SDFM#251 Early Mission Response
To: Roger Marchand
From: Nadine Chrien, Carol Bruegge
Date: June 12, 2001
Attachment: MISR_relative_response.pdf

Roger,
Here are the G1 coefficients for the a file I am calling ARP_01Mar00_SCF8. They were computed by using DN=L*G1. With L assumed invariant, we have G1(ARP_01Mar00_SCF8)=DN(01Mar00)*G1(ARP_T2_SCF8)/DN(27Apr00).

Using the published G1 coefficients for ARP_T2_SCF8, and Nadine's analysis, we have the results:

G1(ARP_01Mar00_SCF8)

	Blue	Green	Red	NIR
Df	23.44	22.90	27.44	44.39
Cf	21.80	22.36	29.91	46.20
Bf	21.72	20.45	27.46	43.95
Af	22.07	22.30	27.86	43.41
An	20.93	21.67	29.44	43.30
Aa	20.85	22.82	26.18	40.93
Ba	23.24	23.24	25.53	47.25
Ca	21.60	20.73	25.67	42.92
Da	21.34	20.34	24.66	40.27

For your radiances, computed with some arbitrary ARP, you compute the desired radiances via:
L(01Mar00)=L(ARP_OLD)*G1(ARP_OLD)/G1(ARP_01Mar00_SCF8).

That is, if the data file you have was computed using ARP_T2_V5, then
L(01Mar00)=L(ARP_T2_V5)*G1(ARP_T2_V5)/G1(ARP_01Mar00_SCF8)

As a sanity check, the ratio G1(ARP_01Mar00_SCF8)/G1(ARP_T2_V5), the inverse of the last term above, should
equal G1(ARP_01Mar00_SCF8)/G1(ARP_T2_SCF8) for all but the An Red and NIR channels. This ratio is (per Nadine's analysis of the DN degradation between March 1 and April 27):

G1(ARP_01Mar00_SCF8)/G1(ARP_T2_SCF8)=DN(01Mar00)/DN(27Apr00)

	Blue	Green	Red	NIR
Df	1.027	1.043	1.049	1.049
Cf	1.029	1.048	1.056	1.055
Bf	1.025	1.042	1.053	1.051
Af	1.031	1.045	1.052	1.050
An	1.023	1.039	1.057	1.056
Aa	1.025	1.040	1.050	1.048
Ba	1.035	1.053	1.065	1.063
Ca	1.030	1.048	1.058	1.056
Da	1.025	1.041	1.050	1.047

Thus, your radiances will decrease by the ratios in the above table for your earlier date.

(DN/Eo, adj) relative to first in-flight calibration

	An				Da				Df
Orbit Date	BLUE	GREEN	RED	NIR	BLUE	GREEN	RED	NIR	BLUE
28-Feb-00	NaN	NaN	1.067	1.064	NaN	NaN	NaN	NaN	1.034
1-Mar-00	1.023	1.039	1.057	1.056	1.025	1.041	1.050	1.047	1.027
13-Mar-00	1.024	1.034	NaN	NaN	1.011	1.019	1.024	1.021	NaN
17-Mar-00	1.021	1.029	NaN	NaN	1.008	1.016	1.020	1.018	NaN
27-Apr-00	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12-Jun-00	0.988	0.983	0.985	0.986	–	–	–	–	–
29-Aug-00	0.981	0.972	0.974	0.976	–	–	–	–	–
1-Nov-00	0.975	0.964	0.960	0.963	0.973	0.961	0.956	0.960	0.972
19-Dec-00	0.975	0.962	NaN	NaN	–	–	–	–	–
22-Feb-01	0.971	0.958	0.951	0.954	–	–	–	–	–
23-Apr-01	0.961	0.946	0.941	0.945	–	–	–	–	–

	Aa				Ba				Ca
Orbit Date	BLUE	GREEN	RED	NIR	BLUE	GREEN	RED	NIR	BLUE
28-Feb-00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
1-Mar-00	1.025	1.040	1.050	1.048	1.035	1.053	1.065	1.063	1.030
13-Mar-00	1.017	1.026	1.031	1.029	1.015	1.026	1.032	1.029	1.015
17-Mar-00	1.014	1.022	1.027	1.025	1.012	1.021	1.027	1.025	1.012
27-Apr-00	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12-Jun-00	–	–	–	–	–	–	–	–	–
29-Aug-00	–	–	–	–	–	–	–	–	–
1-Nov-00	–	–	–	–	–	–	–	–	–
19-Dec-00	–	–	–	–	–	–	–	–	–
22-Feb-01	–	–	–	–	–	–	–	–	–
23-Apr-01	–	–	–	–	–	–	–	–	–

	Af				Bf				Cf
Orbit Date	BLUE	GREEN	RED	NIR	BLUE	GREEN	RED	NIR	BLUE
28-Feb-00	–	–	–	–	–	–	–	–	–
1-Mar-00	1.031	1.045	1.052	1.050	1.025	1.042	1.053	1.051	1.029
13-Mar-00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
17-Mar-00	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

27-Apr-00	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12-Jun-00	–	–	–	–	–	–	–	–	–
29-Aug-00	–	–	–	–	–	–	–	–	–
1-Nov-00	–	–	–	–	–	–	–	–	–
19-Dec-00	–	–	–	–	–	–	–	–	–
22-Feb-01	–	–	–	–	–	–	–	–	–
23-Apr-01	–	–	–	–	–	–	–	–	–

(1) NaN indicates no data for that orbit
(2) – indicates data not processed
(3) An BLUE/GREEN are done on Cal-North orbits, RED/NIR are done on Cal-South orbits
(4) Orbit 1076 Aa has bad DN values for period during which goniometer is running. A time period offset of 1500 sec was applied to both orbit 1076

GREEN	RED	NIR
1.052	1.059	1.057
1.043	1.049	1.049
NaN	NaN	NaN
NaN	NaN	NaN
1.000	1.000	1.000
–	–	–
–	–	–
0.961	0.956	0.959
–	–	–
–	–	–
–	–	–

GREEN	RED	NIR
NaN	NaN	NaN
1.048	1.058	1.056
1.025	1.030	1.028
1.020	1.025	1.024
1.000	1.000	1.000
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–

GREEN	RED	NIR
–	–	–
1.048	1.056	1.055
NaN	NaN	NaN
NaN	NaN	NaN

T2_SCF8 G1 coefficients (G0=G2=0)

	Blue	Green	Red	NIR
Df	22.82	21.96	26.15	42.31
Cf	21.19	21.34	28.32	43.79
Bf	21.19	19.62	26.08	41.81
Af	21.42	21.35	26.47	41.32
An	20.45	20.86	27.84	41.00
Aa	20.34	21.94	24.93	39.05
Ba	22.45	22.07	23.97	44.46
Ca	21.03	19.89	24.47	40.90
Da	20.81	19.54	23.48	38.46

G1(ARP_01Mar00_SCF8)/G1(ARP_T2_SCF8)

	Blue	Green	Red	NIR
Df	1.027	1.043	1.049	1.049
Cf	1.029	1.048	1.056	1.055
Bf	1.025	1.042	1.053	1.051
Af	1.031	1.045	1.052	1.050
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Aa	1.025	1.040	1.050	1.048
Ba	1.035	1.053	1.065	1.063
Ca	1.030	1.048	1.058	1.056
Da	1.025	1.041	1.050	1.047

01Mar00_SCF8 G1=DN01Mar00*GT2_SCF8/DN27Apr00

	Blue	Green	Red	NIR
Df	23.44	22.90	27.44	44.39
Cf	21.80	22.36	29.91	46.20
Bf	21.72	20.45	27.46	43.95
Af	22.07	22.30	27.86	43.41
An	20.93	21.67	29.44	43.30
Aa	20.85	22.82	26.18	40.93

	1.000	1.000	1.000
–	–	–	
–	–	–	
–	–	–	
–	–	–	
–	–	–	
–	–	–	

Ba	23.24	23.24	25.53	47.25
Ca	21.60	20.73	25.67	42.92
Da	21.34	20.34	24.66	40.27

6 and 1911 Aa data for averaging.