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# Monitoring HABs in Spain's Ria de Vigo with OSIL's FC60 MiniBAT

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Situated in Galicia in the north west of Spain, the Ria de Vigo is a river valley that has sunk tectonically and has been flooded by the sea. The Ria is connected to the open sea via a narrow northern channel and a wider and deeper southern channel. Due to the low tidal Circulation, the Ria de Vigo can be susceptible to harmful algal blooms (HABs), which can kill fish, contaminate seafood with toxins and fundamentally alter whole ecosystems.



The Ria de Vigo

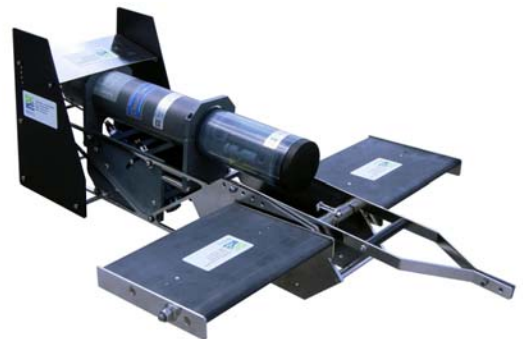
Due to the potential impact of HABs a project was funded by the Xunta de Galicia to investigate the high productivity and the sporadic occurrence of HABs in the Ria de Vigo.

The main interest was in an invasion of warm downwelling waters that seem to coincide with rapid developments of HABs at various times of the year. The project was designed to closely examine this phenomenon using spatial and temporal datasets collected using OSIL's lightweight tow vehicle, the FC60 MiniBAT.

The field data was collected in two phases, the first in September 2006 during the change of water conditions from summer upwelling to

winter downwelling, which is when harmful algal blooms often occur. The second phase will take place in June 2007 during conditions of typical summer upwelling to form a contrast with the conditions of the first phase. Dr Barton, the project's co-ordinator explains, *"our observations will be crucial in interpreting the dynamics of the HABs that coincided with the warm water inflow."*

The field data was collected using a range of instruments, including the FC60 MiniBAT which was fitted with a variety of apparatus to measure chlorophyll and turbidity, amongst other parameters. The FC60 MiniBAT allows rapid profiles to be collected behind a vessel and it eliminates the need to continuously stop and take profiles as in traditional data collection. It also gave the team time to cover the whole Ria at a much quicker rate and better spatial resolution was achieved.



OSIL's FC60 MiniBAT

The FC60 MiniBAT was the ideal instrument to use for this type of investigation as Dr Barton explains, *"we chose the FC60 MiniBAT as the towed vehicle as it is the most capable of carrying a flexible payload and it is well proven in the field."*

The FC60 MiniBAT was fitted with an AML Micro CTD to measure conductivity, temperature and





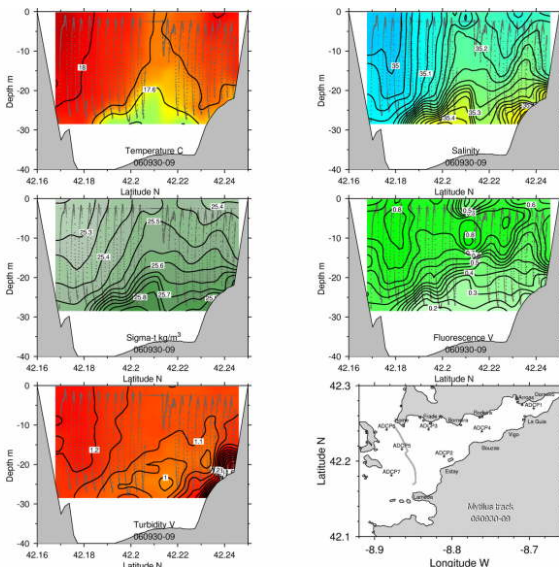
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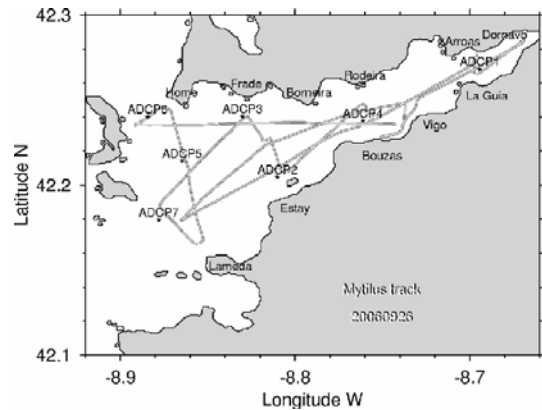
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pressure and a Wet Labs WetStar to measure fluorescence plus an OBS 3 to measure turbidity. By monitoring these parameters spatially and temporally in the ria the team were able to identify the conditions that most favoured the HAB. Dr Barton clarifies *"with the back up of the experienced OSIL team, we were able to maximise the use of the system and succeeded in capturing previously unseen aspects of the inflow."*



Data collected with the MiniBAT on 30<sup>th</sup> Sept 2006

The versatility of the FC60 MiniBAT was a great advantage to the team as it offered them the possibility of undulating the vehicle between the sea surface and a depth of 30 metres, the FC60 MiniBAT can reach 60 metres where required. In addition the FC60 MiniBAT can be towed at speeds of up to 10 knots in suitable circumstances, allowing huge areas to be profiled in a day. The team were able to control the profiling of the vehicle automatically using the FC60 MiniBAT's dedicated software on the boat.



The route taken with the FC60 MiniBAT on 26<sup>th</sup> Sept 2006

The team cycled the FC60 MiniBAT to a depth of 30 metres every few hundred metres and, because the sensors were taking samples every 25 seconds, *"a dense array of data was obtained which provided great detail on the parameter distributions,"* Dr Barton explains, *"overall the MiniBAT has proved a huge success for the HABs project."*

In summary the FC60 MiniBAT offers the perfect solution to collecting profiled spatial data sets, quickly and efficiently using a wide range of equipment and sensors.

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