SCIAMACHY QWG-3 Meeting #7

21-22 September 2016

Current Datasets

Delta after PM#6

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cL0 master set

Reconsolidation campaign with ECONS 1.01 in 2015
focusing on problematic orbits (≈1000)

SOST's analysis identified 128 improved cL0 products

Archived at MMFI/DIMS

Input for next reprocessing

Level 1 v8

- Unchanged after release (May 2016)
- New findings (next slides), detailed on ESA SPPA web page on anomalous processing
  https://earth.esa.int/web/sppa/mission-performance/esa-missions/envisat/sciamachy/quality-reports/products-anomalies/l1
- New L1 README to be released soon
- Access to old dataset (v7.04) soon disabled

Level 1 v8 – inconsistency 1

From Klaus:

AUXFRA incorrectly applied to L1b v8 products for 2012-03-21 (14), causing reduced pointing knowledge (offset: no correction, up to 250m; wrong correction 0.8 - 1.2km)

Bug discovered for start/stop validity dates

AUX_FRA_AXVSER20131126_000000_20120321_000000_20120323_000000

New AUXFRA file generated (to be used for v9)

AUX_FRA_AXVSER20160818_000000_20120321_000000_20120323_000000

Level 1 v8 – inconsistency 2

From Klaus:

Shortened solar occultation states in L1B V8 dataset

Gap caused during Level 0 consolidation for solar states (ID 47/49) ending/starting in two adjacent L0 NRT files

Complete states existing in NRT L0

SOST confirmed possible S/W bug.

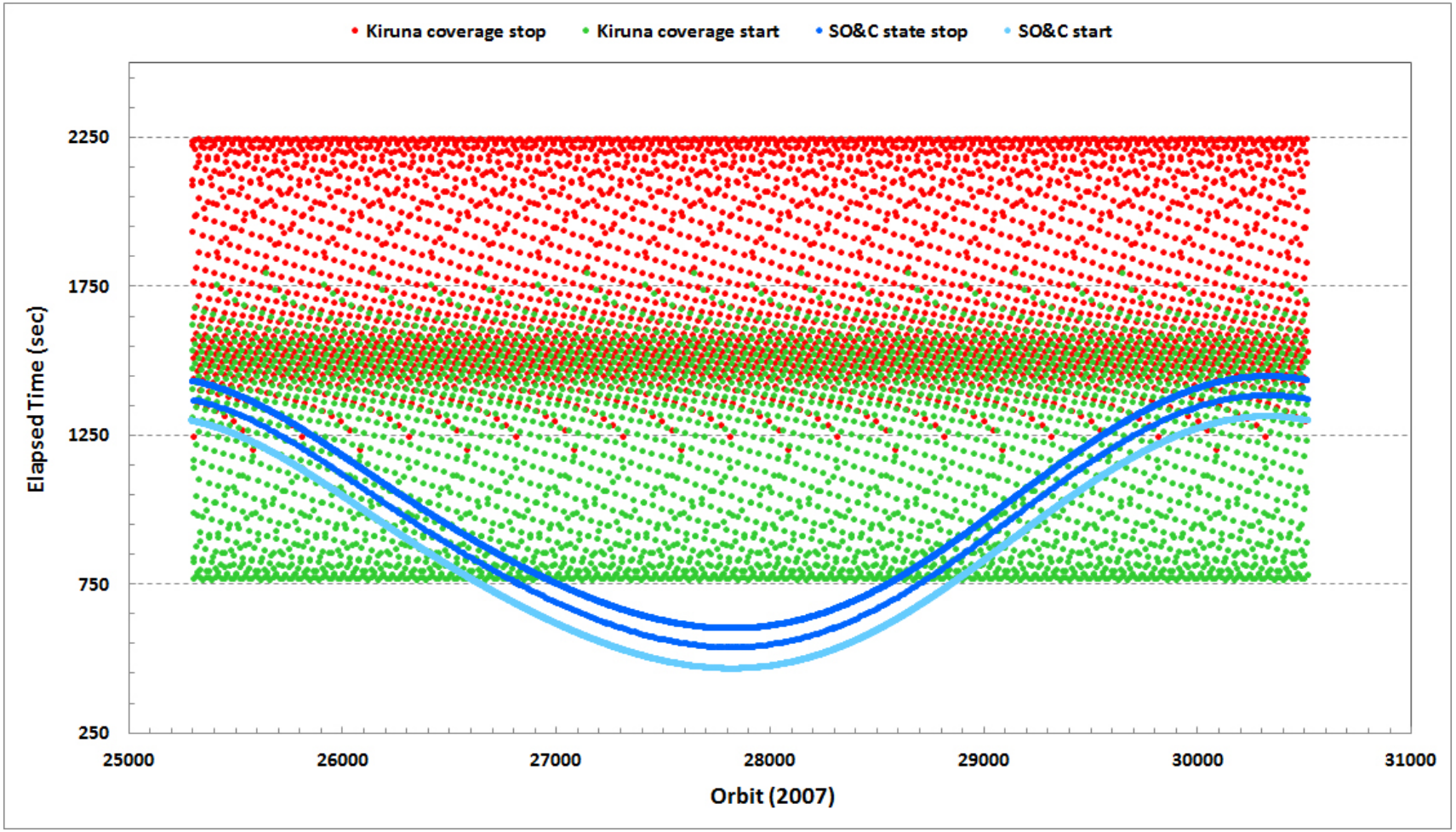
Already known and thought solved

switching to Linux based consolidator (2010).

Recovery not possible with current ECONS.

Estimated n. of affected products = a few hundred per year.

Level 1 v8 – inconsistency 2



2007 -> 893 orbits with SO&C states starting/ending in Kiruna coverage
other cases?

Level 1 v8 – inconsistency 3

From Klaus:

Minor issue in cluster configuration of SO&C and WLS states.
Calculating IT, version 8 processor rounds half BCPS to zero.

Version 7

	intgr_time	coadd_factor	pet
ch 6:	1	2	0.03125
ch 7:	1	1	0.03125

Version 8

	intgr_time	coadd_factor	pet
ch 6:	1	2	0.03125
ch 7:	0	1	0.03125

L1 README file

After last meeting, two inputs expected

From IUP: AI-PM6-09

"Comparisons with independent solar measurements showed that radiometrically calibrated SMR 'D0' gives 5% to 9% higher irradiances in the spectral region 800 - 1000nm (channel 5) than expected."

AI Closed

From SRON: AI-PM6-05

on degradation over-correction for L1 V8

NOT YET RECEIVED

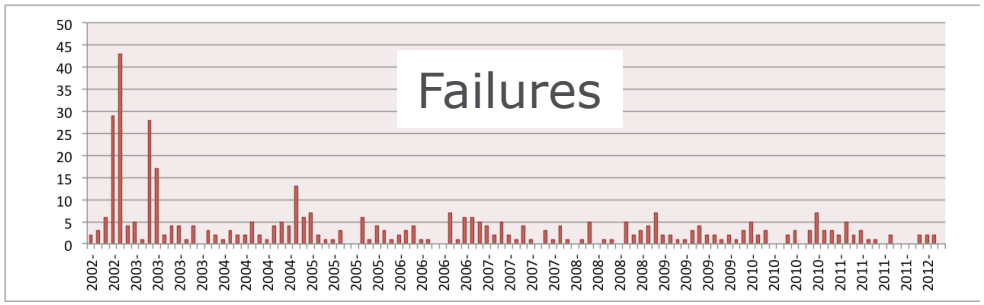
Level 2 v6 – I/O reconciliation

	cL1 IN	L2 OUT
2002	1789	1694
2003	4689	4593
2004	4972	4902
2005	5042	4982
2006	4773	4719
2007	4966	4910
2008	5120	5070
2009	4987	4934
2010	4966	4901
2011	5052	5010
2012	1359	1345
	47715	**47060**

Processing = **98.6%**

655 missing

250 calibration orbits
405 processing failures
(no logs saved)



Level 2 v6 – inconsistency 1

Last day of mission 2012-04-08 not processed with v6.

April 2012

01	52761	52762	52763	52764	52765	52766	52767	52768	52769	52770	52771	52772	52773	52774	
02	52775	52776	52777	52778	52779	52780	52781	52782	52783	52784	52785	52786	52787	52788	
03	52789	52790	52791	52792	52793	52794	52795	52796	52797	52798	52799	52800	52801	52802	52803
04	52804	52805	52806	52807	52808	52809	52810	52811	52812	52813	52814	52815	52816	52817	
05	52818	52819	52820	52821	52822	52823	52824	52825	52826	52827	52828	52829	52830	52831	
06	52832	52833	52834	52835	52836	52837	52838	52839	52840	52841	52842	52843	52844	52845	52846
07	52847	52848	52849	52850	52851	52852	52853	52854	52855	52856	52857	52858	52859	52860	
08	52861	52862	52863	52864	52865	52866	52867								

Tropopause height LUT file one day short.

Generated (08-SEP-2016) 7 additional products.

Download recommended

Level 2 v6 – inconsistency 2

122 L2 v6 products with incorrect PROC_CENTER "IMF"

SCI_OL__2PY**DPA**20020924_051911_000023362009_00406_02965_0000.N1
SCI_OL__2PY**IMF**20020924_070419_000032732009_00407_02966_0000.N1

Derived from Level 1b v8 IMF products.

Renamed/Patched (08-SEP-2016) to fix MPH

Replacement recommended

Level 2 v6 – inconsistency 3

States repeated with time jumps in timeline

#	states.state_id	states.dsr_time	orbit
2	6	2002-12-20 10:37:02.261164	04213
2	7	2002-12-20 15:26:30.588356	04216

States repeated in overlapping orbits

#	states.state_id	states.dsr_time	orbit
2	32	2010-10-27 02:51:11.201541	45262/45263
2	7	2010-10-27 02:52:05.389048	45262/45263

Inherited from L1b v8 products

Only in 4 products

Hopefully solved with L1v9

Compare L2 v6 to v5 datasets

	L2 OUT
2002	1694
2003	4593
2004	4902
2005	4982
2006	4719
2007	4910
2008	5070
2009	4934
2010	4901
2011	5010
2012	1345
	47060

98,6%

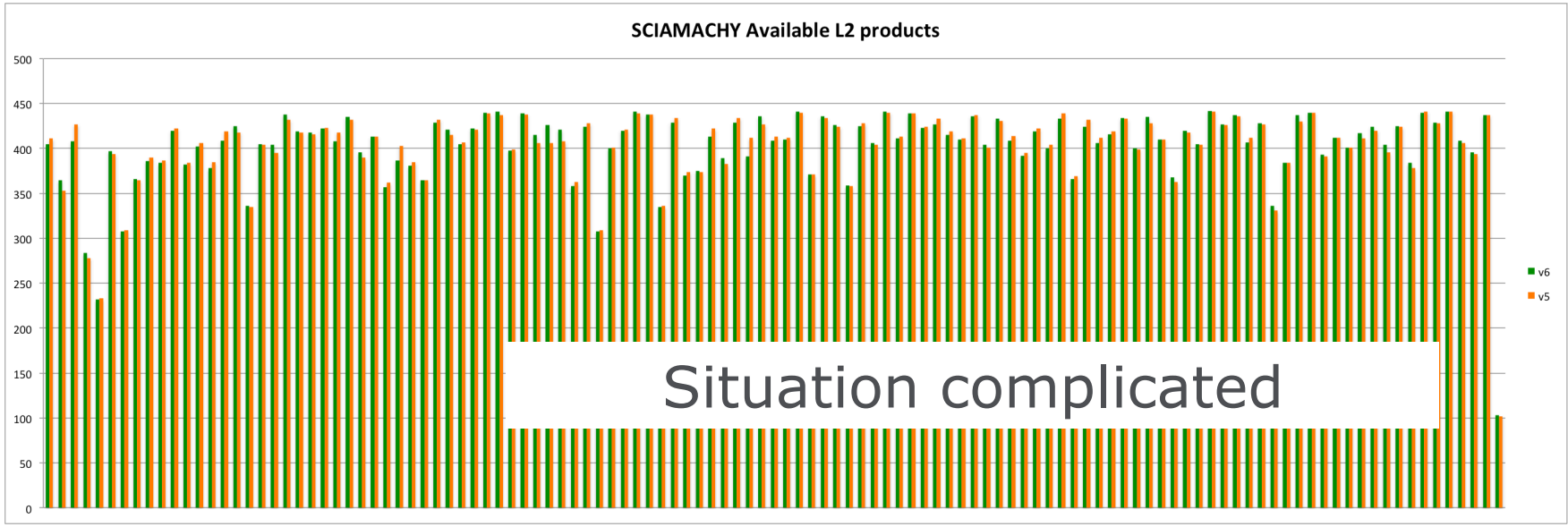
Failed
405

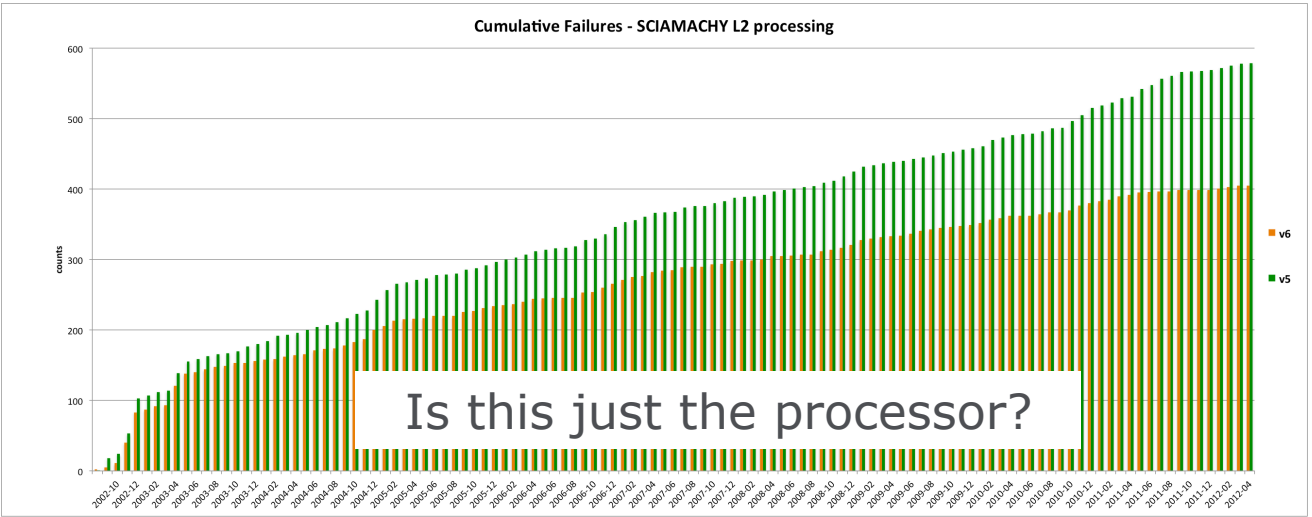
L2 OUT
1702
4614
4906
4950
4725
4930
5080
4966
4882
4983
1339
47077

98,3%

Failed
579

Compare L2 v6 to v5 datasets





Compare L2 v6 to v5 datasets

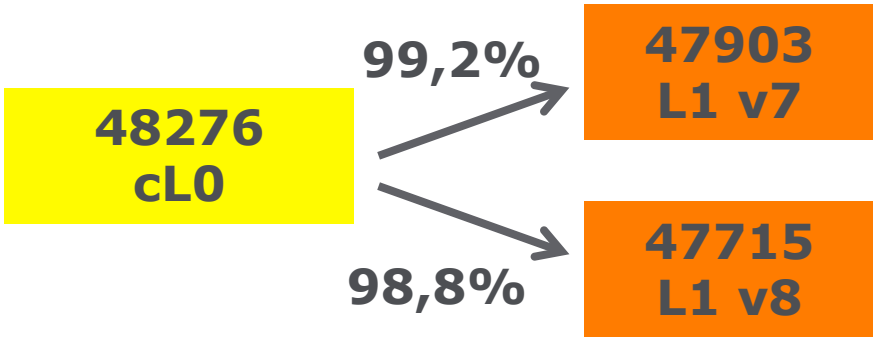
	L1 IN	L1 IN
2002	1789	1817
2003	4689	4713
2004	4972	4995
2005	5042	5030
2006	4773	4797
2007	4966	4996
2008	5120	5144
2009	4987	5024
2010	4966	4972
2011	5052	5058
2012	1359	1357
	47715	47903

Different Level 1b input datasets

V8
V7

L1 Orbits in Common= **47475***

*Only 26988 L1b products without changes for start time and duration (according to filename)



Compare L2 v6 to v5 data - failures

L2 V5 failures = **579**

L2 V6 failures = **405**

in common v5/v6 = **343**

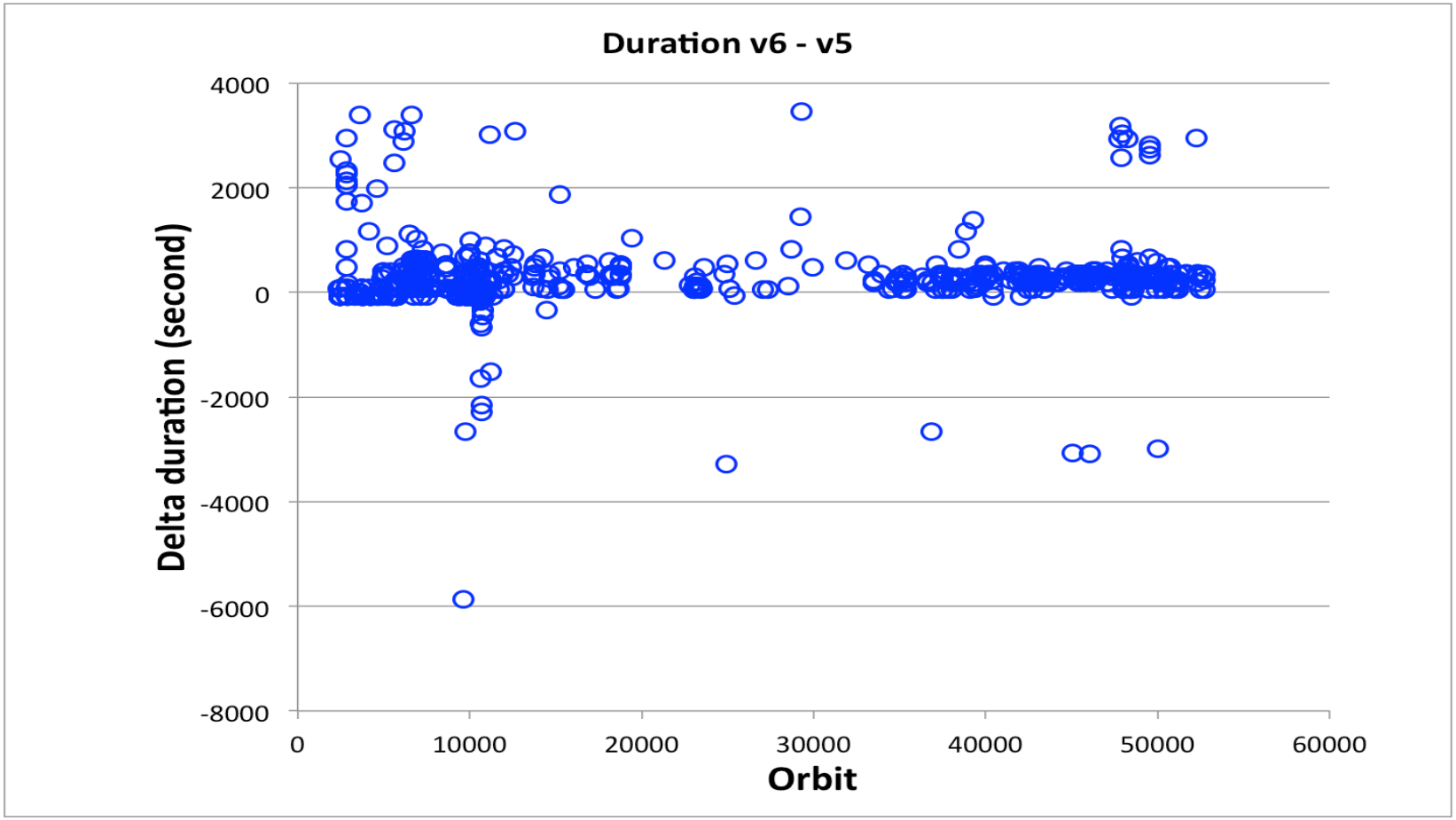
unique v5 = **236** -> **205** recovered with v6

31 missing from L1 v8

unique v6 = **62** -> **41** “new” failures

21 v5 failed at L0-1b stage

Compare L2 v6 to v5 data - durations



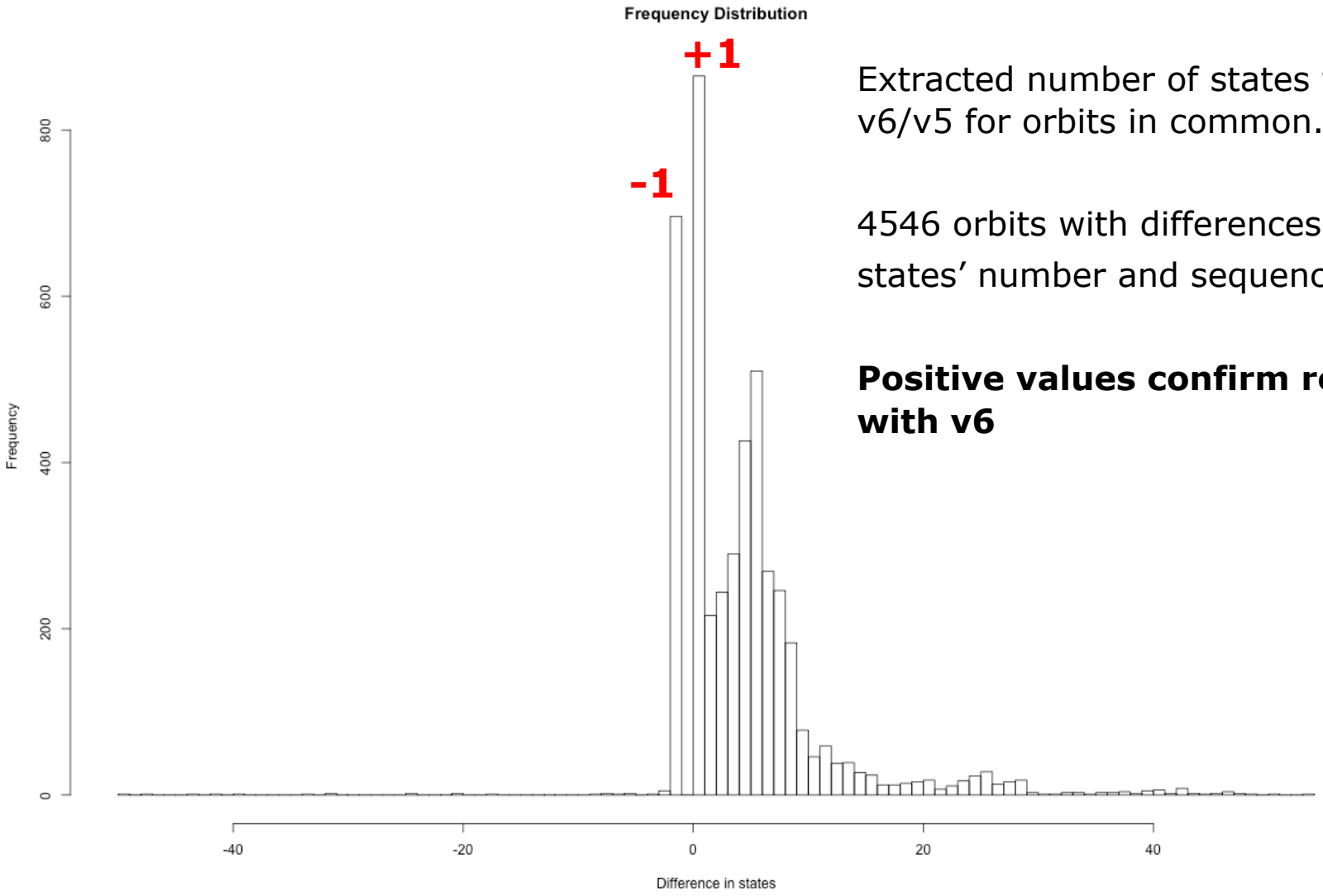
0 values omitted

46629 common products

1011 products with different coverage (values from filename)

Delta = +162165 sec -> 45 hours recovered (internal gaps not considered)

Compare L2 v6 to v5 data - states



Extracted number of states from L2 v6/v5 for orbits in common.

4546 orbits with differences in states' number and sequence

Positive values confirm recovery with v6

Number of DSs in L2v6

Expected 23

SUMMARY_QUALITY
STATE_GEOLOCATION
STATIC_PARAM
STATES
GEOLOCATION_NADIR
GEOLOCATION_LIMB
CLOUDS_AEROSOL
NAD_UV0_O3
NAD_UV1_NO2
NAD_UV3_BRO
NAD_UV4_H2CO
NAD_UV5_SO2
NAD_UV6_OCLO
NAD_UV7_SO2
NAD_UV8_H2O
NAD_UV9_CHOCHO
NAD_IR1_CH4
NAD_IR3_CO
LNM_UV0_NO2
LIM_UV0_O3
LIM_UV1_NO2
LIM_UV3_BRO
LIM_CLOUDS

Already in v5 dataset

From MPH field of L2 v6 files

# DSs	counts
7	1
8	32
9	88
12	8
13	10
15	4
16	23
17	542
18	4
19	7
20	1109
21	1
22	895
23	**44329**
	47060

Orbit 46051
21/12/2010

SUMMARY_QUALITY
STATE_GEOLOCATION
STATIC_PARAM
STATES
GEOLOCATION_NADIR
CLOUDS_AEROSOL
NAD_UV6_OCLO

845
NAD_FIT_WINDOW_IR3="EMPTY

Mainly explained by NNDEC: no GOOD pixels available for channel 8.

Missing Retrievals in L2V6

From SPH Occurrence of EMPTY Fits

NAD_FIT_WINDOW_UV0	**136**
NAD_FIT_WINDOW_UV1	**139**
NAD_FIT_WINDOW_UV3	**136**
NAD_FIT_WINDOW_UV4	**200**
NAD_FIT_WINDOW_UV5	**153**
NAD_FIT_WINDOW_UV6	**117**
NAD_FIT_WINDOW_UV7	**153**
NAD_FIT_WINDOW_UV8	**139**
NAD_FIT_WINDOW_UV9	**153**
NAD_FIT_WINDOW_IR1	**125**
NAD_FIT_WINDOW_IR3	**988**
LNM_FIT_WINDOW_UV0	**1850**
LIM_FIT_WINDOW_UV0	**572**
LIM_FIT_WINDOW_UV1	**1682**
LIM_FIT_WINDOW_UV3	**1682**

cases	counts
**********	44329
**********e***	29
**********e*ee	1109
**********eeee	541
**********e****	845
e*******	21
e****e*ee	1
e****eeee	22
e***e****	1
e***eeeee	2
ee*e*e***	6
ee*e*e**e	3
***ee*e*e**eeee	3
ee*e*e*e*	1
ee*e*e*ee	1
*e*ee*eee**e***	1
*e*ee*eee*ee***	2
eeeee*eee*ee***	8
eeeee*eee*eeeee	3
eeeee*eeeeee***	7
eeeee*eeeeeeeee	1
eeeeeeeeeeee***	117
	47053

AOB - wiki

How refer to SCIAMACHY Product Handbook ?

SCIAMACHY Quality Working Group, 2013, SCIAMACHY Product Handbook, Issue 1.0, Available at: [link], Accessed: [Date].

Is this enough for a wiki where single pages have a version?

Wiki V1 – L1V7/L2V5 RELEASED 2013

Wiki V2 – L1V9/L2V7 TO BE RELEASED 2017

L1V8/L2V6 not considered and now obsolete - ?

AOB - L1v9/L2v7

Decide (QWG/ESA/S&T) for a different REF_DOC in MPH

- for a better specification than PO-RS-MDA-GS-2009_3/M
- benefitting from netCDF DATA format

Any recommendation?