

The background of the entire page is a vibrant underwater photograph of a coral reef. In the lower-left foreground, a moray eel with its mouth open is visible. The reef is covered in various colorful corals, including orange and red branching corals, and a small blue fish is seen swimming in the middle ground.

Musing on the concept of Good Environmental Status:

the complexity of the status &
the status of complexity

Joint Workshop
2-4 December 2020

Mankind is facing grand challenges to deal with the complexity of eco-socio-economic systems which entail a paradigmatic shift to a new way to design and tackle the process towards possible solutions: research and innovation can and will play a fundamental role in this regard.

The good marine environmental status (GES) fostered by the MSFD is one of these challenges, addressing a diversity and complexity of systems in terms of social, economic, environmental and political aspects, as well as, of the related stakeholders. Human activities and protection of the marine ecosystem have to be integrated in the concept of shared values, towards a sustainable and feasible economic and environmental framework.

To maximize the impact of investments and make the contribution of science relevant, the interface between science, funds and policy is crucial to adopt efficient and effective interventions. In this context, the EU directive MSFD has provided a fundamental milestone towards the cooperation and integration of national efforts in addressing the good environmental status of the marine environment, whose potential is still to be fully exploited.

The Joint Programme Initiative Healthy and Productive Seas and Oceans (JPI Oceans) is an intergovernmental strategic platform open to all EU Member States and Associated Countries.

JPI Oceans coordinates and integrates research programmes for tackling marine and maritime challenges. In November 2019, JPI Oceans launched the Joint Action "[Science for Good Environmental Status \(S4GES\)](#)" to better understand marine ecosystems, how multiple activities impact the environment and how to fulfill the requests of MSFD.

BlueMed is an intergovernmental initiative launched in 2014 during the Italian Presidency of the European Union, aiming to advance a shared vision for a more healthy, productive, resilient, better known and valued Mediterranean Sea.

BlueMed addresses research and innovation through a multi-disciplinary approach, linking economy, environment and humans, to build sustainable Blue Growth by means of networks of actors and international science diplomacy efforts.

Effective linkages are needed between emerging knowledge, innovative approaches and techniques in marine science and its practical understanding, and possible uses within the MSFD context. This means that criteria, including threshold values, methodological standards, and proper representation of the MSFD descriptors, should be periodically reviewed and amended in the light of scientific and technical progress.

The efficient mechanisms for such revisions should also be built and strengthened, including the development of new and innovative observational schemes and techniques, available for Member States. This will lead to a better consistency in the determination of the GES of different marine regions in the European Seas.

In such a context science can contribute revising or introducing criteria, apply risk-based approach, and provide rigorous definitions to sharpen and refine/specify the concept of thresholds and, in turn, of the Good Environmental Status (GES). Science has also the responsibility to foster data harmonization and interoperability, as well as integrations among MSFD Descriptors.

This workshop is officially part of the wide promotional action approved and supported by the Implementation plan of BlueMed "Understanding pollution impacts, mitigation and remediation in the Med Sea". Also, it is fully taking into account the recommendation to 'Support a better definition of GES and harmonize assessment criteria for priority contaminants', addressed in the framework of the Mediterranean Workshop preparing the [UN Decade of Ocean Science for Sustainable Development \(2021-2030\)](#).

The workshop aims at addressing the scientific contribution to design and structure a complementary path in addressing the Good Environmental Status, where individual and official positions are asked to confront within a scientific and interdisciplinary approach. Participants can contribute to launch a 'small world network' for the identification of the most relevant theoretical and operational aspects and paths to be considered.

Different aspects will be addressed and shared, in particular focusing on how science, governance and implementation can be integrated taking into account the state-of-the-art. The output of the workshop will be summarized into a document which will report the main aspects and recommendations for future developments.

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Programme - Day I

2 December 2020 (10:00 - 16:05)

10:00 - 10:25

Welcome and Introduction

Welcome by JPI Oceans lead countries of the Science for Good Environmental Status (S4GES) Joint Action, *TBD, 10:00 - 10:05*

The JPI Oceans action S4GES and scope of the workshop, *P. Roose, Royal Belgian Institute of Natural Sciences, Belgium, 10:05 - 10:15*

The MSFD and the sustainable use of marine ecosystems: experiences from BlueMed, *F. Trincardi, CNR, Italy, 10:15 - 10:25*

10:25 - 13:35

Session I: Dealing with Complex Systems - concepts

Introduction to Session I, *Chair: S. Azaele, Università degli Studi di Padova, Italy, 10:25-10:30*

Understanding the dynamics of a complex system: theory, models and data, *A. Vulpiani, Università La Sapienza, Italy, 10:30 - 11:00*

Structure and dynamics of natural ecosystems, *A. Maritan, Università degli Studi di Padova, Italy, 11:00 - 11:30*

Coffee break, *11:30 - 11:40*

Multidimensional nature of ecological stability: examples from marine and terrestrial environments *J. Montoya, CNRS, France, 11:40 - 12:10*

The eco-socio-economic dimension of ecosystems, *A.B. Johannesen, NTNU, Norway, 12:10 - 12:40*

Governance of complex systems, *P.F. Moretti, JPI Oceans, Belgium, 12:40 - 13:10*

Panel Discussion *13:10 - 13:35*

13:35 - 14:30

Lunch Break

14:30 - 15:40

Session II: Dealing with Complex Systems - methods

Introduction to Session II, *Chair: D. Iudicone, Stazione Zoologica Anton Dohrn, Italy, 14:30-14:35*

Analytical tools to deal with real systems, *L. Dubroca, IFREMER, France, 14:35 - 15:05*

Gathering and handling Big data, *D. Eveillard, Université de Nantes, France, 15:05 - 15:35*

Panel Discussion *15:35-16:05*

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Programme - Day II

3 December 2020 (9:00 - 13:30)

9:00 - 9:10

Wake up talk

Key outcomes from Day I, *Sandra Ketelhake, JPI Oceans, Belgium*

9:10 - 11:40

Session III: success stories

Introduction to Session III, *Chair: F. Falcini, ISMAR-CNR, Italy, 9:10-9:15*

The Human Microbiome, *T. Van Rossum, EMBL, Germany, 9:15 - 9:45*

Forests as complex adaptive systems, *M.J. Sanz, Basque Centre for Climate Change, Spain, 9:45 - 10:15*

Coffee break, *10:15 - 10:25*

The soil and cognitive control *G. Masciandaro, CNR-ISE, Italy, 10:25 - 10:55*

Characterizing integrated ecosystems, *C. Gauchere, AMAP Laboratory, France, 10:55 - 11:25*

Coffee break, *11:25 - 11:40*

11:40 - 12:45

Session IV: The ocean domain

Introduction to Session IV, *Chair: P. Mariani, National Institute of Aquatic Resources, DTU, Denmark, 11:40 - 11:45*

The bottom-up view of marine ecosystems, *M. Ribera d'Alcalà, Stazione Zoologica Anton Dohrn, Italy, 11:45 - 12:15*

Diversity, interactions and marine ecosystems functioning, *A. Djurhuus, University of the Faroe Islands, Faroe, 12:15 - 12:45*

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Programme - Day III

4 December 2020 (9:00 - 13:45)

9:00 - 9:10

Wake up talk

Key outcomes from Day II, *Sandra Ketelhake, JPI Oceans, Belgium*

9:10 - 11:55

Session V: how to manage MSFD and enhance the science-policy interface

Introduction to Session V, *Chair: J. Tronczynski, IFREMER, France 9:10 - 9:15*

Did MSFD fail? Contrasting approaches to MSFD implementation and regulatory transition, *W. Bonne, DG RTD, Belgium, 9:15 - 9:45*

Marine Strategy beyond borders, part I, *T. Hema, UNEP-MAP, 9:45 - 10:15*

Coffee break, *10:15 - 10:25*

Marine Strategy beyond borders, part II, *I. Boujmil, BlueMed Ambassador & H. Jaziri, scientist in charge of the National Plastic-Hub, Tunisia, 10:25 - 10:55; M. Snoussi, BlueMed GSO, Morocco & A. Hamza-Chaffai, Tunisian Academy of Science, Tunisia, 10:55 - 11:25*

How to manage the MSFD machine: what are the keys? *A. Borja, AZTI, Spain, 11:25 - 11:55*

Coffee break, *11:55 - 12:05*

12:05 - 12:45

Open Discussion *Moderator: Sandra Ketelhake, JPI Oceans, Belgium*

12:45 - 13:30

Presentation of a joint EU-JPI Oceans MSFD oceanographic cruise in 2021 *P. Roose,*

Royal Belgian Institute of Natural Sciences, Belgium, 12:45 - 13:00

Q&A and discussion, *13:00 - 13:30*

13:30 - 13:45

Conclusion and end of workshop *Moderator: M. Sprovieri, IAS-CNR, Italy*

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