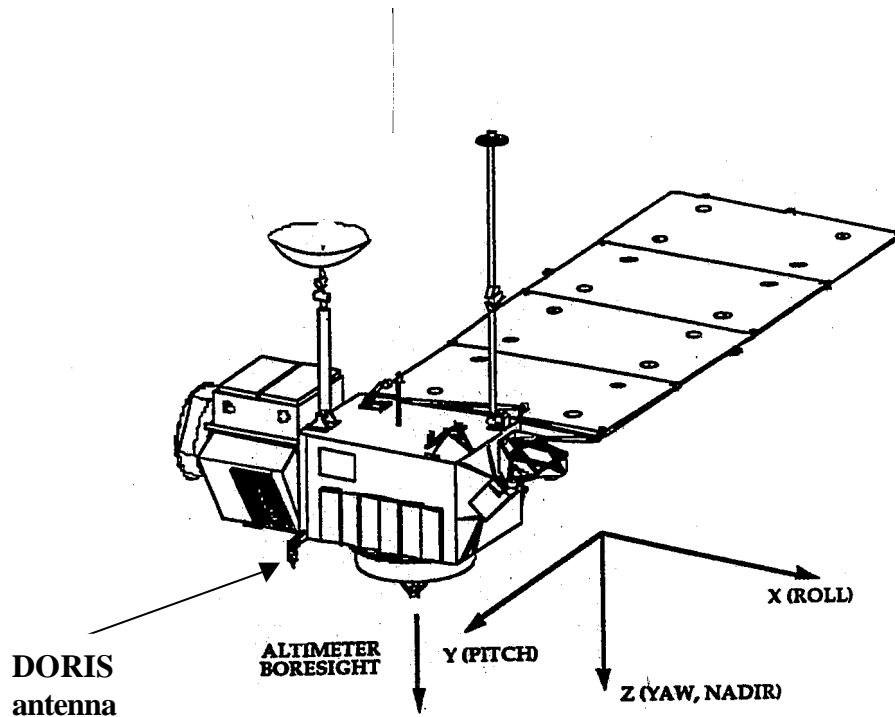
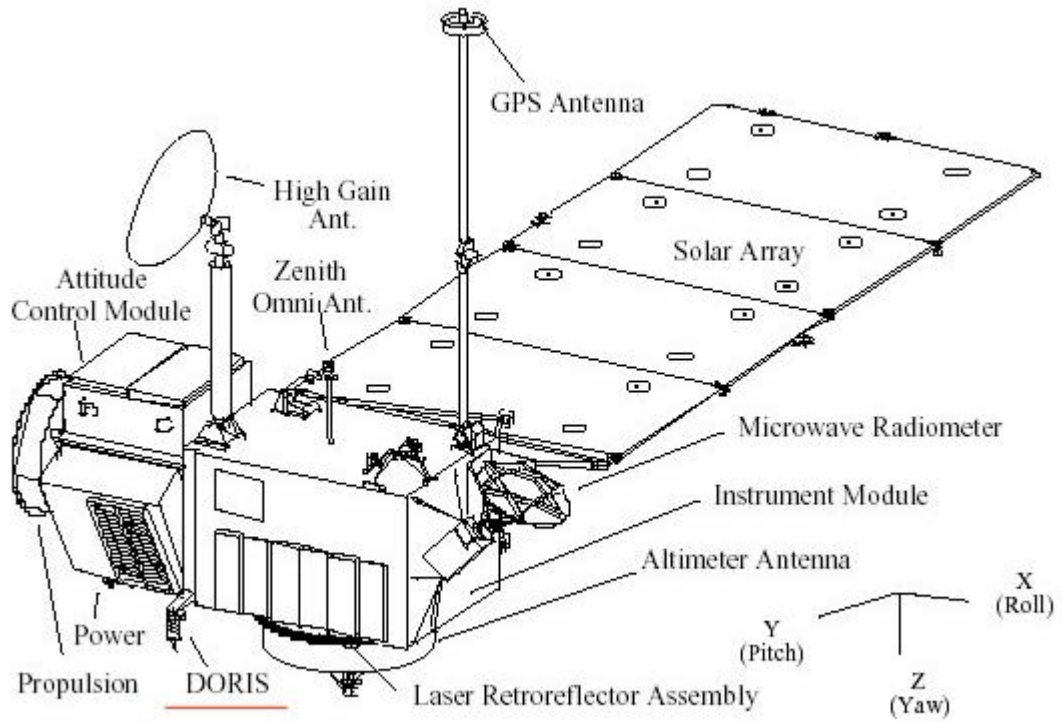


# DRAFT Document

## TOPEX/Poseidon satellite main characteristics



Doris antenna location and spacecraft axes



### DORIS antenna location

## Satellite mission

See the official websites

[http://sirius-ci.cst.cnes.fr:8090/HTML/information/frames/missions/tp\\_uk.html](http://sirius-ci.cst.cnes.fr:8090/HTML/information/frames/missions/tp_uk.html)

<http://topex-www.jpl.nasa.gov/mission/mission.html>

## Satellite number (COSPAR)

92052
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**Spacecraft launch mass :** 2406.4 kg, known value on 02/07/1996

## 2GHz DORIS antenna offset with respect to the center of gravity

X	-0.0729 m
Y	1.5112 m
Z	1.1307 m

## Nominal orbital parameters

	<b>TOPEX</b>
Inclination	66.038309°
Initial position ( $\Omega_0$ )	+ 99.920°
Drift $d\Omega$	- 2.0771°/ jour
Orbital period T	6745.759 s
Cycle duration	856711.46 s
Date of pass at initial position	23/09/92 04h06'49''

## Orbit maintenance requirements

The satellite is placed in a near-circular frozen orbit at an inclination of 66° and at an equatorial altitude of 1336 km. Since the 21 of September 1992 (42 days after launch), it has a reference ground track which repeats every 127 revolutions over 10 days.

Periodic maneuvers maintain the operational orbit and attendant ground track. The specified control and maneuver scheduling constraints require, among others, that:

- 1) 95% of all equatorial crossing are contained within a 2-km longitude band at each orbit node,
- 2) maneuver spacing is at least 30 days, time-phased to occur near the boundary of pre-determined 9.9-day ground track repeat cycle to limit interference with precision orbit determination.

See also <ftp://cddisa.gsfc.nasa.gov/pub/doris/general/topexman.txt>

## **Attitude of the spacecraft**

TOPEX/Poseidon is a three-axis stabilized satellite with the altimeter boresight always pointed to the reference ellipsoid. At the same time, near-continuous sinusoidal yaw steering about the local nadir and solar array (SA) pitching combine to maintain the SA pointed near the sun for power optimization.

## **References.**

1. Bruce Shapiro, Ram Bhat, and Ray Frauenholz, "Using Anomalous Along-Track Forces to Control the TOPEX/Poseidon Ground Track," Paper AAS-94-165, AAS/AIAA Spaceflight Mechanics Meeting, Cocoa Beach, Florida, Feb. 1994.
2. Frauenholz R. B., T.W. Hamilton, B. E. Shapiro and R. S. Bhat. The role of anomalous satellite-fixed accelerations in TOPEX/POSEIDON orbit maintenance. AAS/GSFC International Symposium on Space Flight Dynamics, April 1993, AAS 93-570.
3. C. Valorge. La loi d'attitude de Topex. Logiciel d'orbitographie ZOOM. TE/IS/MS/MO/088. CNES, 20/02/1992.