



Area of Outstanding Natural Beauty (AONB) outstanding scilly

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Into the Beautiful Blue....

By Nikki Banfield, Isles of Scilly Wildlife Trust Communications Officer

Tuesday 16th June was a gloriously beautiful, calm, Scilly day; the kind that Scillyphiles dream of. The postcard picture perfect blues and greens, with highly saturated colours that, when posted on Social Media, are often accompanied with #NoFilter and #NoFilterNeeded.

Due to the country being in Lockdown many locals had taken to Facebook, Twitter and Instagram to share images of the Islands with family and friends who were unable to be here.

The images may look eerily fake or photoshopped but we can assure you they are all as “nature-intended”.

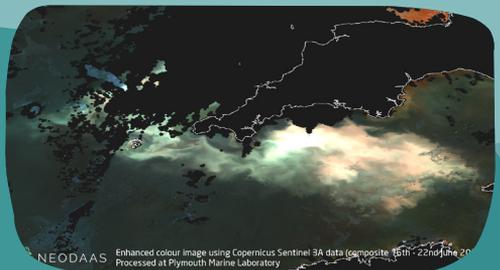
We speculated at the time that the colours must have been as a result of some kind of natural phenomenon; in all probability an algal bloom of some description, given the very distinct lines and tones we were seeing.

But speculation led us on the hunt for an answer, which we've now got thanks to our friends and colleagues at the Centre for Environment Fisheries and Aquaculture Science (Cefas) and Plymouth Marine Laboratory (PML).

When the North Atlantic Blooms in June

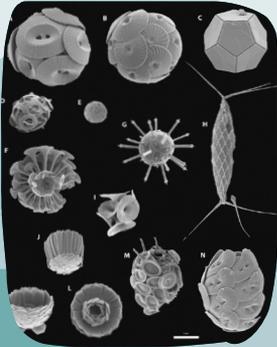
What we were witnessing was a Coccolithophore bloom (bit of a mouthful, but we'll come back to exactly what it is in a minute). Not only that, according to NEODAAS (NERC Earth Observation Data Acquisition and Analysis Service) researchers based at PML, it may have been the largest ever Coccolithophore bloom recorded in the Channel!

It was big enough to be spotted from space, as you can see above in the “Enhanced colour image using Copernicus Sentinel 3A data (composite 16th - 22nd June 2020)” processed by PML.



But what is a Coccolithophore bloom?

Adam Lewis (Research Phycologist/Team leader, Cefas) explains what Coccolithophores are. "Coccolithophores are a type of phytoplankton (microscopic algae) which live in all of the oceans of the world. They are some of the most common organisms on the planet and are also very important in marine ecosystems.



Although they are tiny they are covered in very complex 'scales' called coccoliths. These scales cover their surface and are made from calcium carbonate, which is also what limestone is made from. Each species of Coccolithophore has a unique pattern of coccoliths and these can change throughout the organisms life cycle (a selection can be seen to the right - "The Diversity of Coccolithophores" taken from Wikimedia).

Coccolithophores are important in the oceans because they photosynthesise, fixing energy from sunlight and making it available to other animals. As a result of their coccoliths, they are also important in fixing carbon dioxide from the air and removing it from the atmosphere.

Coccolithophores can cause enormous blooms, covering large areas and turning the seawater a light blue or milky colour (like witnessed in Scilly). Coccolithophore blooms also make the surface of the sea more reflective, this is because of the calcite crystals in the scales that cover the cells.

When these blooms finish the Coccolithophores sink to the bottom of the ocean taking the carbon and calcium they fixed at the surface with them."

So what we were seeing was millions, if not billions, of these tiny planktonic creatures all smooshed together in one place (albeit a very big place) and the explosion of colour was amplified by the sun hitting those tiny particles whilst on the surface! They vanished almost as quickly as they appeared, sinking back down to the bottom of the ocean with their newly acquired loads of carbon and calcium with them.

This particular Coccolithophore bloom was followed closely by many scientists and researchers across the South-West and as we've already said it may have been the largest ever Coccolithophore bloom recorded in the Channel! The NEODAAS researchers, based at PML, use a variety of methods to monitor and track events like the one back in June, including in this case satellite data and imagery.



One set of data came from Sentinel-2B (image above), one of a pair of a European Space Agency satellites operated as part of the Copernicus program.

If you would like to know more and see some more awesome imagery and videos, both from Scilly and space (!) then do check out our extensive Blog, "Into the Blue...", at...



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