



Prifysgol Abertawe  
Swansea University

# Sensor Technologies for Remote Environmental and Aquatic Monitoring

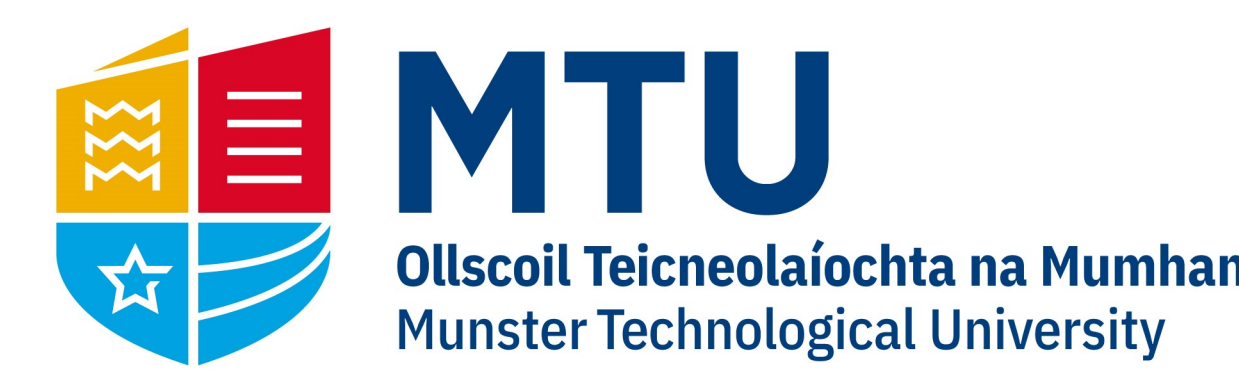
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## STREAM: Sensor Technologies for Remote Environmental Aquatic Monitoring

The STREAM project is a collaboration between both sides of the Irish Sea to better understand the impact of climate change; lower the cost of estuarine and marine observation and accelerate the acquisition of data required for modelling and mitigation planning.

The project aims to develop sensors capable of providing real-time environmental data and disseminating this data via web portals and mobile applications to organisations responsible for protecting and improving Welsh and Irish waters.



Funding:



Programme:



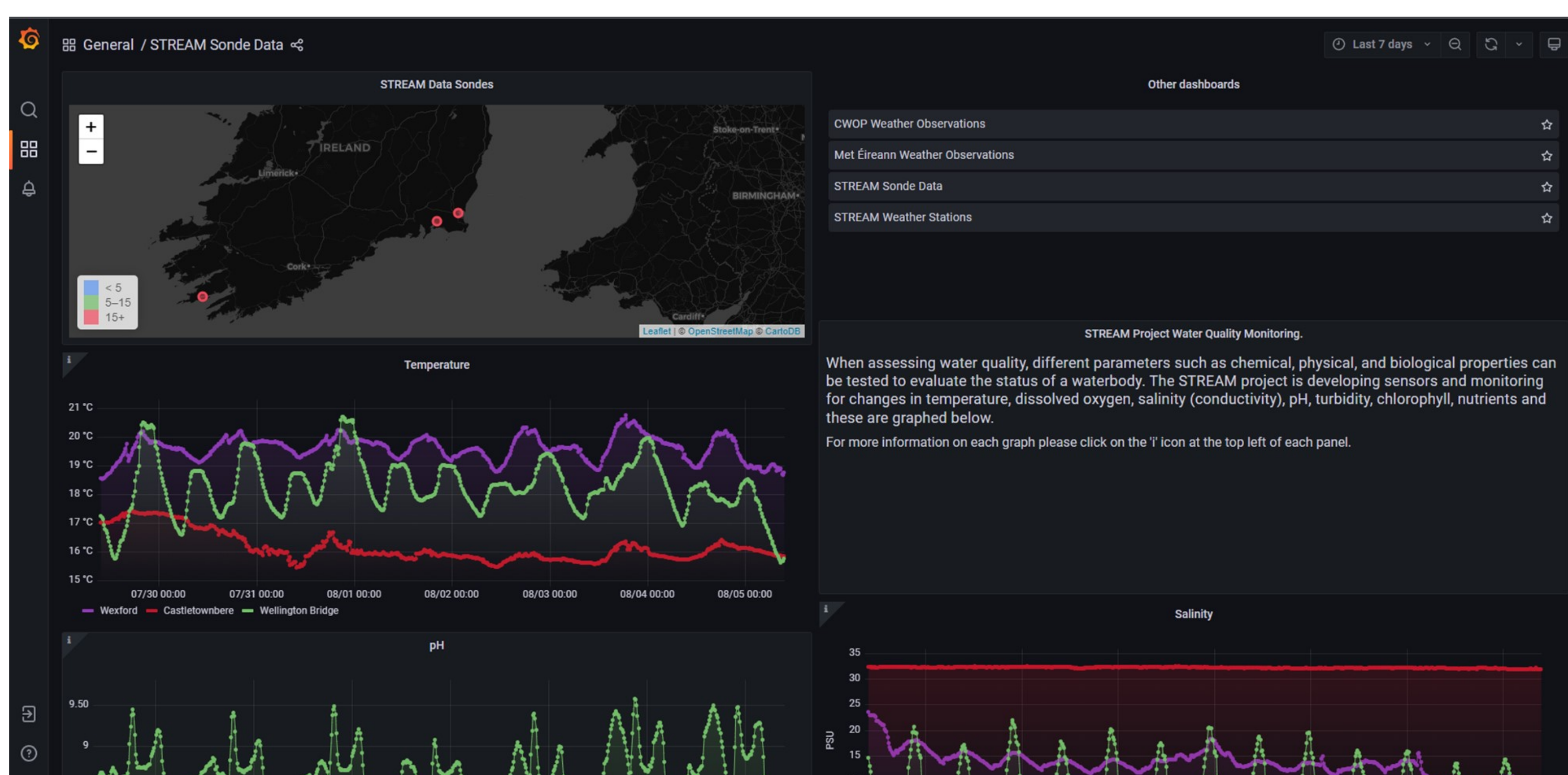
Total Budget:



ERDF:



Duration:



As part of the STREAM project, multiple commercially available sensor systems have been deployed around Southern Ireland and South Wales to measure different chemical, physical and biological properties.

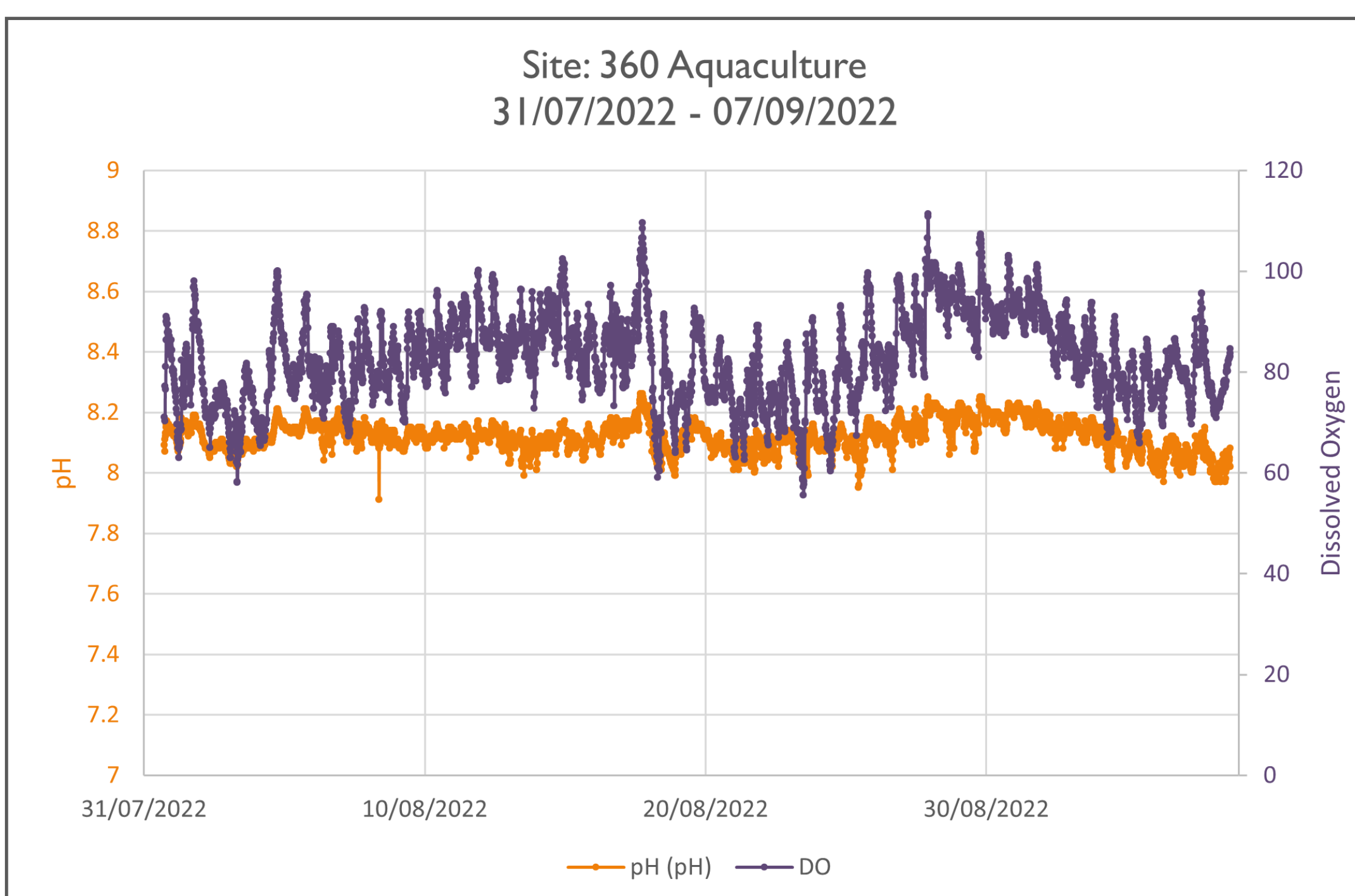
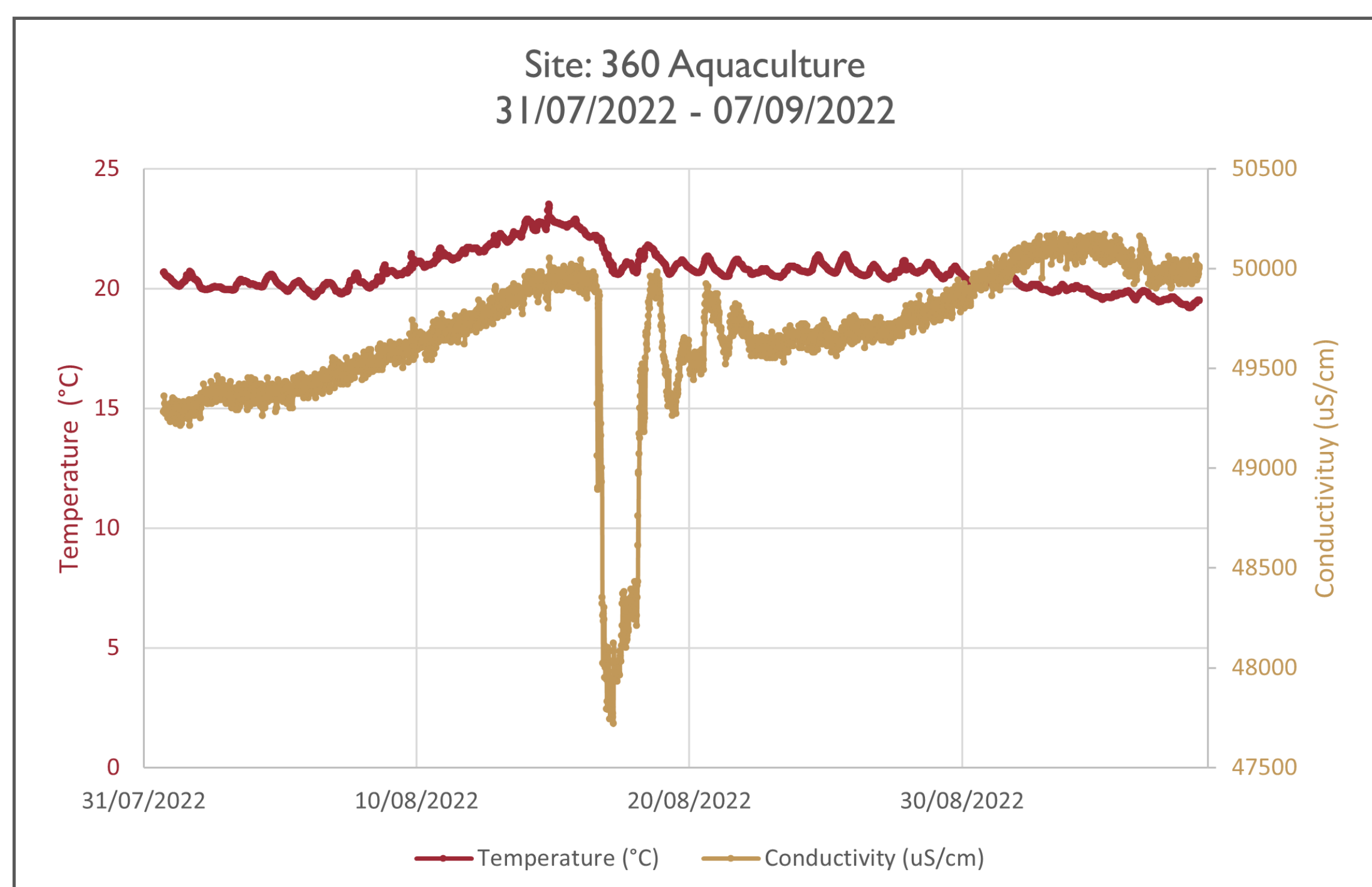
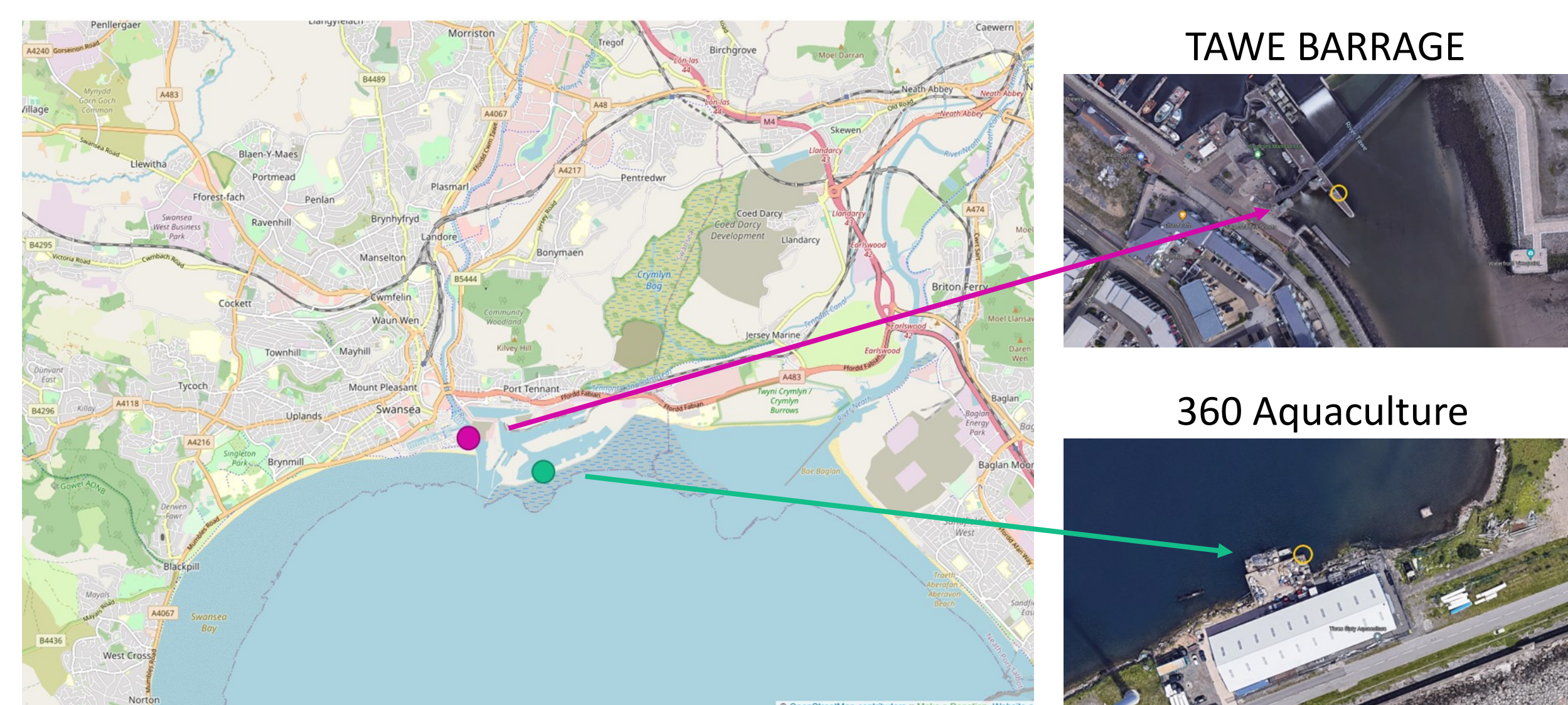
In Swansea, UK, two Proteus systems provided by RS Hydro have been installed. These sondes, contain sensors to measure: temperature, conductivity, pH, dissolved oxygen, total organic carbons, turbidity, chlorophyll A, and chromophoric dissolved organic matter.

The sonde at the Swansea Tidal Barrage is suspended from the outer wall of the loch structure of Swansea marina and as such measures the tidal water from Bristol channel at various depths dependent on the tide.

The 360 Aquaculture sonde measures the water within Queen's Dock which is typically an isolated body of water with no tidal variation. A series of lochs can be opened allowing passage into this area from the bay, however the exchange of water is small relative to the body of water. This site is of interest as it is an oyster farm.



Photographs of the Proteus sondes and deployments in Swansea, South Wales, UK

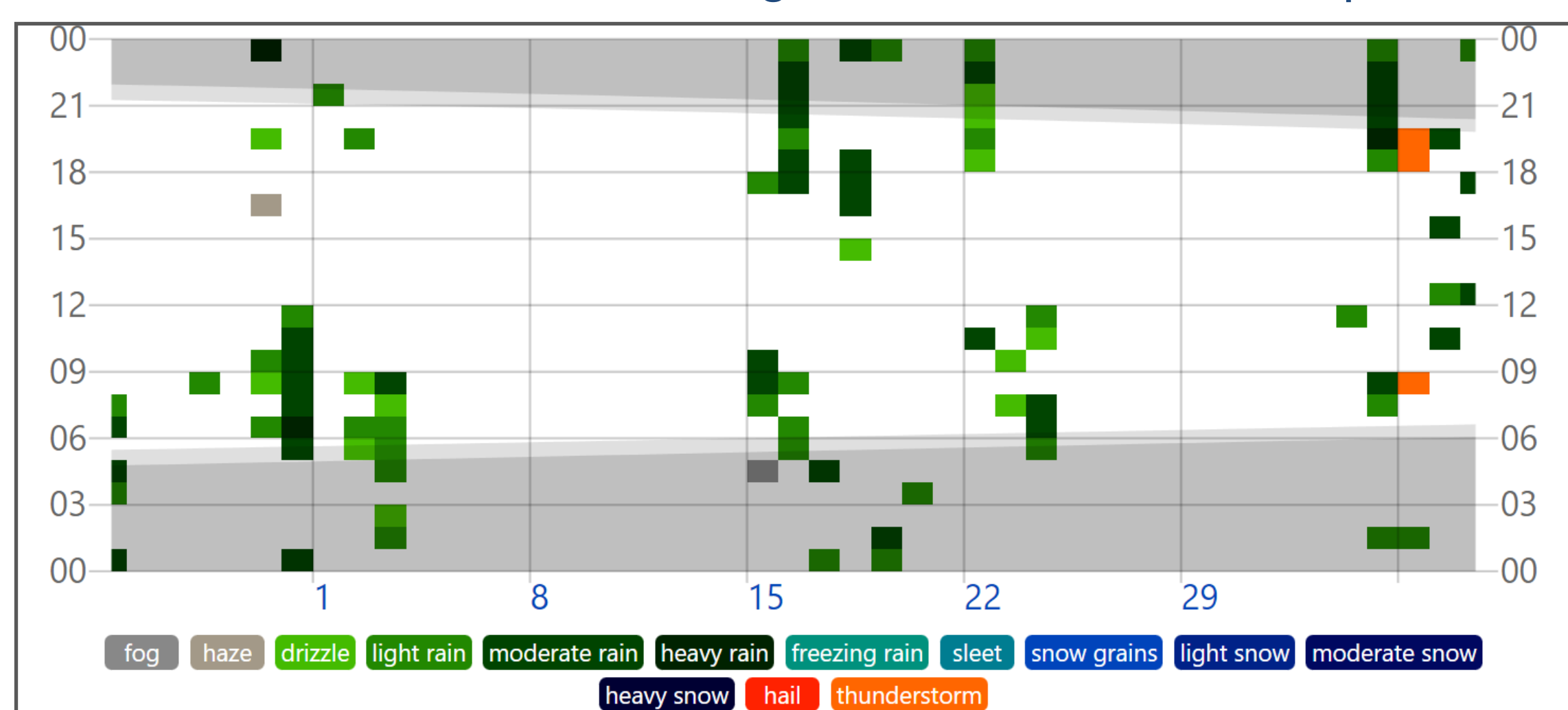


Data collected from the Proteus sonde located at 360 Aquaculture in Swansea, UK between 31<sup>st</sup> July and 07<sup>th</sup> August 2022.

The left hand graph shows temperature, in °C, and conductivity, in uS/cm. The sharp drop on the 16<sup>th</sup> August was a result of rainfall after an extended dry period.

The right hand graph shows pH and dissolved oxygen data collected over the same period.

Observed Weather in Swansea, August 2022 from © WeatherSpark.com



In addition to the deployed Proteus sondes, the project research team are developing new low cost sensors and monitoring systems. Researchers in Swansea University in the Welsh Centre for Printing and Coating are looking at advanced printing and coating technologies to fabricate temperature, conductivity, pH and dissolved oxygen sensors with support from the Centre for Sustainable Aquatic Research (CSAR) who will be testing the sensor technologies in a controlled recirculating aquaculture system before final deployment.



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<https://www.marinestream.eu/>

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