

QWG5
RADIOMETRIC CALIBRATION: STATUS

Sindy Sterckx, Stefan Adriaensen

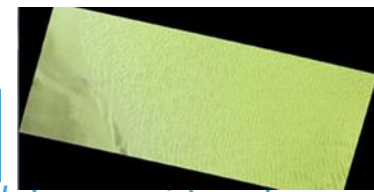
Outline

- ❑ VNIR strips
 - ❑ Stability
 - ❑ Interband
- ❑ SWIR strips
 - ❑ Stability
 - ❑ Impact Updates (C1)
- ❑ Bad pixels
- ❑ RadCalNet Beta testing results
- ❑ Extra yaw maneuvers

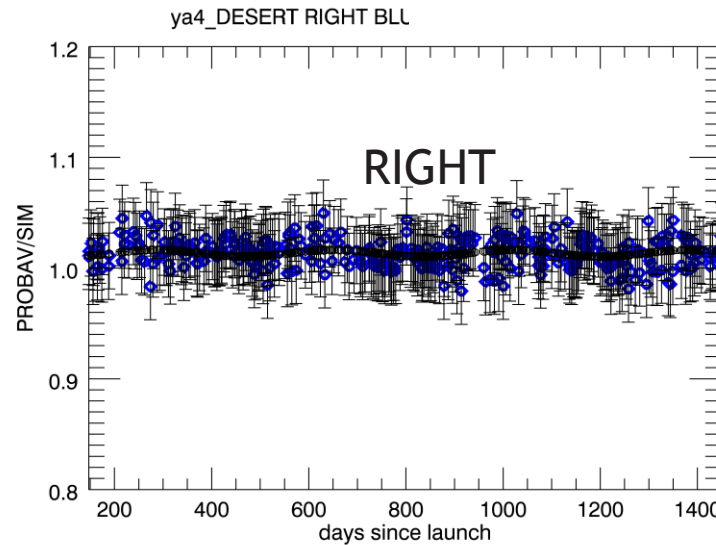
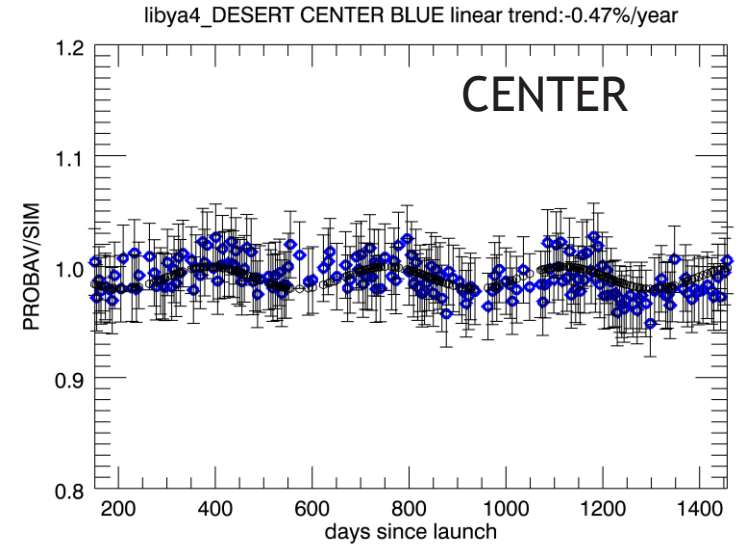
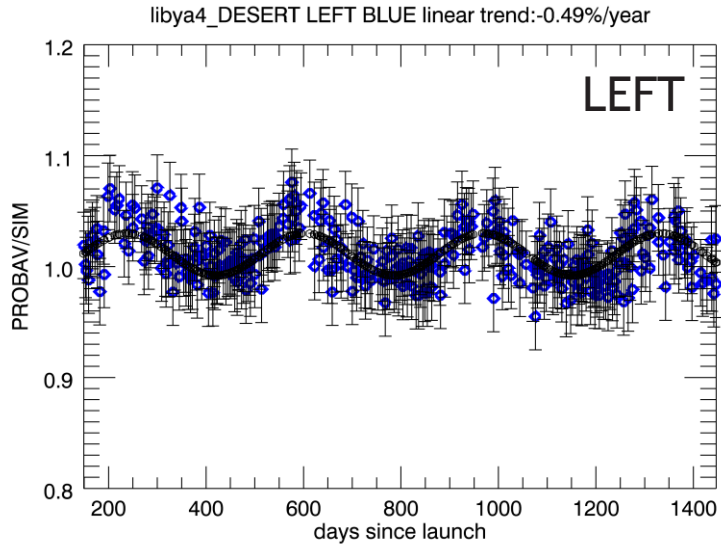
PROBA-V INSTRUMENT STABILITY

VNIR

INSTRUMENT STABILITY : BASED ON OSCAR DESERT LIBYA-4 BLUE

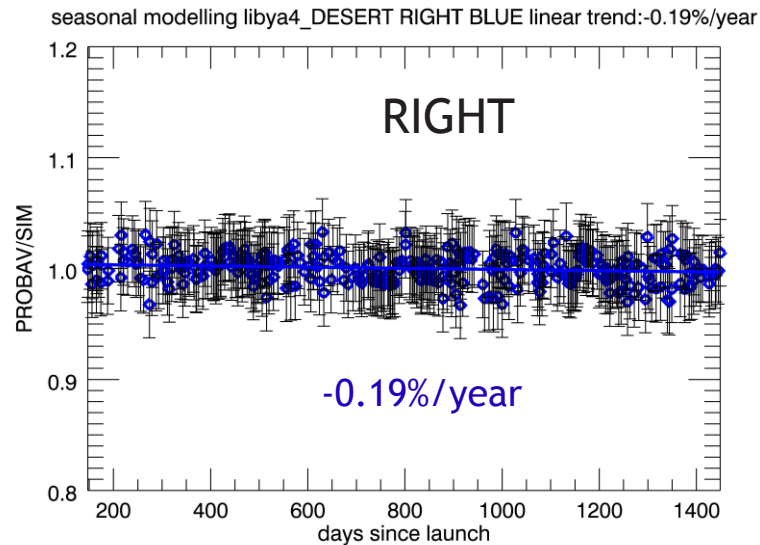
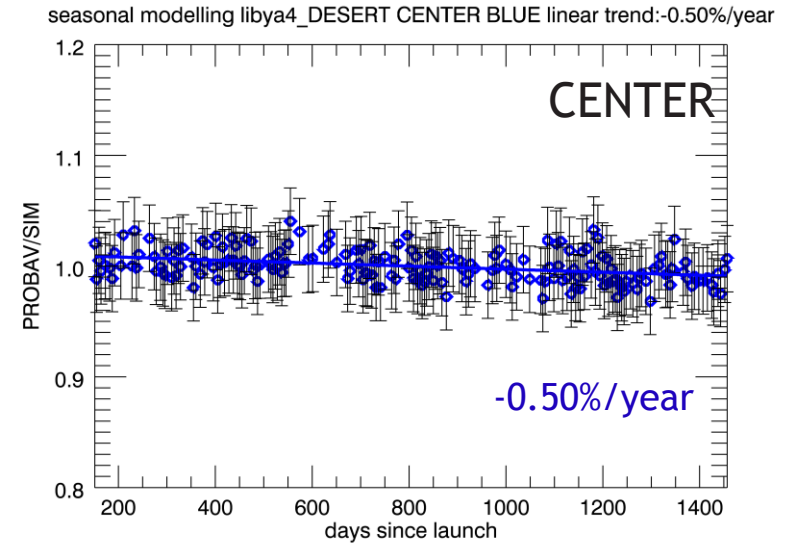
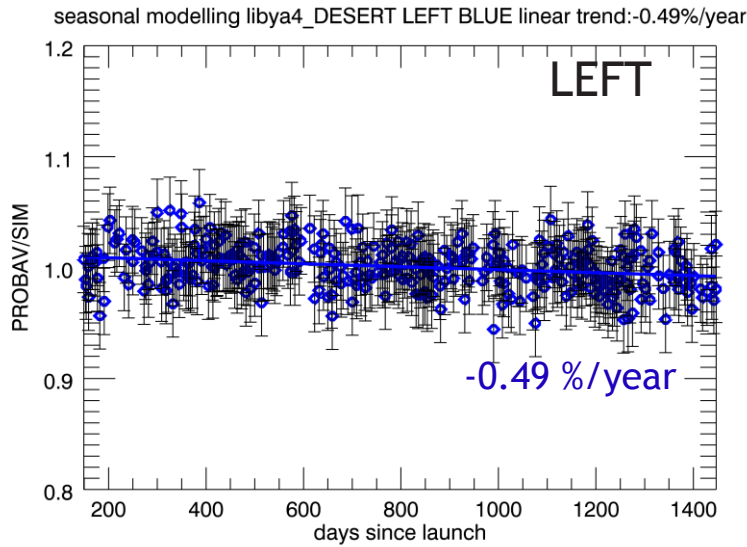


Results OSCAR Libya-4 no A^k updates considered



INSTRUMENT STABILITY : BASED ON OSCAR DESERT METHOD LIBYA-4 BLUE

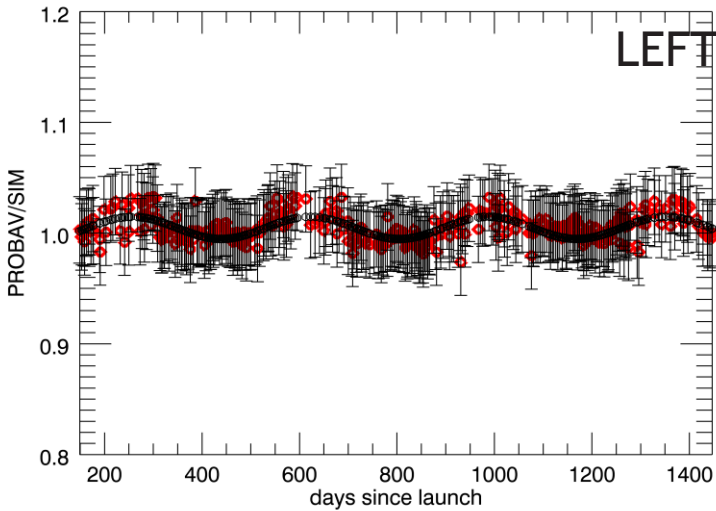
Results OSCAR Libya-4 no A^k updates considered



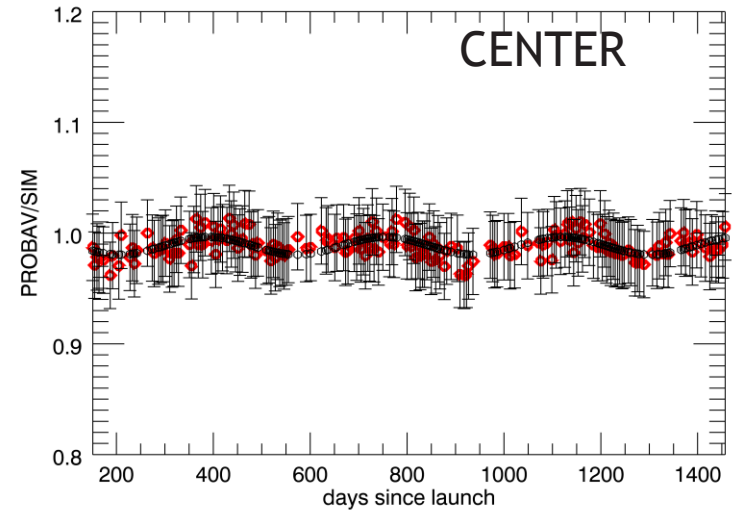
INSTRUMENT STABILITY : BASED ON LIBYA-4 RED

Results OSCAR Libya-4 no A^k updates considered

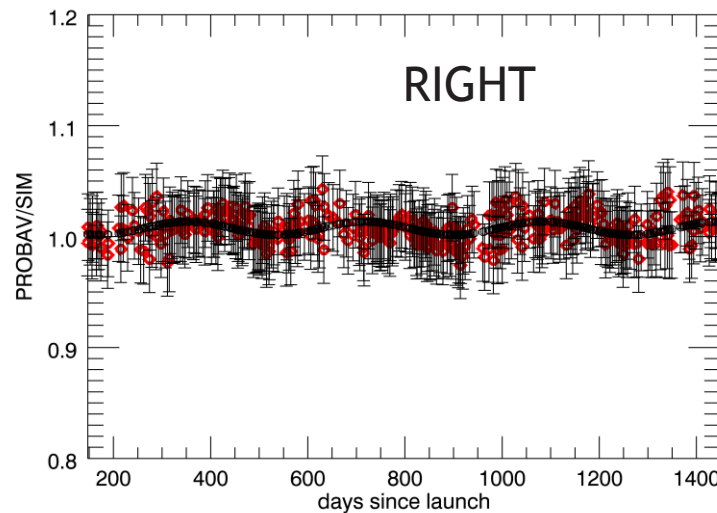
libya4_DESERT LEFT RED linear trend:0.04%/year



libya4_DESERT CENTER RED linear trend:0.01%/year

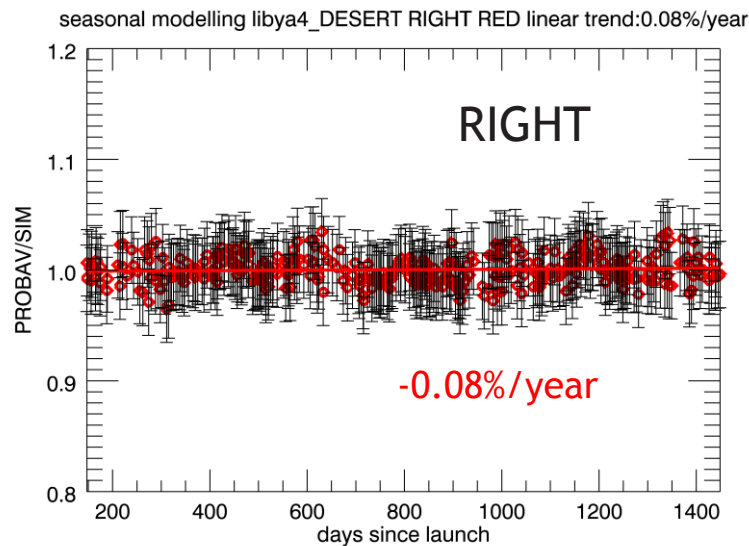
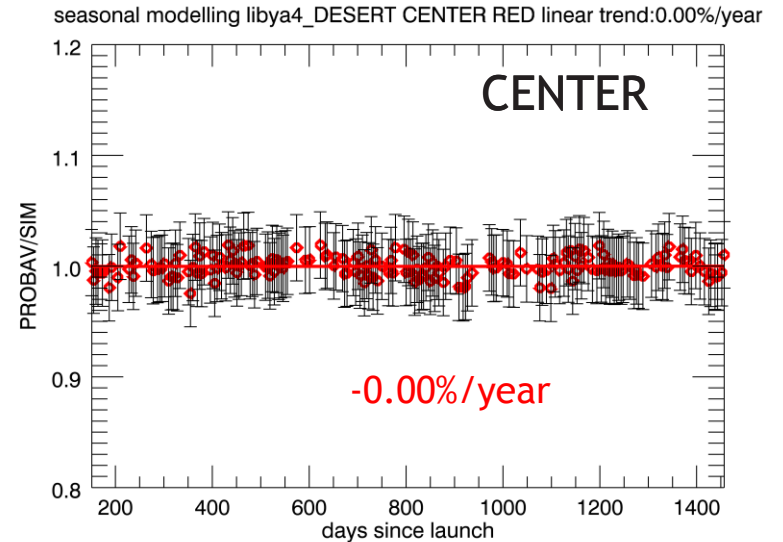
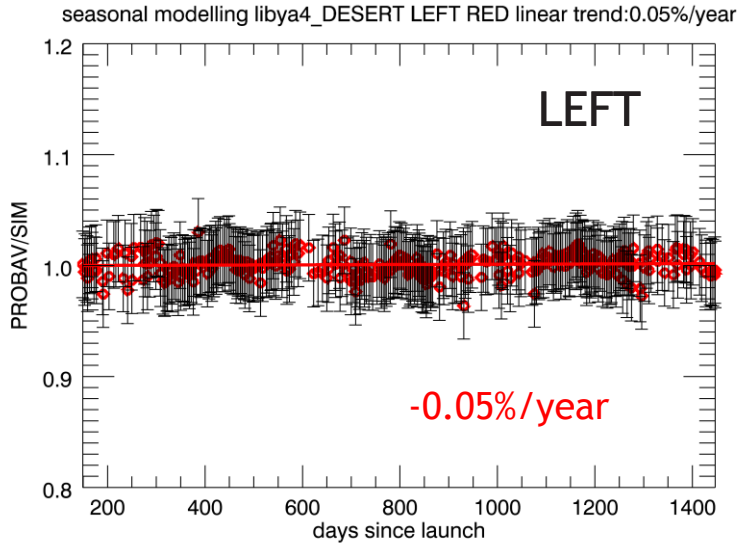


libya4_DESERT RIGHT RED linear trend:0.08%/year



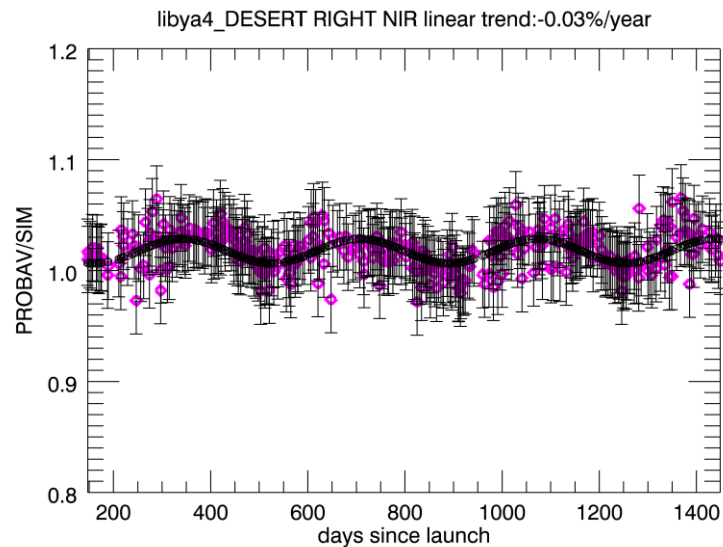
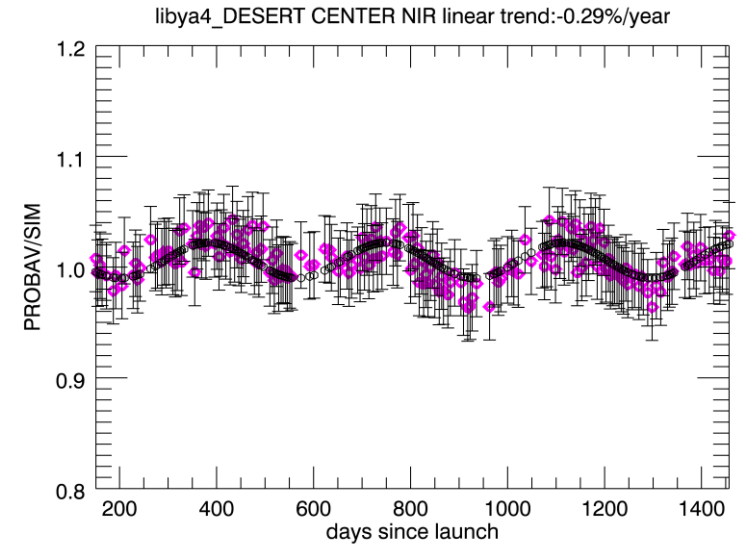
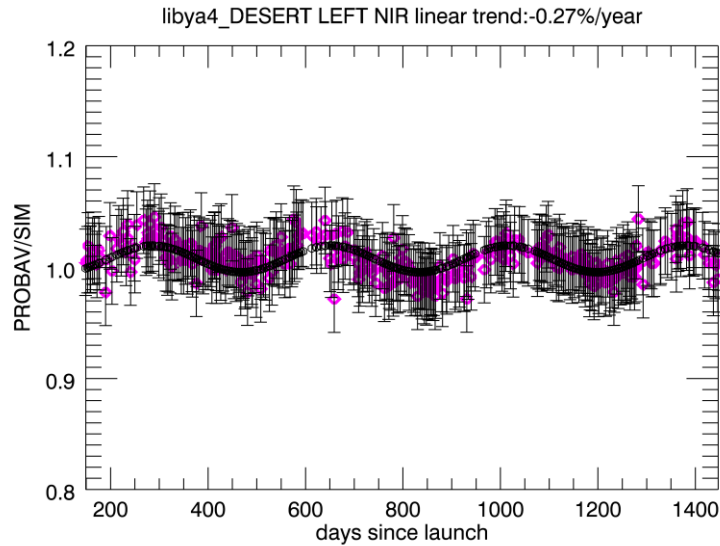
INSTRUMENT STABILITY : BASED ON LIBYA-4 RED

Results OSCAR Libya-4 no A^k updates considered



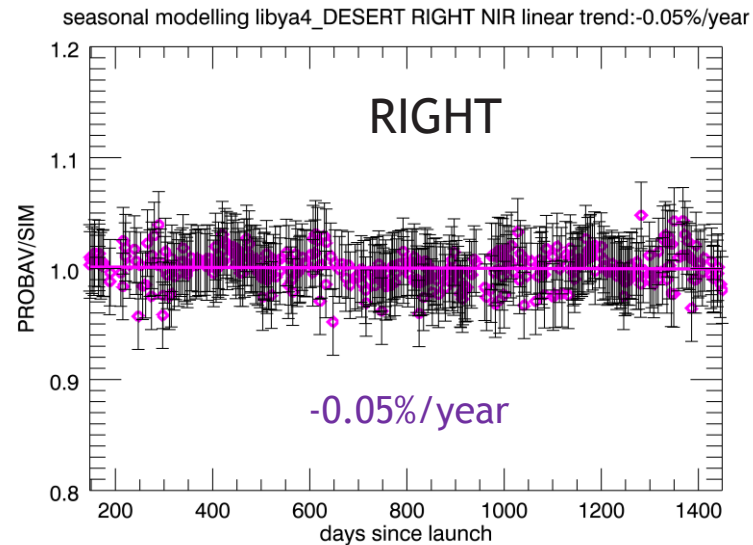
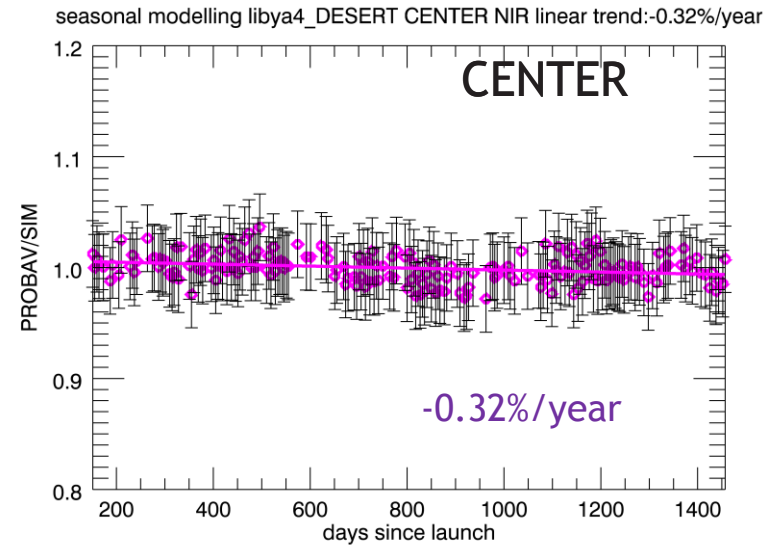
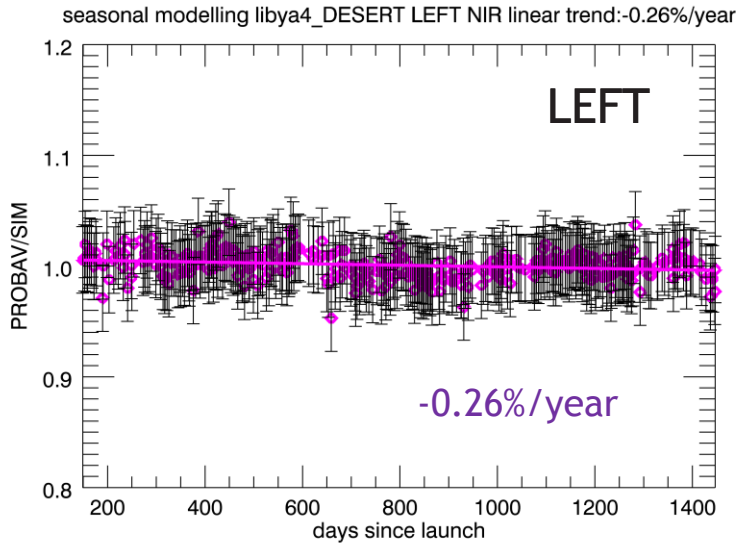
INSTRUMENT STABILITY : BASED ON LIBYA4 NIR

Results OSCAR Libya-4 no A^k updates considered

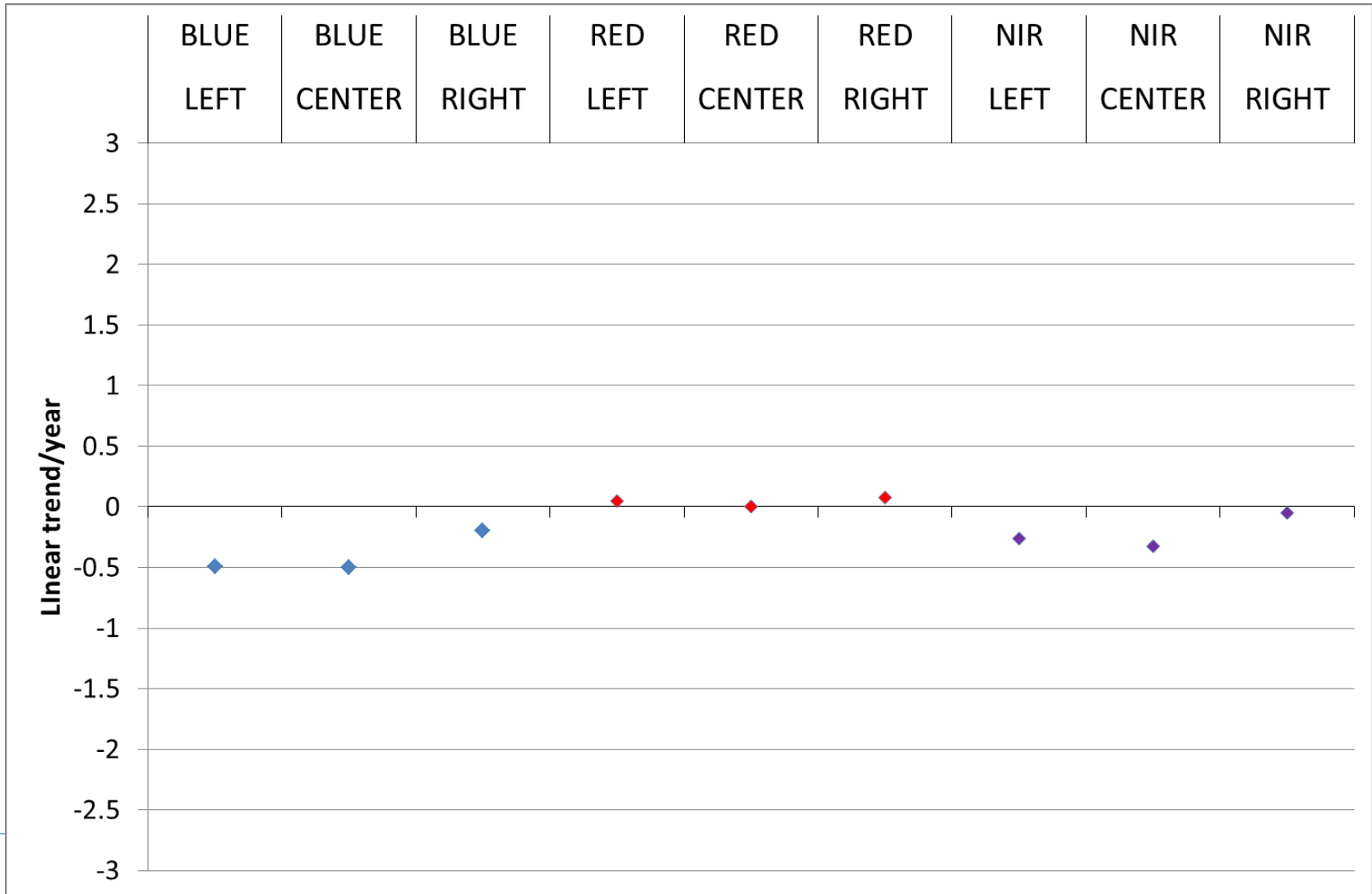


INSTRUMENT STABILITY : BASED ON LIBYA4 NIR

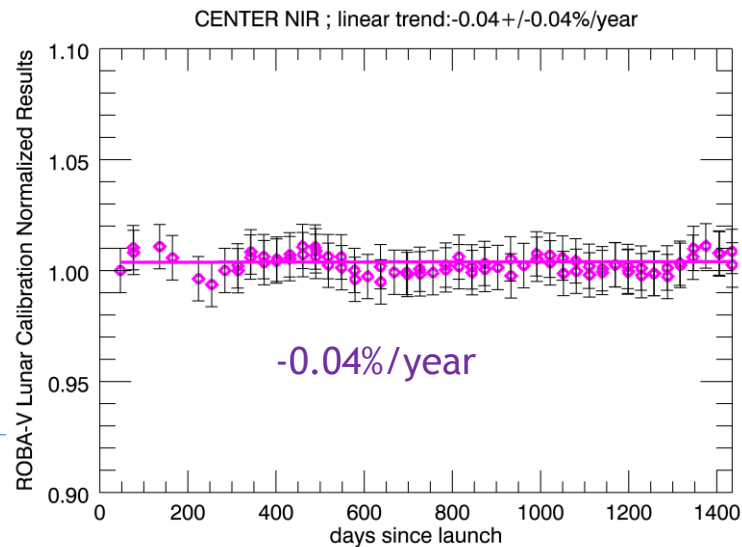
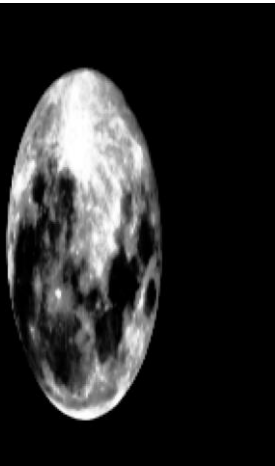
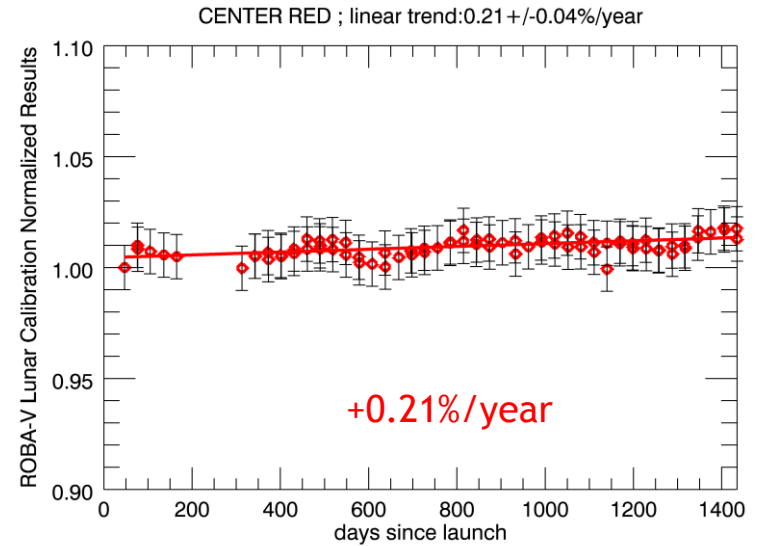
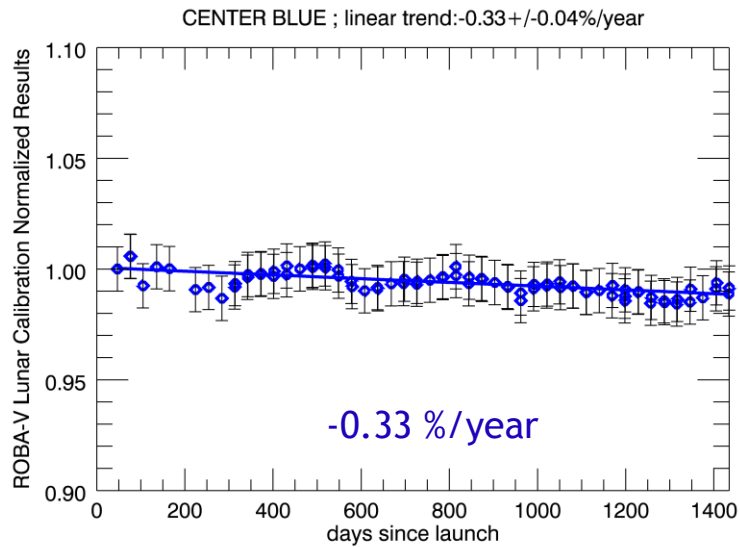
Results OSCAR Libya-4 no A^k updates considered



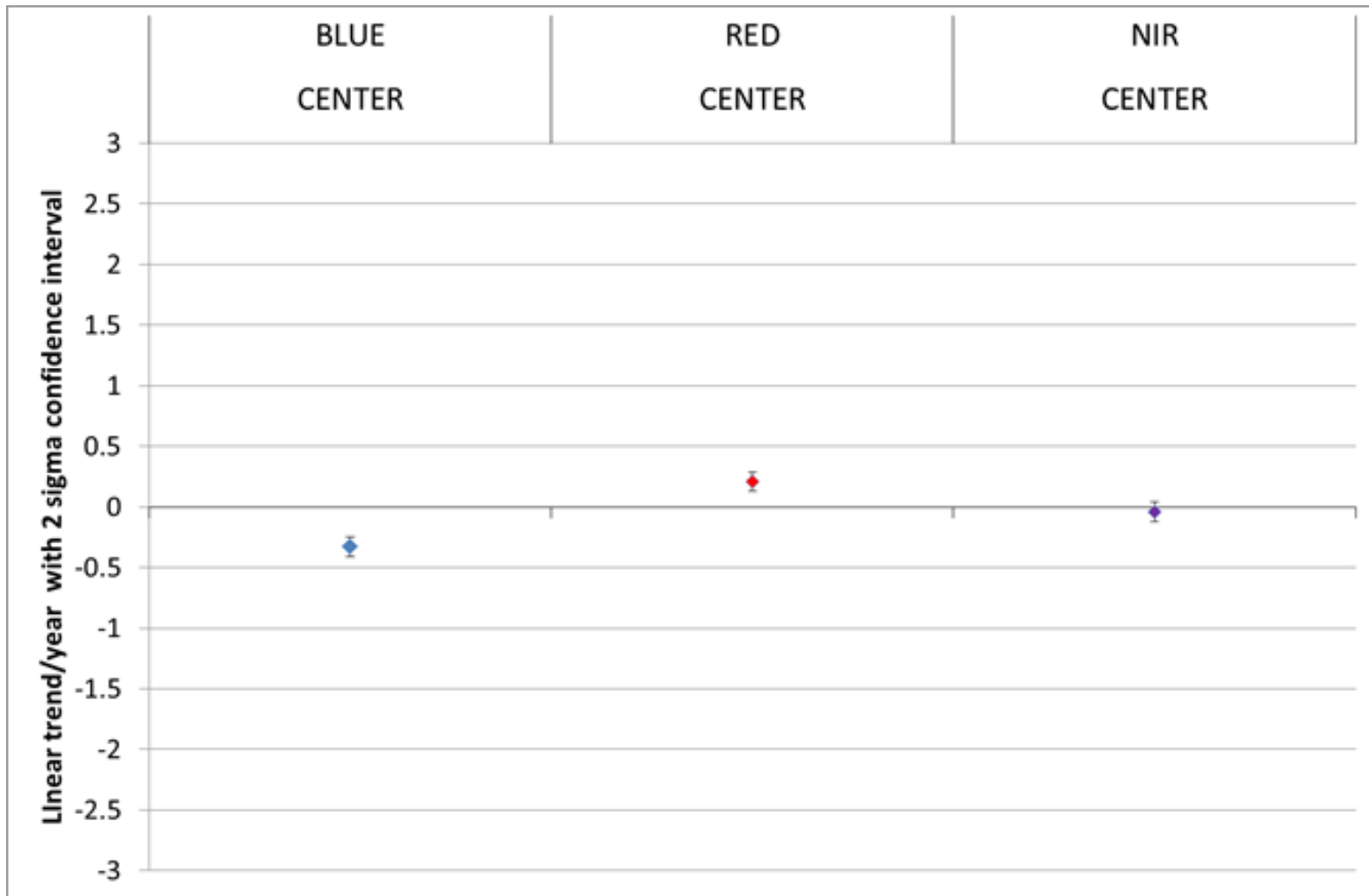
SUMMARY TRENDS VNIR LIBYA-4



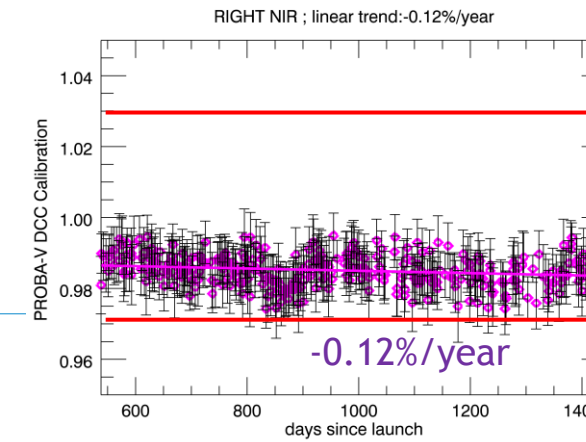
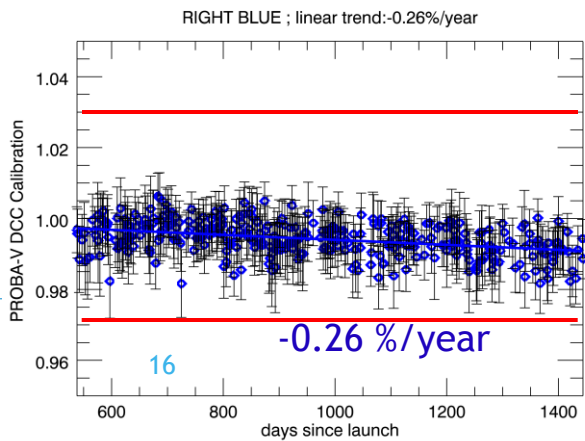
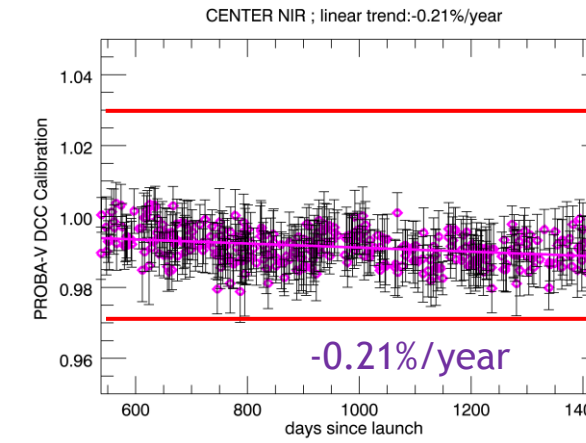
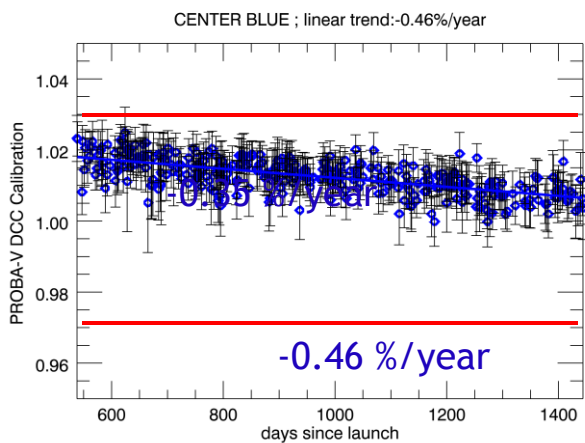
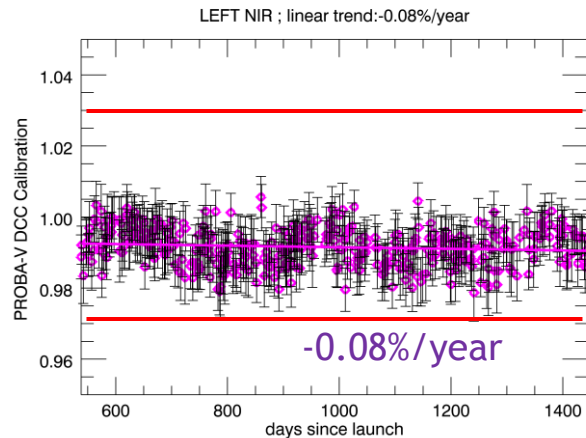
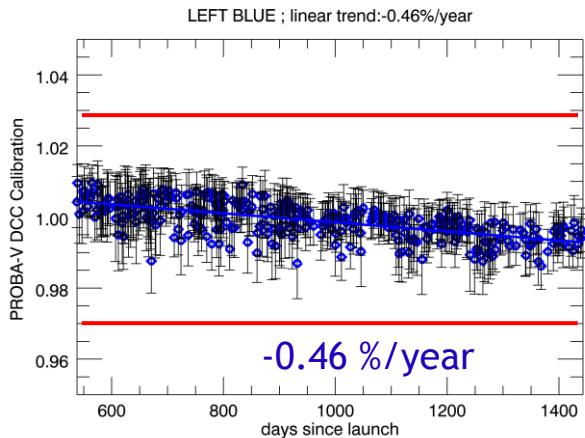
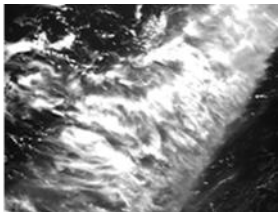
LUNAR CALIBRATION RESULTS: CENTER VNIR



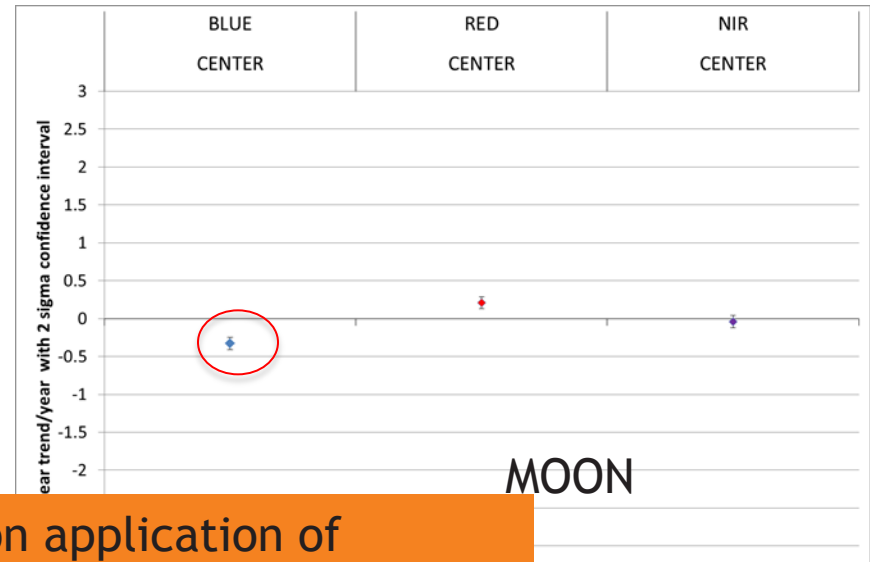
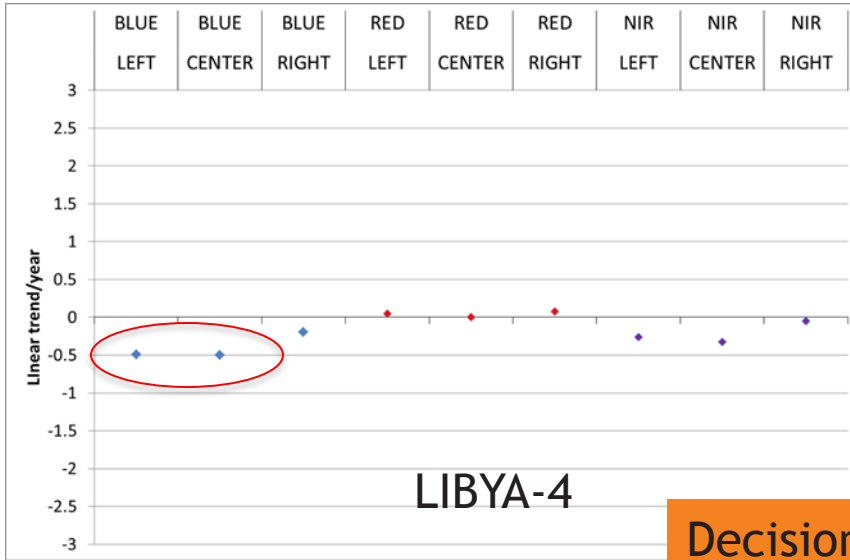
LUNAR CALIBRATION RESULTS: CENTER VNIR



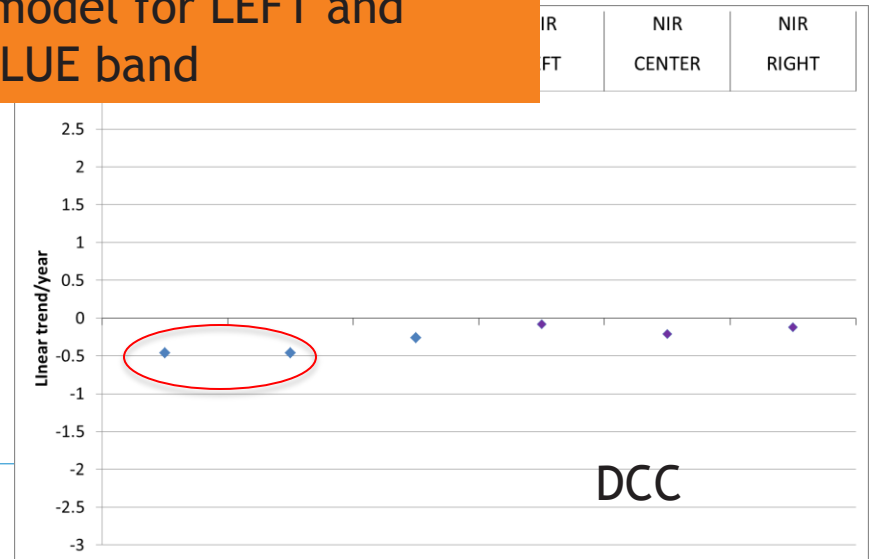
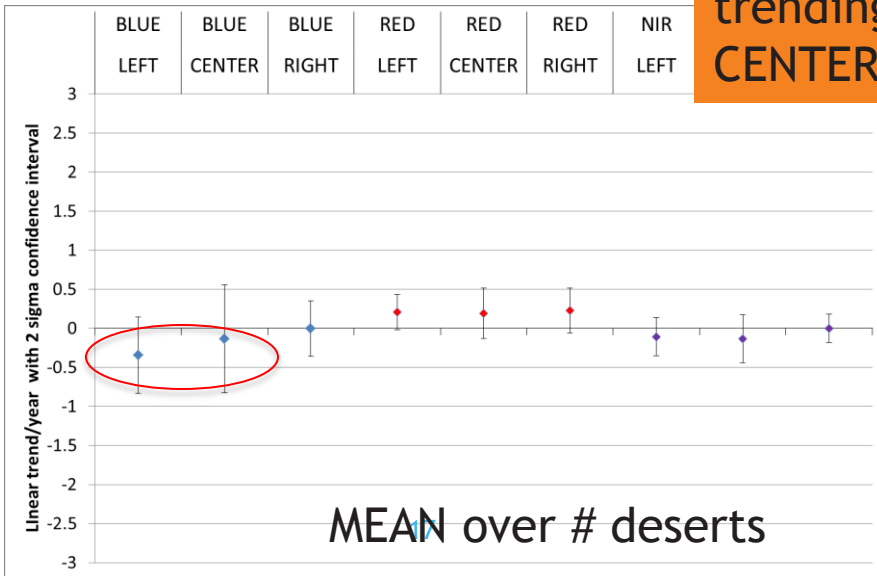
VNIR INTER-BAND



VNIR LINEAR TREND/YEAR

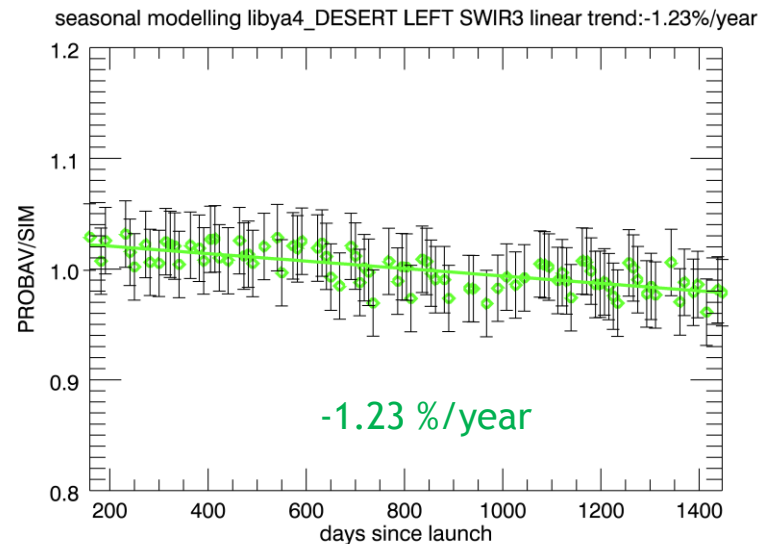
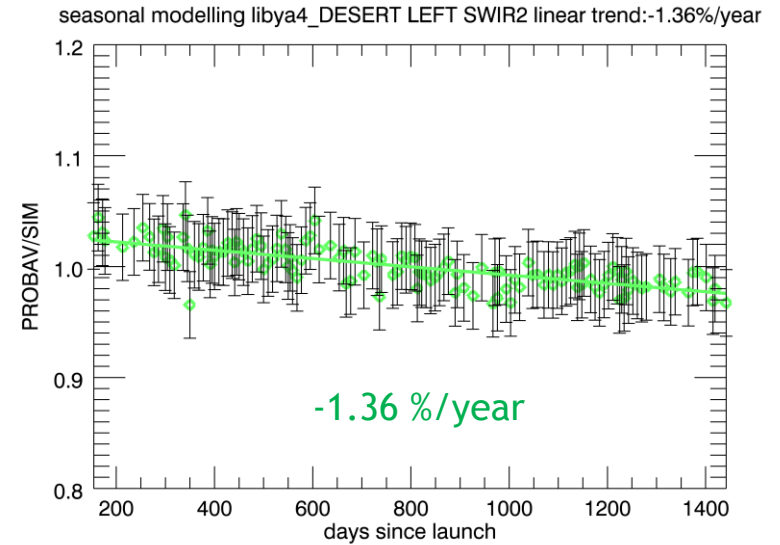
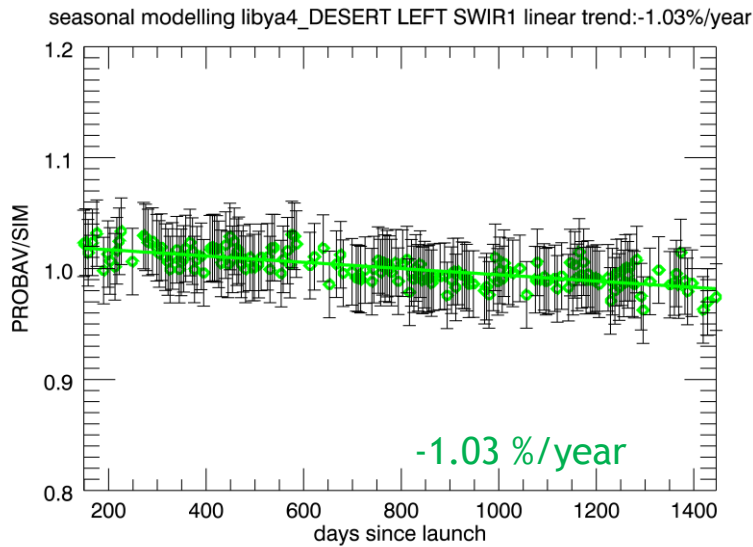


Decision on application of trending model for LEFT and CENTER BLUE band



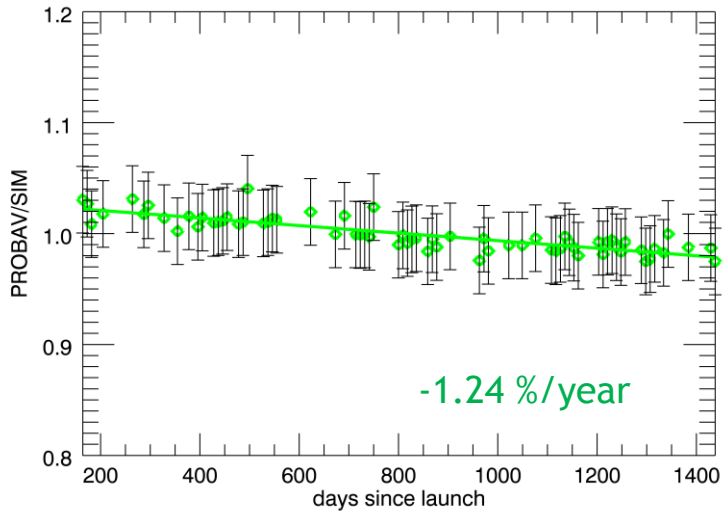
PROBA-V INSTRUMENT STABILITY
SWIR

LEFT CAMERA SWIR STABILITY BASED ON OSCAR LIBYA-4

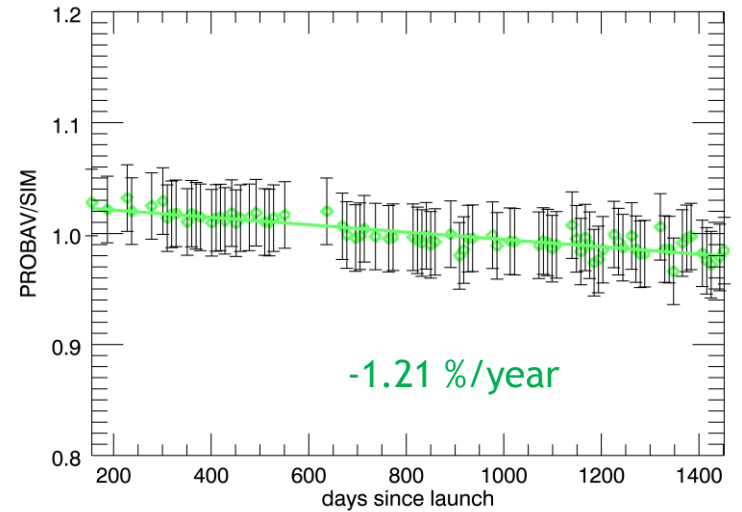


CENTER CAMERA SWIR STABILITY BASED ON OSCAR LIBYA-4

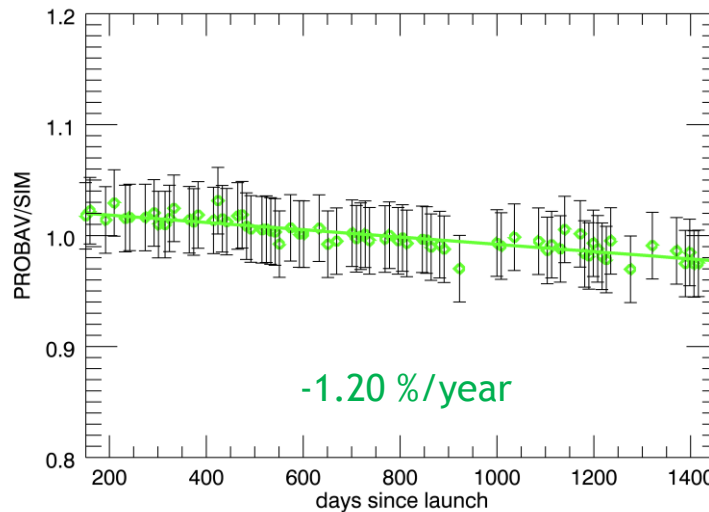
seasonal modelling libya4_DESERT CENTER SWIR1 linear trend:-1.24%/year



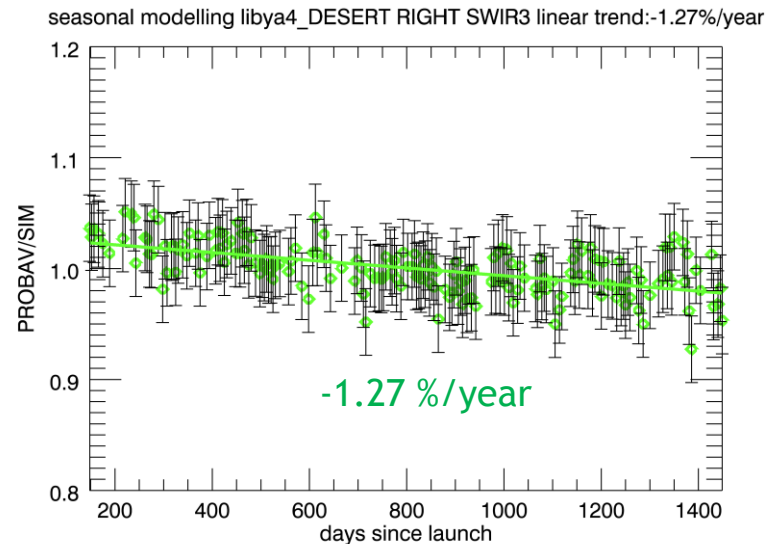
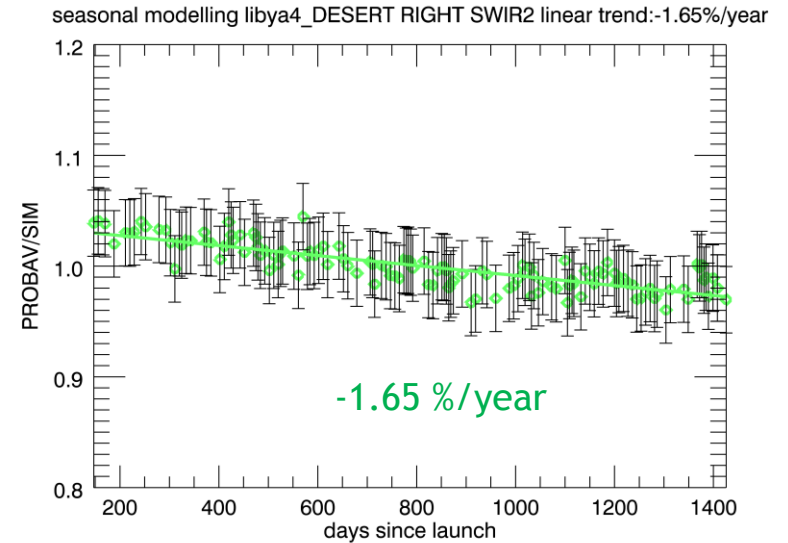
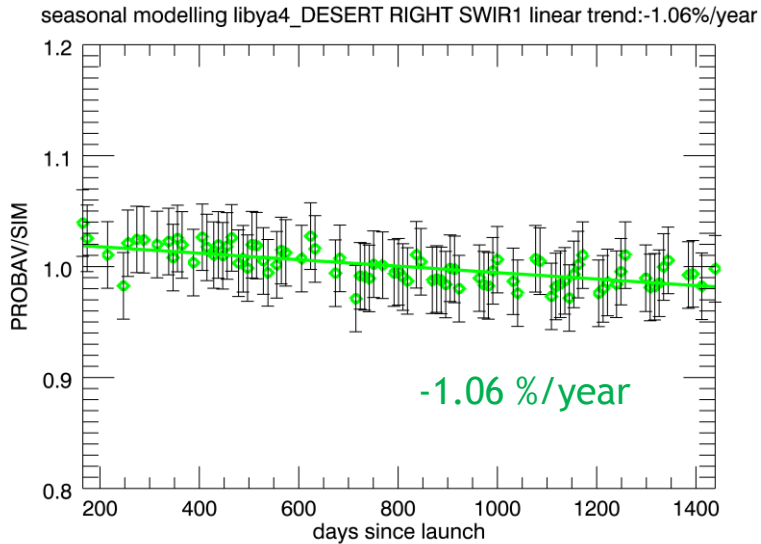
seasonal modelling libya4_DESERT CENTER SWIR2 linear trend:-1.21%/year



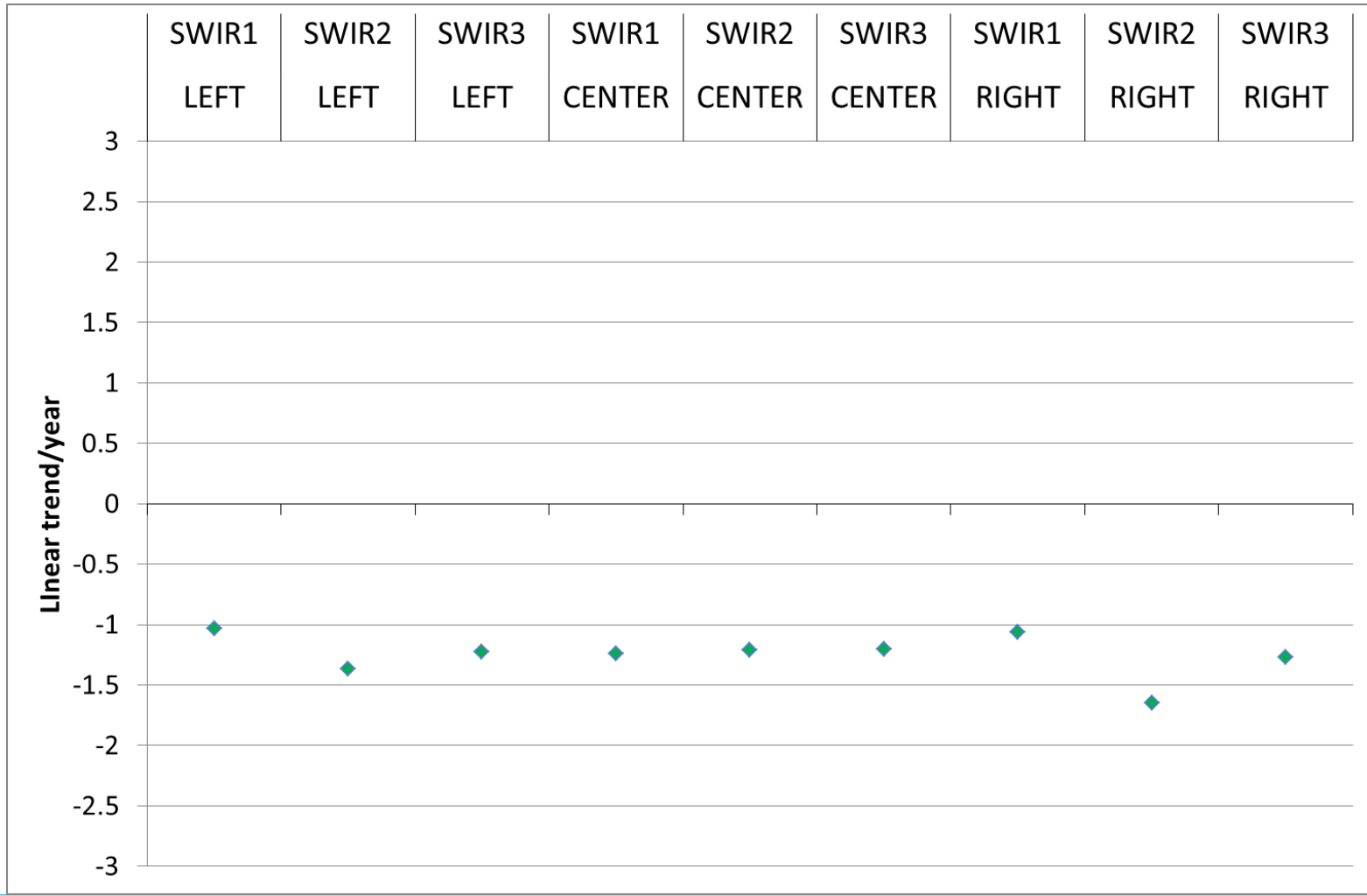
seasonal modelling libya4_DESERT CENTER SWIR3 linear trend:-1.20%/year



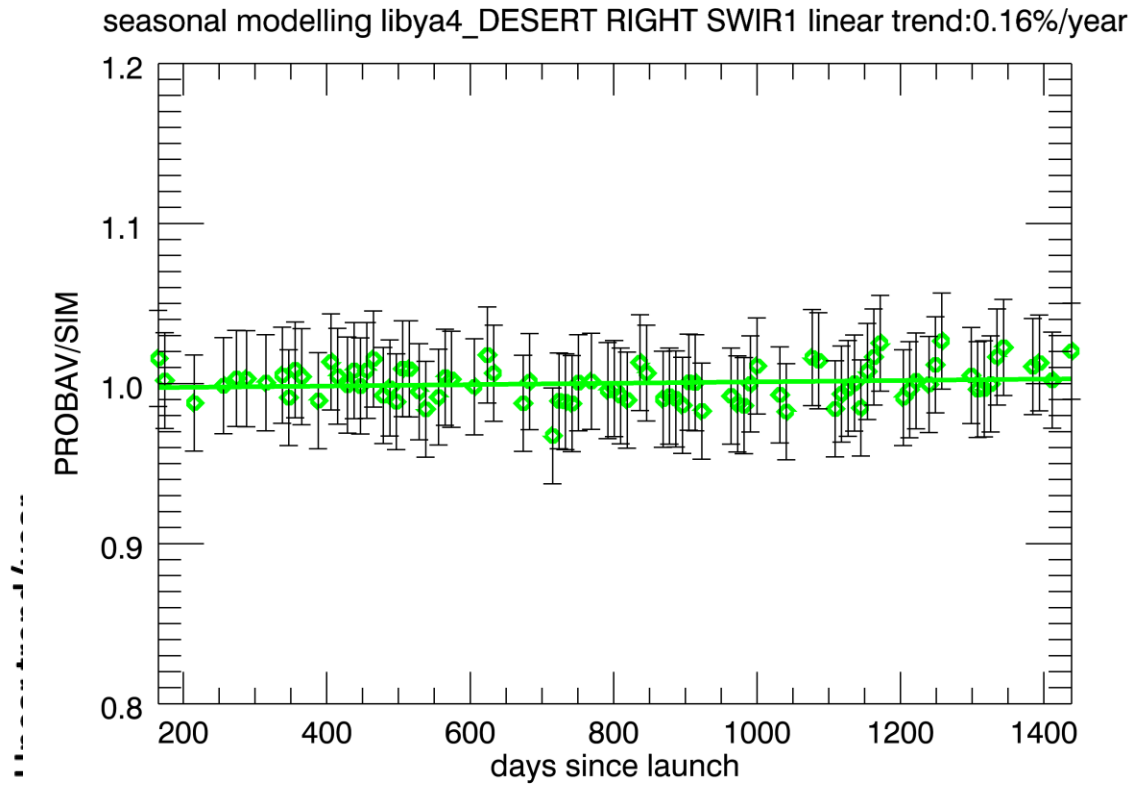
RIGHT CAMERA SWIR STABILITY BASED ON OSCAR LIBYA-4



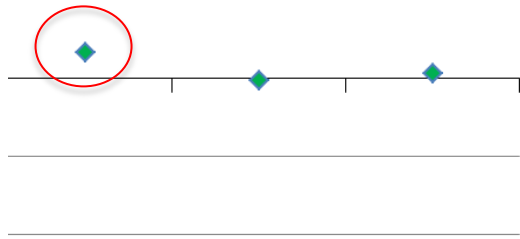
SUMMARY TRENDS SWIR LIBYA-4



TRENDS SWIR LIBYA-4 C2 (DEGRADATION MODEL APPLIED)

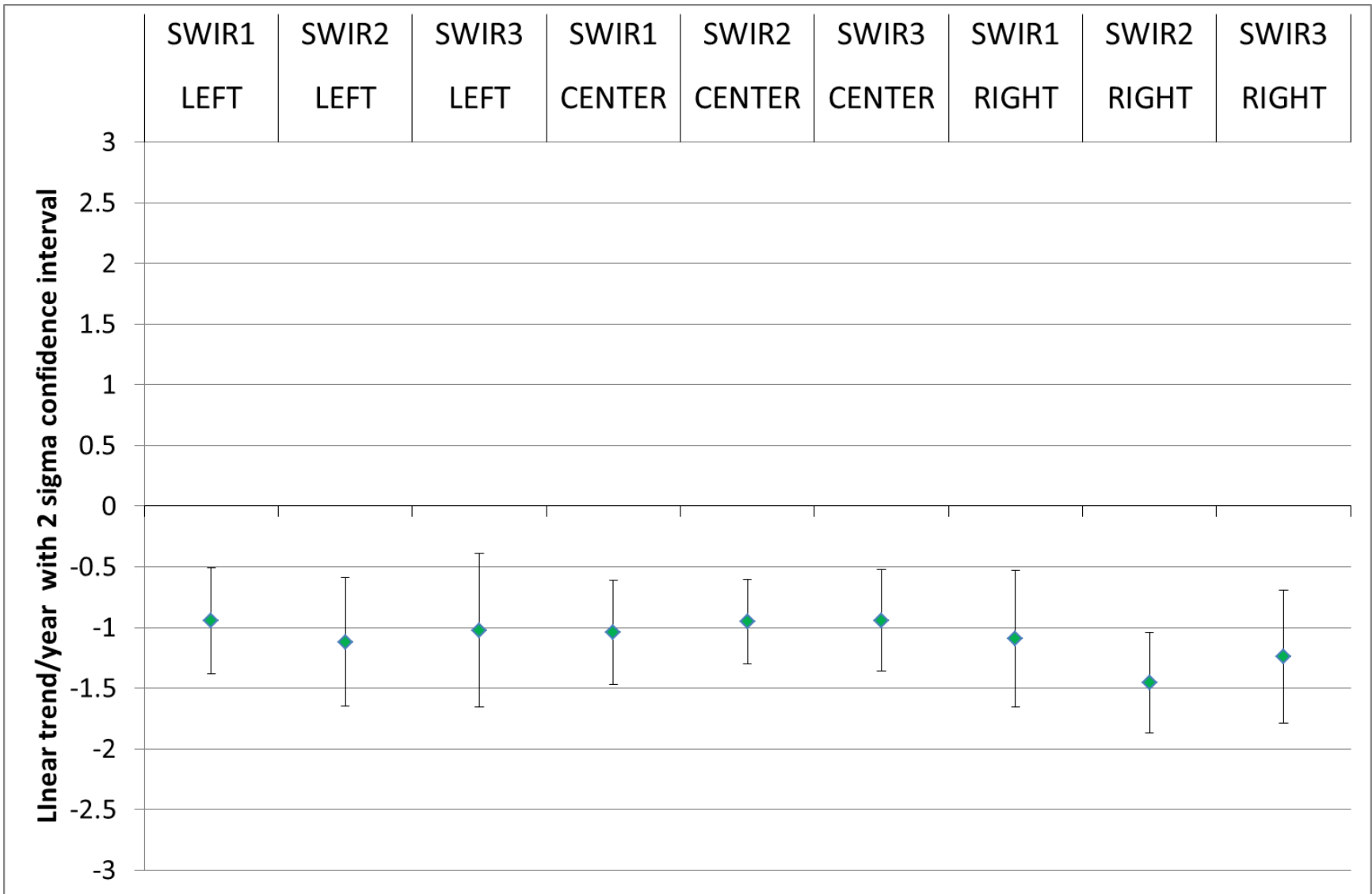


SWIR1	SWIR2	SWIR3
RIGHT	RIGHT	RIGHT



-1.5
-2
-2.5
-3

SUMMARY TRENDS SWIR 16 DESERTS



BAD PIXELS

BAD PIXELS

CAMERA	STRIP	pixel numbers (ID L1 A)											
		NEW BAD	BAD (from previous periods)										
left	swir1		28	298	352	644	956						
left	swir2		711	863									
left	swir3	250	90	172	419	438	568	759	761				
center	swir1		1021										
center	swir2		57	295	769	831	900						
center	swir3	131,804	29	30	476	579	640	763	889	890	917	938	994
right	swir1												
right	swir2		14	438	470								
right	swir3												

RADCALNET

**RADIOMETRIC CALIBRATION NETWORK OF
AUTOMATED INSTRUMENTS**

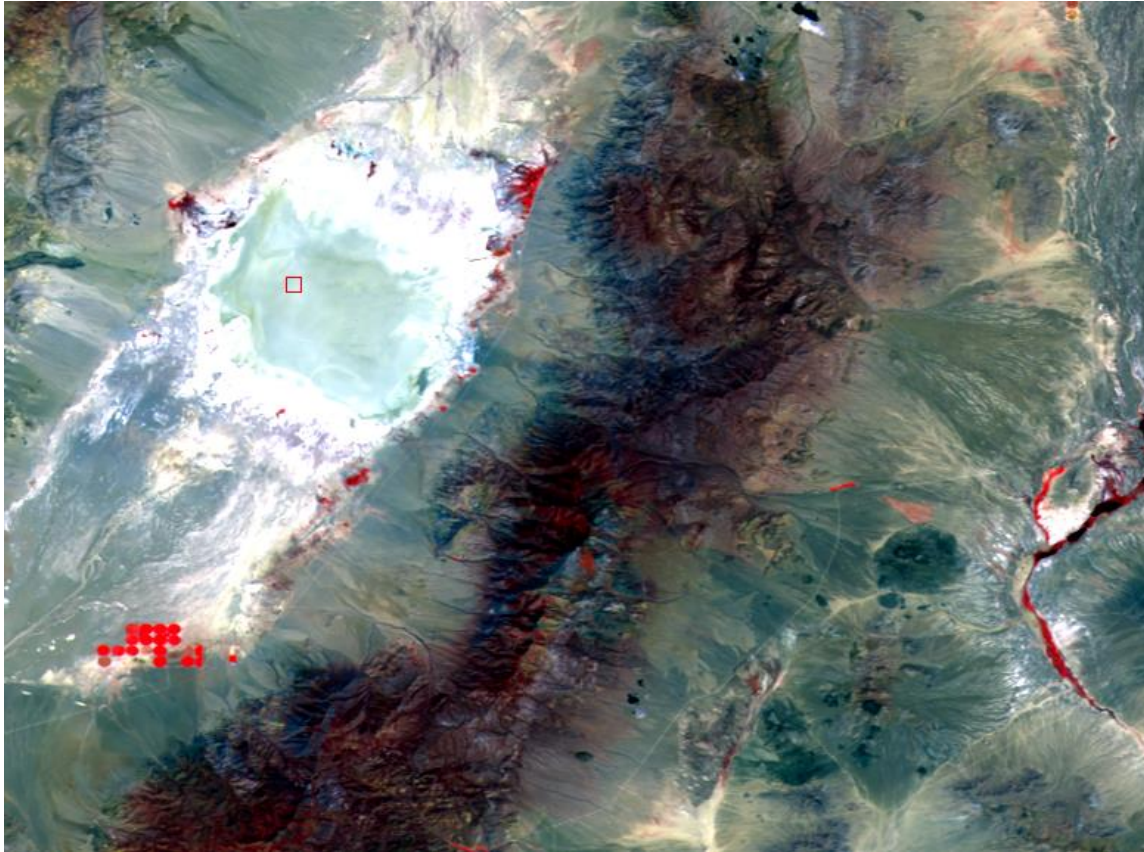
RADCALNET SITES



RadCalNet Site name	Representative area
La Crau	Disk of 30 m radius
Railroad Valley Playa	A square of 1 km x 1km
Baotou	Each square is about 48 m across.
Gobabeb	TBD

RadCalNet Site	Site code	Latitude center (°)	Longitude center (°)	Altitude (m)
La Crau, France	LCFR	43.55885	4.864472	20.0
Railroad Valley Playa, United States	RVUS	38.497	-115.690	1435
Baotou, China	BTCN	40.851659	109.628904	1270
Gobabeb, Namibia	GBNB	TBD	TBD	TBD

RAILROAD VALLEY PLAYA



- 100 m spatial resolution
- Representative area: 1kmx1km
~ 10 x 10 PV pixels

RADCALNET DATA FORMAT

RVUS00_2016_278_v00.00.output - SciTE

File Edit Search View Tools Options Language Buffers Help

1 RVUS00_2016_278_v00.00.output

```

1 | Site: RVUS00
2 | Lat: 38.497
3 | Lon: -115.690
4 | Alt: 1435
5 |
6 | Year: 2016 2016 2016 2016 2016 2016 2016 2016 2016 2016 2016 2016 2016
7 | DOY(U): 278 278 278 278 278 278 278 278 278 278 278 278 278
8 | UTC: 17:00 17:30 18:00 18:30 19:00 19:30 20:00 20:30 21:00 21:30 22:00 22:30 23:00
9 | DOY(L): 278 278 278 278 278 278 278 278 278 278 278 278 278
10 | Local: 9:00 9:30 10:00 10:30 11:00 11:30 12:00 12:30 13:00 13:30 14:00 14:30 15:00
11 | P: 855 855 855 855 854 854 854 853 853 852 852 851 851
12 | T: 283.0 284.6 286.7 286.6 288.1 288.6 289.0 288.9 290.0 290.4 291.0 292.1 291.8
13 | WV: 0.696 0.700 0.674 0.650 9999 9999 9999 0.635 0.638 0.649 0.612 0.582 0.555
14 | O3: 274 274 274 274 274 274 274 274 274 274 274 274
15 | AOD: 0.023 0.023 0.023 0.023 0.025 9999 9999 9999 0.026 0.025 0.026 0.028 0.026 0.026
16 | Ang: 1.090 1.059 1.042 1.009 9999 9999 9999 1.103 1.094 1.136 1.091 1.156 1.219
17 | Type: D D D D D D D D D D D D
18 | 400 0.2262 0.1886 0.2253 0.2278 9999 9999 9999 0.1540 0.2154 0.2155 0.1613 0.2220 0.2292
19 | 410 0.2223 0.1836 0.2221 0.2249 9999 9999 9999 0.1486 0.2118 0.2116 0.1550 0.2171 0.2237
20 | 420 0.2210 0.1808 0.2216 0.2247 9999 9999 9999 0.1456 0.2107 0.2102 0.1510 0.2147 0.2205
21 | 430 0.2215 0.1796 0.2230 0.2264 9999 9999 9999 0.1440 0.2114 0.2105 0.1484 0.2140 0.2188
22 | 440 0.2232 0.1797 0.2255 0.2292 9999 9999 9999 0.1438 0.2133 0.2120 0.1471 0.2144 0.2184
23 | 450 0.2255 0.1804 0.2285 0.2324 9999 9999 9999 0.1443 0.2156 0.2141 0.1468 0.2156 0.2188
24 | 460 0.2278 0.1813 0.2314 0.2355 9999 9999 9999 0.1449 0.2177 0.2160 0.1467 0.2167 0.2192
25 | 470 0.2295 0.1817 0.2337 0.2380 9999 9999 9999 0.1454 0.2192 0.2172 0.1463 0.2171 0.2189
26 | 480 0.2312 0.1823 0.2359 0.2403 9999 9999 9999 0.1459 0.2206 0.2184 0.1462 0.2176 0.2188
27 | 490 0.2336 0.1836 0.2387 0.2432 9999 9999 9999 0.1471 0.2229 0.2205 0.1468 0.2190 0.2196
28 | 500 0.2360 0.1854 0.2417 0.2463 9999 9999 9999 0.1489 0.2255 0.2230 0.1481 0.2209 0.2209
29 | 510 0.2394 0.1882 0.2455 0.2503 9999 9999 9999 0.1519 0.2293 0.2265 0.1504 0.2238 0.2232
30 | 520 0.2442 0.1923 0.2508 0.2558 9999 9999 9999 0.1562 0.2345 0.2315 0.1542 0.2280 0.2267
31 | 530 0.2492 0.1969 0.2564 0.2615 9999 9999 9999 0.1611 0.2400 0.2368 0.1584 0.2325 0.2305
32 | 540 0.2546 0.2018 0.2622 0.2675 9999 9999 9999 0.1662 0.2458 0.2425 0.1630 0.2375 0.2349
33 | 550 0.2599 0.2065 0.2679 0.2733 9999 9999 9999 0.1712 0.2516 0.2481 0.1675 0.2424 0.2392
34 | 560 0.2626 0.2093 0.2712 0.2766 9999 9999 9999 0.1747 0.2551 0.2514 0.1703 0.2450 0.2410
35 | 570 0.2635 0.2106 0.2726 0.2782 9999 9999 9999 0.1768 0.2569 0.2529 0.1719 0.2458 0.2411
36 | 580 0.2654 0.2125 0.2749 0.2805 9999 9999 9999 0.1790 0.2592 0.2552 0.1738 0.2477 0.2427
37 | 590 0.2680 0.2146 0.2776 0.2834 9999 9999 9999 0.1812 0.2621 0.2580 0.1758 0.2505 0.2454
38 | 600 0.2711 0.2171 0.2808 0.2865 9999 9999 9999 0.1833 0.2653 0.2612 0.1779 0.2536 0.2484
39 | 610 0.2750 0.2201 0.2844 0.2901 9999 9999 9999 0.1857 0.2692 0.2652 0.1802 0.2574 0.2522
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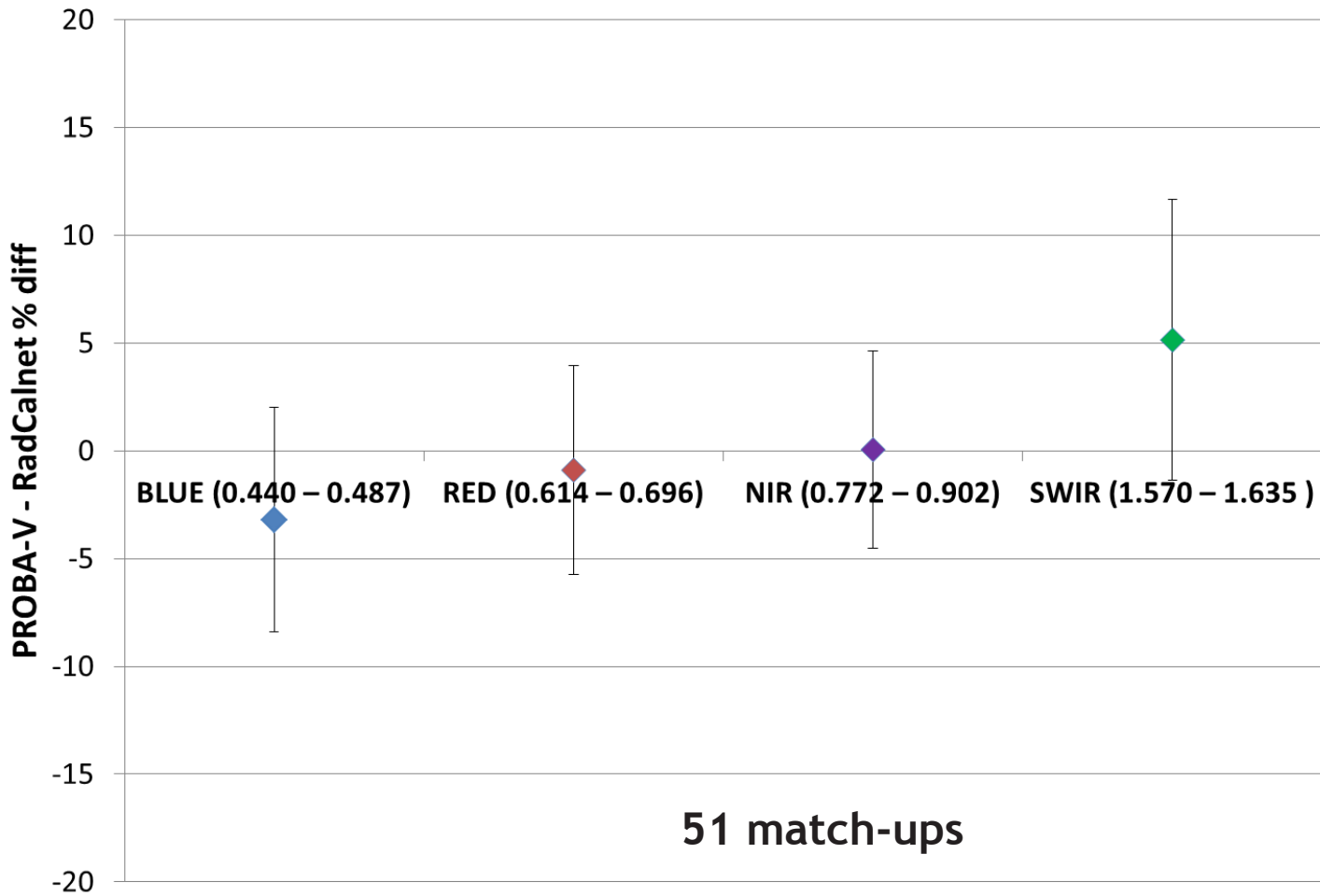
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PROBA-V - RADCALNET DATA PROCESSING

- PROBA-V - RadcalNet data processing :
 - PROBA-V Center Camera 100 m L2A data (TOA reflectance) from 2015-2016 (C1)
 - Calculation of PROBA-V AVG + STDEV TOA refl over 1 km² representative area
 - Removal of observations with stdev > 0.015 in one of the 4 bands
 - Resampling of RadCalNet data to PROBA-V BLUE, RED, NIR, SWIR bands
 - Selection of RadCalNet resampled data with time closest to PROBA-V observation
 - Calculation of difference RadCalNet and PROBA-V TOA reflectance
 - Visual inspection of outlier observations => remove observation with clouds nearby

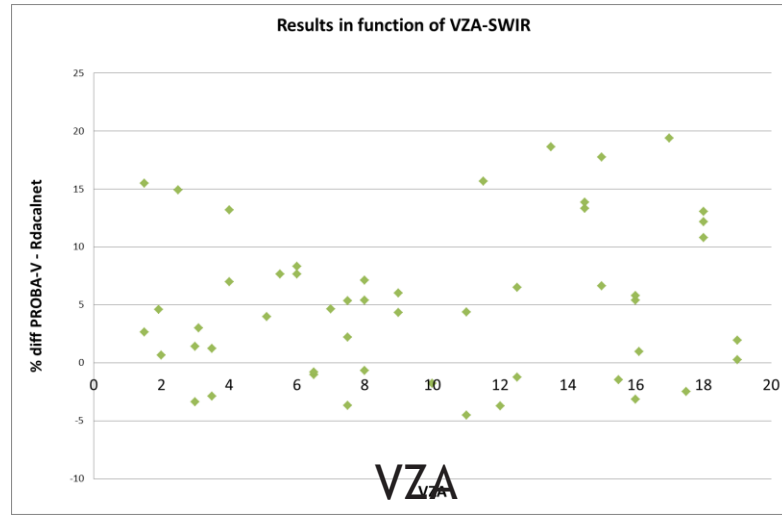
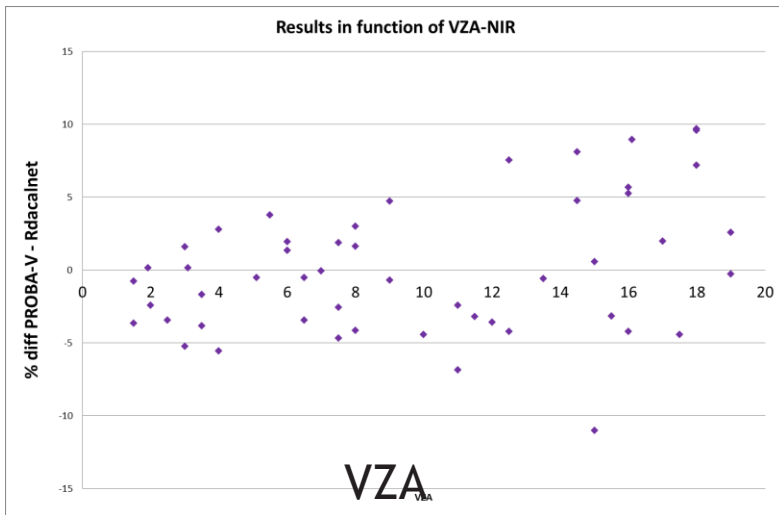
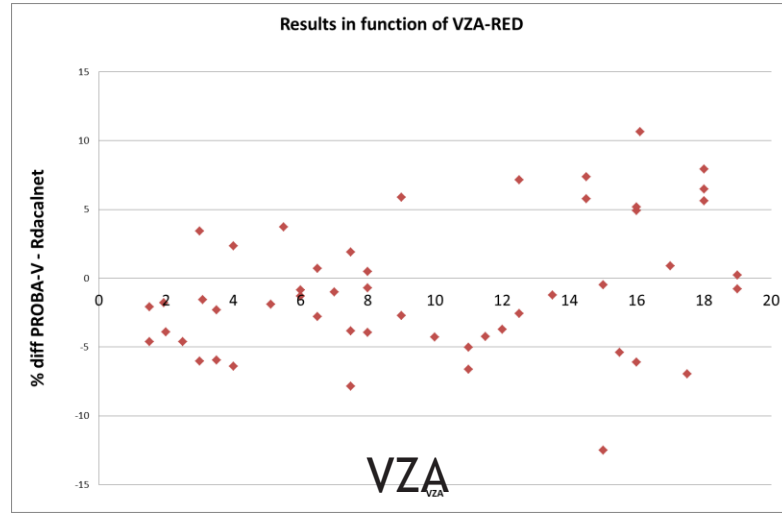
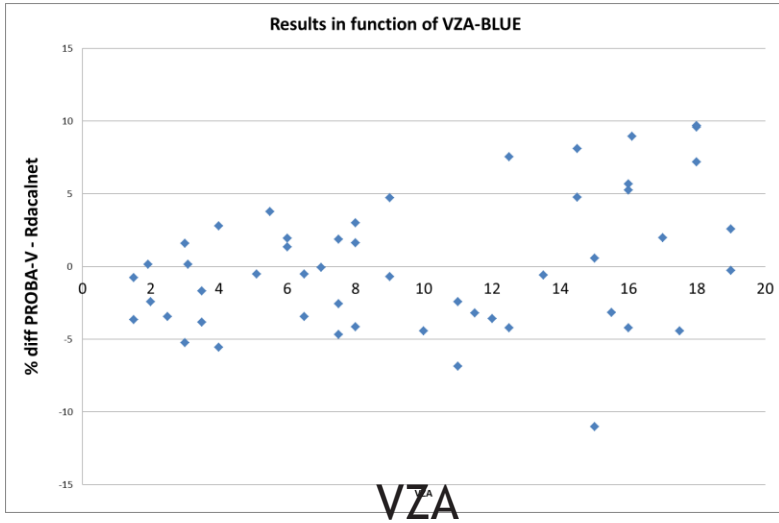
ALL VZA CENTER CAMERA

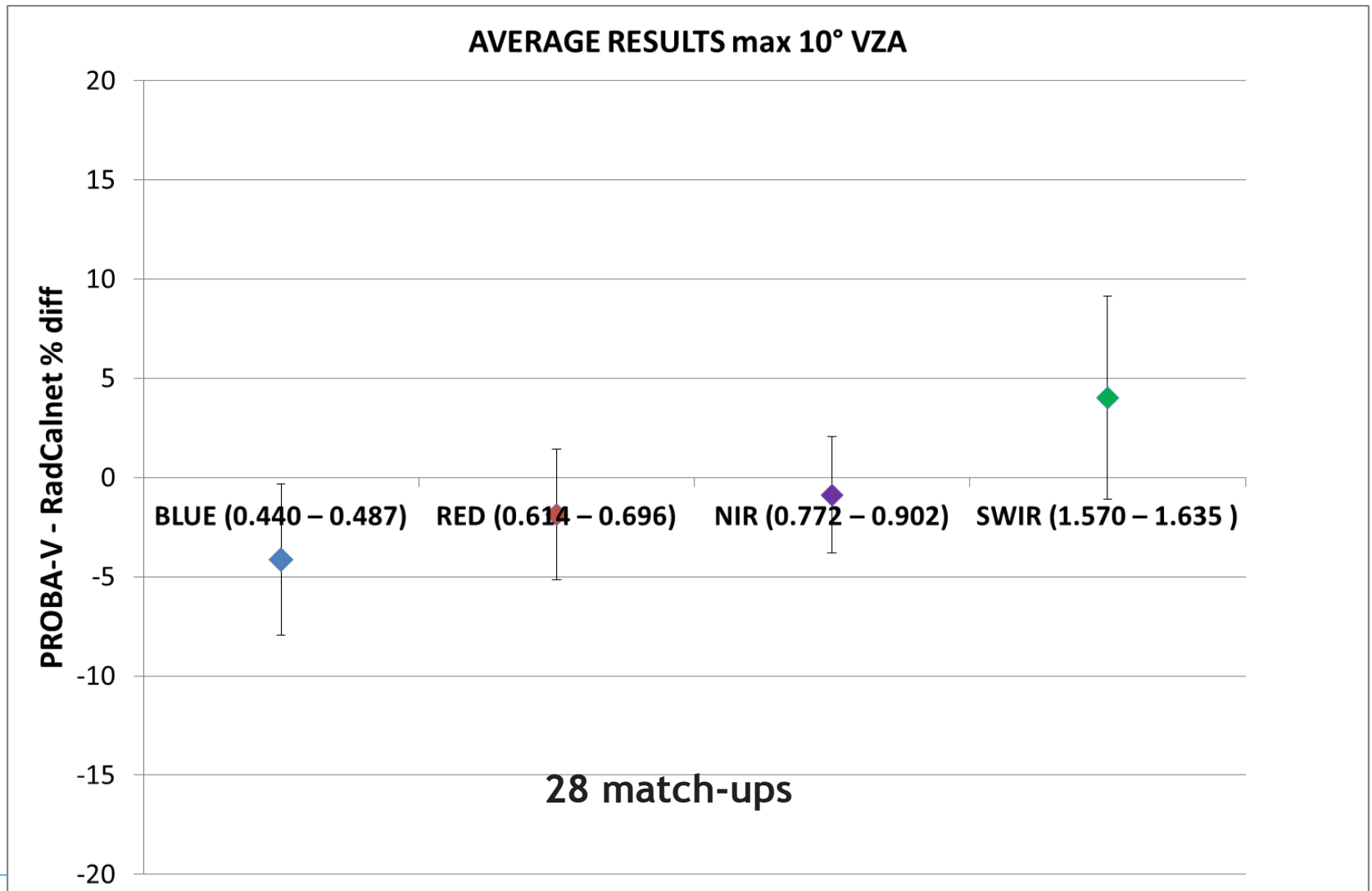
AVERAGE RESULTS



51 match-ups

DIAGNOSTIC PLOTS





***NEW YAW MANEUVERS
PLANNED***