G12A-01 - Status of DORIS contribution to ITRF2013

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Outline

- **IDS contribution to ITRF2013 vs ITRF2008**
- **Current results**
- **IDS delivery schedule**
- **IDS news**

IDS Contributors to ITRF2013

Analysis Center	Software
ESA/ESOC, Germany	NAPEOS
Geodetic Observatory of Pecny, Czech Republic	Bernese
GSFC, USA	GEODYN
IGN/IPGP, France	GIPSY/OASIS
Institute of Astronomy, Russian Academy of Sciences , Russia	GIPSY/OASIS
CNES/ CLS, France	GINS/DYNAMO

DORIS data for ITRF2013

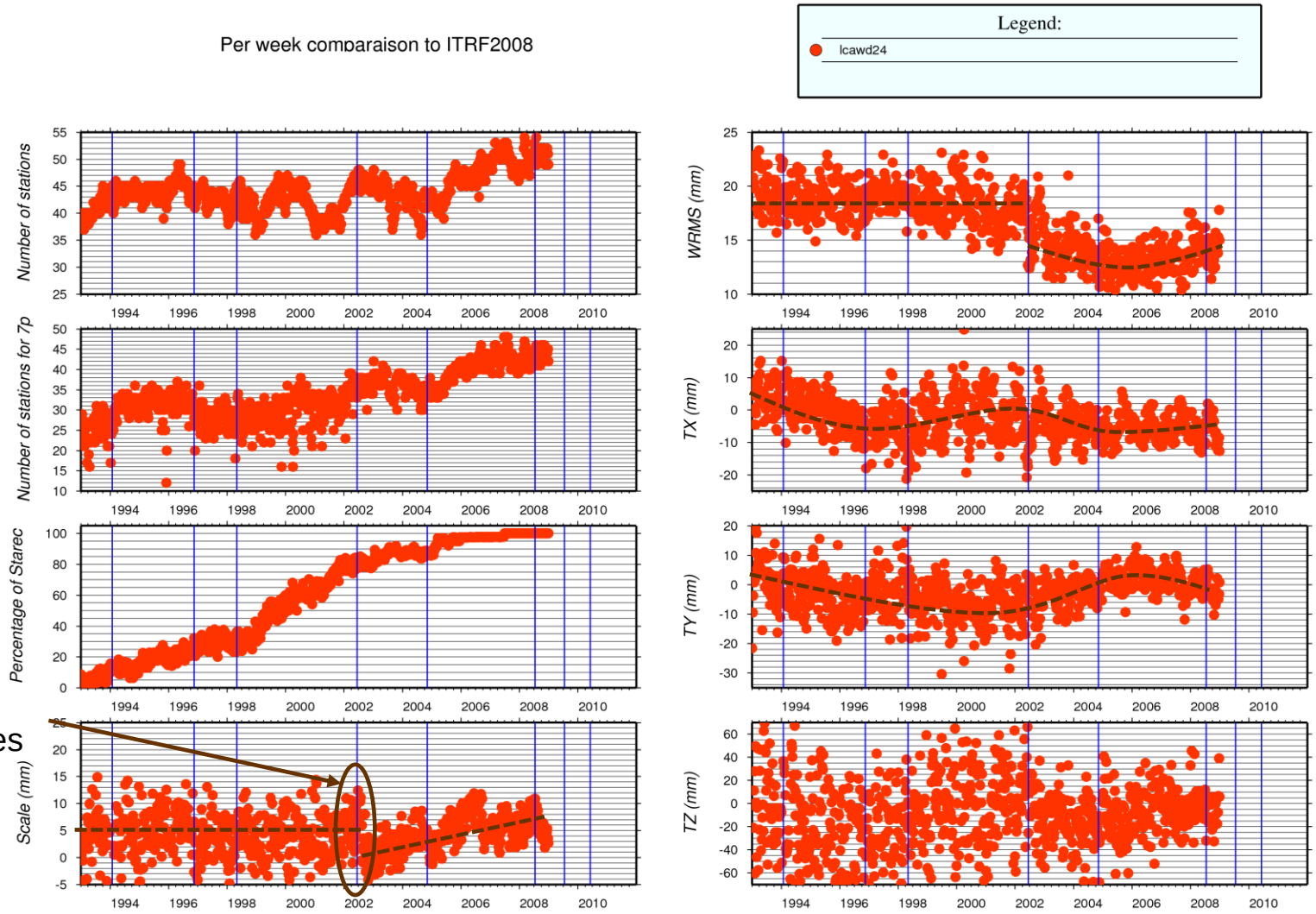
Mission	ITRF2008	ITRF2013	Comments
Envisat	Yes	Yes	New Data 2002 to 2007/DOY178
Spot-2	Yes	Yes	Data after 1993 only
Spot-3	Yes	Yes	
Spot-4	Yes	Yes	New data set for 1998
Spot-5	Yes	Yes	New data set including SAA model correction from JM Lemoine, H Capdeville and P Stepanek
TOPEX	Yes	Yes	
Jason-1	No	Optional	New data set including SAA model correction from JM Lemoine and H Capdeville From end of TOPEX (Nov. 2004) to start of Jason-2 (July 2008)
Jason-2		Yes	
Cryosat-2		Yes	
HY-2A		Optional	ACs are free to include or not this mission as long as it does not degrade their solution (2.5 years of data)
Saral		Optional	ACs are free to include or not this mission as long as it does not degrade their solution (6 months of data)

Forces and Models for ITRF2013

- **Main features**
  - **Time variable Gravity field:** EIGEN-6S2 or GOCO02s (GRACE + GOCE model) + harmonic fit to 4x4 SLR-DORIS time series (Lemoine et al., 2011)
  - **Atmospheric loading:** Not applied, since not all the ACs can take it into account
  - **Nonconservative force models:** updated/improved as result of dedicated study initiated and managed by the IDS Analyis Coordinator
  - **Troposphere**
    - gradient estimation by some ACs (2-3/6 ACs)
  - **Beacon frequency variations:** now handled by all the ACs
  - **Phase center antenna corrections** (PCV: Alcatel/Starec): ACs (2 – TBC) which can not apply it will not participate to the estimation of the combined scale

Example of contribution to ITRF2008 (7p)

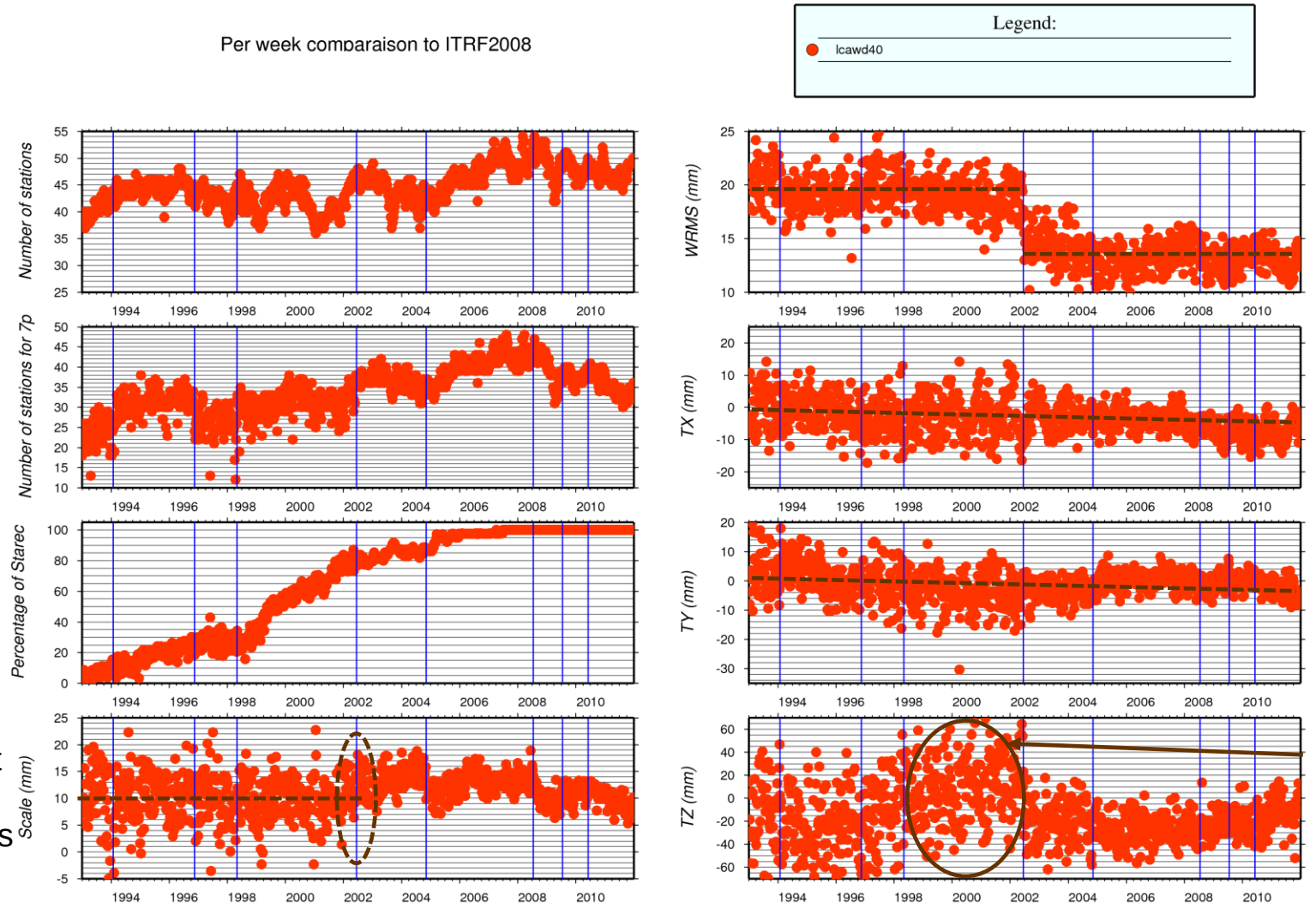
Note: it is results from one AC only



Artifact of beacons frequencies variations

Example of contribution to ITRF2013 (7P)

Note: it is results from one AC only

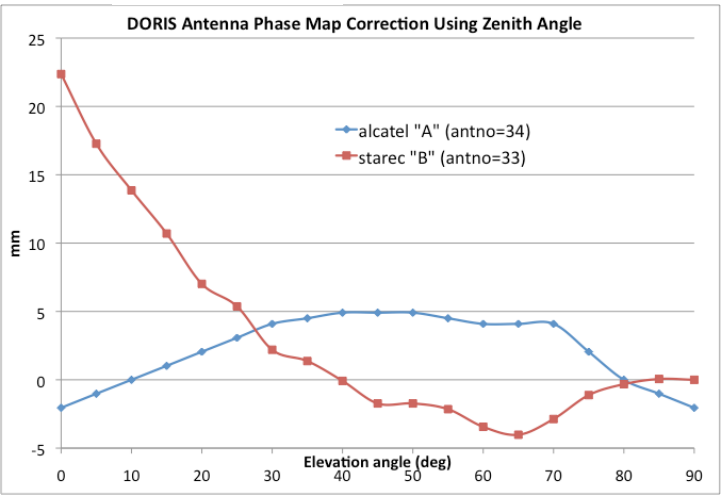


Scale shift
↑
phase laws

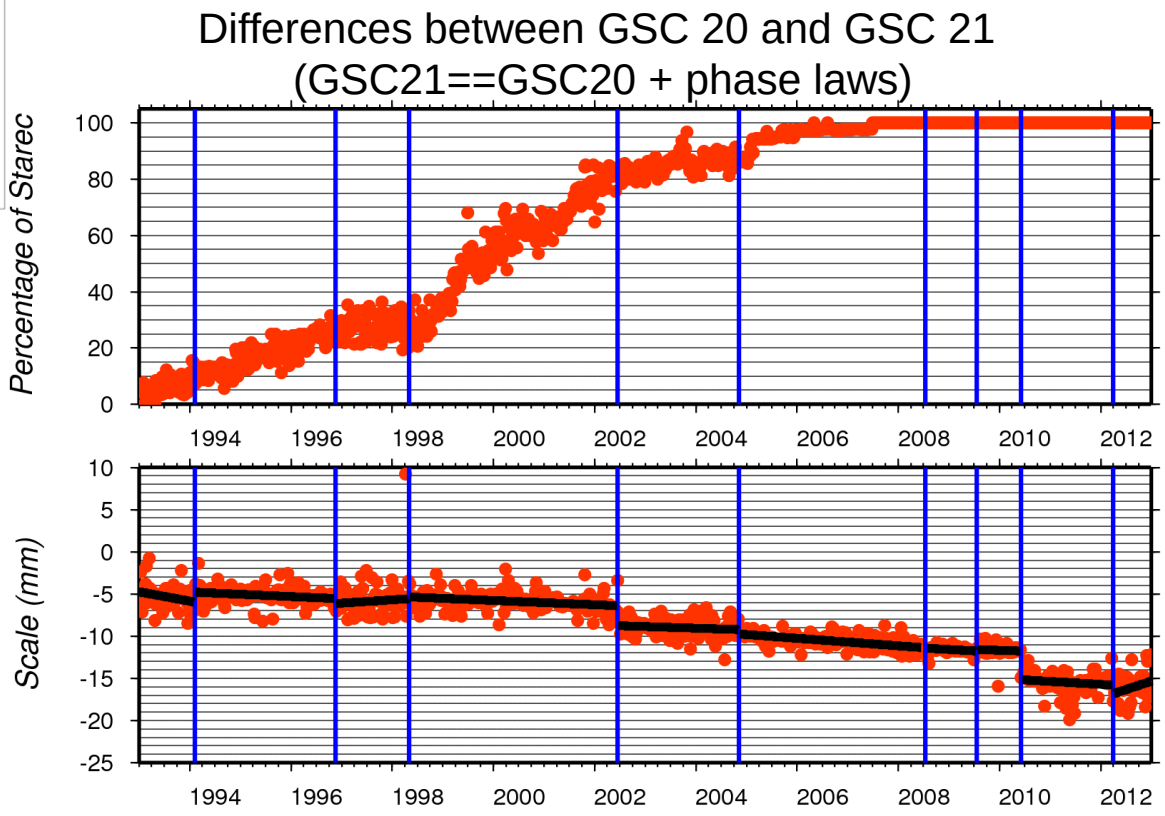
Spot-4 issue ?

DORIS antennae phase laws scale impact

http://ids-doris.org

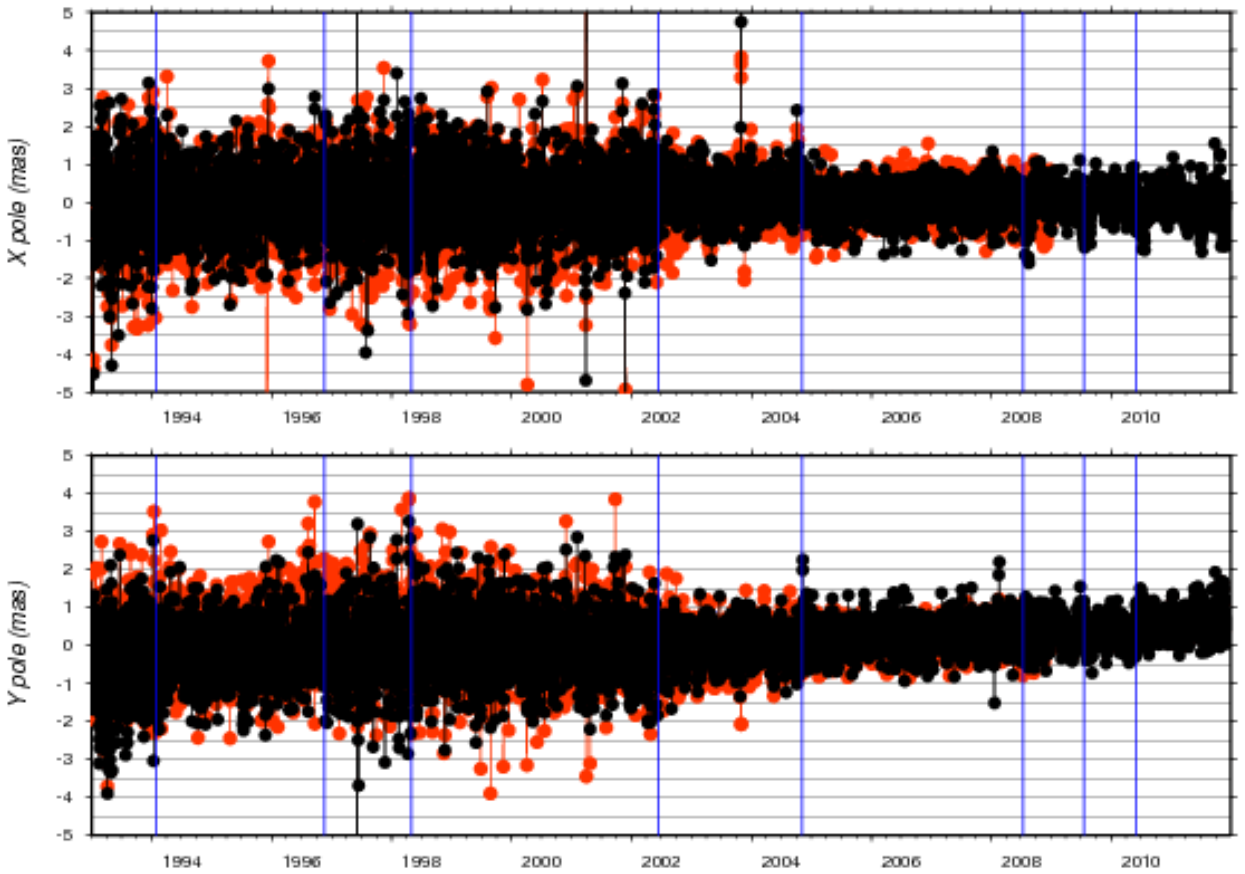


Courtesy from FG Lemoine and N Zelensky



Example of contribution to ITRF2013 vs 2008 EOPs differences wrt IERS C04 series

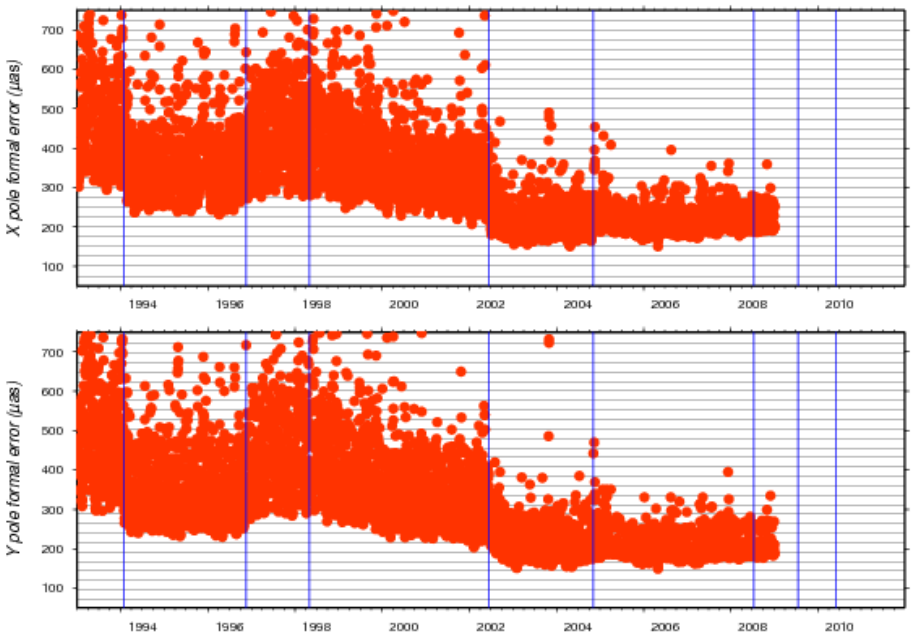
Note: it is results from one AC only

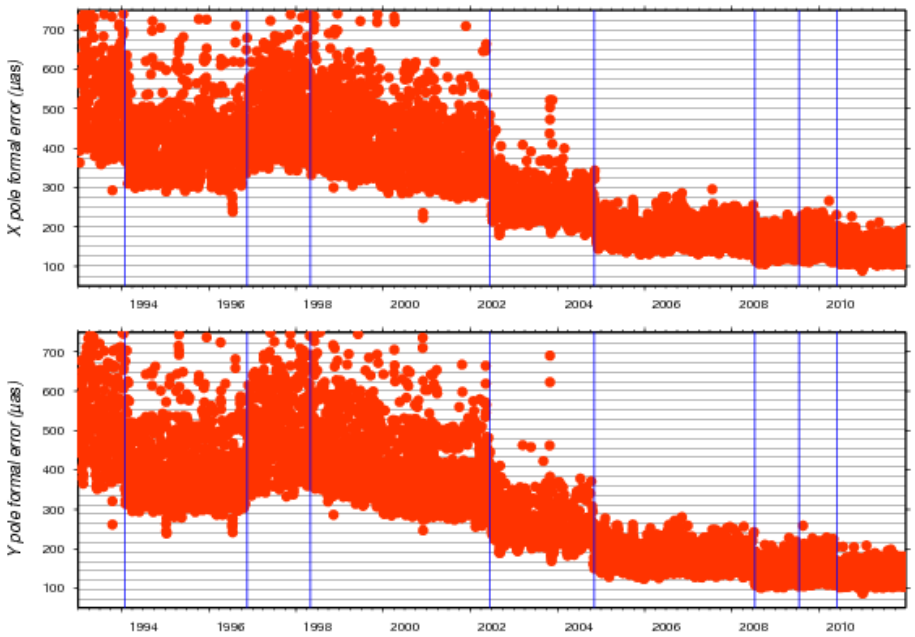


New processing ITRF2013 files replicates results
(red=LCA 24 ; black=LCA 40)

Example of contribution to ITRF2013 vs 2008 EOPs Formal Errors

Note: it is results from one AC only





Improvements early 2002

ITR2013 IDS Schedule

- **Mid January 2014:** closing date for delivery of ACs contribution to the time period 1993-2012

- **February 2014:**
  - ACs processing of last quarter of 2013
  - CC processing of 1993-2013

- **March 2014:** Final delivery to IERS of IDS combination

- After March 2014: Possible new version as soon as the remaining 2 ACs will have included the phase laws.

Summary

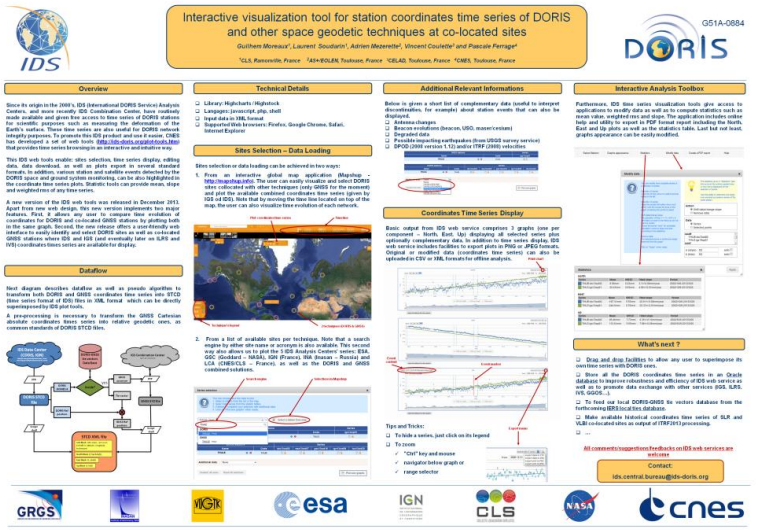
- **For DORIS: 6 Analyses Centers**
- **Data Span: 1993-2013**
- **Results improved**
  - **When more satellites are available (after 2002.5)**
  - **With new DGXX receivers data (Jason-2, Cryosat-2, HY-2A…)**
  - **With beacon frequency variations included**
  - **With updated satellites macomodels**
- **Final delivery to IERS in March 2014**

IDS News

- **Forthcoming IDS CC new product:** stacked solution (positions and velocities) from combined weekly solutions

- **New version of the IDS web-service**
  - Include IGS coordinates time series of GNSS stations co-located with DORIS ones
  - New network map selection tool

See poster « Interactive visualization tool for station coordinates time series of DORIS and other space geodetic techniques at co-located sites » (G51A-0884) on Friday morning



- **IDS invites applications for renewal early 2015 of the IDS Analysis Coordinator position – Submission deadline : ??/??/2014**