Rosemary
Morrow
LEGOS / Observatoir-Midi-Pyrenees
Pascal Bonnefond, Observatoire de la Cote d'Azur – GEOAzur, Valbonne, France
Lee-Lueng Fu, 3. Jet Propulsion Laboratory, CALTech, Pasadena, California, USA
Josh Willis, 3. Jet Propulsion Laboratory, CALTech, Pasadena, California, USA
Thierry Guinle, CNES, Toulouse, France
Glenn Shirtliffe, 3. Jet Propulsion Laboratory, CALTech, Pasadena, California, USA
Keynote
The ocean observing satellite altimeter Jason-1 was launched from Vandenberg Air Force Base, Calif., on December 7th, 2001, and terminated its mission on July 2nd, 2013. With more than 11 years in orbit, Jason-1 became one of the longest-lived oceanographic satellites. Much smaller and lighter than TOPEX, Jason-1 was the first satellite to use the CNES-TAS PROTEUS platform, and the digital radar altimeter instrument Poseidon-2. With a 3-system precise orbit determination (laser retroreflector array, DORIS orbitography instrument, and GPS receivers), and its microwave radiometer, Jason-1 demonstrated that a lighter, precise, reference altimetry mission was possible, and these technological choices have continued with Jason-2 in 2008, and Jason-3 planned in 2015.

During its lifetime, Jason-1 provided a major contribution to the monitoring of sea level rise, an essential climate variable. This was due to its excellent measurement accuracy, the long-term stability of its instruments, and the continuous effort of calibration-validation. This precise calibration was assisted by two key periods of formation flying intercalibration, with its predecessor TOPEX in 2001, then with its successor Jason-2 in 2008, allowing us to maintain measurement uncertainty below the 0.5 mm/year mark.

Jason-1 was an exemplary and multi-faceted altimeter mission. Not only did Jason-1 extend the precise climate record established by Topex/Poseidon, it then made invaluable observations for mesoscale ocean studies on his second, interleaved orbit. Even when moved to a "graveyard" orbit, Jason-1 continued to make unprecedented new observations of the Earth's gravity field, with precise measurements right till the end.

Jason-1 observed the full spectra of ocean variations, including the near 4 cm rise in global sea level over that period, helped reveal the different flavours of El Nino in the early 20th century, extended the monitoring of mesoscale eddies over a 2 decade period, and even made precious observations of extreme events such as tsunamis or the ocean interaction with cyclones and hurricanes. Last, but not least, Jason-1 also played a key role in the transition of altimetry towards more operational applications, and accompanied the development of the global Argo program and the GODAE ocean forecasting programs.

This presentation will cover some of the many success and achievements of Jason-1 over the last 11.5 years.
OSTS session
Science Results from Satellite Altimetry
Meeting name
Ocean Surface Topography Science Team (OSTST) Meeting
Download to PDF