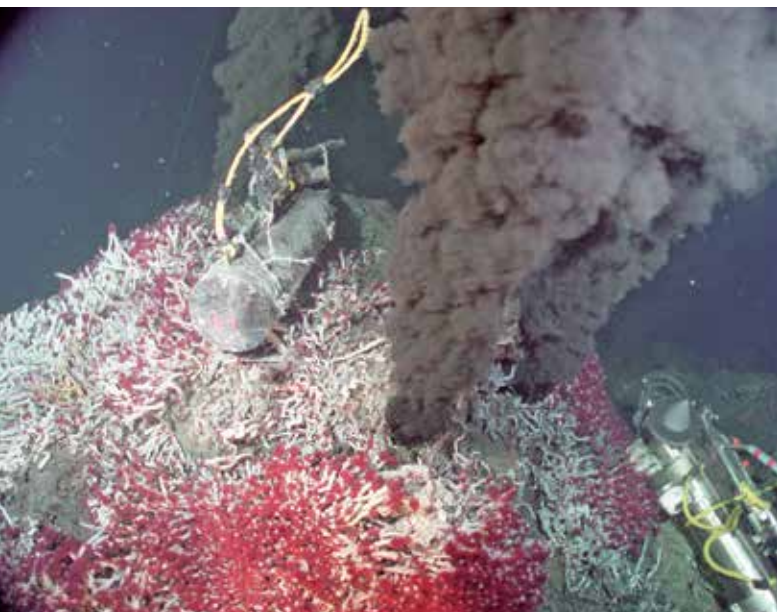


WHAT THE OCEANS



1 Cradle of life — According to current scientific understanding, life on earth began in the oceans. At hydrothermal vents on the ocean's floor we can see how 'extremophiles' are able to adapt and evolve even in the most extreme temperatures and pressures.



2 Oxygen for Life — Although the Amazon rainforest is considered to be the 'lungs of the world', its oxygen production is dwarfed by the oxygen produced by ocean life. Marine phytoplankton and algae produce between 50% and 85% of the global oxygen supply by photosynthesis.



3 Weather Maker — The oceans and its currents are responsible for roughly 50% of global heat transfer. Without the transfer of warm tropical waters to the poles and vice versa, equatorial waters would be 14°C warmer and polar waters 25°C colder. This transfer grants Edinburgh warmer temperatures than Moscow, despite their location at the same latitude.



4 Recycling Powerhouse — The high biological productivity of the ocean is due to a complex food web consisting of microscopic organisms in a so-called 'microbial loop'. The loop is essential in recycling organic matter and nutrients. These organisms also serve as a powerful 'carbon sink' by capturing carbon dioxide, then mineralizing and depositing it on the ocean floor.

GIVE US



5 Biodiversity — Over 90% of the world's living biomass resides in the ocean; estimates suggest this is made up of around a million different species. High biodiversity stabilizes an ecosystem, protecting it from other pressures and allowing complex relationships to evolve like that between clownfish and sea anemones.



6 Food Security — The oceans give us abundant food. Up to 1.4 billion people depend upon fish for a fifth of their animal protein. To meet the demand of growing populations, more fish are being harvested from fish farms and mariculture.



7 Busy nurseries — Much more than a photogenic subject, coral reefs serve as critically important nurseries for oceanic fish. Oases in what are often nutrient poor shallow waters, coral reefs have evolved symbiotic relationships that recycle and capture limited resources to sustain its communities.



8 Coastal defence — Few ecosystems are as beneficial to society as mangrove forests. They stand as physical barriers to storms, act as nurseries for fish, offer habitats for birds, trap sediment, and stop land erosion.

Text: M. Madsen, IAEA Division of Public Information;
Photos: NOAA PMEL Vents Program; NASA/Goddard Space Flight Center Scientific Visualization Studio, iStockphoto