

Observing the Oceans from Space

Satellite-based systems have changed the way we observe the earth and its oceans.

Surface Wind Velocity

Sea Surface Temperature

Sea Surface Height

TOPEX/POSEIDON has continuously monitored the oceans since 1992 and tracked events such as the 1997-1998 El Niño.

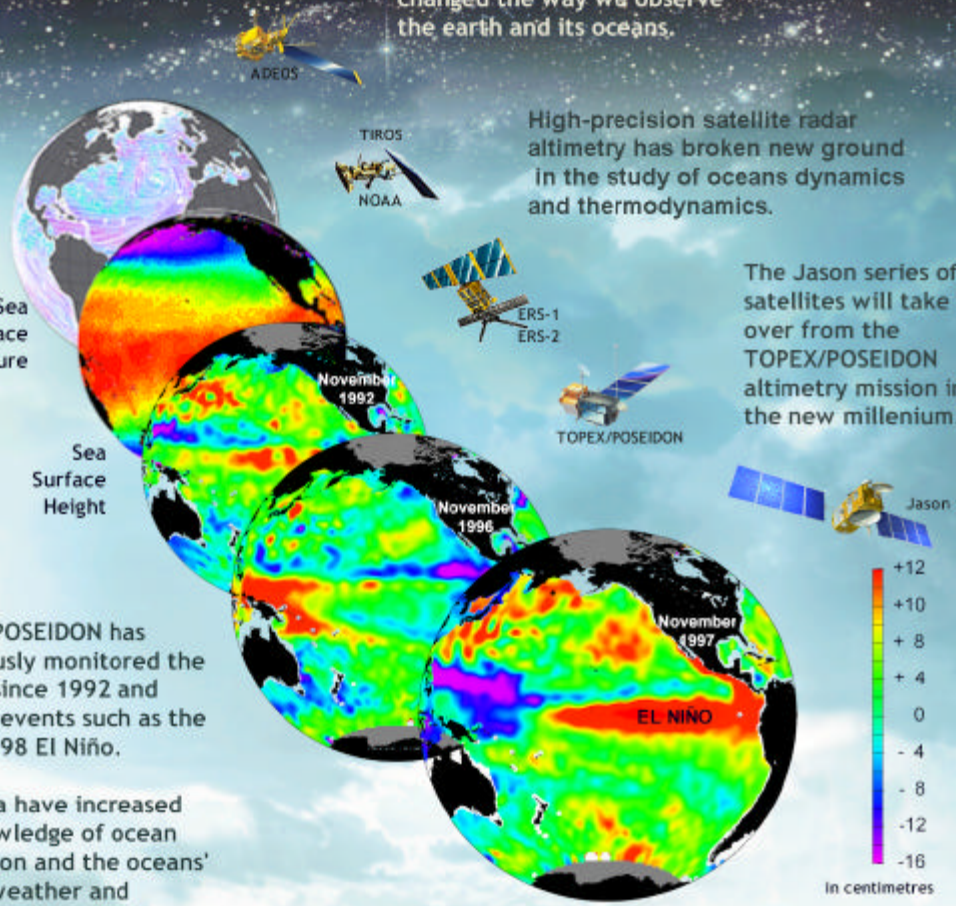
The data have increased our knowledge of ocean circulation and the oceans' role in weather and climate.

Tracking oceans changes helps us to better understand our global environment.

Satellite altimetry, combined with advanced computer modelling and near-real time operational ocean forecasting systems, is important for commercial, scientific, and governmental activities.

High-precision satellite radar altimetry has broken new ground in the study of oceans dynamics and thermodynamics.

The Jason series of satellites will take over from the TOPEX/POSEIDON altimetry mission in the new millennium.



Maritime Weather

- supplying sea-state climatologies
- contributing to forecasts, ship routing and safety at sea



Research and Naval Vessels

- forecasting the ocean and ocean acoustics
- supplying operational bulletins for ships



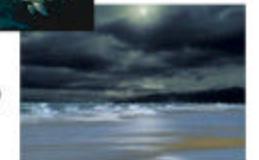
Fisheries, Aquaculture and Marine Biology

- tracking ocean eddies and fronts
- detecting mammal and fish habitats



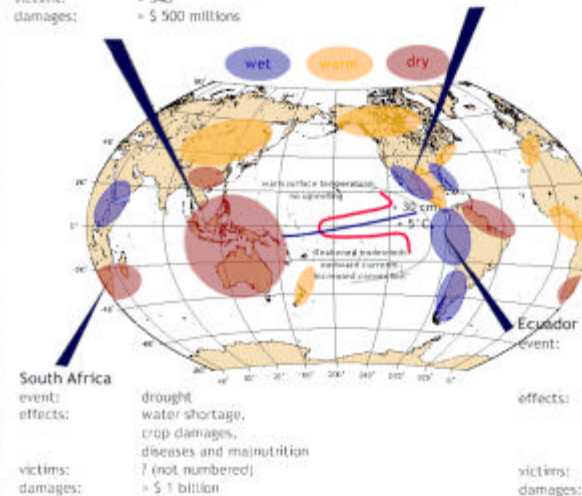
Earth-Ocean-Climate system

- observing, understanding, forecasting (e.g. El Niño)
- contributing to disasters preparedness, water and agriculture management, etc.



Indonesia and Australia
 event: drought
 effects: water shortage, crop failures, bush fires, starvation, coral reefs in danger
 victims: = 340
 damages: = \$ 500 millions

U.S.A. Pacific coast
 event: storms, torrential rains
 effects: downpours, floods, mud slides = 45
 damages: > \$ 1.1 billion



South Africa
 event: drought
 effects: water shortage, crop damages, diseases and malnutrition (not numbered)
 victims: = \$ 1 billion

Ecuador and Northern Peru
 event: storms, torrential rains, high surf, no upwelling, higher sea level temperature
 effects: floods, landslides, coastal destruction, homeless, fish industry devastated, cases of cholera reported
 victims: = 600
 damages: > \$ 650 millions

How El Niño affects our environment



For more information
<http://www-aviso.cls.cnes.fr> , e-mail: aviso@cls.cnes.fr
<http://topex-www.jpl.nasa.gov> , e-mail: topex@jpl.nasa.gov

Imagery courtesy of CLS, CNES, JPL/NASA, NOAA and TOPEX/POSEIDON investigators