Oceanography from Space
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Revisited

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Springer
To all those sailors
Who dreamed before us
Of another way to sail the oceans
To all those sailors / Who dreamed before us / Of another way to sail the oceans.

The dedication of this Volume is meant to recall, and honour, the bold pioneers of ocean exploration, ancient as well as modern. As a marine scientist, dealing with the oceans through the complex tools, filters and mechanisms of contemporary research, I have always wondered what it was like, in centuries past, to look at that vast horizon with the naked eye, not knowing what was ahead, and yet to sail on. I have tried to imagine what ancient sailors felt, when “the unknown swirls around and engulfs the mind”, as a forgotten author simply described the brave, perhaps reckless, act of facing such a hostile, menacing and yet fascinating adventure. Innovation has always been the key element, I think, for their success: another way, a better way, a more effective, safer and worthier way was the proper answer to the challenge.

The map of our world has been changed time and again, from the geographical as well as the social, economic and scientific points of view, by the new discoveries of those sailors. One of the positive qualities of human beings is without doubt the inborn desire to expand their horizons, to see what lies beyond, to learn and understand. Exploring the oceans not only brought fame and fortune to the sailors, it also opened the way to progress in all spheres of life: new lands, new markets and new people meant new ideas as well, new perceptions of the world around. In this sense, the “space” oceanographers who gathered in Venice, for the first “Oceans from Space” Symposium, in 1980, were like those pioneers who opened new trade routes, as what they discovered since then in reality surpassed many times what was expected in the beginning.

Both in ancient and in modern times, novel expeditions cost a lot. Merchants and rulers had a keen interest to invest into such risky enterprises as fragile ships sailing towards the unknown, because of the profits to be made with the goods they would bring back, and of the invaluable benefits brought by new discoveries. Oceanographers had similar, if less material goals, when they started to look at the expensive tools of space exploration, for opening new avenues of research. Satellite missions require huge investments, and are not immune from the risk of total failure, but they do bring back invaluable goods such as plentiful data, generated by large-scale, long-term systematic observations, as well as surprising, intriguing and promising new knowledge. The oceanographers who came back to Venice, for the
second “Oceans from Space” Symposium, in 1990, were faced by difficulties of continuing to fund their enterprise, in spite of the extraordinary possibilities hinted by their early results.

It was only during the third edition of “Oceans from Space”, in 2000, that the need for new, unprecedented commitments, in terms of both funding and research programmes, became evident not only to the scientific community, but also in the political circles where goals and priorities of public investments are set. Climate change, and its unexpected consequences, both in the environmental as well as socio-economic realms, was upon us, at that time, and action seemed urgent. It is still, as we get together once again, in Venice, the city that represents so well our complex, dangerous and yet captivating bond with the sea. The achievements, the understanding we gained over the past three decades of ocean observations, are reviewed and commented in the present collection of key-note lectures delivered at the fourth “Oceans from Space” Symposium, in 2010. But, as usual, the future outlooks offered by many of the authors focus on the open questions, on the new challenges that have been brought about in the course of the most recent explorations.

The chapters of this Volume provide an overview of the path followed so far, the instruments available today, and the plans for tomorrow, when observing the oceans with passive or active microwave, infrared and visible remote sensing. In some instances, they start to unveil the advantages deriving from the use of complementary techniques and the added value of their combined views. The breadth and complexity of the environmental themes and of the diverse techniques covered in the papers called for the contribution of several prominent figures in our scientific community, whose names and affiliations appear in the following list of Contributors. To all of them go my sincerest thanks, for the enthusiasm with which they responded to my call for help, and for the patience with which they endured my continuous reminders of incumbent deadlines. Further, special thanks are due to my colleagues at the Joint Research Centre of the European Commission, whose help as “fast reviewers” of the submitted papers has been highly appreciated, when time was running short, and is acknowledged here, now that their obscure, but invaluable, job is done. Their names are also recalled in the list of Contributors that follows. Finally, I would like thank my co-editors of this Volume, and dear friends, Jim Gower and Luigi Alberotanza. Without Jim, there would be no “Oceans from Space” conference series, period. Without Luigi, none of the “Oceans from Space” editions would have enjoyed the success that they did. It has been a privilege, and a great pleasure, to work with both of them.

Ispra, Italy

Vittorio Barale
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