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Preface

Fifteen years after the launch of ERS-1 and TOPEX/Poseidon, the European Space Agency, in collaboration with the French Space Agency, CNES, has organised an exceptional Symposium on "15 Years of Progress in Radar Altimetry" in Venice Lido, Italy, from 13 to 18 March 2006. Within the framework of this Symposium, three related events were scheduled: the Ocean Surface Topography Science Team Meeting, the International DORIS Service Workshop and the Argo Workshop.

After many years of development and data exploitation, radar altimetry is at the turn of an epoch. Radar altimetry is going operational for oceanography and entering a new generation with higher resolution and higher precision radar altimeters. The Symposium is about looking back at the progress made since the launch of ESA's ERS-1, back in 1991, and Topex/Poseidon in 1992, followed by ERS-2 in 1995, Geosat Follow-On in 1998, Jason-1 in 2001 and ENVISAT in 2002. The Symposium drew together six scientific communities: Oceanography, Marine Meteorology, Land Hydrology, Cryosphere, Geodesy and Geophysics.

Three different scientific communities, geodesy, geophysics, and oceanography, learned to work closely together on common goals over many decades, developing new technologies with much improved accuracies. The cryosphere community benefited from all the technological and data processing progress made for oceanographers when adapting these techniques to monitoring the ice caps and sea-ice. More recently, it became clear that exploiting radar altimetry to monitor inland water levels was feasible, even if quite complex, and the accuracy over these difficult targets is improving rapidly. Many countries, especially those in Europe and the USA - countries with different cultures and ambitions - learned to work closely together on common goals. By 1992, the progress and results laid a very strong foundation for the future of satellite altimetry and the Jason, Envisat, and Geosat Follow-On missions were decided. The accuracy of global geodetic measurements increased from a few hundred meters at the beginning of the satellite era to a few centimeters during the last fifteen years. As a result, we know much more about the Earth, ocean dynamics and the cryosphere than we would have known without altimetry, and we have laid the foundations for fully operational 3-D oceanography. Satellite altimetry has expanded from conferences attended by a handful of scientists to this Symposium attended by around 500 scientists submitting papers with more than 1200 authors and co-authors.

The "15 Years of Progress in Radar Altimetry" Symposium covered all the themes mentioned above and full papers are collected in these proceedings. In particular, a summary of the recommendations gathered during the plenary session on the future of altimetry and the panel discussion brings guidance on the requirements for future radar altimetry missions. The main message is the need for continuity of a multi-mission radar altimetric system making the best use of new technology arising for a new generation of instruments in support of both science and GMES.

One remarkable expression was the appreciation of the richness and the usefulness of such an exceptional Symposium stimulating a precious exercise of analyzing the past difficulties and the progress made so far. A noteworthy recommendation calls for holding a sequel to this Symposium in five years, hopefully joining-up with the famous Venetian meeting held every ten years since 1980, called “Oceans from Space”.

In closing we would like to recognize the contribution of the partner agencies, institutions and organizations supporting the development of altimetry, in particular NASA, NOAA, EUMETSAT, IAG, IAPSO, INSU, IRD, IFREMER, EMS and IOC. As well, we express our gratitude to the Scientific Committee members, the Chairs and the Keynote Speakers, and to the contributors and the participants who made this Symposium a success. *Bonne lecture!*

Jérôme Benveniste (ESA) and Yves Ménard (CNES)
Organising Committee Chairs
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LIST OF PARTICIPANTS

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