

# Ionosphere product

## IDS “Product”

Doris ionosph. corrections > TEC rate (per pass processing for absolute TEC)  
(ancillary data, but spherical Earth for elev.)

### Users:

(LPCE) for DEMETER (Earthquakes)

submission to JoG

IGS working group (GIM product comparison)

USAFRL for CITRIS mission preparation

submission to JoG

ROB + ionosonde for complete modelling (abandoned : need a beacon at Dourbes)

No need for DORIS/GIM like maps (only satellite local time)

Recom’: publicized and complete the iono file over a complete solar cycle

## CNES model

New computations for pre & processing (F. Mercier)

2<sup>nd</sup> order term (cf GPS)?

# **DORIS system sensitivity**

## **TEC gradients & scintillations**

**At Kourou, severe amplitude signal attenuation on 400 MHz (P. Yaya) > other stations?**

**CITRIS on STPSAT1 nov 2006 > scintillations parameters ( $S_4$  &  $S_\phi$ ) as a new product ?**

## **Future**

**2 GHz phase robustness (F. Mercier) > better than L2 GPS ?**

**GMxx instruments (Jason2, Altika) with 8 canals > horizontal gradients**

**➤ arguments for a mixed DORIS/GNSS receiver in the future ?  
(a chance for IDS to survive to Galileo!)**

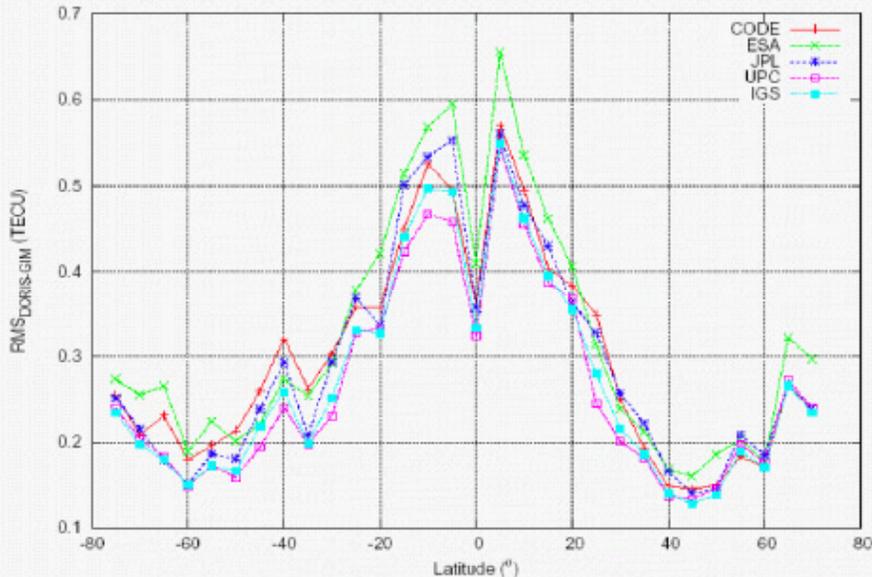
## DORIS Ionosphere product (1)

- Ionosphere correction calculated routinely and part of normal data record.
- Supplementary IONO file contains additional information, including elevation angle & geometry

The format is :- for the header (for each satellite pass over a beacon) :s  
satellite, beacon mnemo, number of observations, max of satellite pass elevation,  
local time (deg), meteorological data : Pressure (mb), T (deg), Humidity (%)  
ex : SPOT2 SALB 27 57.954 22.6091012 21 68

- for the data :  
CNES julian date, second in the day of the observation (TAI),  
elimination criteria,  
count interval (2 GHz channel),  
count interval (400 Hz channel),  
Tropospheric correction (2 GHz channel),  
Tropospheric correction (400 MHz channel),  
Ionospheric correction (2 GHz channel),  
Ionospheric correction (400 MHz channel),  
Elevation angle, Azimuth, Station-satellite distance (m),  
Acquisition mode,  
Received power level (400 Mhz), Received power level (2 Ghz),  
Ponderation (0 if eliminated or 1),  
Doppler count (400 Mhz), Doppler count (2 Ghz).

## DORIS Ionosphere product (2)



**IONO Files Available:**  
Jason-1: from Aug. 2002.  
Spot2/4: from Jan. 2001.  
Spot5: from May 2004.  
Topex: Jan. 2001- Nov. 2004.

Figure 2: Comparison of DORIS derived vertical total electron content (VTEC) for JASON in 2004 with VTEC results from different IGS analysis centers. The display indicates the RMS difference between each IGS center and DORIS for 2004. The units are TECU. At the Jason altimeter frequency of 13.6 GHz, 1 cm of range corresponds to 4.6 TECU. (from M. Pajares, April 2004-2005, IGS working group report)