

16th CAA Cross-Calibration Workshop
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STAFF Report

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Plan

1. Status of dataset delivery
2. Delivery plan
3. Status of software development
4. Cross Calibration activity
 - . Smoothed transfer function
 - . STAFF CWF NBR - FGM one event comparison
 - . STAFF CWF NBR -FGM **ten years** comparison study
 - . STAFF HBR-FGM burst mode
 - Scale: ~1 hour
 - Scale: ~ 5 mn
 - Scale: ~ 30s
 - Scale: ~ 2s
5. Conclusion

1. Status of dataset delivery

a. STAFF-SA

Product	Content	Level	Num. of files	Produced	Delivered to CAA
C?_CP_STA_AGC	Automatic Gain Control	1	1 file/ 1 sat./24h	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 to 31/07/2012	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 to 31/07/2012
C?_CP_STA_PSD	Power Spectral Density	2	1 file/ 1 sat./24h	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 31/07/2012	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 31/07/2012
C?_CP_STA_SM	Spectral Matrix	2	1 file/ 1 sat./24h	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 to 31/07/2012	<u>V04:</u> 01/01/2001 to 31/12/2010 <u>V05:</u> 01/01/2011 to 31/07/2012



On time...

Product	Content	Level	Num. of files	Produced	Delivered to CAA
C?_CQ_STA_SA_ NOT SRP_CAVEATS	PSD/SM Caveat	2	1 file/ 1 sat./24h	<u>V01</u> : 01/01/2001 to 31/07/2012	<u>V01</u> : 01/01/2001 to 31/07/2012
C?_CQ_STA_SA_ PSD NEG_CAVEATS	SM Caveat	2	1 file/ 1 sat./24h	<u>V01</u> : 01/01/2001 to 31/07/2012	<u>V01</u> : 01/01/2001 to 31/07/2012
C?_CP_STA_PPP	Polarisation and Propagation Parameters	3	1 file/ 1 sat./24h	<u>V04</u> : 01/01/2001 to 31/12/2011	<u>V04</u> : 01/01/2001 to 31/12/2011
C?_CQ_STA_SA_ UNDEFINED_MFA_ CAVEATS	PPP Caveat	3	1 file/ 1 sat./24h	<u>V01</u> : 01/01/2001 to 31/12/2011	<u>V01</u> : 01/01/2001 to 31/12/2011



On time...
PPP waiting aux data

b. STAFF-SC, NBR and HBR mode

Product	Content	Level	Num. of files	Produced	Delivered to CAA
C?_CP_STA_DWF	Decommuted WaveForm	1	1 file/mode/ 1 sat./24h	<u>V02:</u> 01/01/2001 to 31/12/2006 <u>V03:</u> 01/01/2007 to 31/12/ 2009 <u>V04:</u> 01/01/2001 To 31/12/2011	<u>V02:</u> 01/01/2001 to 31/12/2006 <u>V03:</u> 01 Jan. 2007 to 31 Dec. 2009 <u>V04:</u> 01/01/2001 To 31/12/2008
C?_CP_STA_CWF_GSE	Calibrated WaveForm	2	1 file/ 1 sat./24h	<u>V01:</u> 01/01/2001 To 31/12/2002	-
C?_CP_STA_CS	Calibrated Spectra (will be replaced by CCS)	2	1 file/mode/ 1 sat./24h	<u>V02:</u> 01/01/2001 to 31/12/2005 <u>V03:</u> 01/01/2006 to 31/12/2009	<u>V02:</u> 01/01/2001 to 31/12/2005 <u>V03:</u> 01/01/2006 to 31/12/2009
CL_CG_STA_SC_ SPECTRO	Spectrograms Plots	3	1 file/ 4 sat./3h	<u>V01:</u> 01/01/2001 to 31/12/2011	<u>V01:</u> 01/01/2001 to 31/12/2011



DWF: OK

CWF: still an effort...

CCS: priority after CWF validation

2. Delivery plan

Product Year of delivery	2012	2013
SC DWF Version 4	-	2012
SC Calibrated Complex Spectra V 4	2010-2011 2001-2009	2012
SC Images	2012	
SC CWF GSE SC CWF ISR2	2001-2006 ?	2007-2012 ?
SA AGC/ PSD / SM/ Version 4	-	2012
SA AGC/ PSD / SM/ BE products = Version 5	-	2001-2012
SA Polarisation/ Propagation	-	2012

3. Status of software development

► SA:

- Data pipelines are operational.
- An updated pipeline with new format + add of new calibration tables will be developed soon.
- Warning: - PSD and SM data were formerly described to be in the ISR2 reference frame. **Indeed it's in SR2.**
 - SM BB units are $\text{mV}^2 \cdot \text{m}^{-2} \cdot \text{Hz}^{-1}$ rather than $\text{nT}^2 \text{Hz}^{-1}$.
 - SM BE units are $\text{mV}^2 \cdot \text{m}^{-2} \cdot \text{Hz}^{-1}$ rather than $\text{nT} \cdot \text{mV} \cdot \text{m}^{-1} \cdot \text{Hz}^{-1}$.
(conversion factor to SI units given in UG)



► SC:

recommendations. HBR
timing issues were
optimized in order to

- CWF pipeline was updated to fulfil CAA recom
and NBR mode are now merged and some tim
corrected. The production pipeline was also o
be as fast as possible:

ss = 7 days, with 10

Ex: one year (2002), NBR + HBR + merge + CEFpas
CPU.

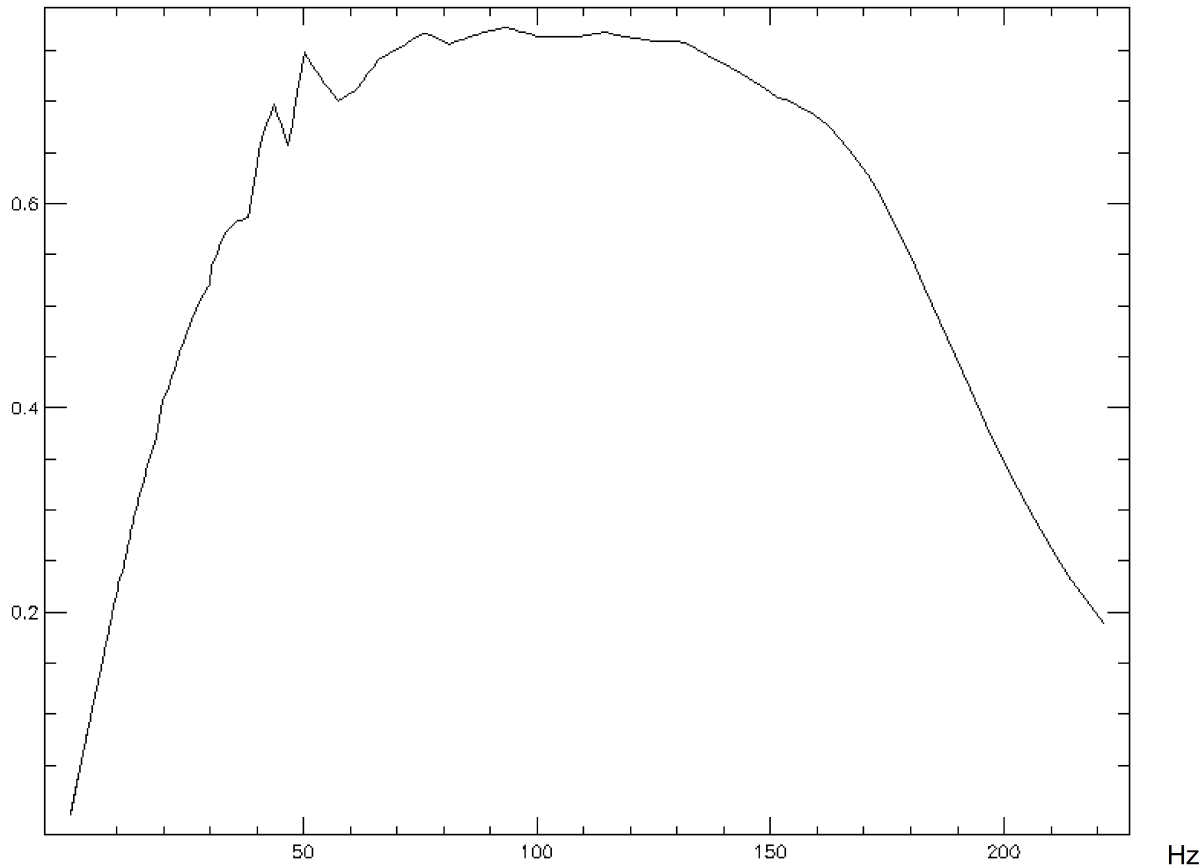
$$\approx 0.6h / GB.$$

new data gaps
SE system (0.6 –
5 or 225 Hz).

- CCS pipeline is under development, with a ne
management and will provide data both in GS
12.5 or 225 Hz) and in ISR2 system (0.1 – 12.

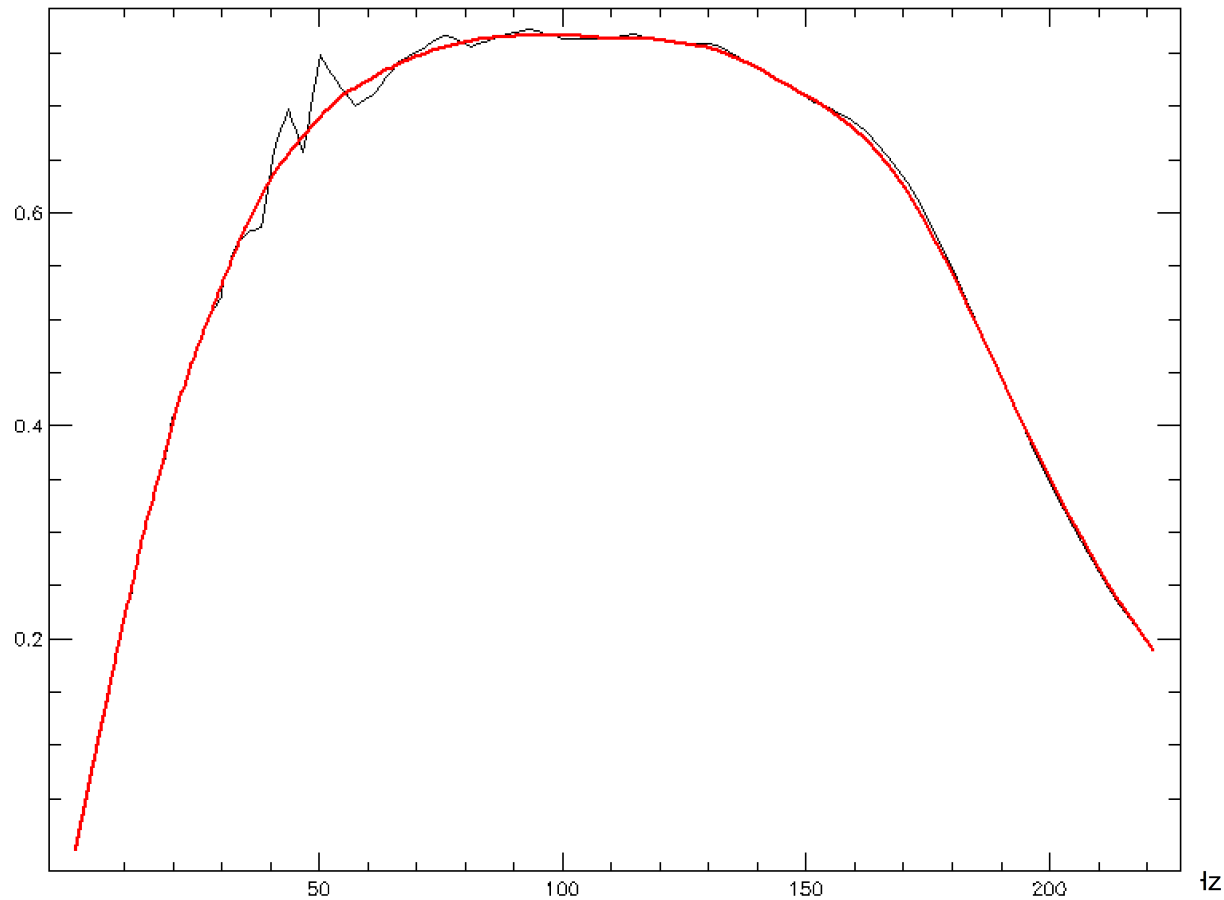
4. Cross Calibration / new results

4.a : Raw transfer function for HBR mode



- Experimental transfer function show problems near 50Hz and 100Hz
- Ex: C3 – HBR
x component

4.b : Smoothed transfer function



- Smoothed transfer function
- Ex: C3 – HBR
x component

4.c : STAFF CWF **NBR** - FGM one event comparison



- **STAFF** (25 Hz)
- **FGM** (~23 Hz)

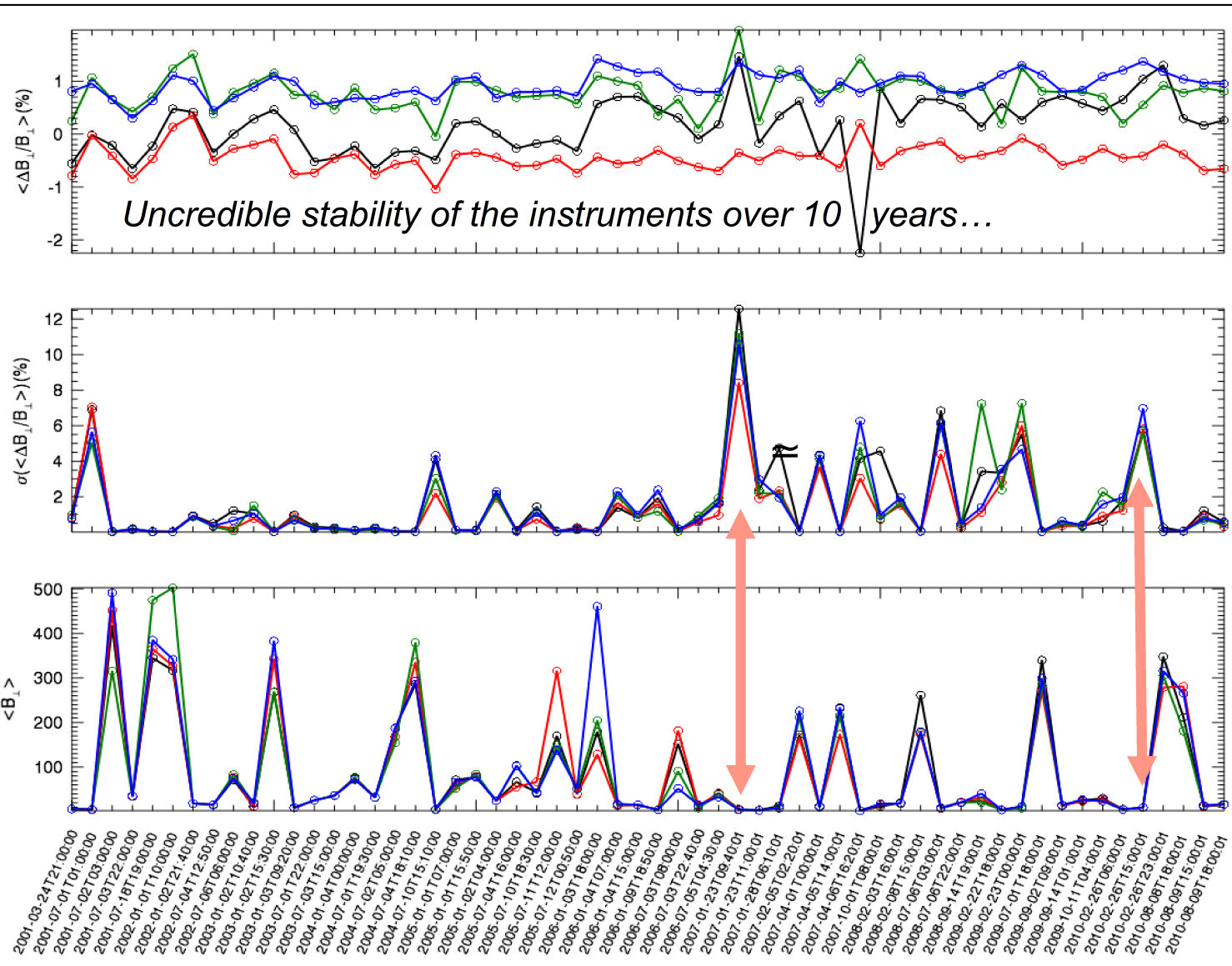
Both in SR2 system

FGM: CAA FULL
STAFF: CWF

$$\langle \Delta B/B \rangle \approx 1\%$$
$$\sigma \Delta B/B \approx 1\%$$

4.d : STAFF CWF **NBR** -FGM ten years comparison study

(SR2 system)



C1 (average cal)

C2

C3

C4

FGM: CAA FULL
 (~23 Hz)
 STAFF: CWF
 (25 Hz)

$\langle \Delta B/B \rangle \approx 1\%$

$\sigma \Delta B/B \approx 5\%$

Or ~ a few nT
 for low fields

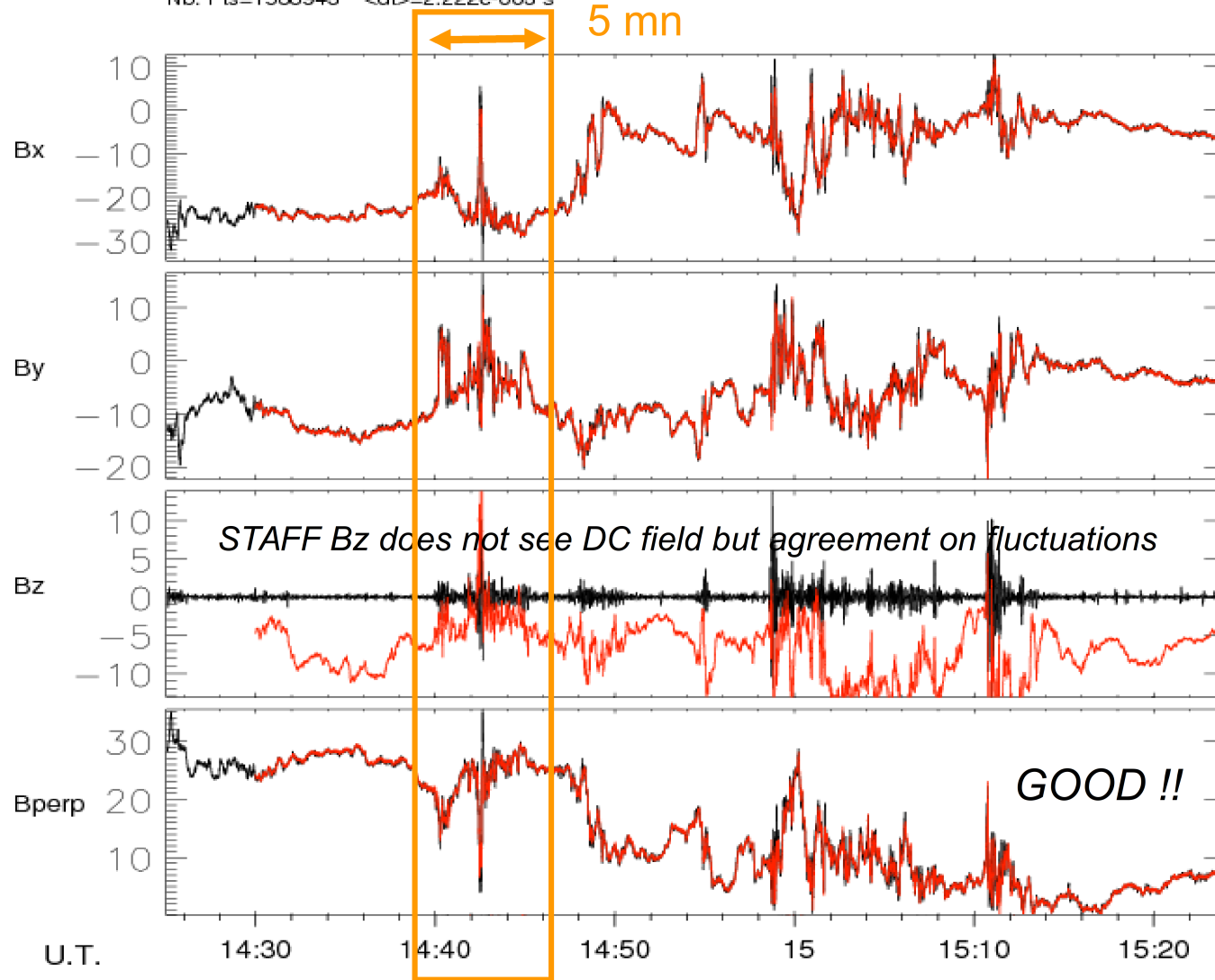
4.e : STAFF HBR-FGM burst mode

Scale: ~1 hour

C1 – SR2

2003-September-24 (JD 1362)

Nb. Pts=1588943 <dt>=2.222e-003 s



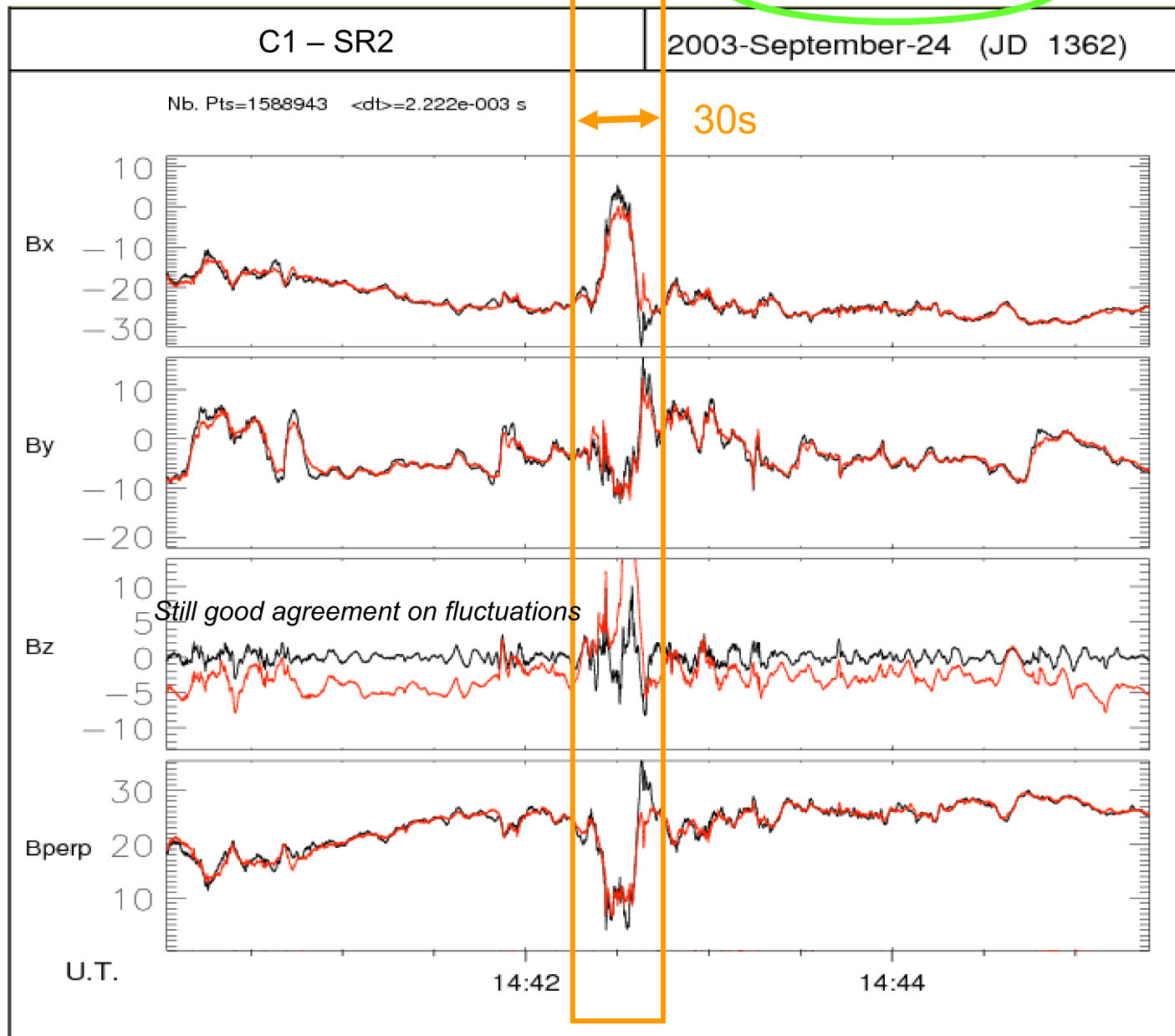
- STAFF (450 Hz)
- FGM (~66 Hz)

Both in SR2 system

FGM: CAA FULL
Burst mode
STAFF: CWF
HBR mode

$\langle \Delta B/B \rangle \approx 1\%$
 $\sigma \Delta B/B \approx 6\%$

4.e : STAFF HBR-FGM burst mode - Scale: ~ 5 mn



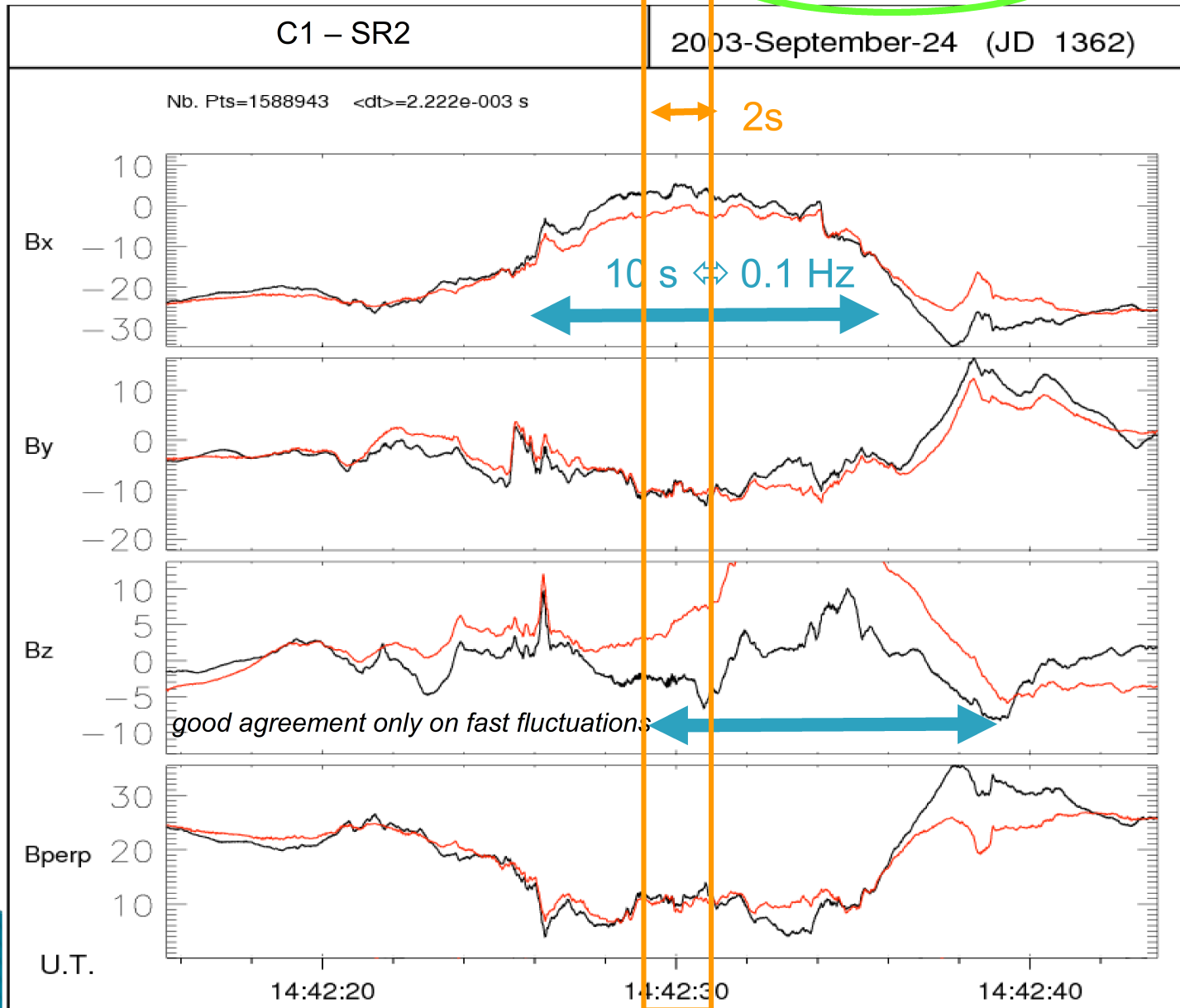
- STAFF (450 Hz)
- FGM (~66 Hz)

FGM: CAA FULL
Burst mode
STAFF: CWF
HBR mode

$\langle \Delta B/B \rangle \approx 1\%$
 $\sigma \Delta B/B \approx 6\%$

4.e : STAFF HBR-FGM burst mode

Scale: ~ 30s



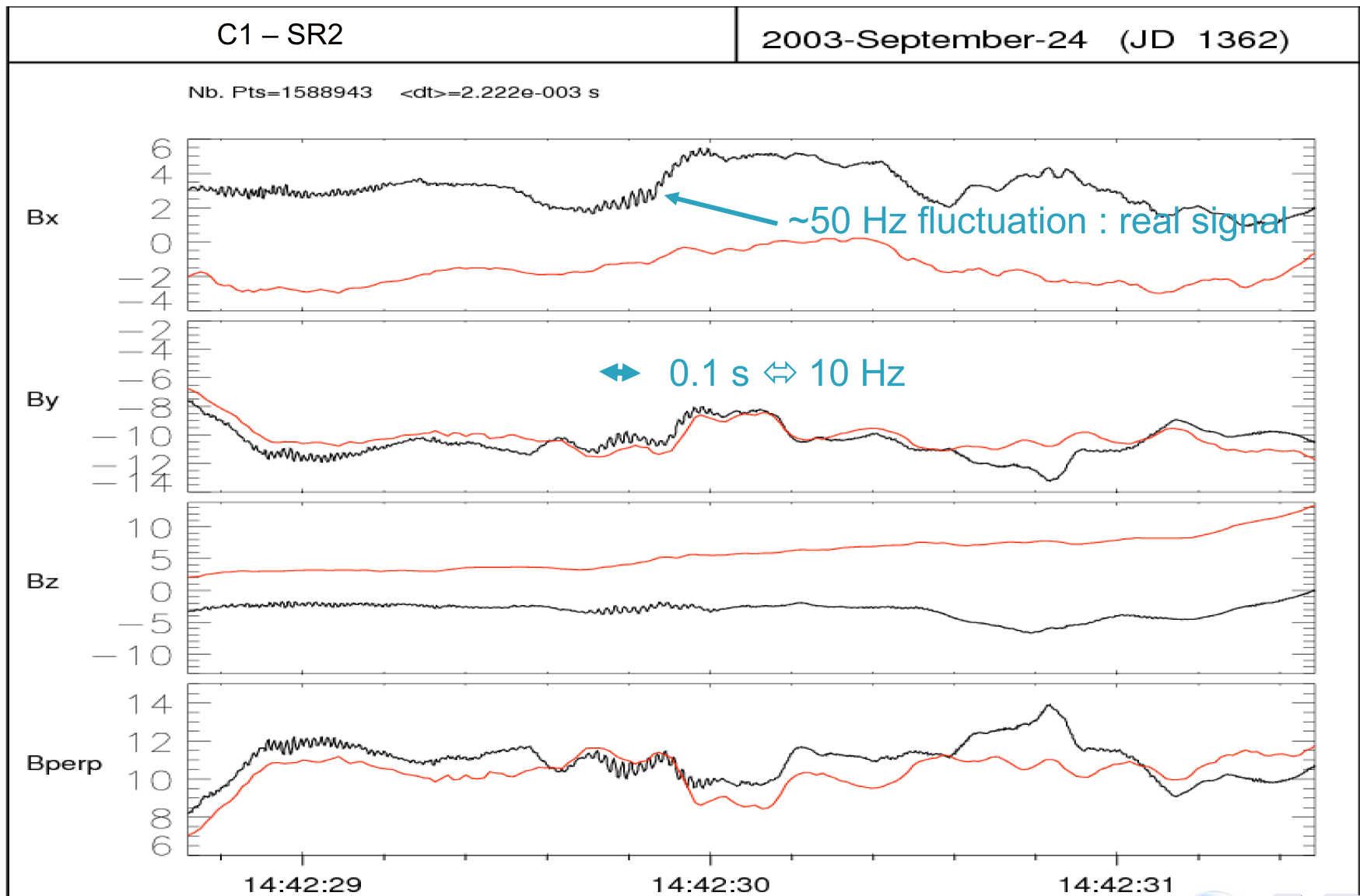
Low frequency
agreement
in spin plane
depend on
B polarisation

(Will be detailed
in next version of CR
and paper)

$\langle \Delta B/B \rangle \approx 3\%$
 $\sigma B/B \approx 15\%$

4.e : STAFF HBR-FGM burst mode

Scale: ~ 2 s



5. Conclusion

Status of dataset delivery/Delivery plan

~ OK

Status of software development

- DWF: finished
- CWF: finished, but results under checking
- CCS software almost ready
- SA pipeline: to be updated with new format and new calibration tables

Cross Calibration activity

- . Smoothed transfer function introduced (best HBR calibration)
- . STAFF CWF NBR - FGM one event comparison detailed
- . STAFF CWF NBR -FGM ten years comparison study
- . STAFF HBR-FGM burst mode comparison:
 - comparison at different time scale show limits of each instruments (1 hour, 5 mn, 30s, 2s)
 - All this news results will be integrated in a next version of the STAFF CR, and used for the papers « ~ CLUSTER STAFF/FGM data comparaisons in the common frequency range »