



Newsflash

Optodes that revolutionized oceanographic oxygen measurements get even better



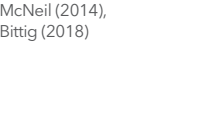
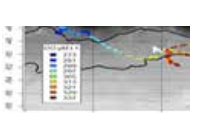









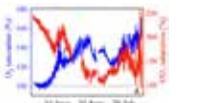


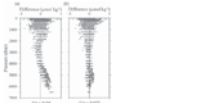
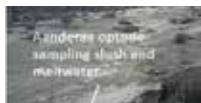
In 2002 Aanderaa revolutionized the measurement of oceanographic oxygen with the release of optical-based oxygen sensors. Their proven long-term stability and reliability have created new possibilities in aquatic research and monitoring. Thousands of Aanderaa optodes are in use around the world.

Applications range from shallow creeks to the deepest trenches and from tropical to in-ice measurements in the Arctic and Antarctica. More than [150 scientific papers](#) have so far been published using these sensors. Below is a selection of some of the applications with the name of the first author and the year that it was published.

From the start we have constantly improved and updated our optodes; the latest developments include:

- 40-point calibration with foil "burn-in" (gives more stable sensors) included in all the deep sea rated

- models (4330 & 4831)
- Improved fast foils, 4-times lower noise, not sunlight sensitive (4330 & 4831)
- Shallow water (below 300 m) oxygen optodes with more stable & rugged foils
- Red reference LED for on-the-fly internal optics + electronics calibration and high quality temp, all models
- Best Practice handbook [available](#). End users can check and improve data quality themselves; no need to return sensors to the manufacturer for routine performance check

<p>RIVERS/HYDROLOGY/HYPORHEIC</p> <p>Birkel (2013), Malcolm (2006, 2008, 2010), Soulsby (2008)</p> 	<p>SURFACE ROAMING</p> <p>Ghani (2014)</p> 	<p>TECHNOLOGY EVALUATION</p> <p>Tengberg (2006), McNeil (2014), Bittig (2018)</p> 	<p>ANIMAL-BORNE</p> <p>Bailleul (2015)</p> 	<p>BUOYS</p> <p>Jannash (2008), Bushinsky (2013)</p> 	<p>AUV</p> <p>Clark (2012)</p> 
<p>GLIDERS</p> <p>Nicholson (2008, 2017), Pizarro (2016), DeYoung (2018), Queste (2018)</p> 	<p>GRADIENTS</p> <p>McGillis (2011), Champenois (2012), Atamanchuk (2015)</p> 	<p>EARTHQUAKE ZONES</p> <p>Oguri (2015)</p> 	<p>INCUBATORS</p> <p>Drazen (2005), Sommer (2008), Caprais (2010), Almroth (2012), Wikner (2013), Niemisto (2018)</p> 	<p>FERRY BOXES</p> <p>Hydes (2009), Hartman (2014)</p> 	<p>CARBON CAPTURE & STORAGE</p> <p>Atamanchuk (2015)</p> 
<p>WELL BOAT FOR FISH TRANSPORT</p> <p>Thomas (2017)</p> 	<p>LAKE METABOLISM</p> <p>Peeters (2016)</p> 	<p>ARGO FLOATS</p> <p>Körtzinger (2004), Johnson (2010), Fiedler (2013), Takeshita (2013), Johnson (2015), Wolf (2018)</p> 	<p>MOORINGS</p> <p>Stramma (2014), Viktorsson (2012)</p> 	<p>CABLED CTD</p> <p>Uchida (2008)</p> 	<p>CHRYOSPHERE</p> <p>Bagshaw (2016)</p> 

A publication by Bittig et al (2018) summarizes experiences from the extensive use of mainly Aanderaa optodes for 15 years. The main recommendations and findings are as follows:

- For highest accuracy, a sensor should be multi-point calibrated (in T- and O₂-space) at least once during its lifetime.
- Since sensing foils become more stable with time, do not replace them unless they are mechanically damaged.
- Optodes are far more stable when deployed (typical drift less than -0.5% per year) compared to when stored.
- An in-air measurements routine should be implemented before and after deployments to detect and correct for possible drift. This is discussed in our [Best Practices handbook](#).

Aanderaa offers five models of optode

4531

2-point calibrated, WTW foils*, 100m rated, various connector options, shallow water/aquaculture, serial+analog (V/mA, 2 channels O₂+Temp) output.

4835

2-point calibrated, WTW foils*, 300m rated, coastal, serial+AiCap** output.

4330

40-point calibrated, pre-matured PreSens foils***, 6000/12000m rated, high accuracy/deep water, serial+AiCap**

4831

40-point calibrated, pre-matured PreSens foils***, 6000/12000m rated, high accuracy/deep water/3d party platforms, 8-pin SubCon connector, serial+analog (V/mA, 2 channels O₂+Temp) output.

5730

40-point calibrated, WTW foils*, flush mounted, cameras, serial output. For OEM sales, restriction apply, please contact us.

5730



*WTW FDO 701 foils: WTW is a Xylem company that offers high quality instrumentation for laboratory and wastewater application. Their O₂ optode foils are stable and exceptionally robust against the mechanical wear that often occurs in shallow water application.

** AiCap: is a modified CAN bus based master-slave communication protocol standard available on most of Aanderaa's smart sensors. AiCap makes plug-and-play connection, to as many (+40) sensors, possible when connected to an Aanderaa logger or Hub directly and remotely using a single seven wire cable. This feature is unique to Aanderaa and practical in all multiparameter applications e.g. multi-sensor strings, buoys, flow through ferry boxes, autonomous vehicle platforms.

***PreSens PSt3 foils: used on our high accuracy/deep water optodes. These foils are stable and very well characterized for oceanographic use in more than 20 scientific papers (see Bittig et al., 2018 for a recent summary). They have been in use on Aanderaa optodes in thousands of applications since 2002. To minimize initial drift the foils are pre-matured before doing the 40-point calibration, which today is standard for 4330 and 4831. A fast responding version is available (t63<8s). The fast foils were upgraded from February 2018 that has the same low noise level as the standard foils and are less sensitive to direct incoming sunlight (compared with the previous fast foils).

For more information and questions please contact us at aanderaa@xylem.com.

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