1

MCST Weekly Report on MODIS Status and Maturity of L1B Calibration Product
For Week ending noon, 16 February 2000
Bruce Guenther

1. New Sensor Characterization and Calibration Results

NEdT for Themal Emissive Bands are meeting specification in SV measurements 2-5
NEdL for Reflected Solar Bands are meeting specification in SV measurements 6
RMS noise in DN_{sv} matches closely with the pre-launch TV results 7
Blackbody must be at elevated temperature; established at 290 K 8

2. New Sensor Issues/ Status of Previously Reported Issues

2-1 Electronic Cross-talk features present in SWIR Bands 5- 7 9-16
Requires on-orbit testing of focal plane operating parameters

2-2 Gain changes (G3) being installed for Bands 5, 14H and 16. G3 larger for 16, smaller for 5 and 14H. 17-19

2-3 Improved electronic calibration parameters required for optimum testing of linearity of counting circuits 20

3. Data Sets Received

Status for this item is RED. RED means that the data flow into MCST is not adequate for MCST to complete planned sensor characterizations analyses required as precursor to opening the NADIR Aperture Door. We do not know how much of the problem is with EDOS or G-DAAC, but we know that much is at EDOS, and they are working these issues.

4. Data Sets Analyzed

Status for this item is YELLOW. The MCST software has been performing very well with the data we have received, but that data flow is very low. Also, MCST-image of L1 A has not been working on L0 EDS format data due apparently to problems with the leap second file.

5. Sensor Operations for Past Week

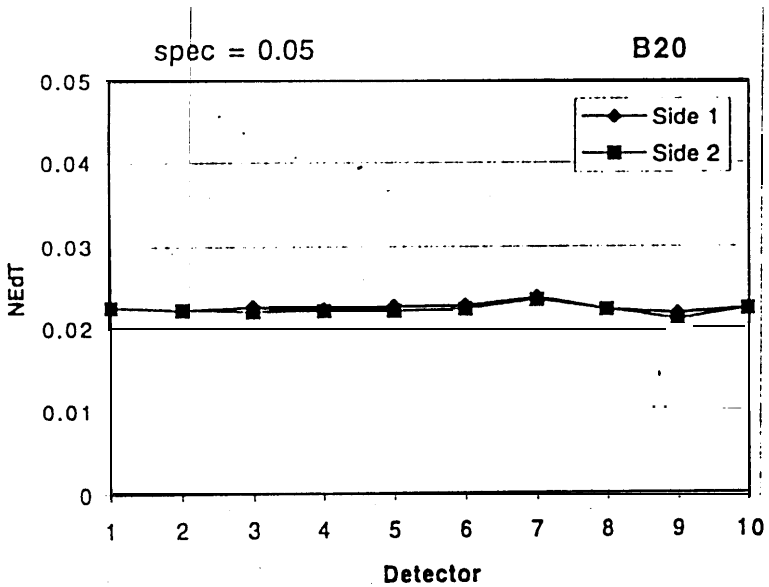
First electronic calibrations, first solar diffuser measurements, elevated blackbody tests

6. Sensor Operations for Coming Weeks

Focal plane parameter testing, SRCA measurements, tune gain coefficients for three bands
NAD opening scheduled for 27 Feb; moon in space view roll 24 March

7. L1B Algorithm Status

Uses earth view data, and none acquired yet. Consequently, L1B untested. New LUT delivery will be made this week.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Side 2
NEdT
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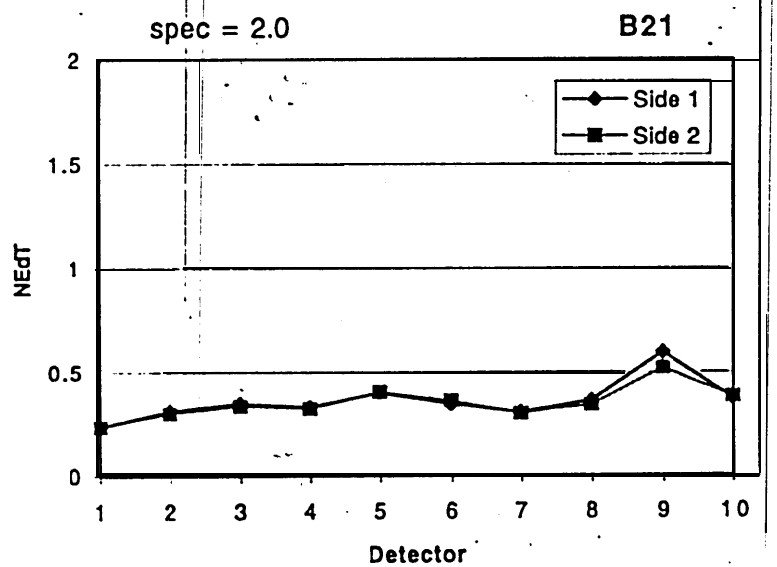
0.04
0.03
0.02
0.01
0
1 2 3 4 5 6 7 8 9 10
Detector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1
0.5
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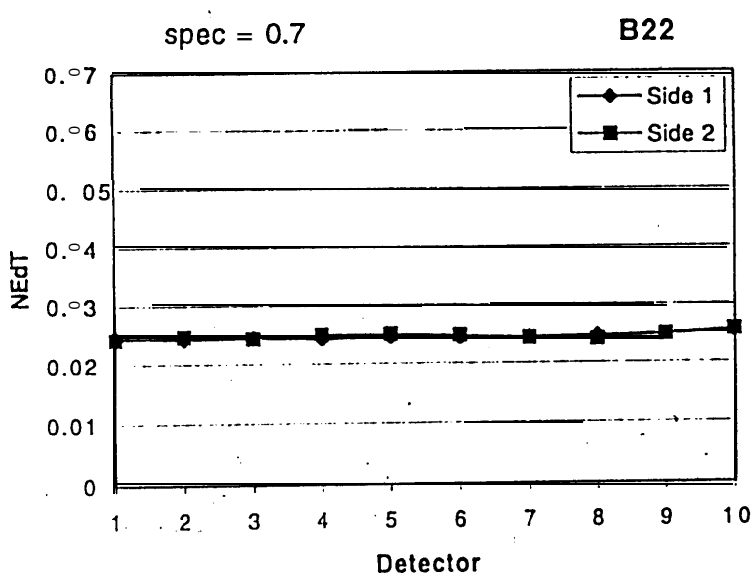
Detector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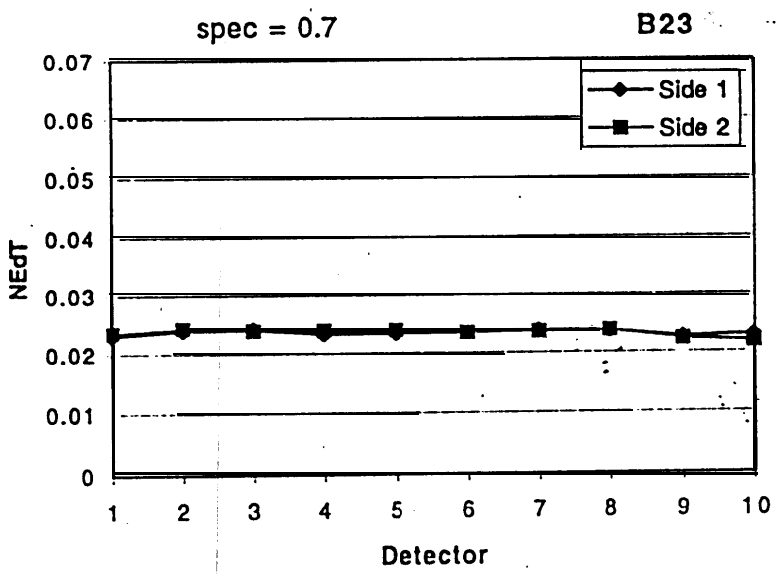
Detector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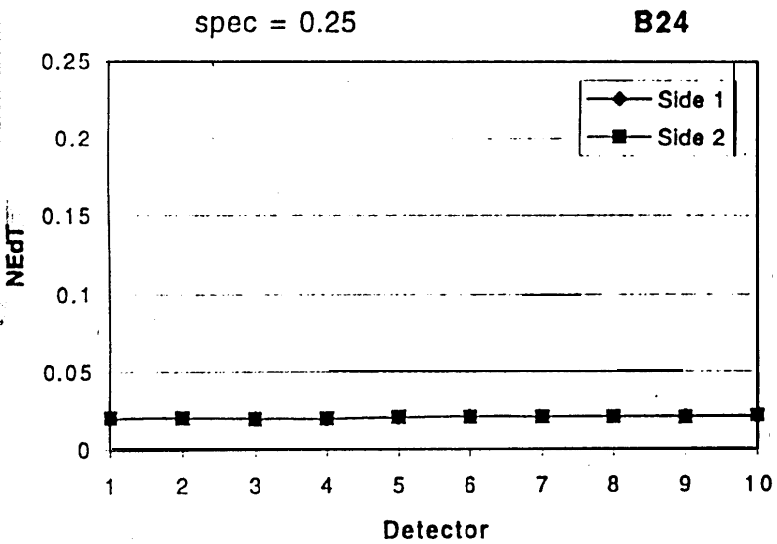
Detector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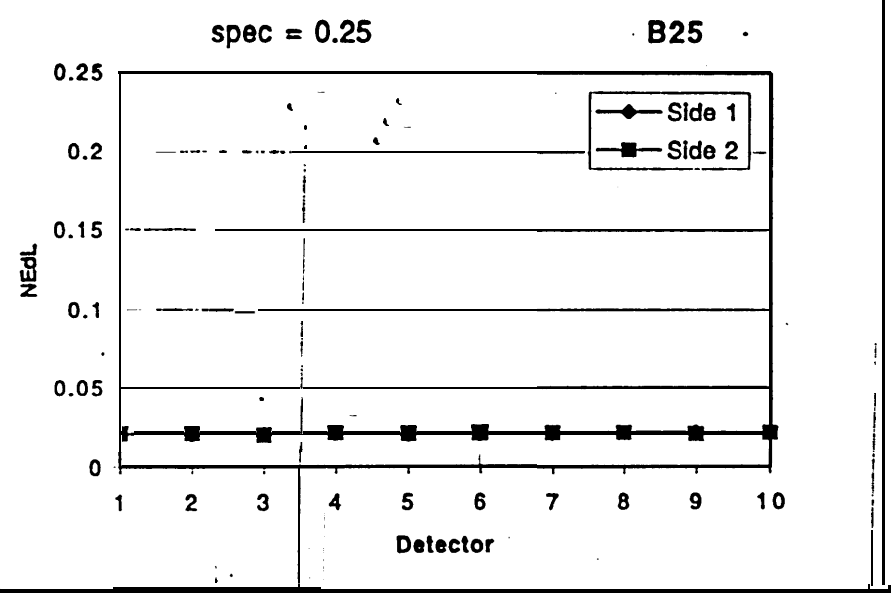
Detector
Side 1
Side 2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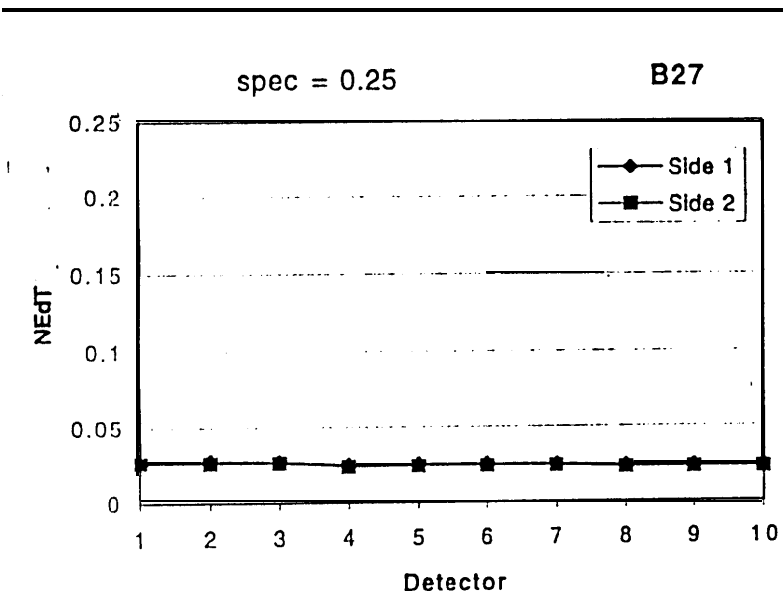
Detector
Side 1
Side 2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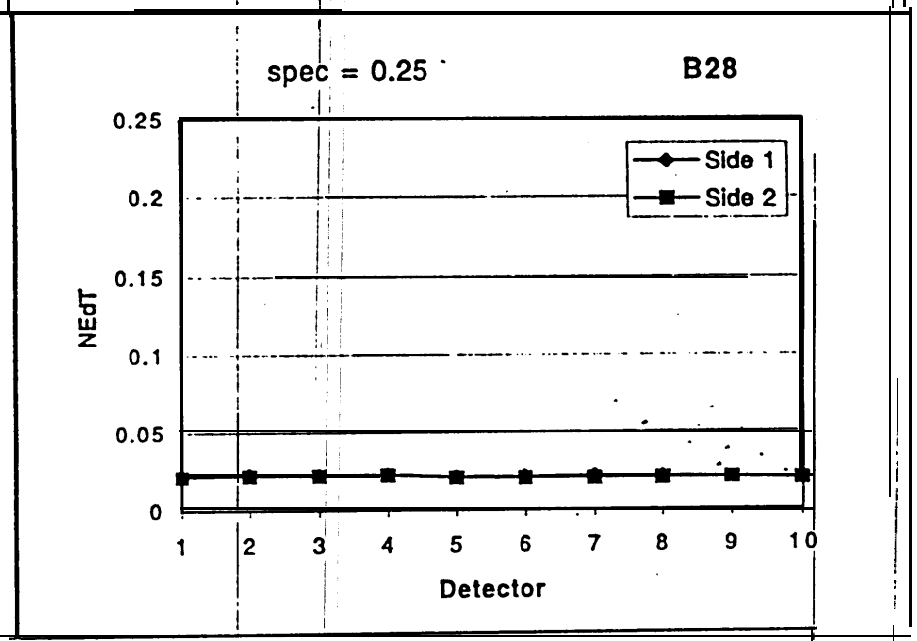
Side 1
Side 2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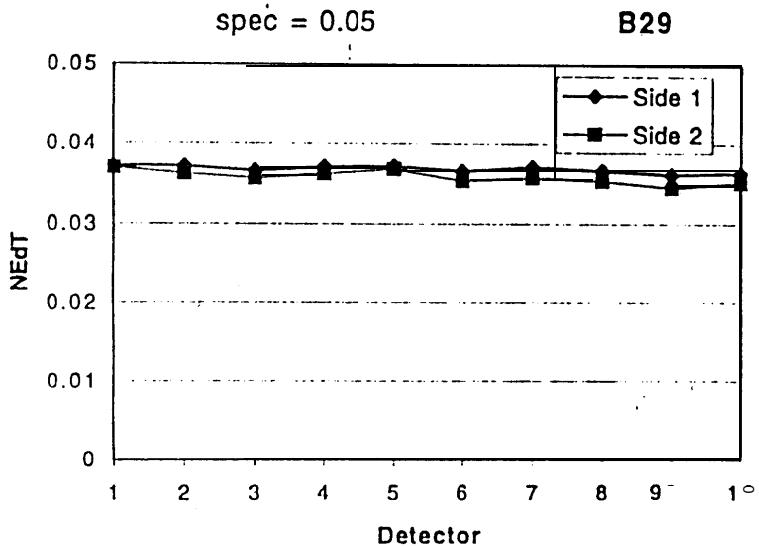
Detector
Side 1
Side 2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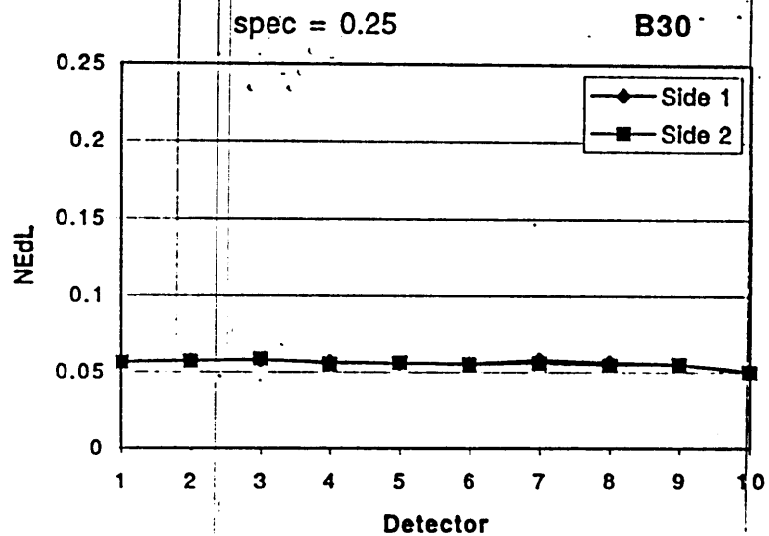
Detector
Side 1
Side 2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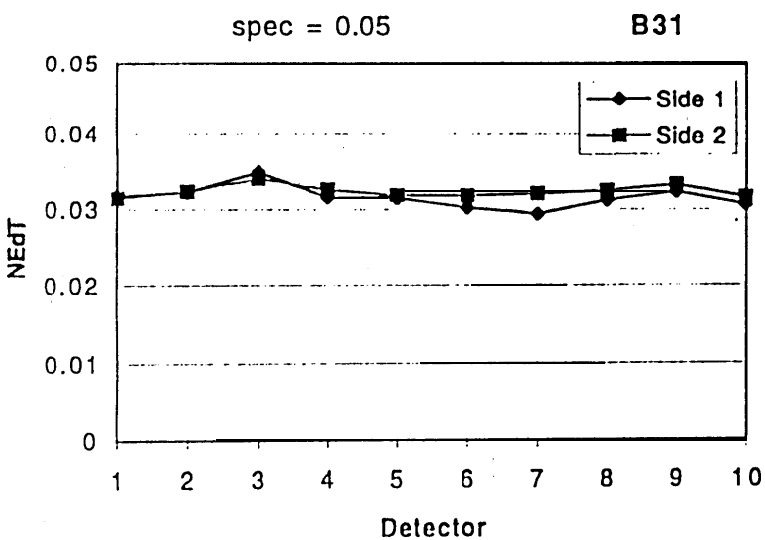
Detector
Side 1
Side 2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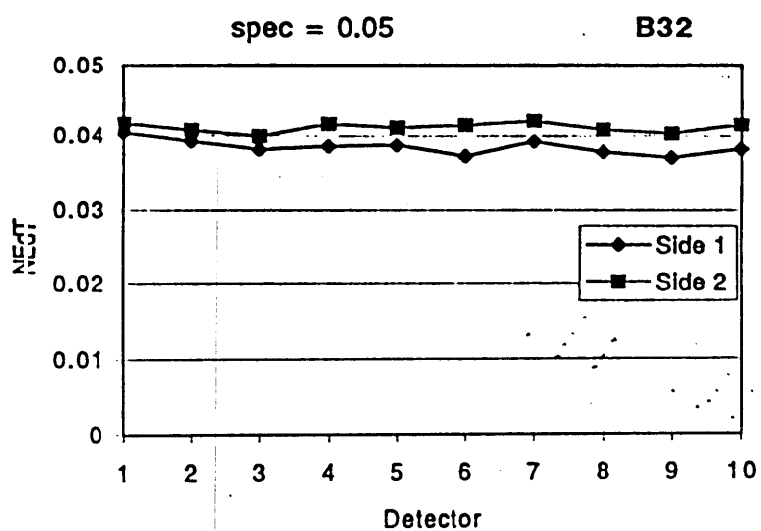
Detector
Side 1
Side 2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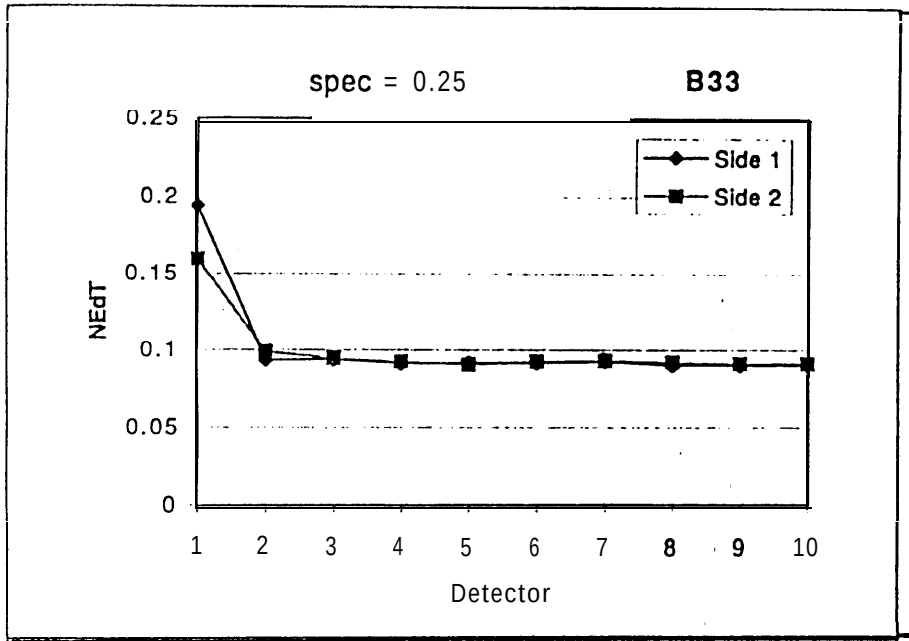
Detector
Side 1
Side 2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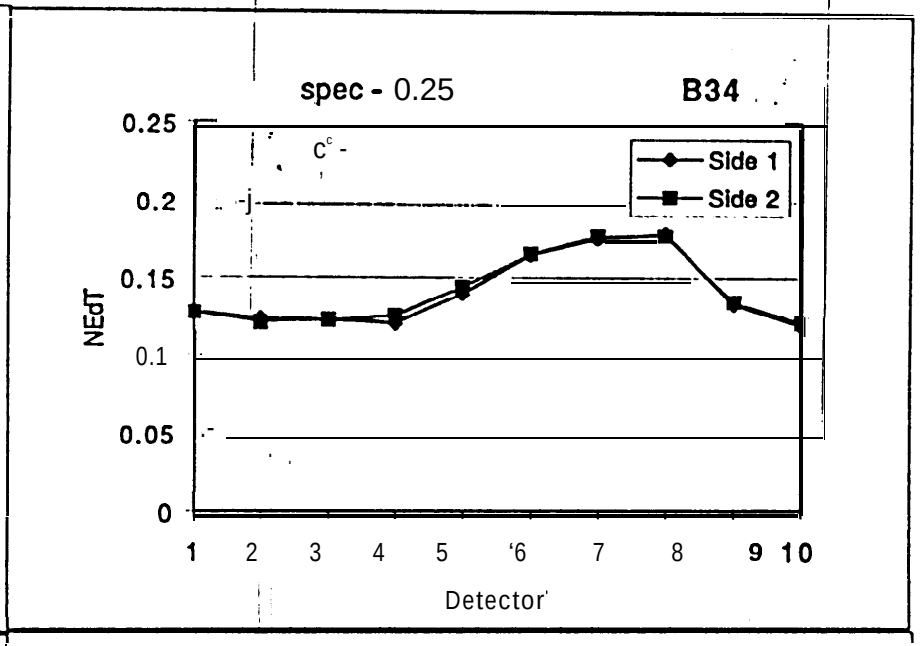
1 2 3 4 5 6 7 8 9 10
Detector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0
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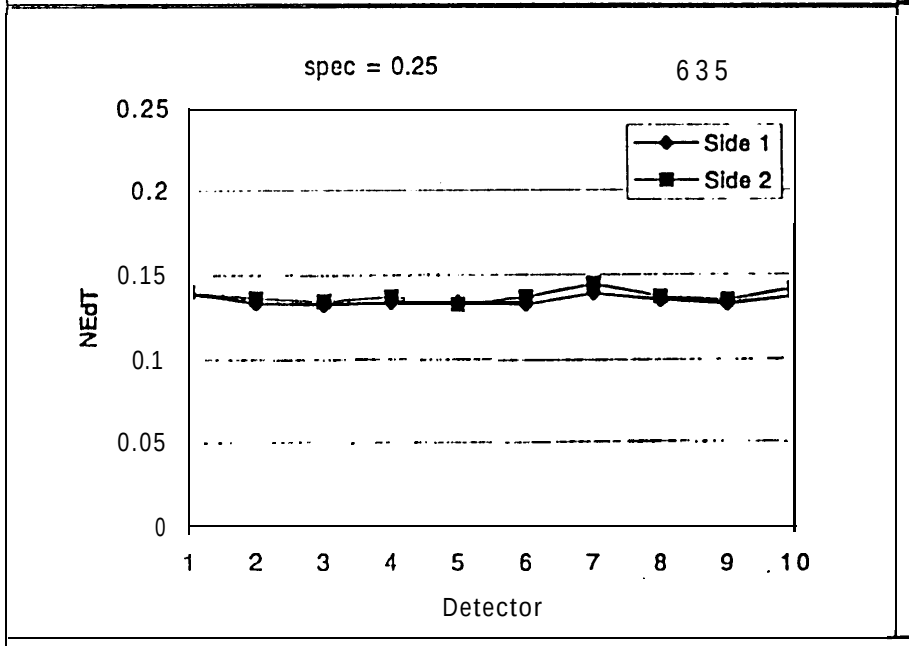
Detector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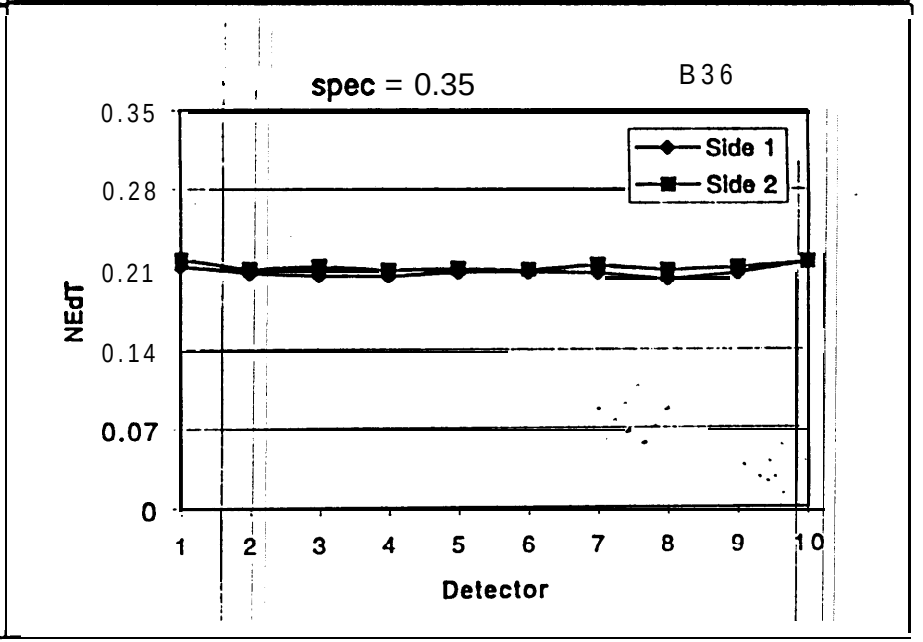
Detector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Side 2
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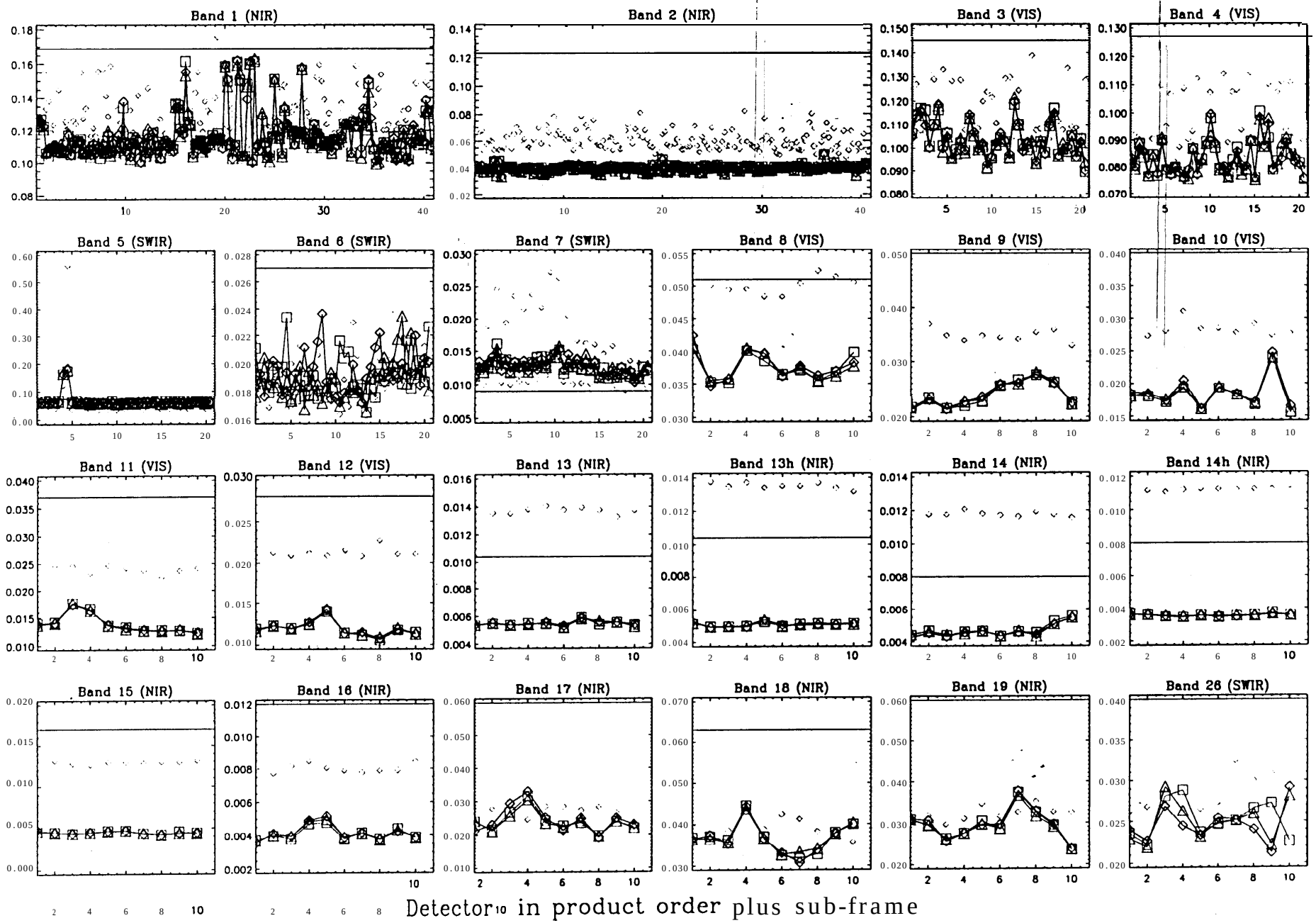
0.21
0.14
0.07
0
1 2 3 4 5 6 7 8 9 10
Detector

PFM RSB *NEdLs* (on-orbit Granule: A2000044.0520; Feb. 13)



NEdL_SPEC
MODIS side: B
T_VIS: −8.315C

NEdL_pre-launch
SDD: Close
T_NIR: -7.713C

A NEdL_SD
SVD: Open
T_SWIR: 87.970K

1.3 NEdL_BB
NAD: Close
T_BB: 285.12K

0 NEdL_SV
Mirror: 1

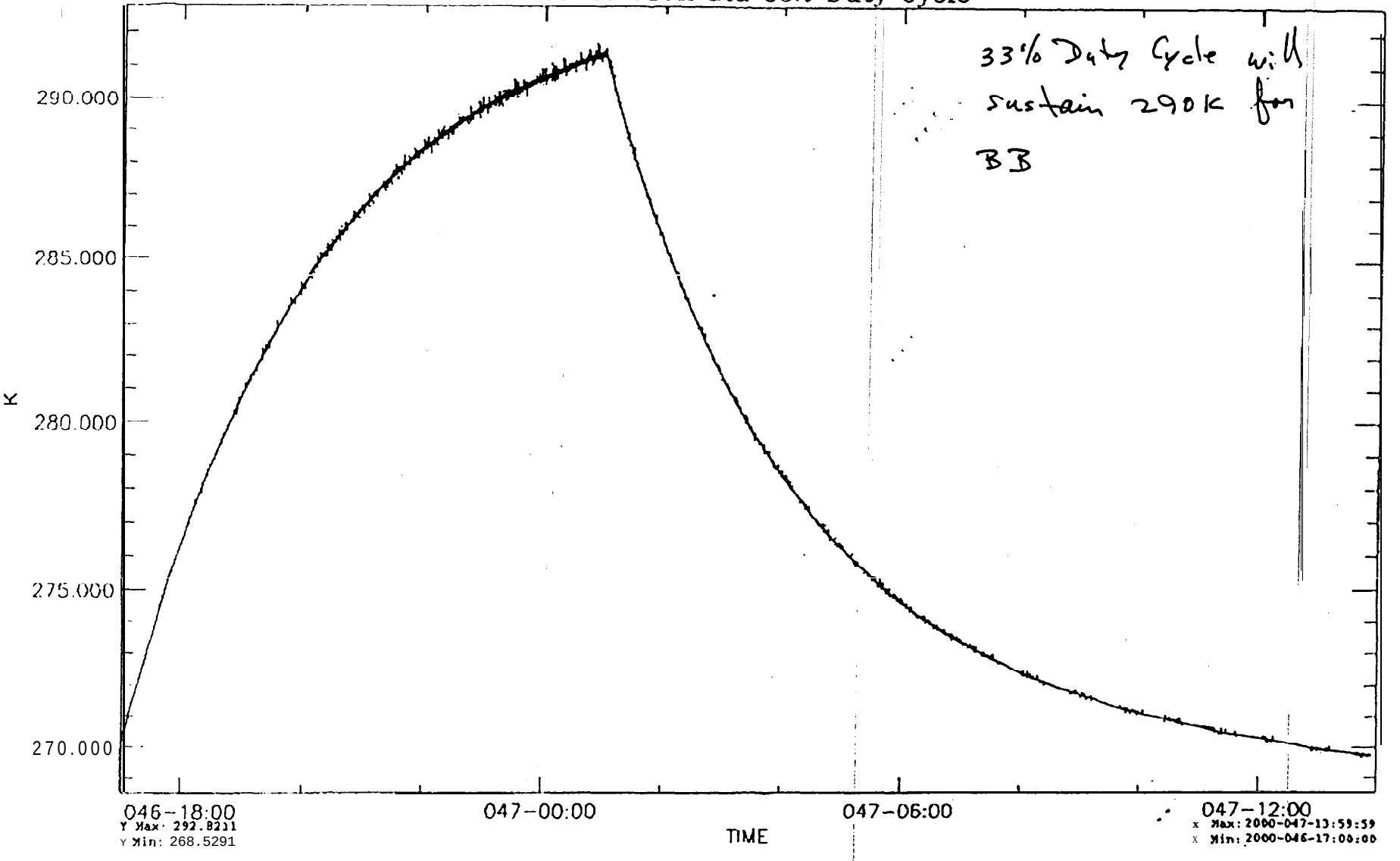
SV noise

Band	SBRS T/V	MCST RESULTS
1	0.75	0.5
2	0.52	0.5
3	0.6	0.6
4	0.66	0.6
5	1.77	1.9
6	0.86	0.8
7	1.79	1.6
8	0.8	0.7
9	0.6	0.6
10	0.62	0.5
11	0.61	0.5
12	0.69	0.6
13	0.64	0.6
14	0.52	0.5
15	0.67	0.6
16	0.58	0.5
17	0.53	0.6
18	0.49	0.5
19	0.53	0.5
20	1.37	
21	0.82	
22	1.25	
23	1.13	
24	1.64	
25	1.81	
26	1.02	1
27	1.31	
28	0.99	
29	0.78	
30	1.54	
31	0.48	
32	0.73	
33	3.09	
34	4.84	
35	3.87	
36	4.77	
5 even	2.27	
6 even	1.1	
7 even	1.97	
5 all	164.8	
6 all	73.72	
7 all	171.78	

RMS (1-σ) noise in DN_{SV}

Spacecraft: am_1
Stream Name: rno

BB to 315K ata 33% Duty Cycle



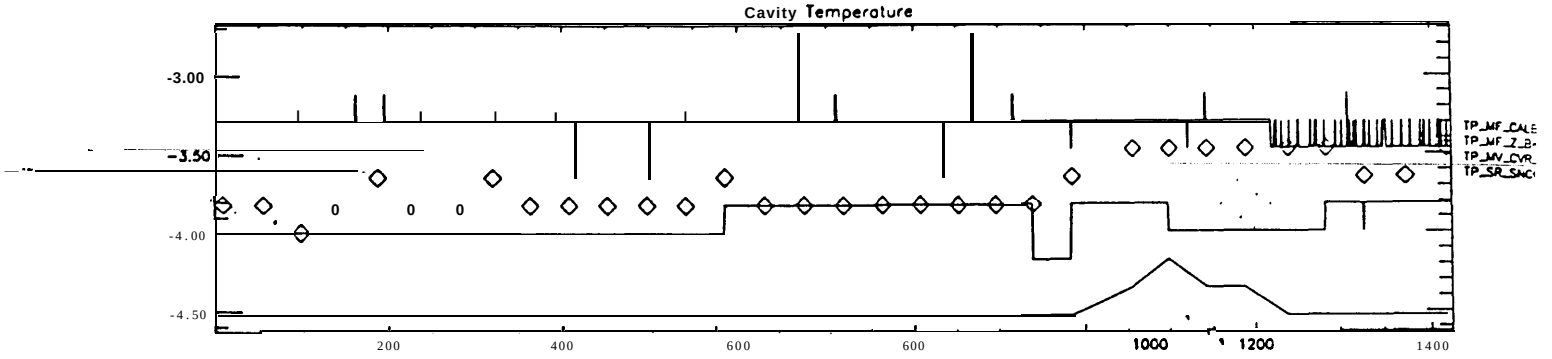
** TOTAL PAGE.01 **

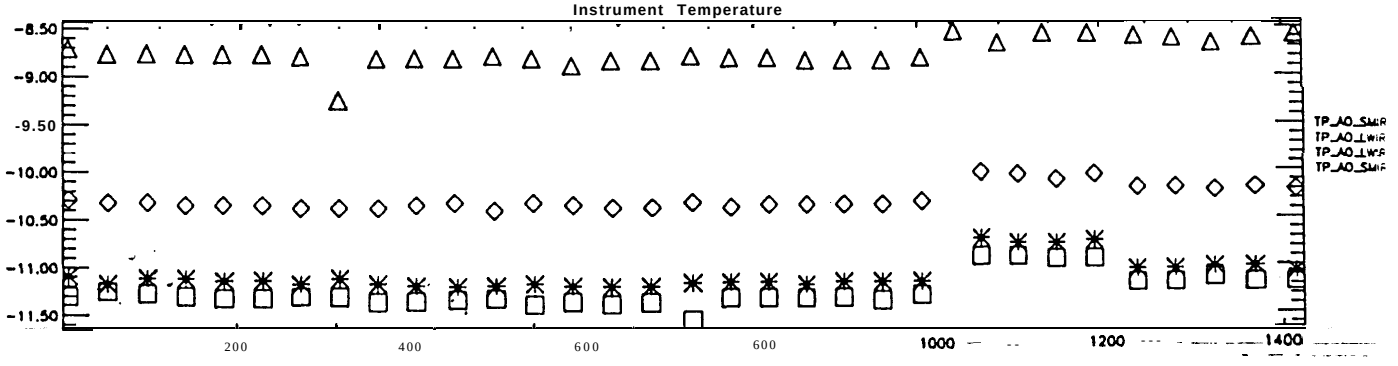
MNEMONIC NAME	SAMPLES	MINIMUM	MAXIMUM	AVERAGE	STD DEV	DESCRIPTION
MOD_TP_BB_TEMP01H	8707	269.68	291.44	281.03	6.9618	Obc BB temp; also in eng
MOD_TP_BB_TEMP02H	8707	269.67	291.45	281.01	6.9552	Obc BB temp; also in eng
MOD_TP_BB_TEMP03H	8707	269.71	291.71	281.02	6.9561	Obc BB temp; also in eng
MOD_TP_BB_TEMP04H	8707	269.71	291.44	281.01	6.9482	Obc BB temp; also in eng
MOD_TP_BB_TEMP05H	8707	269.68	291.64	281.01	6.9409	Obc BB temp; also in eng
MOD_TP_BB_TEMP06H	8707	269.70	291.62	281.00	6.9362	Obc BB temp; also in eng
MOD_TP_BB_TEMP07H	8707	259.70	291.57	281.03	6.9515	Obc BB temp; also in eng
MOD_TP_BB_TEMP08H	8707	269.71	291.65	281.02	6.9547	Obc BB temp; also in eng
MOD_TP_BB_TEMP09H	8704	269.64	391.49	281.02	6.9549	Obc BB temp; also in eng
MOD_TP_BB_TEMP10H	8704	269.75	291.62	281.01	6.9456	Obc BB temp; also in eng
MOD_TP_BB_TEMP11H	8704	269.63	291.52	281.01	6.9417	Obc BB temp; also in eng

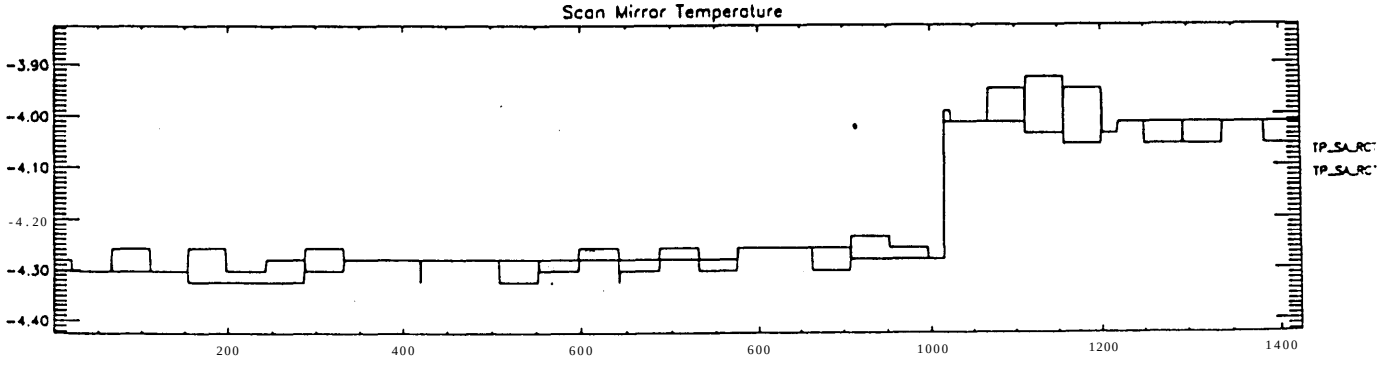
Current Time:	2000-047-15:07:50
Req Start Time:	2000-046-17:00:00
Req Stop Time:	2000-047-14:00:00
Sampl e Rate:	All Points
Profile Name:	NONE
User Name:	abeuser

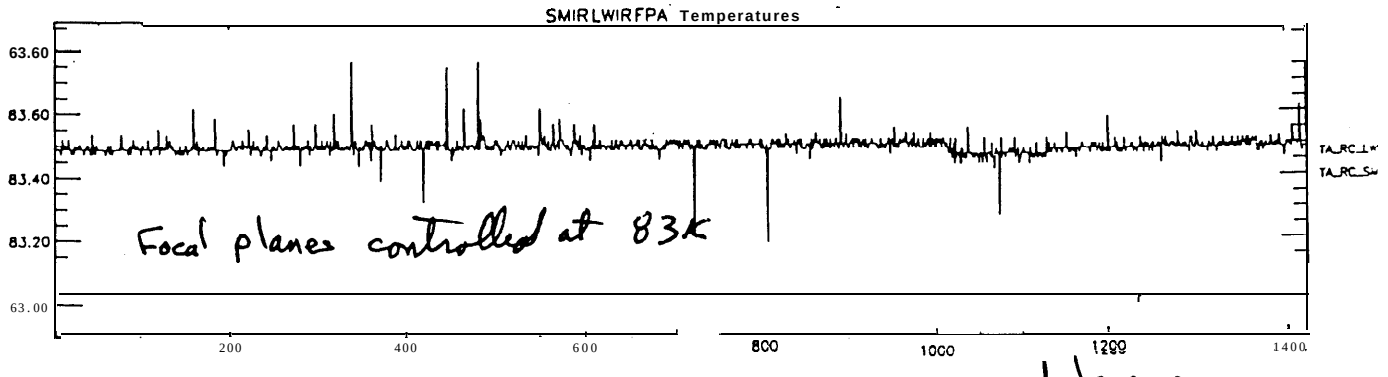
8

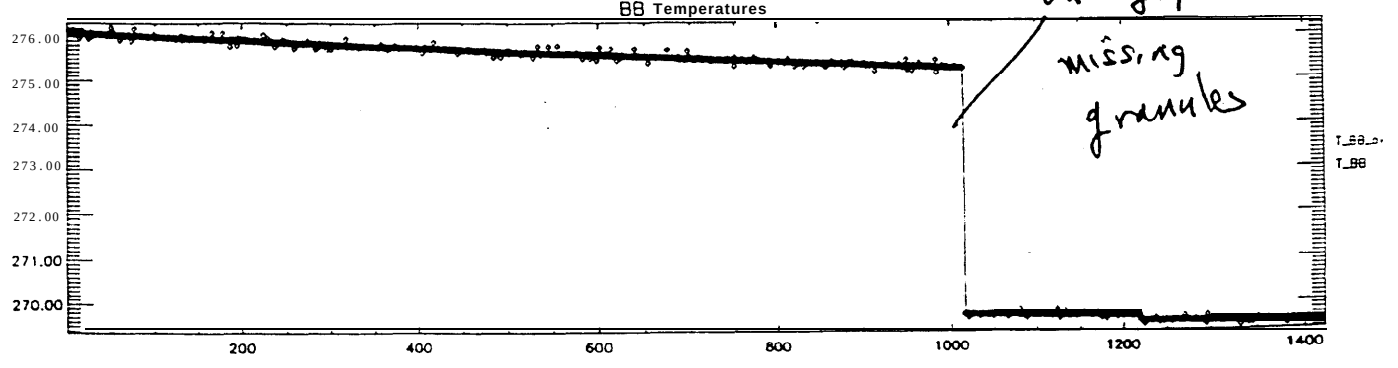
From 2/13/2000 19:30 to 2/14/2000 3:50

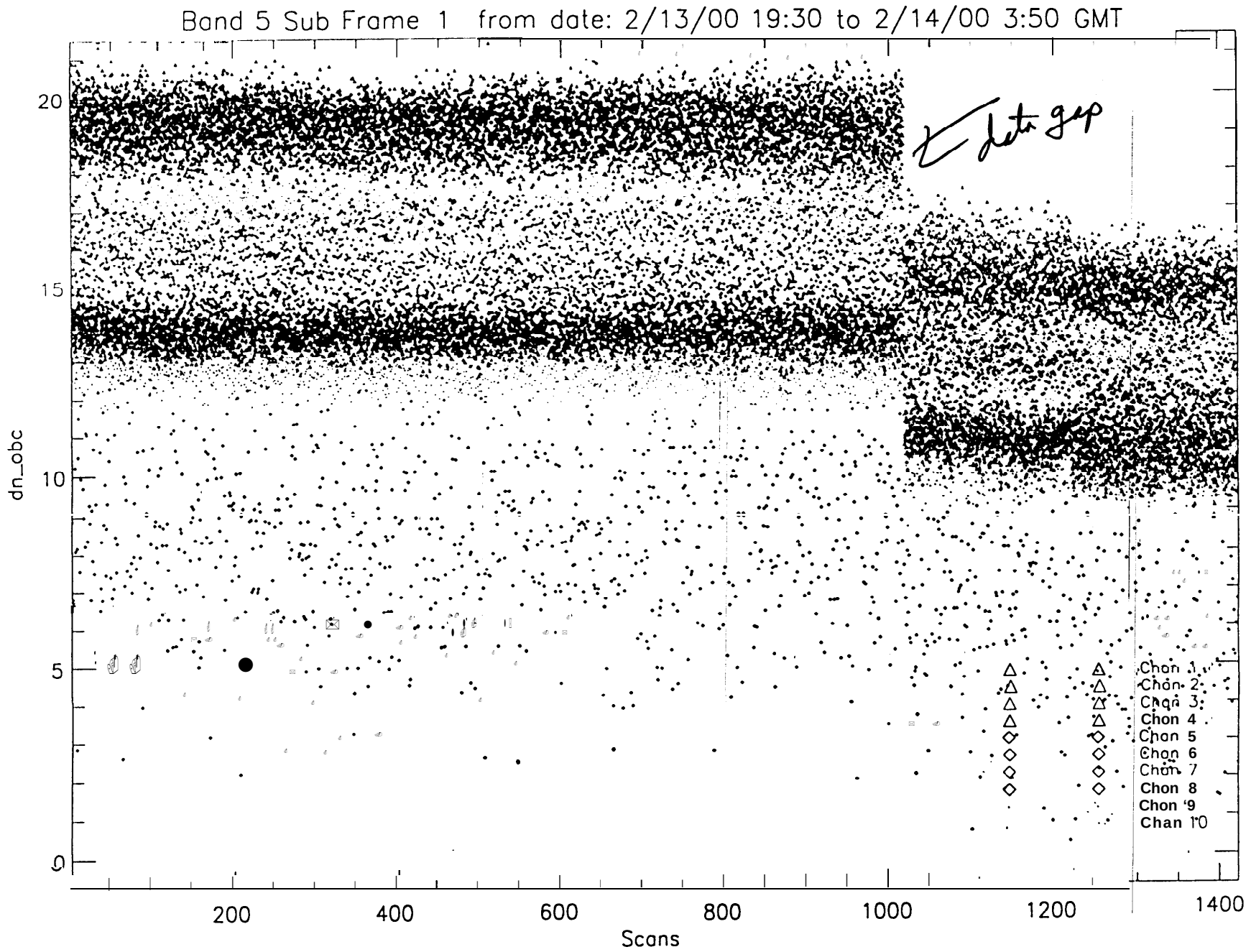








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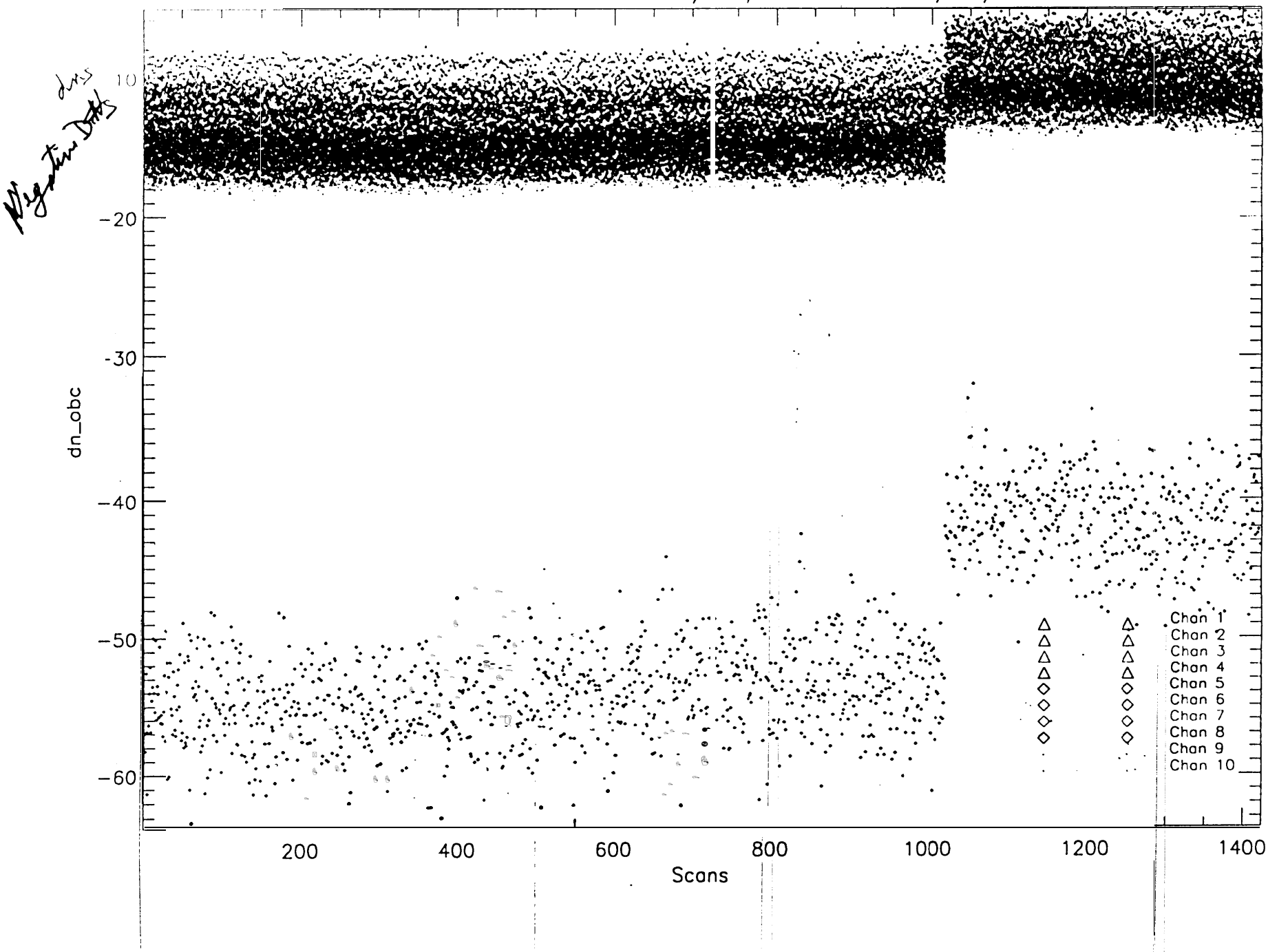
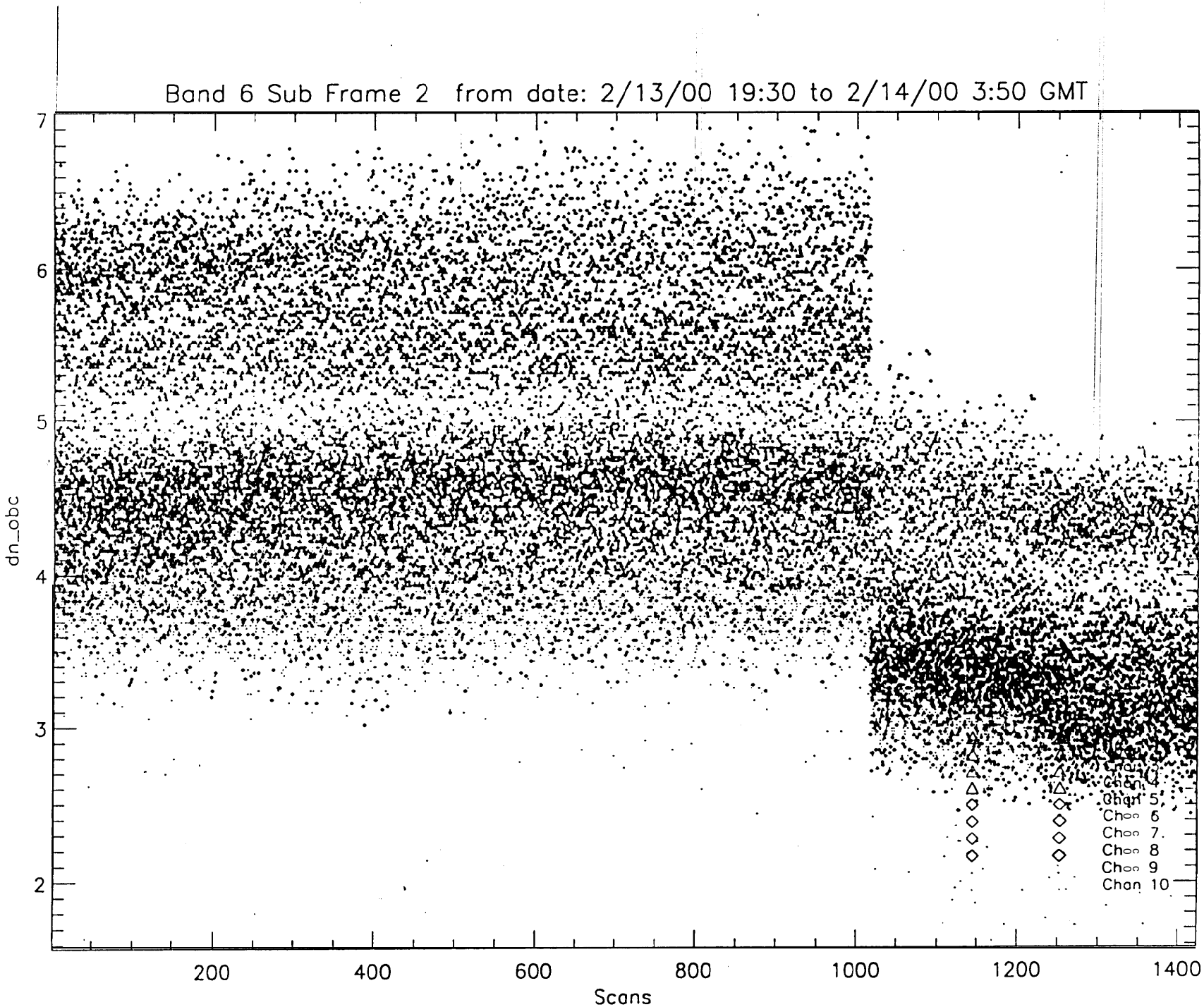
dn_obc
Scans
0
5
10
15
20
200
400
600
800
1000
1200
1400
Chan 1
Chan 2
Chan 3
Chan 4
Chan 5
Chan 6
Chan 7
Chan 8
Chan 9
Chan 10
data gap

3

Band 5 Sub Frame 2 from date: 2/ 13/00 19:30 to 2/14/00 3:50 GMT



11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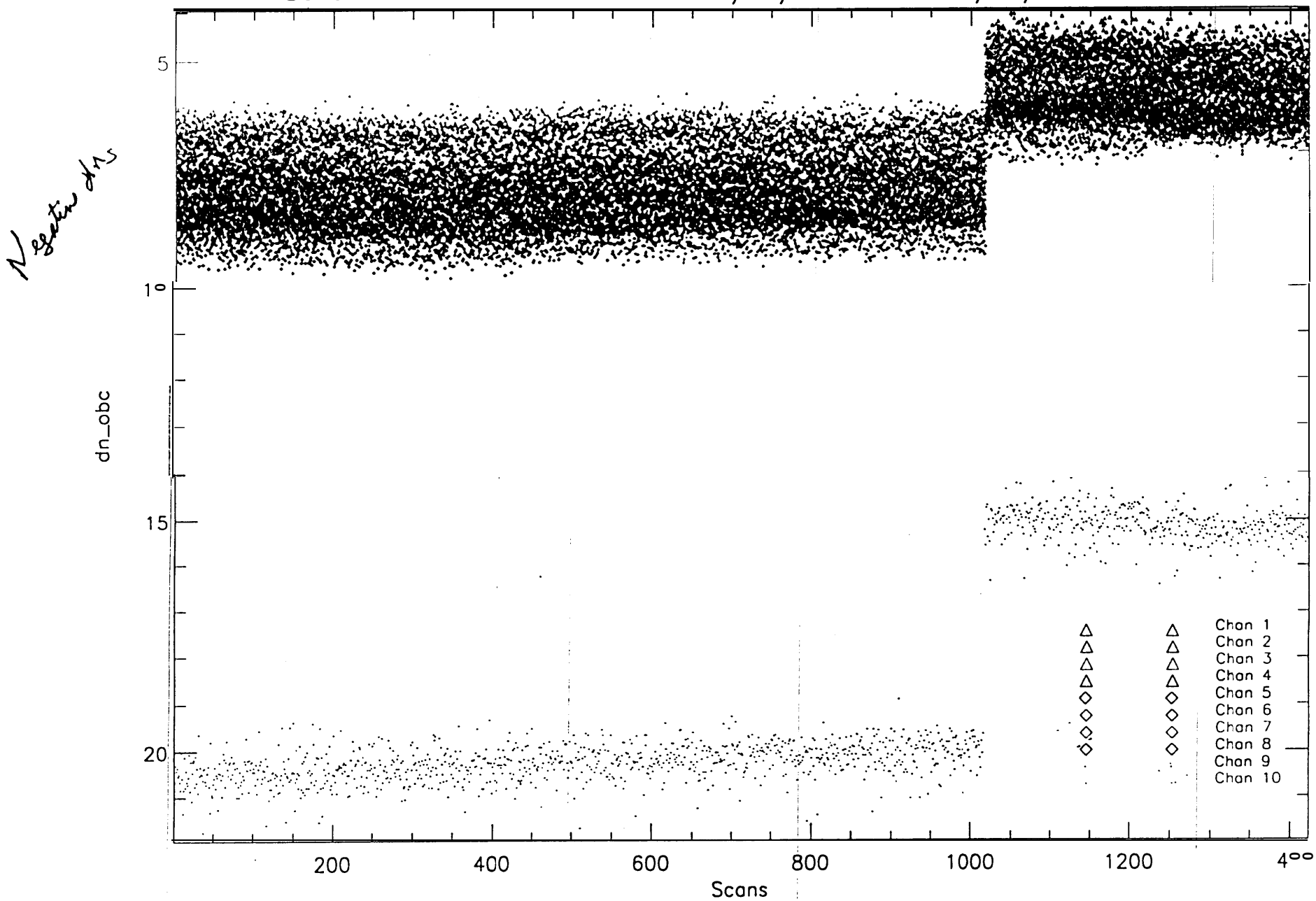
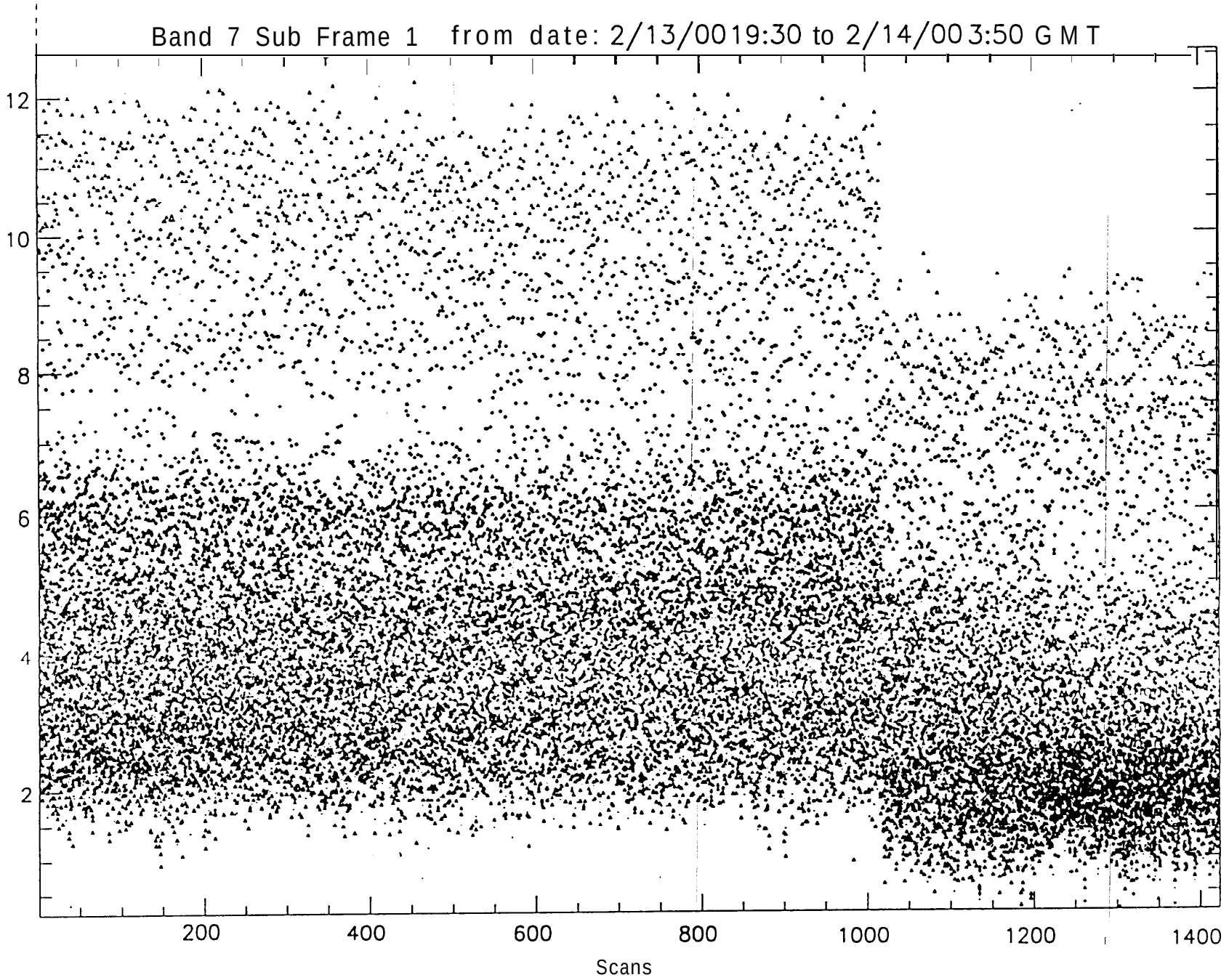
Scans
7
6
5
4
3
2
200
400
600
800
1000
1200
1400
Chan 5
Chan 6
Chan 7
Chan 8
Chan 9
Chan 10

12

Band 6 Sub Frame 1 from date: 2/13/00 19:30 to 2/14/00 3:50 GMT



(3)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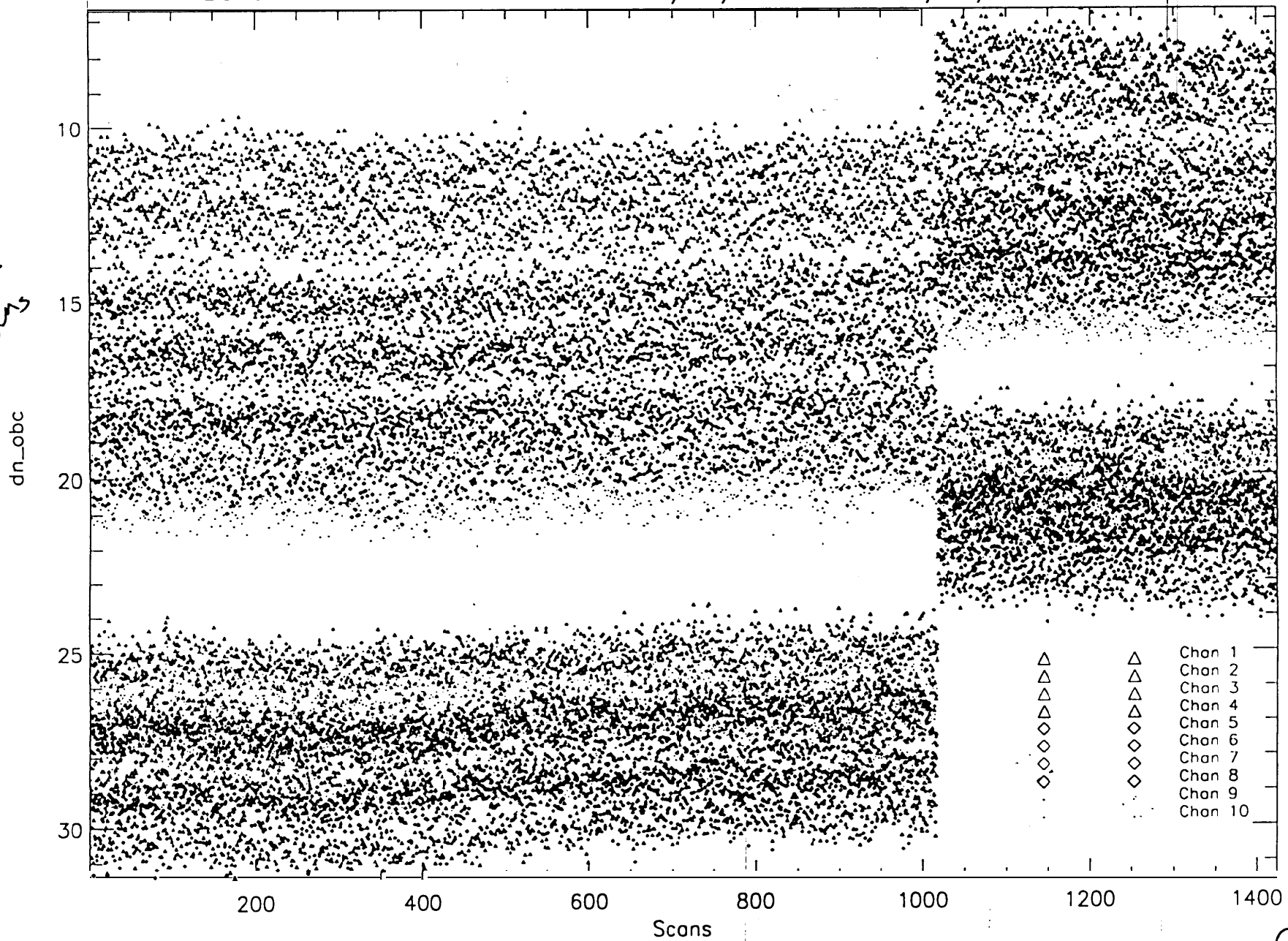
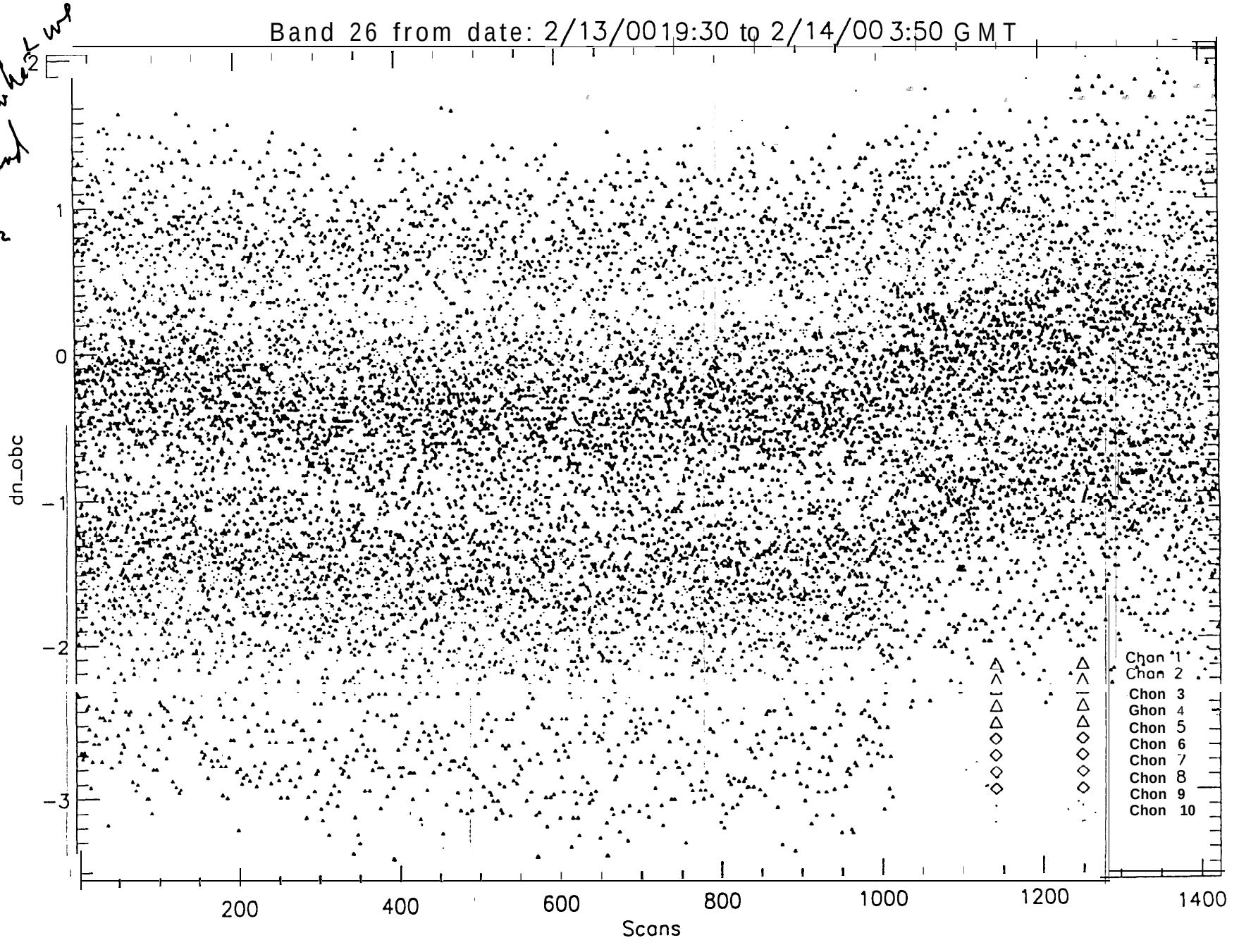
12
10
8
6
4
2
200
400
600
800
1000
1200
1400
Scans

Band 7 Sub Frame 2 from date: 2/13/00 19:30 to 2/14/00 3:50 GMT



Negative dns

B26 uncertain what we see this band for Extlk



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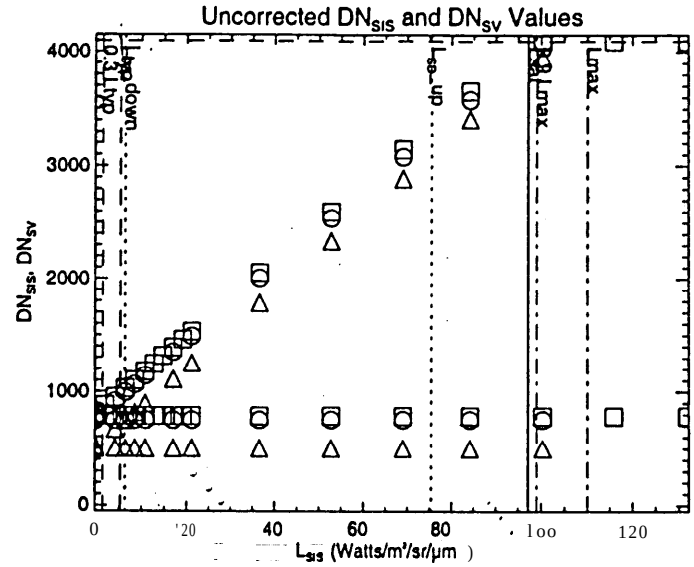
(17)

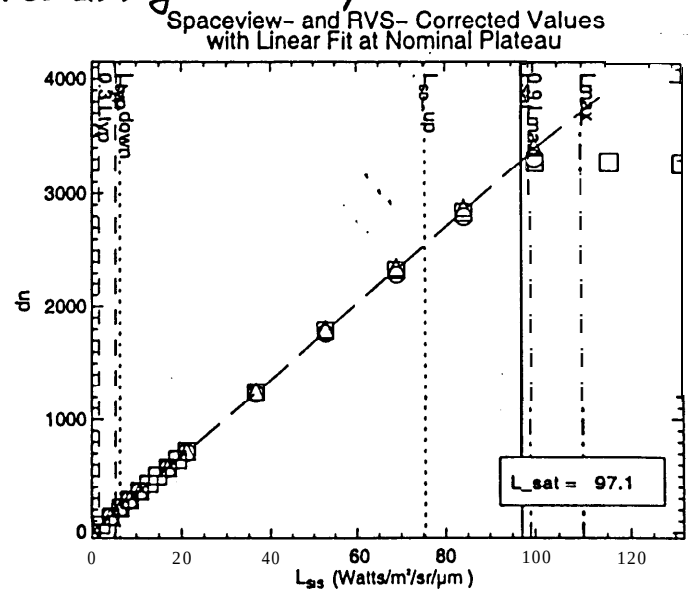
PFM Band 5 Det 10 SF 1 MS1

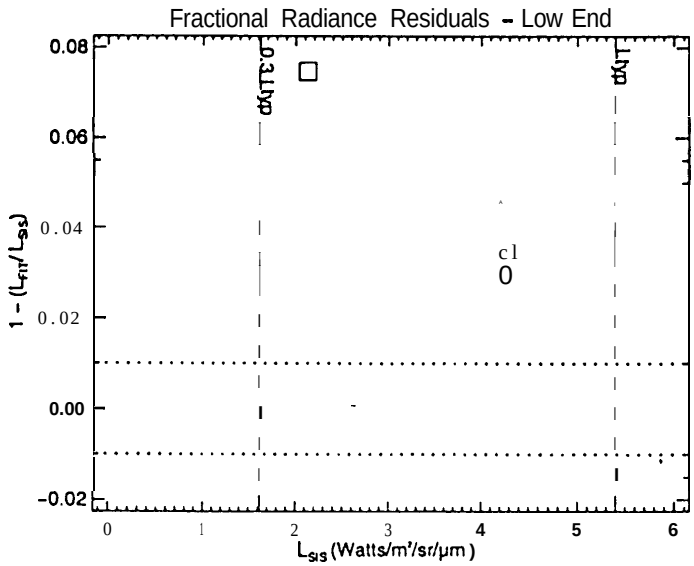
Feb 9, 2000

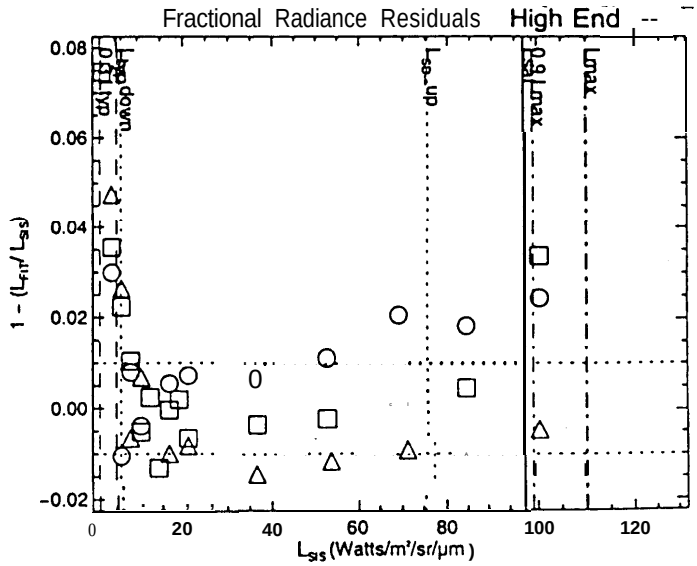
R* and K_inst fit sequentially in 0.3 Ltyp to 0.9 Lmax range,
exclusive of saturation, with constraint at origin.
From PFM T/V RC01UAIDs 1338, 1339, 1504, 1442, 1443

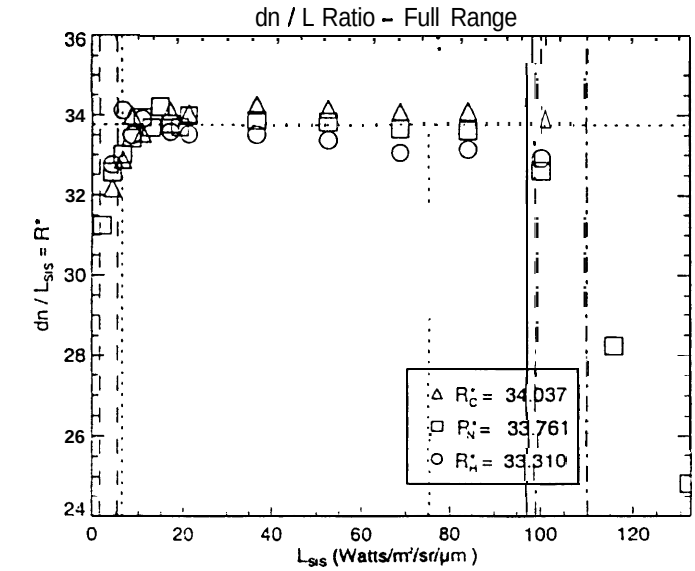
Decreased gain with improve resolution

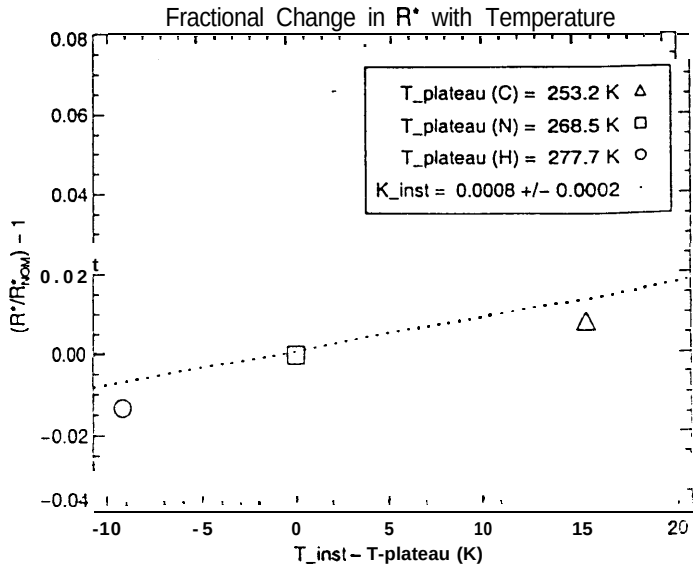










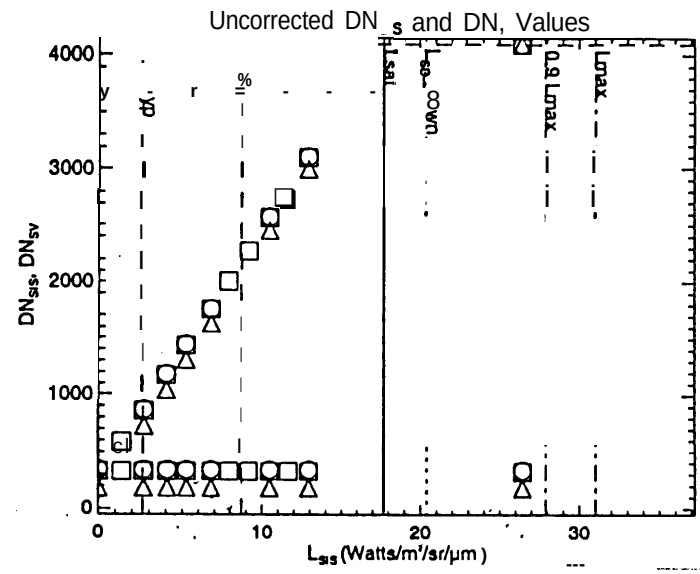


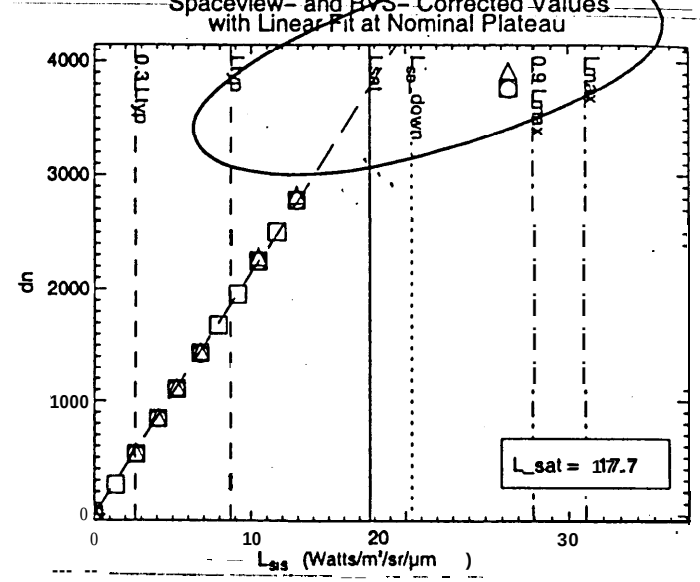
PFM Band 14.5 Det 5 MS 1

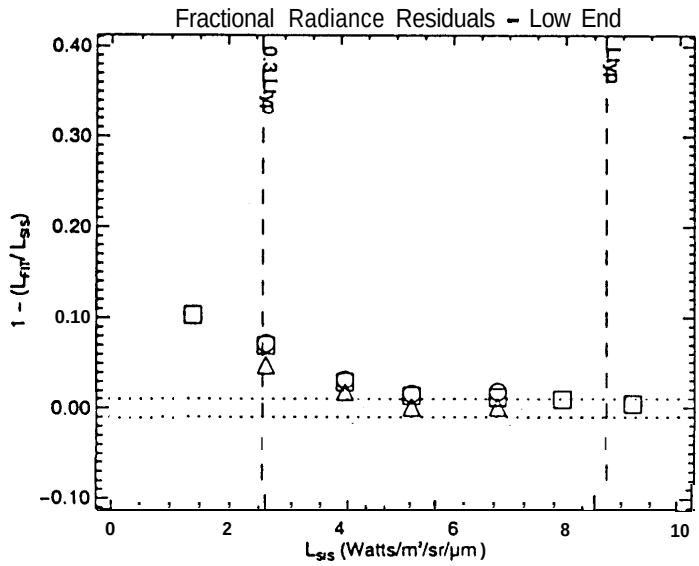
Feb 9, 2000

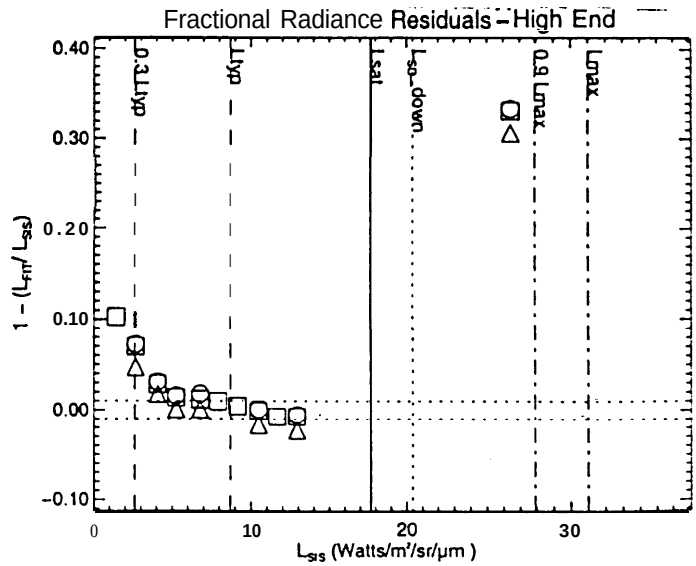
R* and K_inst fit sequentially in 0.8 Ltyp to 0.9 Lmax range, exclusive of saturation, with constraint at origin.

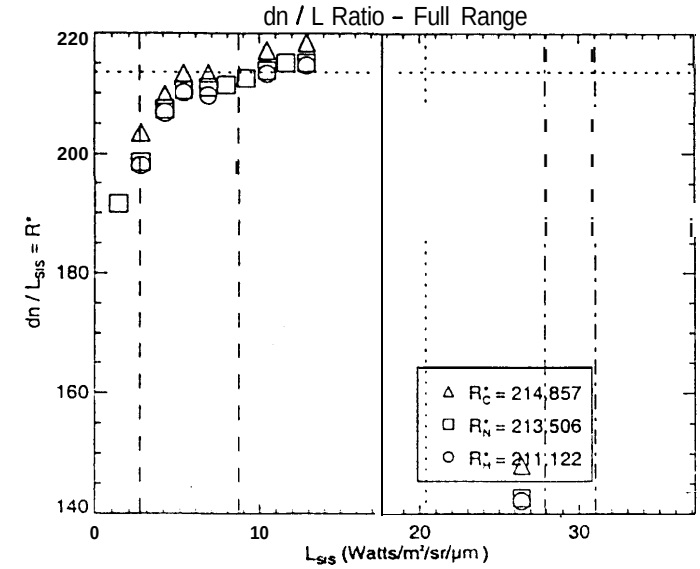
From PFM T/V RC01UAIDs 1338, 1339, 1504, 1442, 1443

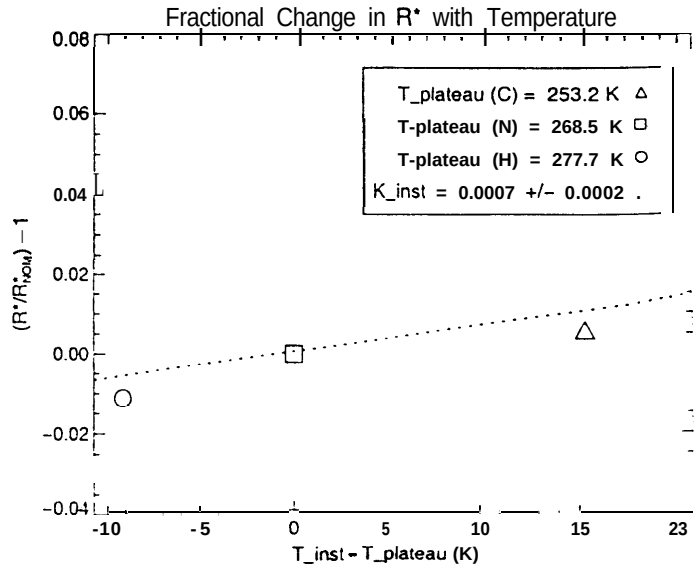












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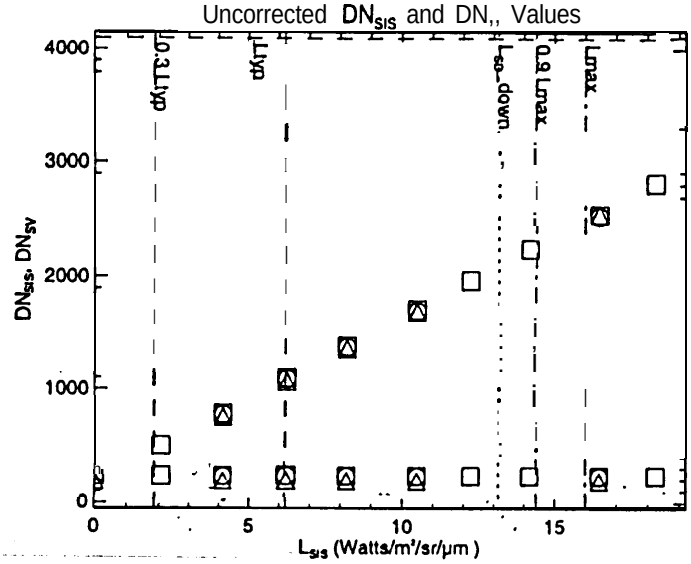
PFM Band 166 Det 5 MS 1

Feb 9, 2000

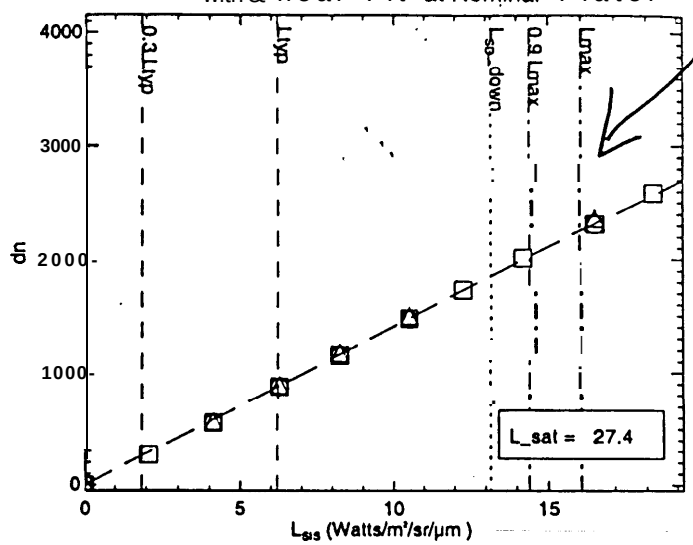
R* and K_inst fit sequentially in 0.3 Ltyp to 0.9 Lmax range,
exclusive of saturation, with constraint at origin.
From PFM TN RC01UAIDs 1338, 1339, 1504, 1442, 1443

Increased slope will improve ~~resolution~~ dynamic range

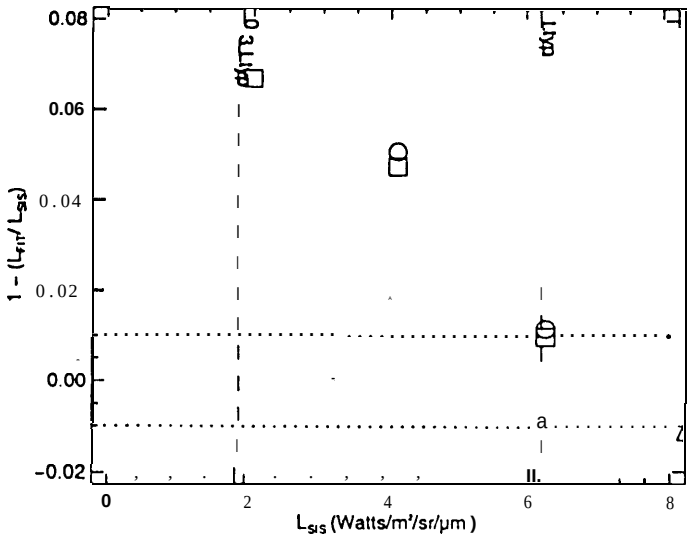
Uncorrected DN_{SIS} and DN_{SV} Values



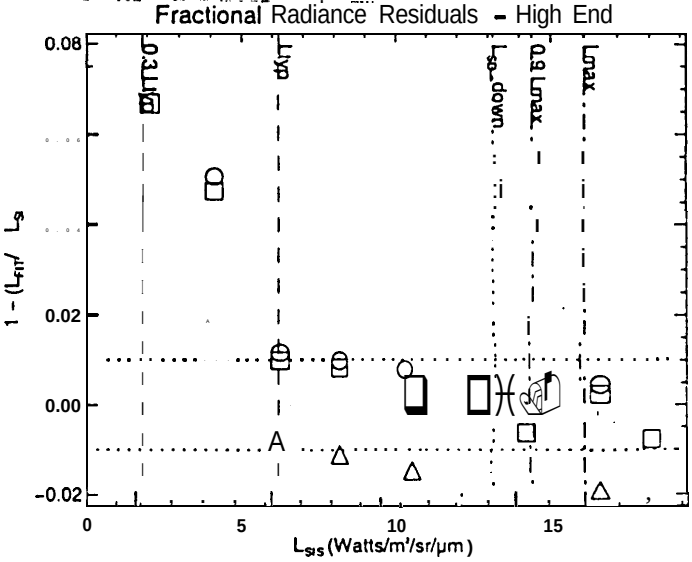
Spacevi w- and RVS- Corrected Values with & near Fit at Nominal Plater



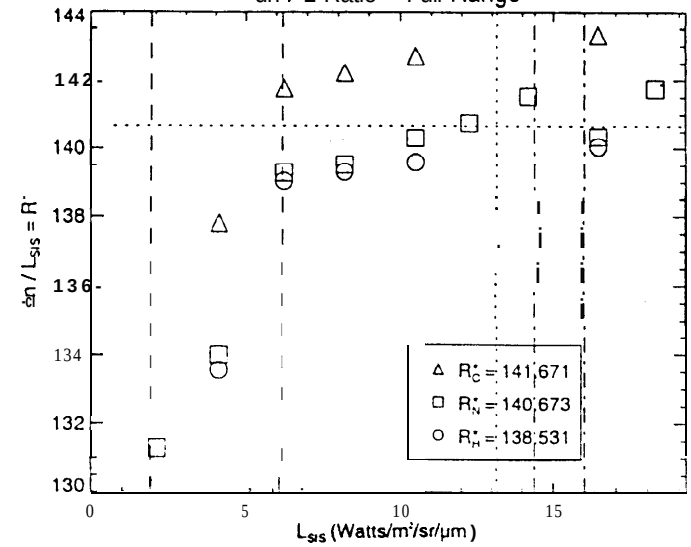
Fractional Radiance Residuals – Low End



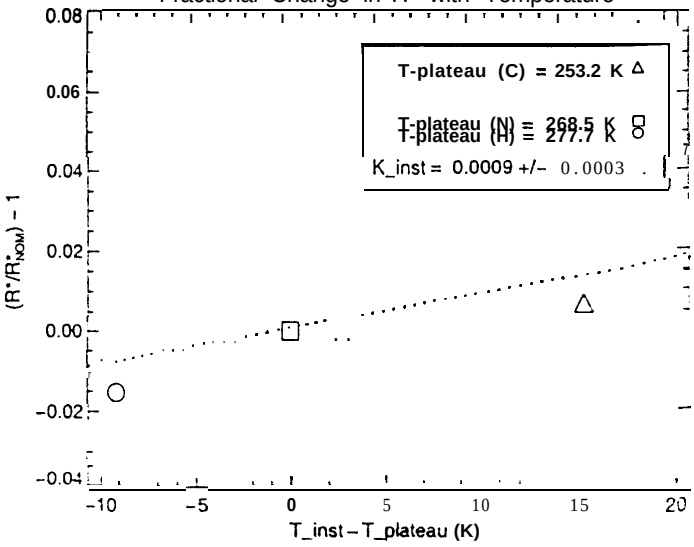
Fractional Radiance Residuals – High End



dn / L Ratio – Full Range



Fractional Change in R* with Temperature



ECAL requested configuration for VCAL and NSTEP

	VCAL				NSTEP			
Operation#	VIS	NIR	SMWIR	LWIR	VIS	NIR	SMWIR	LWIR
1	48	43	53	60	20	20	20	8
2	49	44	54	61	20	20	20	8
3	50	45	55	62	20	20	20	8
4	51	46	56	63	20	20	20	8
5	53	48	58	65	20	20	20	8
6	54	49	59	66	20	20	20	8
7	55	50	60	67	20	20	20	8
8	56	51	61	68	20	20	20	8
9	48	43	53	60	19	19	19	9
10	49	44	54	61	19	19	19	9
11	50	45	55	62	19	19	19	9
12	51	46	56	63	19	19	19	9
13	53	48	58	65	19	19	19	9
14	54	49	59	66	19	19	19	9
15	55	50	60	67	19	19	19	9
16	56	51	61	68			19	9
17	48	43	53	60	21	21	21	9
18	49	44	54	61	21	21	21	9
19	50	45	55	62	21	21	21	9
20	51	46	56	63	21	21	21	9
21	53	48	58	65	21	21	21	9
22	54	49	59	66	21	21	21	9
23	55	50	60	67	21	21	21	9
24	56	51	61	68	21	21	21	9

All other ECAL configurations should be kept at their nominal values
The number of scans can be modified if necessary