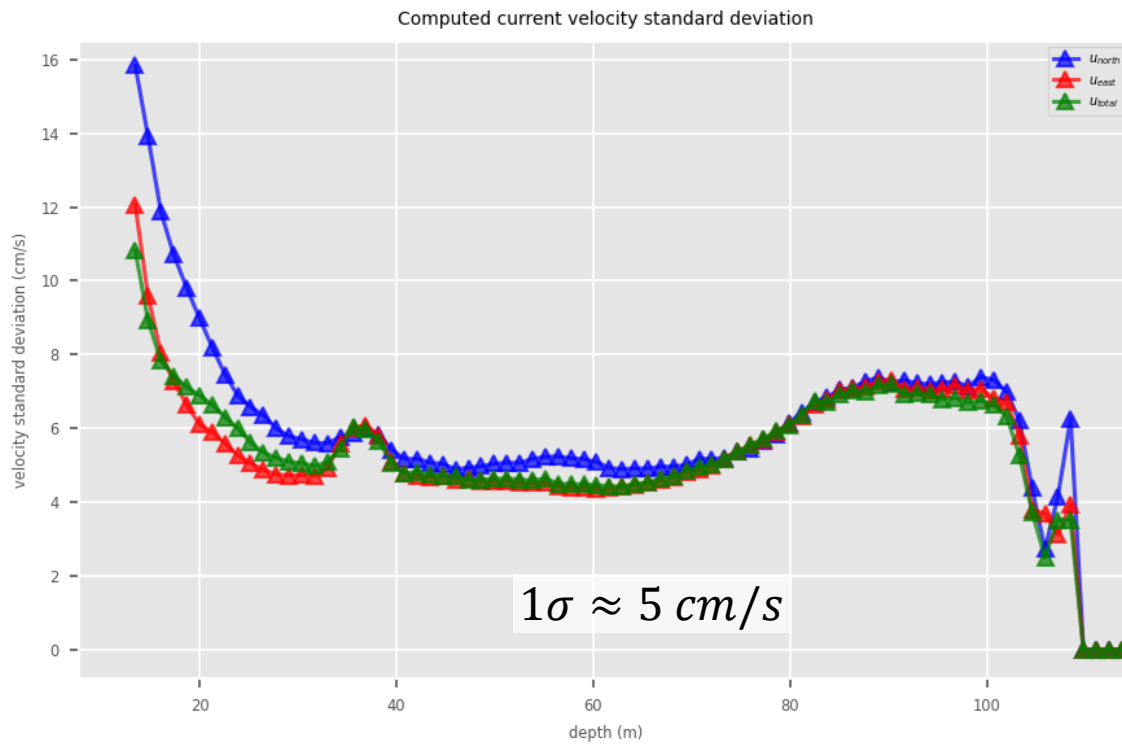
24h data : 27/03/2024

Some data examples



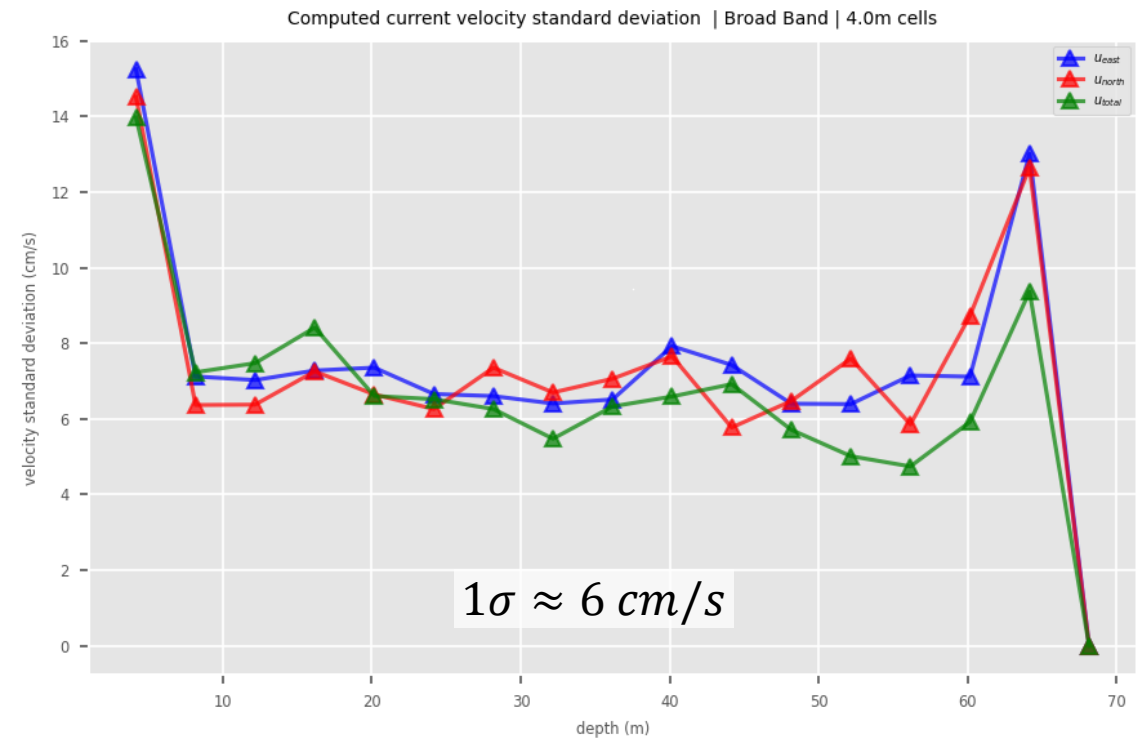
Horizontal standard deviation (cm/s)

Kongsberg CP300 – 4m cells - LFM



R/V Thalassa – Atlantic Ocean

RDI Workhorse 300 – 4m cells - broadband

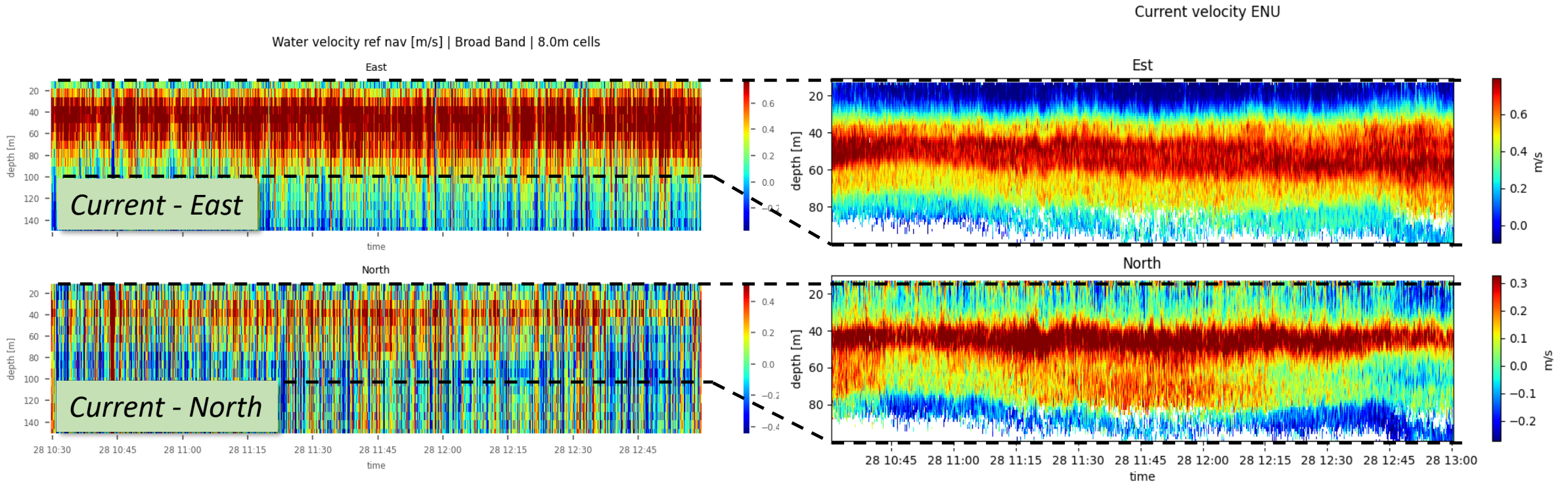


R/V Téthys – Mediterranean sea

R/V Côtes de la Manche – Iroise sea

Visual data comparison - PIRATA-FR34 cruise

RDI OS150 (left) & Kongsberg CP300 (right)



RDI OS150 - 8m cells - broad-band

Kongsberg CP300 - 4m cells – LFM 295->325kHz

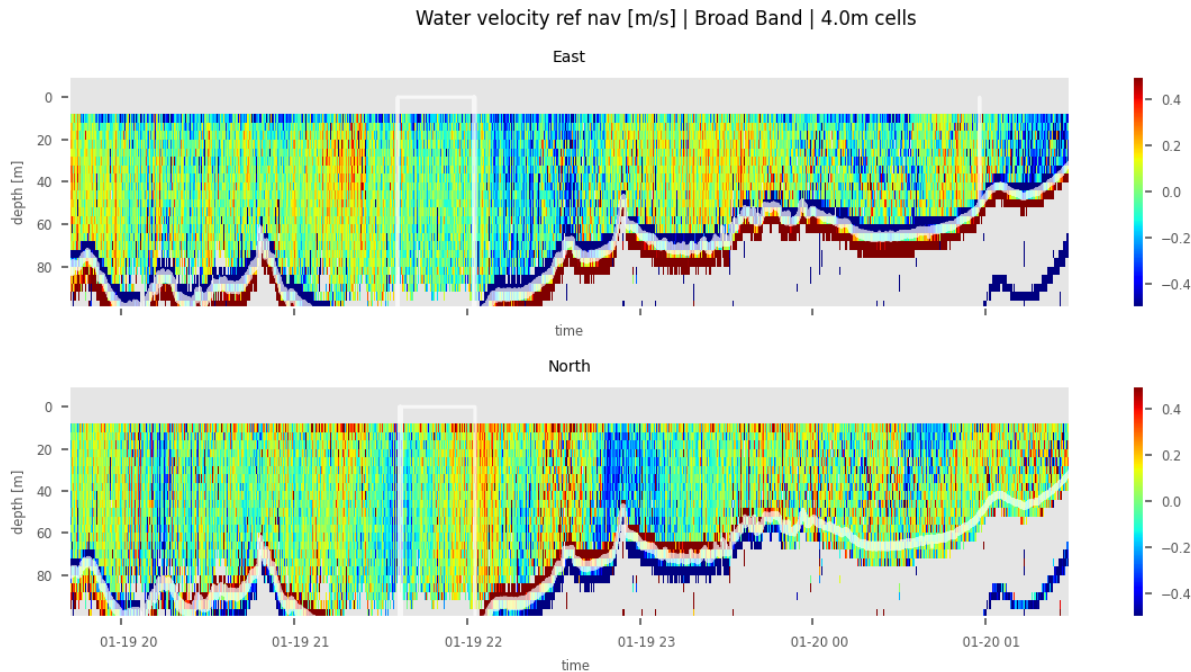
Note : « 4m cells » for Kongsberg CP300 ADCP means a pulse duration of 5,9ms. The sampling frequency being 50 kHz, and a decimation factor of 10 being used for data export, the **vertical resolution in our plots is roughly ~15cm.**

Visual data comparison – different areas

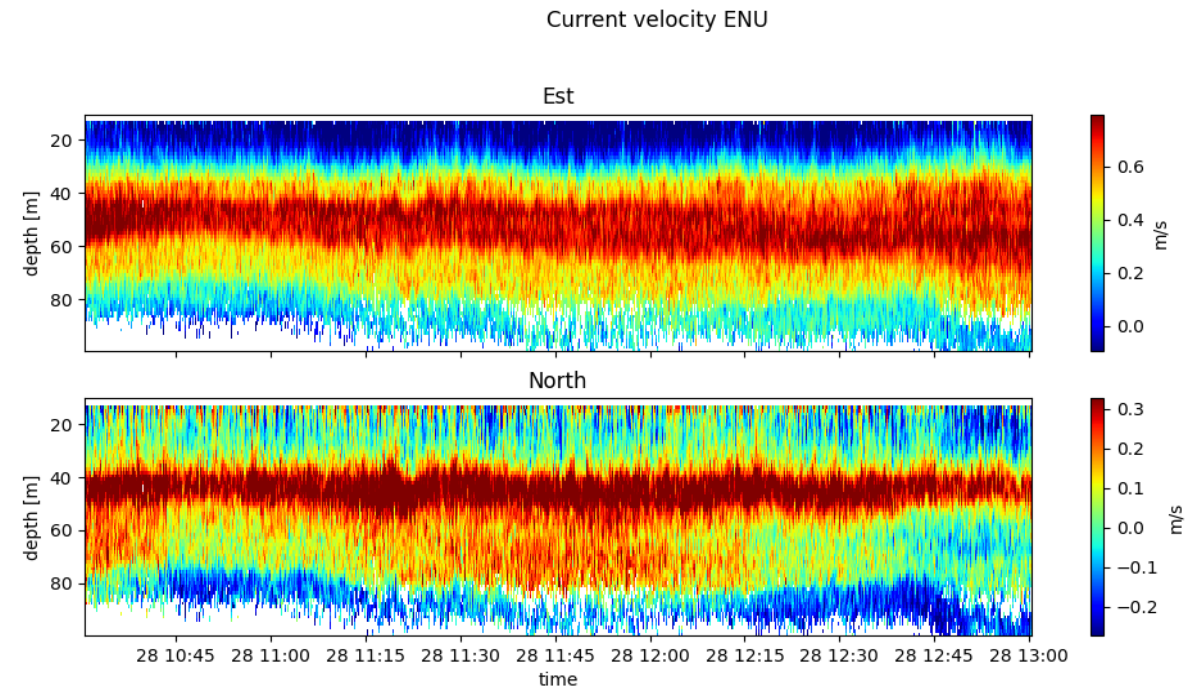
RDI WH300 (left) & Kongsberg CP300 (right)



Note that maximum range is strongly dependant of ensonified medium properties (scatterers, ...) and here the survey area are different.



RDI WH300 - 4m cells - broadband



Kongsberg CP300 - 4m cells – LFM 295->325kHz

First results are promising...

- But it remains still a lot of work for technical trials analysis
- quite amazing fine-scale resolution mainly explained by :
 - Accurate time synchronization system
 - Proper compensation of platform dynamic
- Coherent range and uncertainty results with concurrent systems
- Up-to-date acquisition software (EK80)
- Open-source data format output (netCDF4-SONAR)

Risks identified & acknowledgments

- New system therefore not yet mature (first sales in Summer 2024)
- Still some work to be fully compliant with netCDF4-SONAR format convention
- Need to carefully choose the frequency band in LFM mode to avoid side effects

The author would like to sincerely thank :

- Kongsberg company for trusting Ifremer to evaluate their prototype,
- French National Research Institute for Sustainable Development for making it possible to carry out these technical tests on a scientific cruise and for sharing the PIRATA's scientific data for our studies,
- Genavir company for their help with sensor installation on board the R/V Thalassa.