

Major pan-European study conducted on ocean acidification

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More than 160 researchers across 10 European countries joined together, in what is being hailed as the first international project to focus on ocean acidification and its consequences.

According to the partners in the EPOCA project ('European Project on

Ocean Acidification') marine research was a relatively new field when they initiated the project four years ago. It brought together scientists who were concerned about the possible risks associated with ocean acidification for [marine organisms](#) and [ecosystems](#).

Concerns had arisen after evidence showed that over the last 250 years the ocean had absorbed around a third of the [carbon dioxide](#) released, because of human activities. This caused [CO2 levels](#) to affect the [ocean chemistry](#), increasing the acidity of [seawater](#). Ocean Acidification is often referred to as the 'other CO2 problem.'

As a result, the EPOCA project conducted research to uncover the biological impact and discovered that 10 % of Arctic [surface waters](#) will become corrosive to shells and bones in less than 10 years. Further analyses of the Mediterranean coastal habitats also revealed that around 30 % of [marine plants](#) and animals could be lost by the end of this century.

However, scientists found that something could be done to counteract the effects if measures were taken to offset the impact of [CO2 emissions](#). They predicted that these countermeasures could, in the long term, lower ocean pH significantly. This important finding spurred a large consortium of experts to implement guidelines and standards for ocean acidification research.

EPOCA has advanced scientific understanding of ocean acidification and its impact on marine organisms and ecosystems. The project has also conducted several important studies including, demonstrating that many calcifying organisms like [mollusks](#), are adversely affected by ocean acidification.

Further studies revealed considerable variability in sensitivity between closely related species, and even between different strains of the same

species. Researchers also found that some species appeared tolerant to ocean acidification in a relatively large range of CO₂ levels, while others were particularly sensitive to it. Elevated CO₂ also resulted in delayed larval development of crustaceans, bivalves, and echinoderms.

Some species were also seen to be sensitive to ocean acidification in short-term incubations, which meant they became insensitive when kept under high pressure of carbon dioxide (pCO₂) for extended periods of time. Other studies indicated that ocean acidification narrowed the thermal tolerance of many organisms, and that the interaction of warming and acidification could alter their community structure and biodiversity.

A testament to the importance of these findings is that more than 200 EPOCA papers were published during the lifetime of the project, representing 21 % of all research articles on ocean acidification published during that period. EPOCA has also developed tools and methods that are now used by the research community and policy-makers. The results from EPOCA are also expected to influence further studies on the socio-economic impacts of ocean acidification.

Dr Jean-Pierre Gattuso, Senior Research Scientist at CNRS-Université Pierre et Marie Curie in France, says, 'The project has garnered significant international interest and support. The EPOCA Ocean Acidification Reference User Group (OA-RUG), which was launched during the project, has rapidly evolved to include related research programmes in the UK, Germany and the Mediterranean region. Also with the recent addition of countries outside the EU, the decision was taken to form the International Ocean Acidification Reference User Group (iOA-RUG), with support from the Prince Albert II of Monaco Foundation.'

Dr Gattuso believes it is thanks to the European Commission that

European research on ocean acidification has received so much attention and increased international awareness, 'EU funding has ensured that the legacy of EPOCA carries on and research on [ocean acidification](#) continues through other European channels, such as the EU project MedSeA ('MEDiterranean Sea Acidification in a Changing Climate'). We also have further funding for a three-year project from the BNP Paribas Foundation, so our work can continue.'

More information: EPOCA www.epoca-project.eu
MedSEA medsea-project.eu

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