EGU2020-11252 – The IDS contribution to the ITRF2020: Preliminary results

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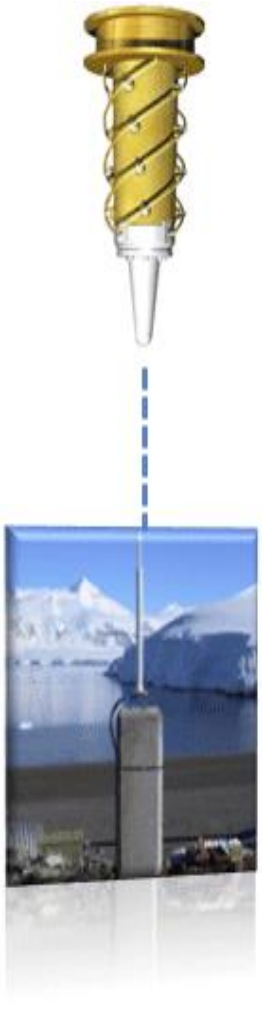
IDS ITRF2020 Reprocessing Time Line

http://ids-doris.org



2020

- ✓ **March 30th: AC delivery of 1993.0 2002.3 (Until start of first DORIS 2G receiver)**
- **June 30th:** AC delivery of 2002.3 2011.8 (Until start of HY-2A)
- **Sept. 30th:** AC delivery of 2011.8 2020.0

2021

- **Feb. 10th:** First delivery of the IDS combined solution to the IERS (1993.0 2020.0).
- **Feb. 14th:** AC delivery of 2020.
- **Mar. 15th:** Complete delivery to the IERS of the IDS combined solution (1993.0-2021.0)

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What has changed between ITRF2014 and ITRF2020?

http://ids-doris.org

- **In terms of Data**

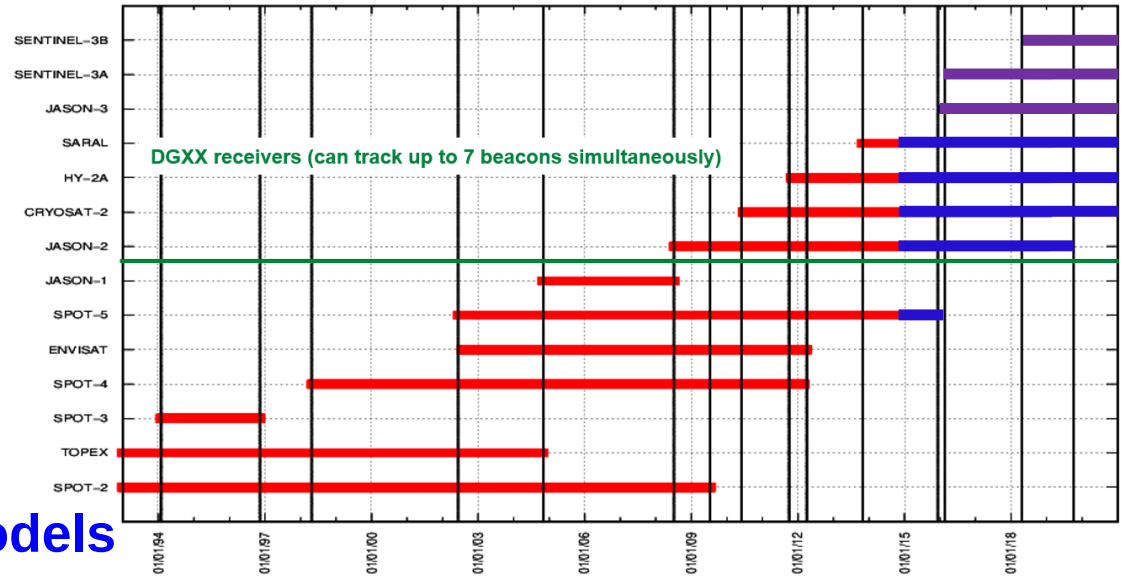
ITRF2020 = **ITRF2014**

+ new missions

(Jason-3, Sentinel-3A, Sentinel-3B)

➔ **14 missions**

➔ **5 missions simult. since 2003.0**



- **In terms of Forces and Models**

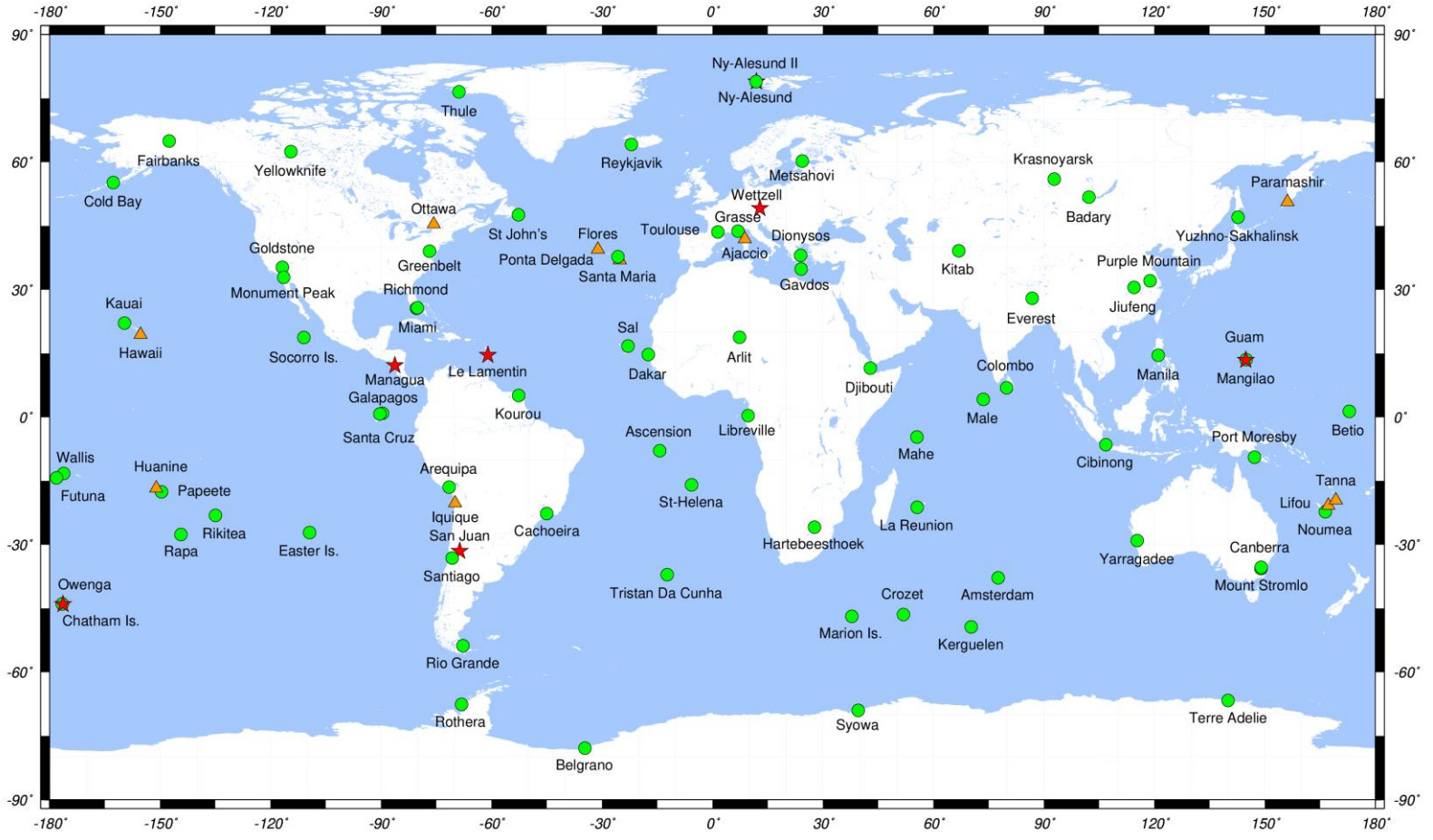
ITRF2020

- ✓ **Still includes Time variable Gravity field.**
- ✓ **Introduces new mean pole model (secular model).**
- ✓ **Desai & Sibois HF (diurnal-subdiurnal) tidal EOP model .**
- ✓ **Integrates new phase center ALCATEL antennae corrections.**
- ✓ **Introduces precise SPOT-5 solar panel angle values.**
- ✓ **Makes use of SAA mitigation strategy for Jason-2 & 3.**
- ✓ **…**

DORIS ITRF2020 Network

http://ids-doris.org

199 stations @ 88 sites.



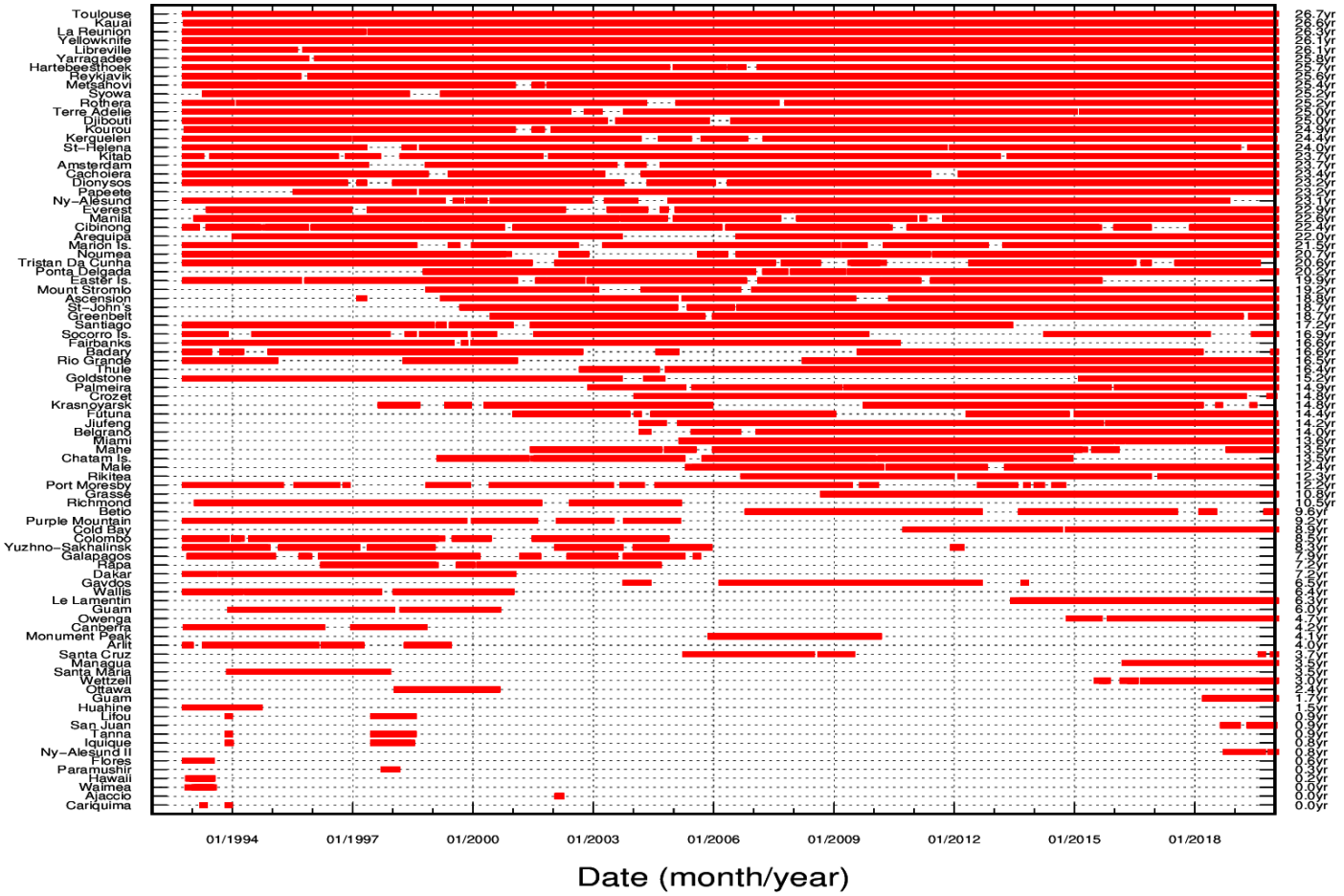
In addition to the IDS contribution to the ITRF2014:

- **6 new sites since ITRF2014:** Le Lamentin, Mangilao, Ny-Alesund II, Owenga, San Juan, Wettzell.
- **10 sites with short time spans.**

DORIS Site History

http://ids-doris.org

Status @ 2020.0



Expectations @ 2021.0:

- 16 sites with more than 25 years of data
- 32 sites with more than 20 years of data

ACs Contributions

5 ACs from 5 different institutions with 5 different software packages

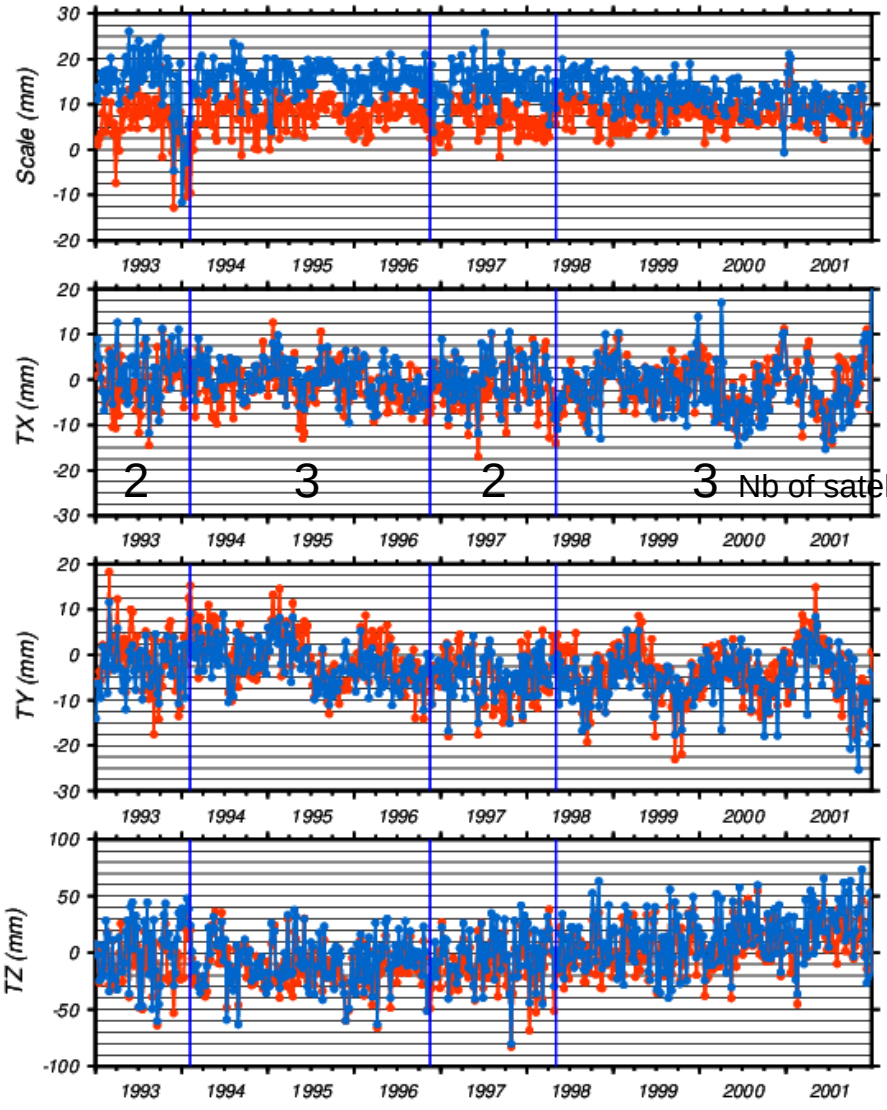
AC	Software	Series number	Solution Type	Time Span	EOPs
ESA	NAPEOS	11	NEQ	1993.0-2021.0	Motion+rate+LOD
GOP	BERNESE	65	COV	1993.0-2021.0	Motion+rate
GRG	GINS-DYNAMO	40	COV	1993.0-2021.0	Motion
GSC	GEODYN	35	NEQ	1993.0-2021.0	Motion
INA	GEOIS	XX	COV	2008.6-2021.0	Motion+rate+LODR+UT
IDS	**CATREF**	**15**	**COV**	**1993.0-2021.0**	**Motion**

➔ **1-2 ACs less compared to ITRF2014.**

➔ **New software from INASAN (DORIS RINEX only).**

Open to contributions from the IDS Associated ACs over shorter time spans.

IDS 15.1 (ITRF2020P) vs IDS 09 (ITRF2014)
Origin and scale wrt ITRF2014

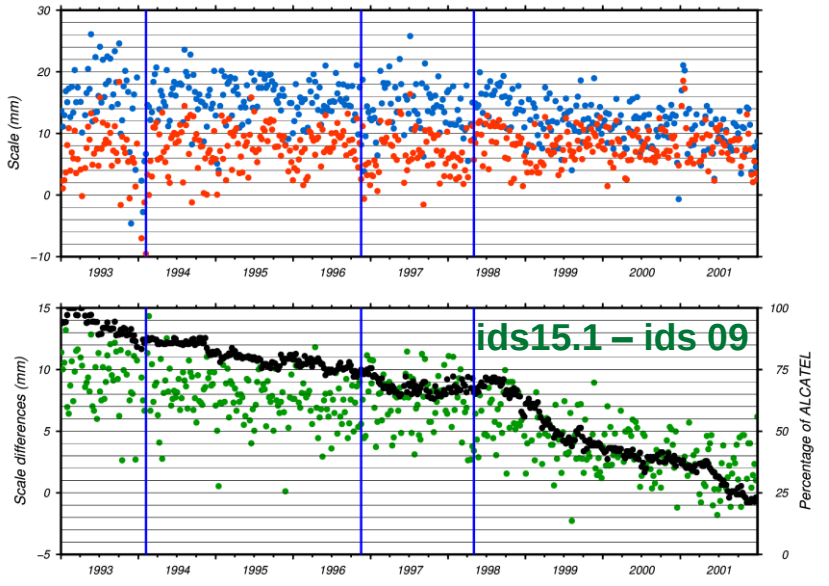


ITRF2014: **ids 09** – ITRF2020P: **ids 15.1**

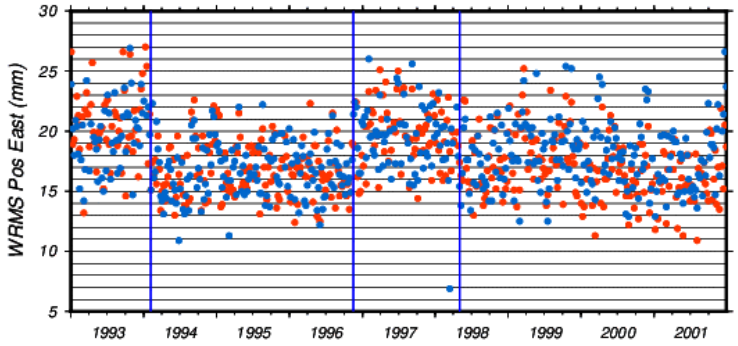
❑ **Origin: Improvements of Tx, Ty and Tz (lower STDs, less annual signal).**

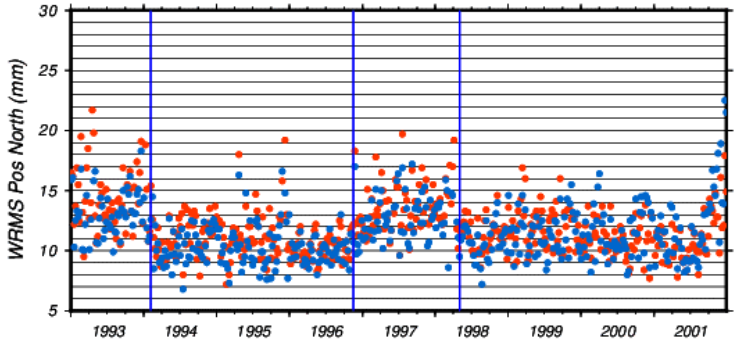
❑ **Scale:**

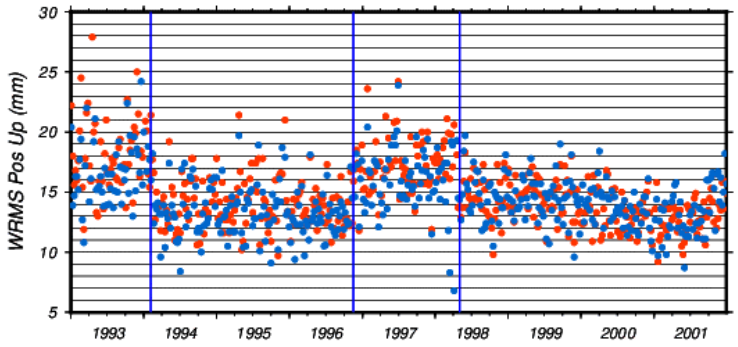
- **Difference tends to zero over time.**
- **Is the consequence of the change of the ALCATEL PCV (which reduces the DORIS data residuals).**



IDS 15.1 (ITRF2020P) vs IDS 09 (ITRF2014)
Station Position WRMS







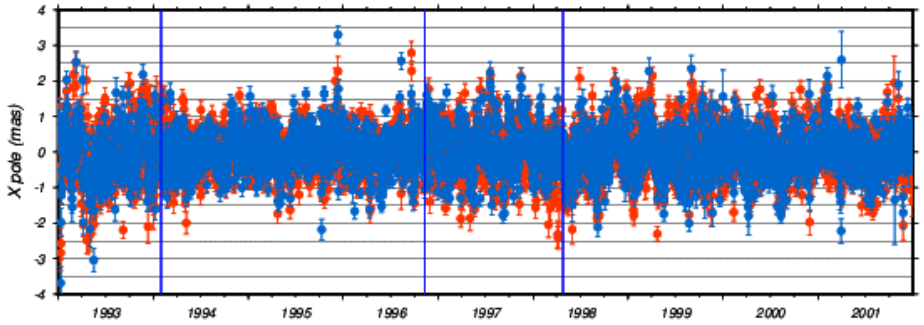
ITRF2014: **ids 09** – ITRF2020P: **ids 15.1**

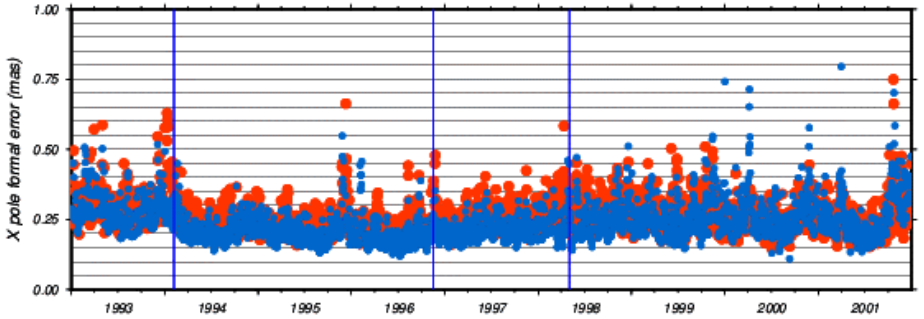
Series	East [mm]	North [mm]	Up [mm]
ids 09	17.7 ± 3.0	12.0 ± 2.3	15.0 ± 2.8
ids 15.1	17.7 ± 3.0	11.5 ± 2.3	14.4 ± 2.5

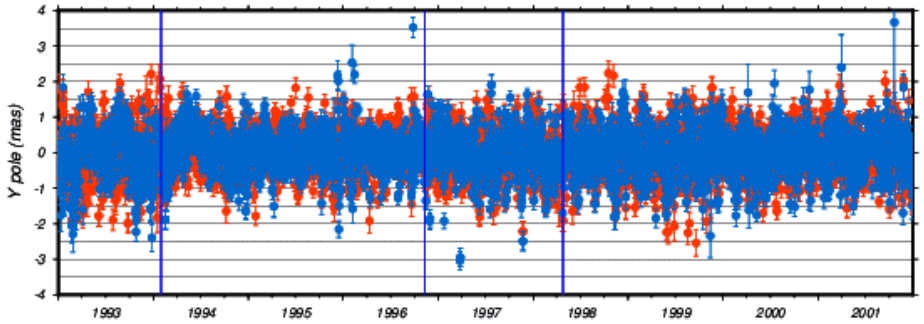
- ❑ **As expected, the East direction is the worst.**
- ❑ **East: Similar performances.**
- ❑ **North and Up: slightly better performances.**

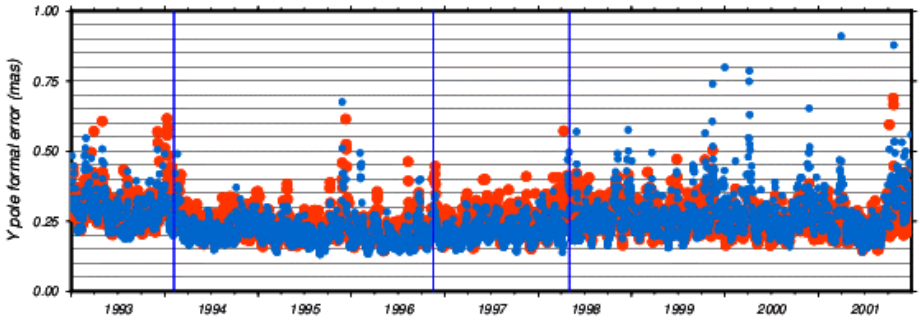
IDS 15.1 (ITRF2020P) vs IDS 09 (ITRF2014)
EOPs differences wrt IERS C04 series

ITRF2014: **ids 09** – ITRF2020P: **ids 15.1**





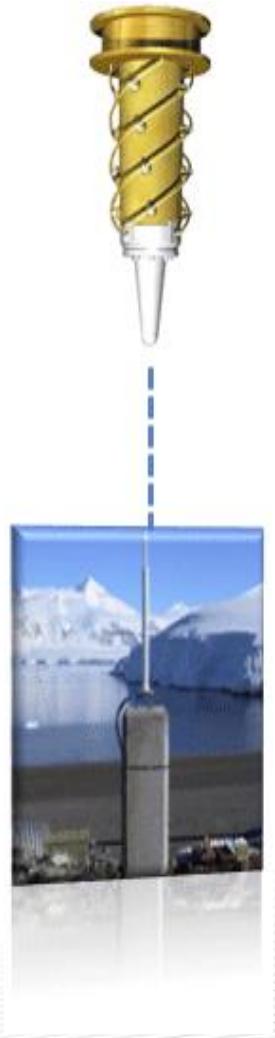




Series	Std ΔX [mas]	Std ΔY [mas]
ids 09	0.676	0.615
ids 15.1	0.653	0.606

❑ **Slight improvements in both X and Y (lower STDs, lower formal errors).**

Summary of the IDS contribution to ITRF2020



- **In overall**
  - ❑ **4-5 Analysis Centers.**
  - ❑ **Up to 14 DORIS missions.**
  - ❑ **28 years of data (1993.0-2021.0).**
  - ❑ **199 stations @ 88 sites (16/32 sites with more than 25/20 years of data).**

- **Status**
  - ❑ **So far, on time wrt IDS schedule.**
  - ❑ **1993.0-2002.0 AC contributions received and several IDS weekly combined solutions performed.**
  - ❑ **Compared to the IDS contribution to the ITRF2014:**
    - ❑ **Scale: differences due to the new ALCATEL PCV.**
    - ❑ **Origin: similar performances.**
    - ❑ **Positioning and EOPs: slightly better performances.**