

CLS

Solar Activity and Geomagnetic Indices

Forecast Centre

CLS Forecast Centre

- CLS is operating a Solar and Geomagnetic Activity forecast Centre, providing solar F10.7 flux and K indices predictions every day.
- Our main users are satellite orbit calculation centres.

Forecast improvement

CNES R&T Studies

To improve our forecast service, we use new data and model results from CNES R&T studies:

- Improvement of **F10.7 cm solar flux** forecast from the current day to 14 days using Swan/SOHO Lyman α far side of the Sun data (Laboratoire d'Aéronomie CNRS - Verrières le Buisson, Meudon Observatory)
- Improvement of solar flare and **CME** (coronal mass ejection) probability prediction using solar coronal magnetic field modeling (Centre de Physique Théorique Ecole Polytechnique – Palaiseau, Meudon Observatory)

CNES R&T Studies

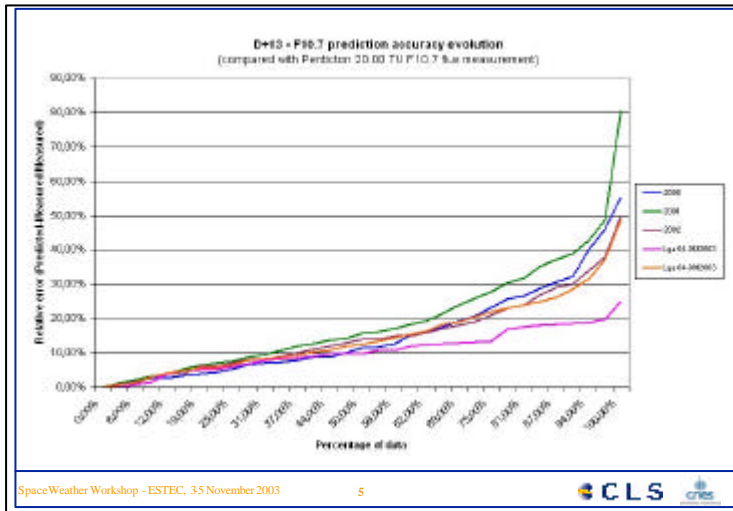
SWAN/SOHO Lyman α data

<http://sohowww.nascom.nasa.gov/data/summary/swan>

- **Far side / near side ratio**
- **Lya coefficient :**

$Lya * F10.7(\text{observation day})$

- **D, D+2 and D+13**



CNES R&T Studies SWAN/SOHO

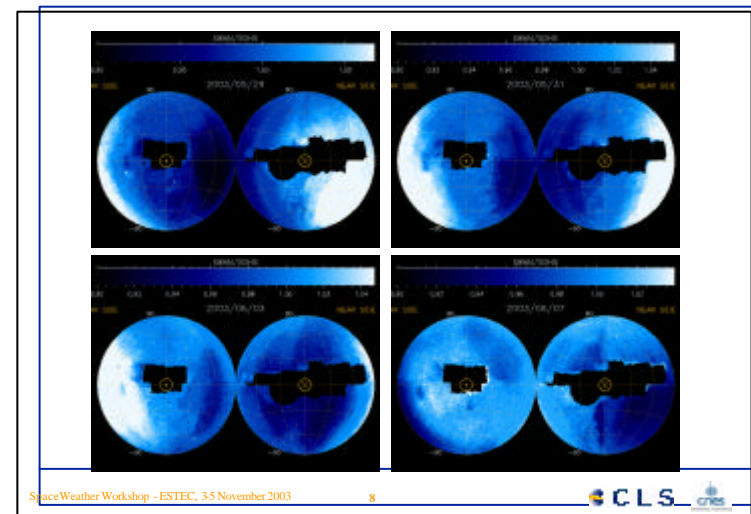
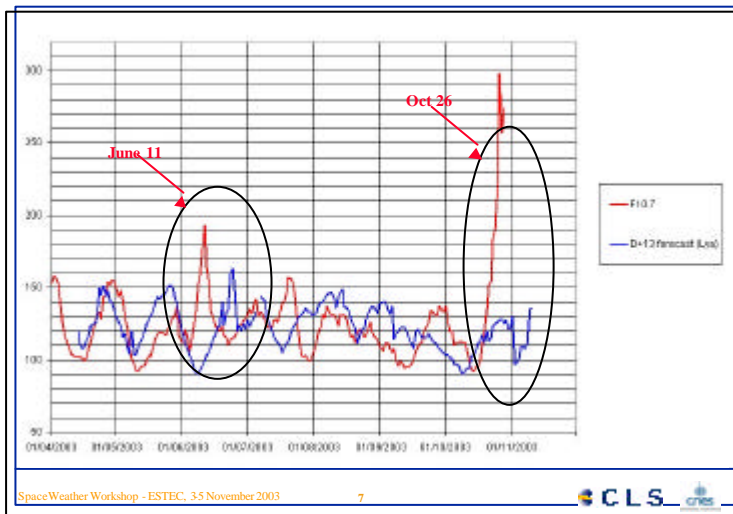
Results accuracy is linked to :

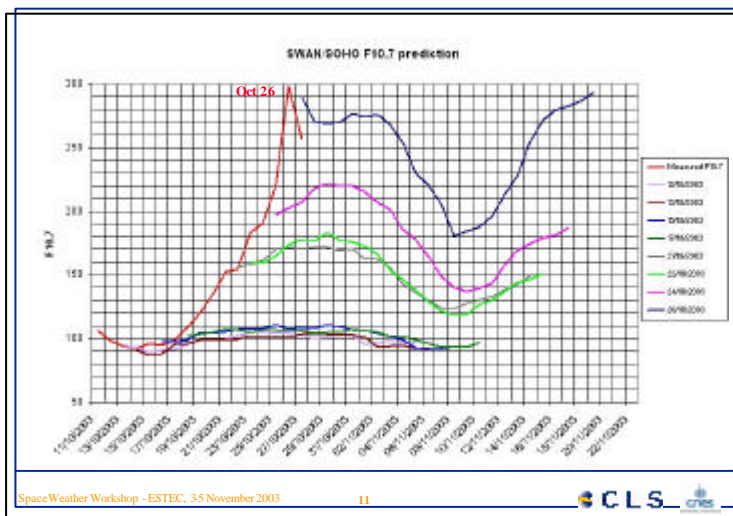
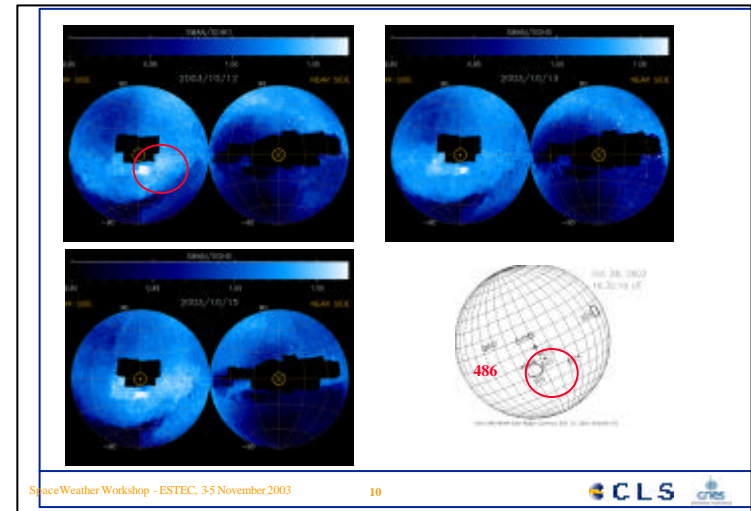
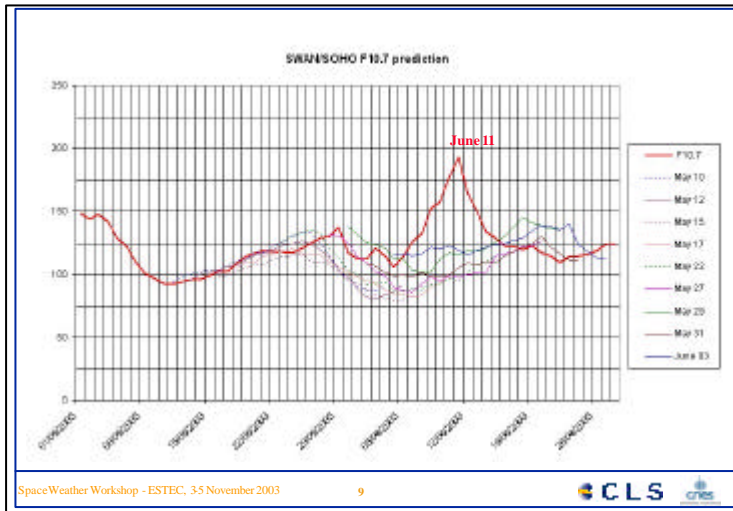
- Lack of SWAN data (jun 11-july 23 + delay)
- Events non predictable 13 days in advance (solar activity complexity)

SpaceWeather Workshop - ESTEC, 35 November 2003

6

CLS CNES



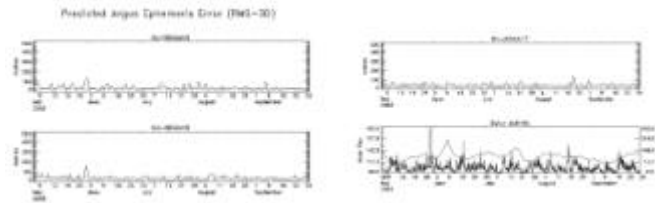


Service evaluation and improvement

- The service evaluation is regularly performed :
 - through Argos LEO satellite orbit calculation
 - through comparisons with other sources of forecasted and measured data
- We are developing collaborations with French laboratories to help service evolution and improvement

SpaceWeather Workshop - ESTEC, 35 November 2003 12 CLS CNRS

Service evaluation Argos LEO satellite orbit calculation



Service evaluation and evolution Other sources of forecasted and measured data

- F10.7 Penticton 20:00 TU
- SEC
- ISGI geomagnetic indices
- New geomagnetic indices (M. Menvielle, C. Lathuillere)

CL S

- is involved in the SWENET network
- is responsible for a Pilot Project about ionospheric scintillations (J.J. Valette)

WEB sites

| | |
|--------|---|
| CL S | http://www.cls.fr/previsol |
| SWAN | http://sohowww.nascom.nasa.gov/data/summary/swan |
| CMEs | http://www.cpht.polytechnique.fr/cpht/amari/ |
| ISGI | http://tango.cetp.ipsl.fr/~isgi/lesdonne.html |
| Meudon | http://previ.obspm.fr/previ/ |