The Mediterranean Reference User Group (MRUG) is an advisory body of the MedSeA project. It is composed of scientists, marine and coastal managers, conservation practitioners, industry representatives, science policy advisors and policy makers, and other stakeholders, mainly from countries bordering the Mediterranean Sea. The MRUG ensures the work and results of the MedSeA project are not only promoted and widely disseminated but are translated into a form that all audiences can understand. The MRUG also ensures that there is a clear understanding of the implications of ocean acidification for policy, socioeconomic and environmental issues which are of importance to stakeholders and end-users in the Mediterranean region. Additionally, the MRUG will assure the quality of the dissemination methods used by the MedSeA scientists.

What can we do?

- Reduce other environmental stresses (e.g. pollution, over fishing, habitat destruction) to build resilience into the marine environment;
- Create effective marine protected areas to help the ocean cope with these global stressors;
- Use marine spatial planning so as to promote the conservation and sustainable management of coastal ecosystems as major carbon sinks; and integrate Blue Carbon into the global policy and financing processes; and
- Adopt stringent reductions in greenhouse gas emissions, including the reduction of emissions from marine industries.

When it comes to mitigating the impact of acidification and warming on the Mediterranean Sea, we can:

- However, short of global collaboration, the risks for each country posed by warming and acidification becomes ever more acute. Here, the implementation of ecosystem-based adaptation strategies through integrated coastal and ocean management institutions at national, regional, and local levels is revealed to be fundamental. This includes amongst others the establishment and effective management of networks of marine protected areas, as healthy and intact marine systems can absorb and store more carbon.

Partners

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The MRUG’s purpose

- Synthesize the key scientific results from MedSea research;
- Advise on the types of data, analyses and products that will be most useful to managers, policy advisors, decision-makers, and politicians;
- Advise on the format and nature of key messages arising from the research;
- Advise on the dissemination procedures to ensure that the results from the research are disseminated to, and accessible by, all potential end-users; and
- Translate and transmit key science developments into their own sector and parent organization.
The rapidly changing Mediterranean

An introduction to ocean acidification in the Mediterranean: why it matters and how you can help

Why should you care?
Ocean acidification could also have significant social and economic effects due to its potential impacts on tourism (e.g., as a result of marine habitat degradation, such as coral reef death, or invasion of non-native species) or fisheries and aquaculture (resulting from altered the cycles of key surface- and bottom-dwelling animals, including shellfish). There is growing concern that impacts of acidification would be widespread from individual organisms up through marine food webs, affecting commercial fisheries and shellfish industries, thereby threatening protein supplies and food security for millions of people. The effects on such marine-based activities could indirectly affect land-based economic activities and jobs on a much larger scale.

Potential vulnerability and global change in the Mediterranean
Although the general impact of acidification on water chemistry is globally well understood, the response of small and complex water bodies like the Mediterranean Sea is unknown. Specific research activities and detailed regional studies are needed to shed light on ocean acidification in the Mediterranean.

Important sectors that could potentially be affected by ocean acidification are tourism, fisheries, and aquaculture. Mediterranean ecosystems may also lead to harmful algal blooms, affect fishery distribution patterns, influence shellfish physiology and impact coral communities. Such resilience changes on a global scale would have major impacts on marine ecosystems, species, and economic activities and jobs on a much larger scale.

Other threatened species

**Seagrass** (Posidonia oceanica) meadows are known as a hot spot of biodiversity in the Mediterranean near Sea, supporting hundreds of species as a shelter and nursery.

**Coral reefs** (e.g., coral reefs) are suffering from a depth of a few meters to over a hundred meters. The highly diverse community of these reefs hosts one of the most iconic and commercially important species, the Red Coral (Caryophyllia sulphurea).

**Wetland reefs**, structures built by living organisms (such as marine snails) that rise from the bottom towards the surface of the sea, which are equally important for their biodiversity and shore protection.

**Greenhouse gases** (H2O, CH4, CO2...) reduce the potential warming effect on our climate. The ocean has been very efficient absorbing so much CO2 that it is changing the chemistry of the ocean resulting in "ocean acidification". This poses a threat to the fundamental chemical balance of ocean and coastal waters, marine ecosystems and could potentially result in large changes in global biogeochemical cycles, and thus the entire ocean system.

Coastlines near (accumulation of calcium carbonate encrusting algae) are a major benthic alteration covering large sections of the Mediterranean coastal waters from a depth of a few meters to over a hundred meters. The highly diverse community of these reefs hosts one of the most iconic and commercially important species, the Red Coral (Caryophyllia sulphurea).

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