

# Programme Implementation

## EU project targets better understanding of the role of coastal sands

**Up to 70% of the European coastal shelf is made up of permeable sand, and as well as producing some memorable beaches, this sand also represents a valuable resource through its use in the fishing, raw materials, water, oil and gas industries.**

However, with hundreds of litres of seawater being pumped through each square metre of highly permeable sand per day, it is predicted that it also plays an important role in the functioning of coastal ecosystems, although exactly how and to what extent has not yet been properly assessed.

To address this lack of understanding, a team of scientists and nature protection officers has been assembled to examine coastal sands as biocatalytic filters (COSA), a project funded by the EU under the energy, environment and sustainable development priority of the Fifth Framework Programme.

Previous research has revealed that by filtering such large amounts of seawater each day, coastal sands remove significant quantities of plankton and small particles, leaving the water clear and providing nutrients for a multitude of bottom-dwelling organisms. In order to properly protect these sands and ensure their sustainable use, the COSA project is investigating their role in the cycle of matter.

The team is co-ordinated by the Max Planck Institute for marine microbiology in Bremen, Germany, and includes researchers from Poland, Denmark, and the Netherlands. Together, they established research sites in two subtidal zones in Poland and Germany with the necessary



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equipment to measure waves, currents, sediment profile, water clarity, oxygen content and salinity. Core samples of the sand were also assessed for permeability and nutrient and particle content, and water samples were measured for photosynthesis, mineralization and concentration of dissolved particles.

Their aim is to discover exactly how important the sand filtration mechanism is for the turnover of organic substances in the coastal zone, to assess its effect on water quality and to understand its capacities and limits. Rather like a sand filter in an aquarium, it is thought that coastal

sands too can become overloaded and clogged, leaving too many particles in the water which have a negative impact on its quality and biota.

Presenting some of the initial results of their investigations, co-ordinator Dr Markus Hüttel said: 'We were able to follow a full yearly cycle and perform in depth measurements at crucial times. Now we know that the permeability and filtration capacity of the coastal sands differ significantly in winter and in summer.' Dr Hüttel added that one of the most striking observations related to high levels of denitrification in deeper layers of the sand sediment, as this was previously thought to be typical only of silt sediments: 'Thus the coastal sands influence the nitrogen cycle in an important way,' he concluded.

The COSA project team will continue with its work until October 2005, when it will integrate and publish the final results. Finally, the presence of two partners from natural protection agencies in Poland and Germany will ensure the fast and effective transfer of those results into environmental policy-making, to ensure the protection of these important and valuable natural systems.

For further information, please consult the following Web address:

<http://www.eu-cosa.net/en/index.html>

*Based on information from the COSA project team*

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