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Bringing the Ocean to the Classroom

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The majority of pupils are fascinated with the biological aspects of the ocean, taking keen interest in marine organisms such as whales, sharks, turtles or dolphins. However, the "other side of the ocean", i.e. ocean physics and chemistry, has always taken a backseat in the attention of schoolchildren. The main reasons for this is the notorious reputation of physics and chemistry as “difficult subjects” and the abstract nature of the physical and chemical phenomena occurring in the oceans, rarely offering tangible examples which pupils can see and touch. One of the outreach activities at IFM-GEOMAR in Kiel, Germany is to bring this part of the ocean to the classroom of pupils in all age brackets through “age-oriented” approaches.
For younger children, aged 10-14 years, simple colorful experiments are employed using materials, which are readily available. Topics like the development of the mixed layer, thermohaline circulation, the buffering capacity of the ocean as well as ocean acidification are presented in easy-to-follow hands-on activities. Some of these experiments were developed in the frame of the EU-funded CarboSchools project, where the main focus was on the CO2 cycle. Oftentimes these activities provide the children’s first exposure to chemistry and physics, without them being aware of it. This helps prevent younger pupils from developing fear or prejudice against these subjects, by making them realise that these topics can be fun. The experiments are very universal in nature and can be adopted in all classrooms irrespective of their distance from the ocean, making it possible even for schools far inland to offer marine science as part of the regular curriculum.
Older pupils are given research-projects on which they can work more independently, and they are encouraged to develop, plan and realise video clip projects on more advanced and specialised topics. Through these, pupils communicate information they learned from scientists and their own research in their “own” language and medium, making the topics attractive to other young people in their age group.