

## 1<sup>st</sup> ICOS OTC $p\text{CO}_2$ instrument inter-comparison exercise



**When?**

24. August - 04. September 2020

**Where?**

[Flanders Marine Institute \(VLIZ\) in Oostende/Belgium](#)

**What?**

In the recent years new technologies are involving and a whole new generation of sensors and instruments measuring  $p\text{CO}_2$  the surface ocean and below entered the market. This spans from «classical» equilibrator based systems with new  $\text{CO}_2$  detectors to membrane based sensors that can be submerged.

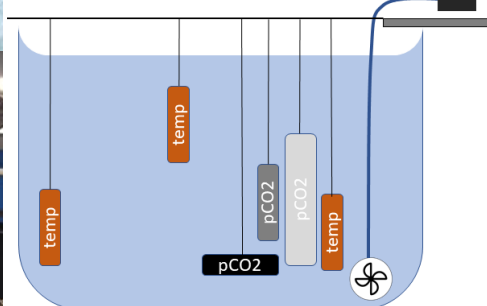
The aim of this exercise is

- the comparison of instruments and sensors that are (or will be) used within the ICOS community over a range of temperatures and  $p\text{CO}_2$ .
- to engage instrument suppliers to work together with the observational community to reach a high level of standardization in operating  $p\text{CO}_2$  sensors and instruments.
- to give answers to the community of choosing the appropriate sensor for their application.

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# Why pCO<sub>2</sub> intercomparison

## Last inter-comparisons took place in

- 1996 onboard R/V Meteor (Körtzinger et al., 2000)
- 2003 in Japan, not published
- 2018 in Norway, not published, problems with setup

In the past 20 years a lot of technological progress was made (new CO<sub>2</sub> sensors, submersible pCO<sub>2</sub> sensors).

There is a strong need in the community for reliable pCO<sub>2</sub> instrumentation. Reliable also means that we need to know how good the reported values are.

When setting up a European wide pCO<sub>2</sub> observing network, there must be an objective way to judge measurements from different instrumentations.

# Facilities – VLIZ/Ostend

- 100m<sup>2</sup> room, air conditioned
- 3 tanks, 5m<sup>3</sup>
- Ø 2.5m, h: 1.2 m
- Temperature controlled 5 - 20°C
- Buffer tanks 10m<sup>3</sup>

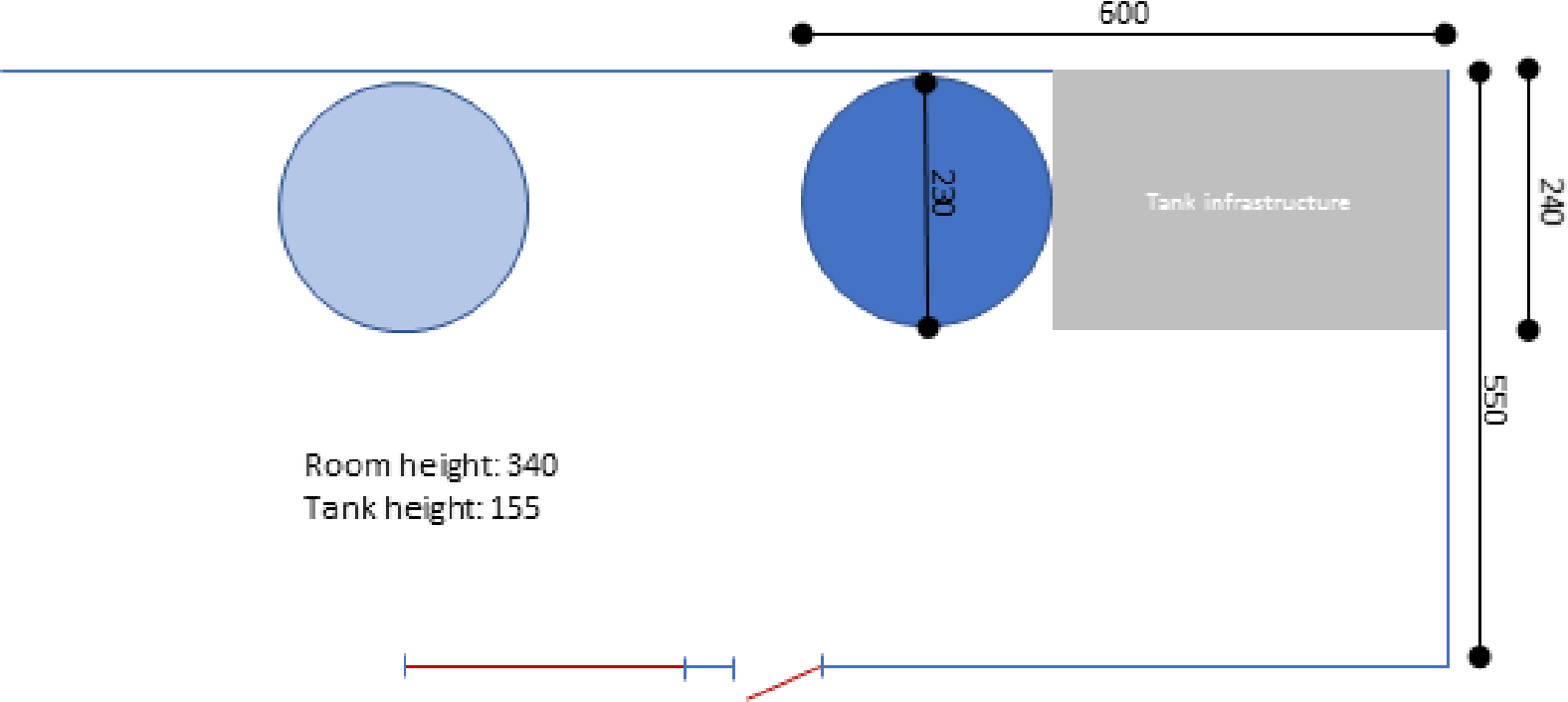




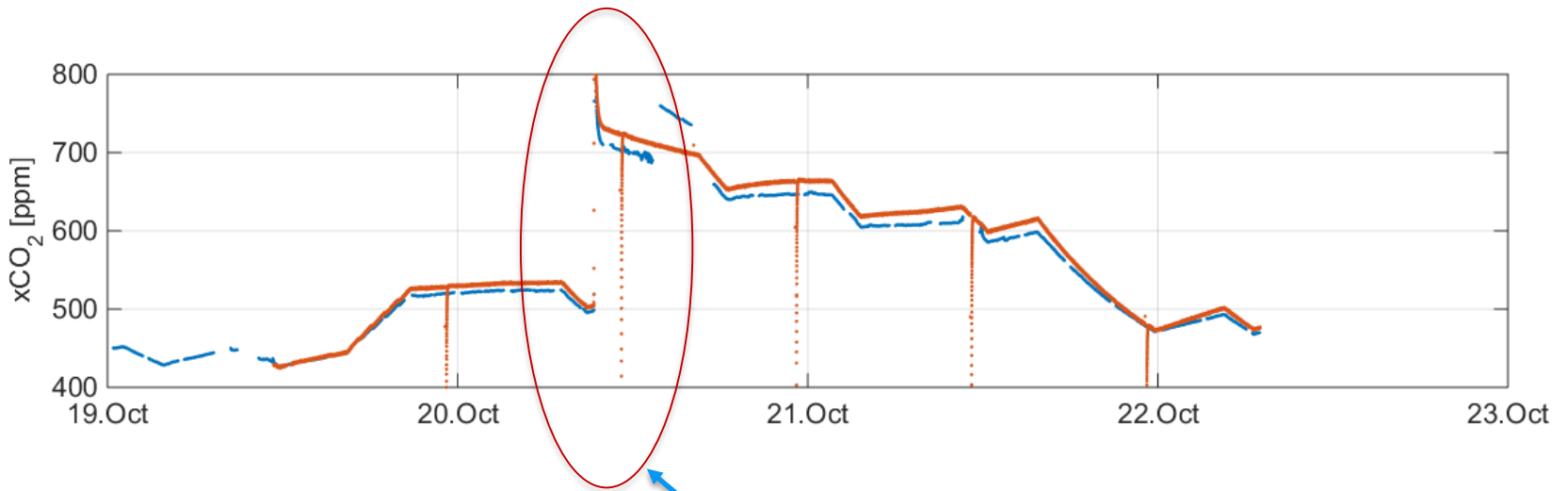
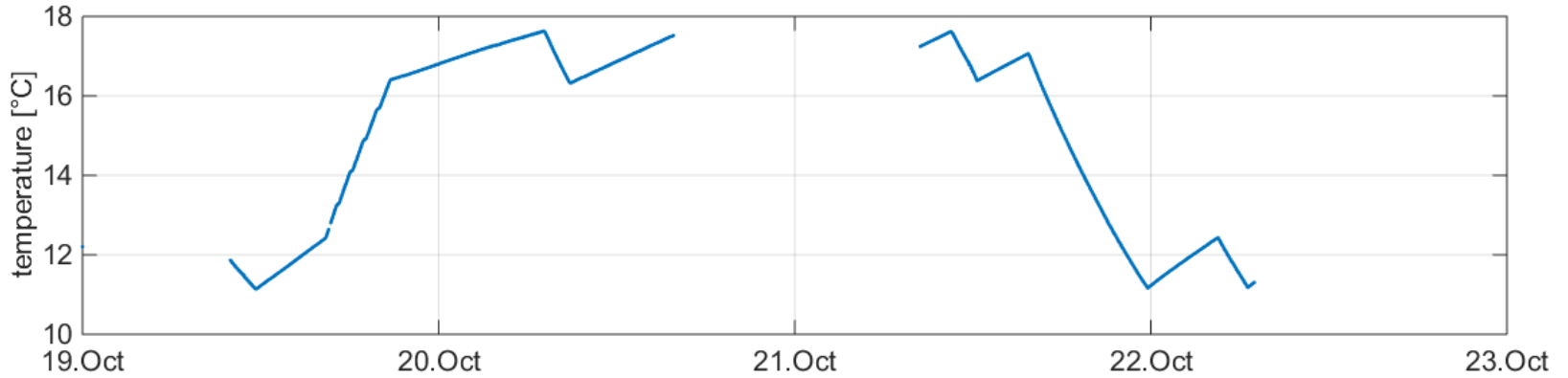
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# VLIZ test run in October



Manipulation of pCO<sub>2</sub> by adding acid

# Intercomparison goals

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**We want the community work together with sensor companies**

- to get the best measurement out of an instrument
- in a defined way
- under defined conditions

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- building groups for each instrument type (users and vendors)
- Define conditions for a successful deployment → SOP
- Focus on surface applications
- Different  $p\text{CO}_2$ , different temperatures
- 2 week exercise, 1 week preparation
- Enough expertise and time to change/adjust
- 30 to 40 people on site
- For every sensor there should be a responsible person on site for the whole time

