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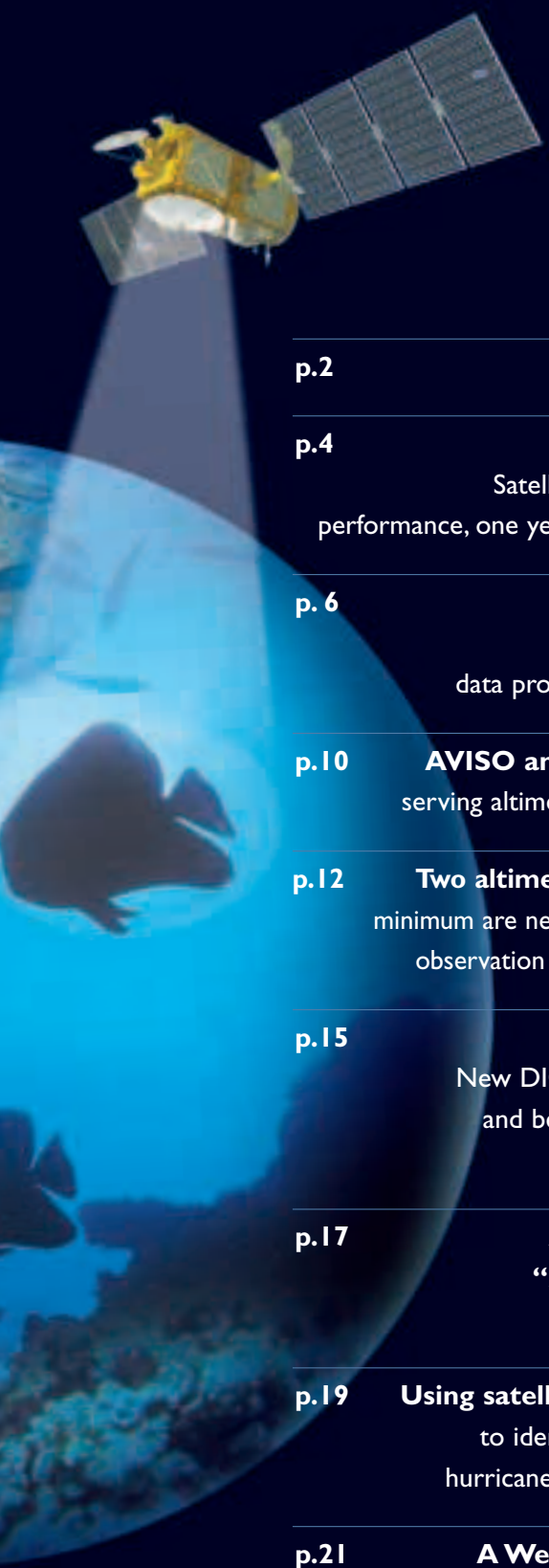


Editorial

December 6, 2002, in San Francisco, the American Geophysical Union (AGU) opened to some 5,000 conference attendees from around the world. The satellite radar altimetry community and everyone keen to discover the latest developments in this area went to the session on the French-US Jason-1 mission, where a presentation was given of the first results obtained by the mission's Principal Investigators (PIs) and Co-Investigators (CoIs). The next day, marking the first anniversary of Jason-1's launch, a meeting of the close circle of project teams from CNES and NASA gave the go-ahead to start distributing data to the worldwide community in April 2003. Thus, 2002 ended as it had begun, with the Jason-1 engineering, satellite, instrument, and ground teams in full swing. Since the satellite completed in-orbit checkout on February 6, 2002, the teams have been devoting all their energies to monitoring the mission, optimizing processing systems, and keeping the project on track. Everyone has risen magnificently to the challenge throughout the past year, during which several major milestones were reached:

- The start of the validation phase and release of the first data to PIs in March
- The first meeting of the Science Working Team (SWT) in Biarritz, France, in June, halfway through the validation phase
- The second SWT meeting marking the end of the validation phase in October, in New Orleans, U.S.A.
- Presentations to the COSPAR in Houston and to the AGU in San Francisco, U.S.A.
- The start of the mission's routine phase

This issue of the AVISO newsletter, in which we can only hope to give a brief overview of these past months of intense activity, is dedicated to all the extremely talented people working on the Jason-1 project.

For over one year now, Jason-1 has been following in the tracks of Topex/Poseidon (T/P), which was sent into orbit 10 years earlier and is still performing superbly to the great satisfaction of its many admirers and users. Like its illustrious predecessor, Jason-1 is surveying the ocean in all its forms and unlocking its closely held secrets. It measures the topography of the ocean surface with extreme accuracy (to within one centimeter), yielding vital information about ocean

circulation and its impact on climate. Jason-1 also provides weather centers with wave height and wind speed data for sea-state prediction models in just three to five hours. The recently completed scientific validation phase, to which the project and science teams contributed, confirmed that all system components—the spacecraft bus, payload, and ground segment—are working well. The satellite's performance is meeting and even exceeding mission specifications. Jason-1 and T/P data have been cross-calibrated with sub-centimeter precision, a result made possible by flying both satellites along the same ground track just one minute apart. The routine phase of Jason-1's mission to observe the global oceans for the next five years and possibly beyond is therefore ready to begin.

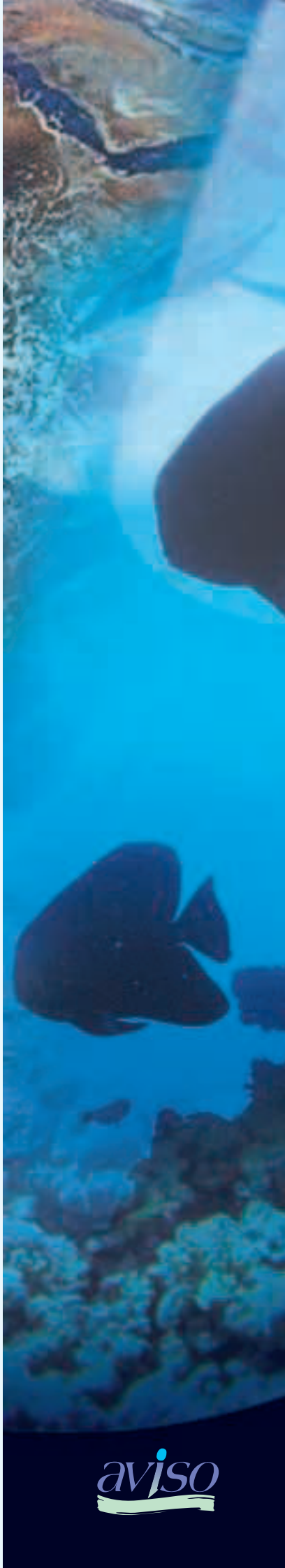
Jason-1's new ocean odyssey will confirm and complement the results already obtained with T/P, but it is also set to bring new advances in oceanography. We still have a great deal to learn about the ocean environment. Although we have a much clearer picture today of many ocean phenomena thanks in large part to T/P observations (combined with other altimetry data from the ERS and GFO satellites), gaps in our knowledge nevertheless remain. For instance, the interaction between low-frequency signals and other ocean modes is still poorly understood. The medium-amplitude El Niño conditions in the equatorial Pacific Ocean, revealed by Jason-1 in recent months, are another fine example. The North Atlantic Oscillation (NAO), generated by north-south shifts between high- and low-pressure systems, and its counterpart in the Pacific, are other important climatic events being closely tracked by Jason-1. Likewise, Jason-1 is training its sharp eye on year-to-year variations in the seasonal cycle and on mean sea level, a key indicator of global warming. To understand the inner workings of these phenomena and be able to predict them using models, we need to sustain an observation capability such as Jason-1 can provide over the long term.

Lastly, Jason-1 is playing a central role in developing operational oceanography, an ambitious project that signals a paradigm shift in climate prediction for the coming years. This is the aim being pursued by the international Global Ocean Data Assimilation Experiment (GODAE) for 2003-2005. Altimetry is a key element of this program, as is the extension of the global network of Argo in-situ data buoys. Several experimental or pre-operational GODAE projects using altimetry data are already underway, for example, the FOAM project led by the UK Met Office and ECCO in the USA. In France, the Mercator Ocean public interest grouping formed at the start of 2001 is already delivering 3-D ocean forecasts for the North Atlantic, and is set to extend coverage of its model to all the oceans of the globe this year. Recent events have clearly demonstrated the utility of these forecasts, helping competitors in the Route du Rhum solo transatlantic yacht race, providing input data for models used to track oil slicks —which, sadly, is making headline news at the moment— or to improve the safety of offshore oil drilling operations.

2003 will to be just as exciting and absorbing as last year, not only for the science teams working on the data but also for the engineering teams conducting routine operations and introducing significant mission enhancements. Downstream applications and derived products incorporating multisatellite data are also set to emerge. Here again, T/P has an important role to play, since it is still performing just as well and is just as productive 10 years after launch, having surpassed its initial five-year design life. Since September 16, T/P has been positioned in a parallel orbit midway between adjacent Jason-1 ground tracks. Paired operations with T/P offer observations with higher resolution than either satellite could attain alone, which will improve detection of such smaller-scale phenomena as ocean eddies, coastal currents, and tides. The European Space Agency's Envisat satellite, launched on March 1, 2002, and Japan's ADEOS-II satellite, launched on December 14, 2002, are two more traveling companions carrying out multisensor observations for the oceanography community that will usefully complement data from Jason-1.

At the same time, CNES and NASA are already working on the future of the Jason program with Eumetsat and NOAA, two new partners providing support and expertise to develop and promote operational services associated with the mission. A program decision is expected this year. A follow-on satellite to Jason-1, scheduled for launch in 2007, will ensure continuity of high-accuracy altimetry measurements essential to further our understanding of the "ocean machine" and to fuel the growth of operational oceanography—two closely related objectives that both pose crucial challenges.

Yves Ménard



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