

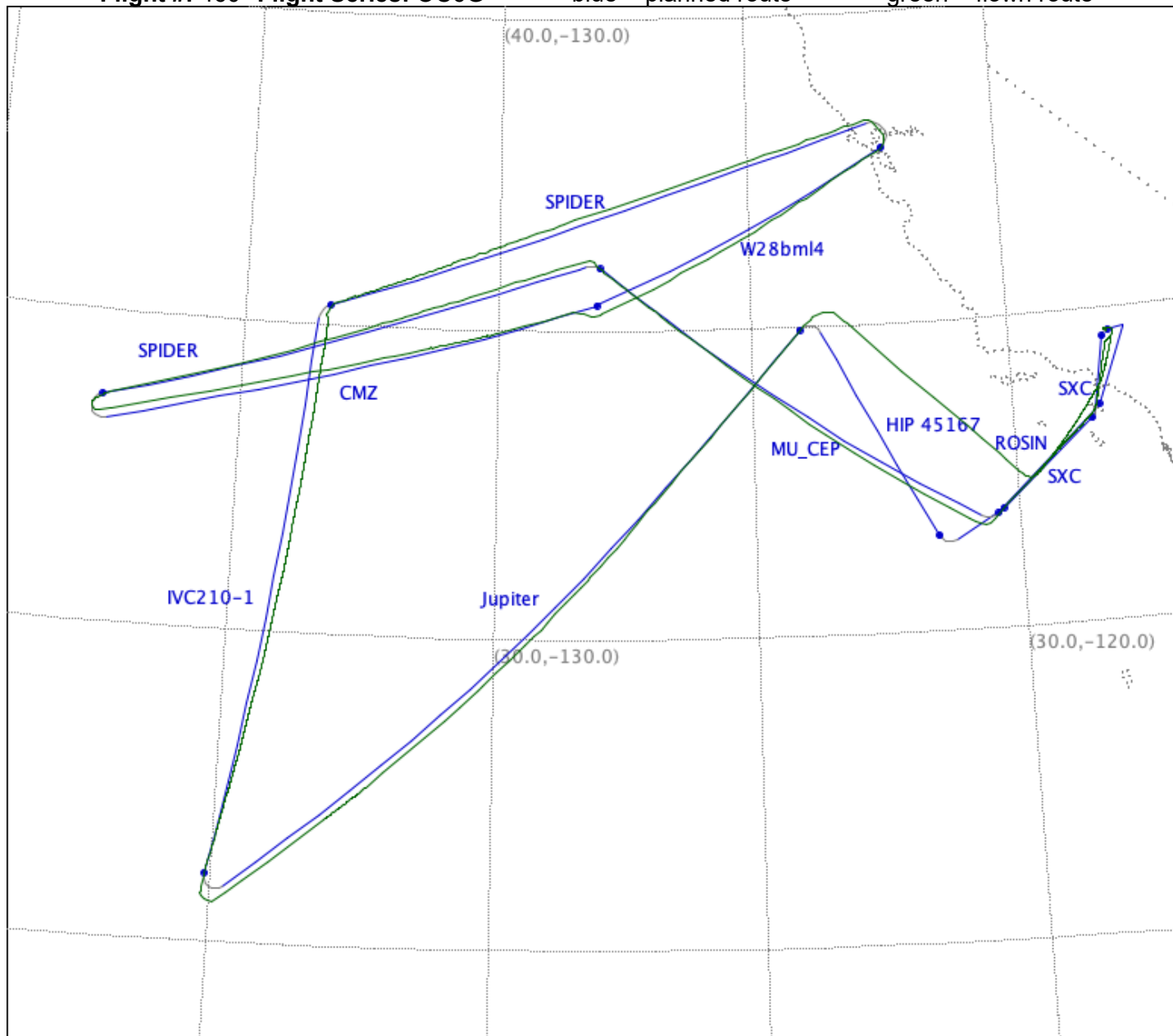
MISSION ID: 2018-05-23_GR_F460

Date: 2018-05-23 UT Instrument: GREAT

Flight #: 460 Flight Series: OC6G

blue = planned route

green = flown route



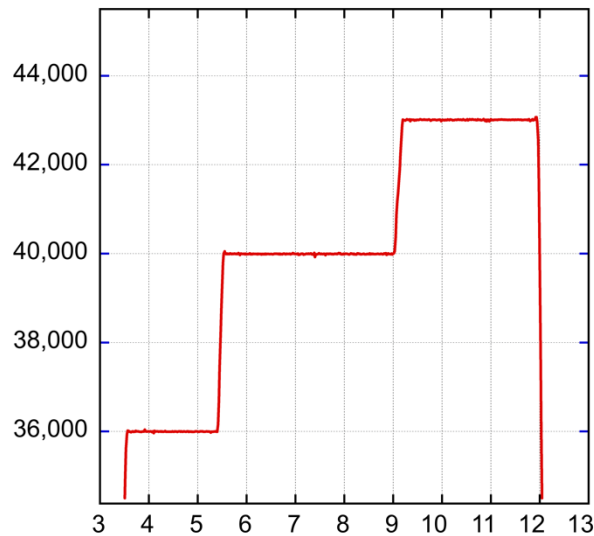
Flight notes:

Late departure, but no observing time lost.

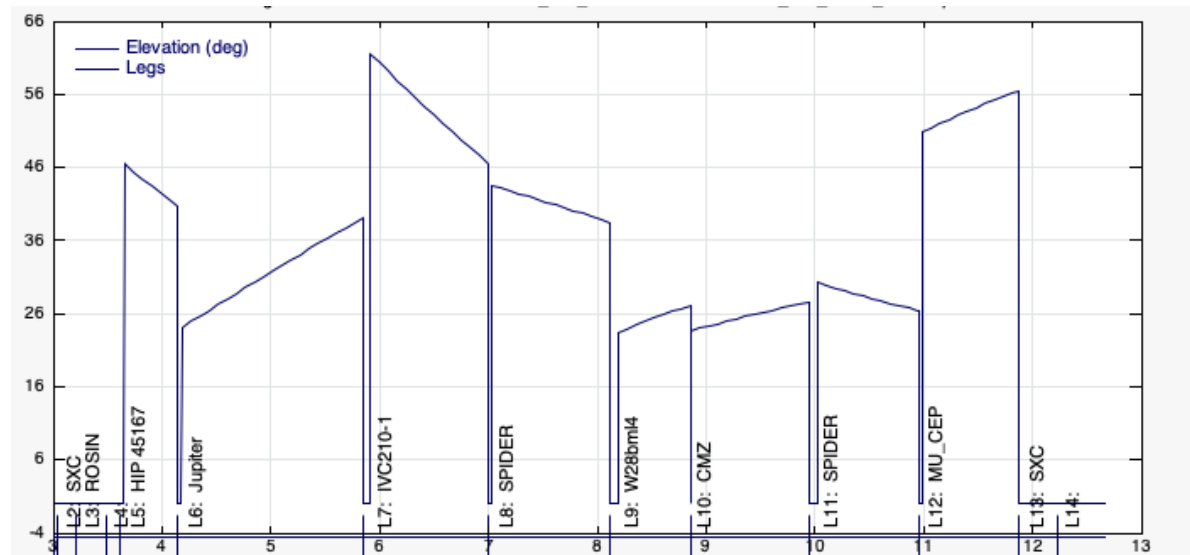
Flight 460 Mission ID 2018-05-23_GR_F460
 Palmdale to Palmdale Take off date UTC: 23-MAY-2018
 Departure UTC: 03:04 Arrival UTC: 12:29
 HFA/LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
5			HIP 45167	09h12m12.88s	03d52m01.1s	3:38	29	
6	90_0008	Calibration	Jupiter	14h56m55.79s	-15d31m47.5s	4:10	100	
7	06_0164	Kerp	IVC210	10h53m06.70s	24d55m20.0s	5:54	65	
8	06_0153	Schneider	SPIDER	10h37m28.50s	73d39m16.5s	7:01	65	
9	06_0001	Reach	W28bml4	18h01m40.31s	-23d25m03.3s	8:10	40	
10	06_0157	Gusten	CMZ	17h45m40.19s	-29d00m43.5s	8:50	65	
11	06_0153	Schneider	SPIDER	10h37m28.50s	73d39m16.5s	10:00	56	
12	06_0091	Harper	MU_CEP	21h43m30.46s	58d46m48.2s	10:58	53	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

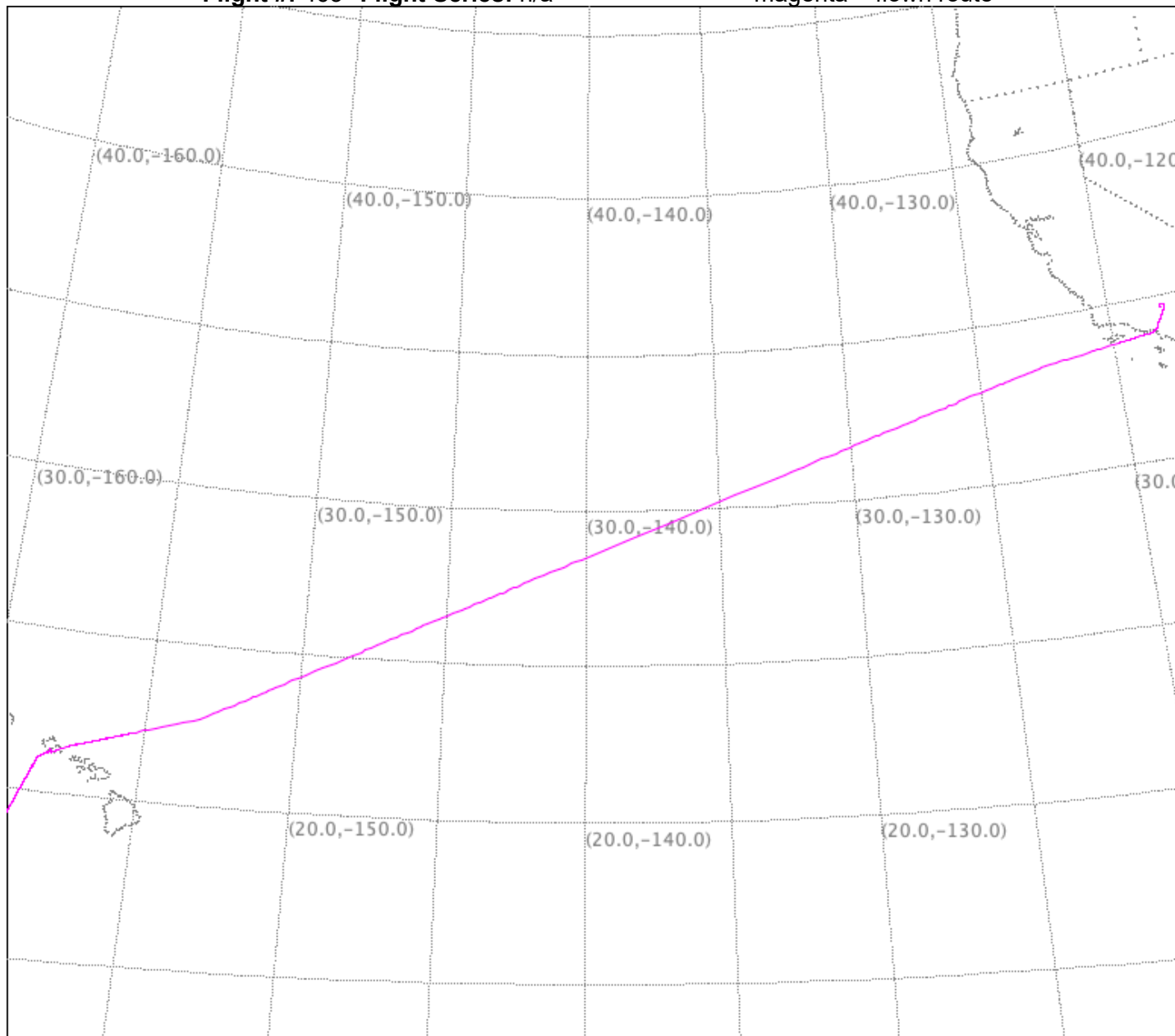


MISSION ID: 2018-06-01_GR_F463

Date: 2018-06-01 UT Instrument: n/a

Flight #: 463 Flight Series: n/a

magenta = flown route



Flight notes:

Ferry flight from Palmdale, CA to Honolulu, HI (no science planned)

Flight 463
Palmdale to
Honolulu

Mission ID 2018-06-01_GR_F463
Take off date UTC:
01-JUN-2018

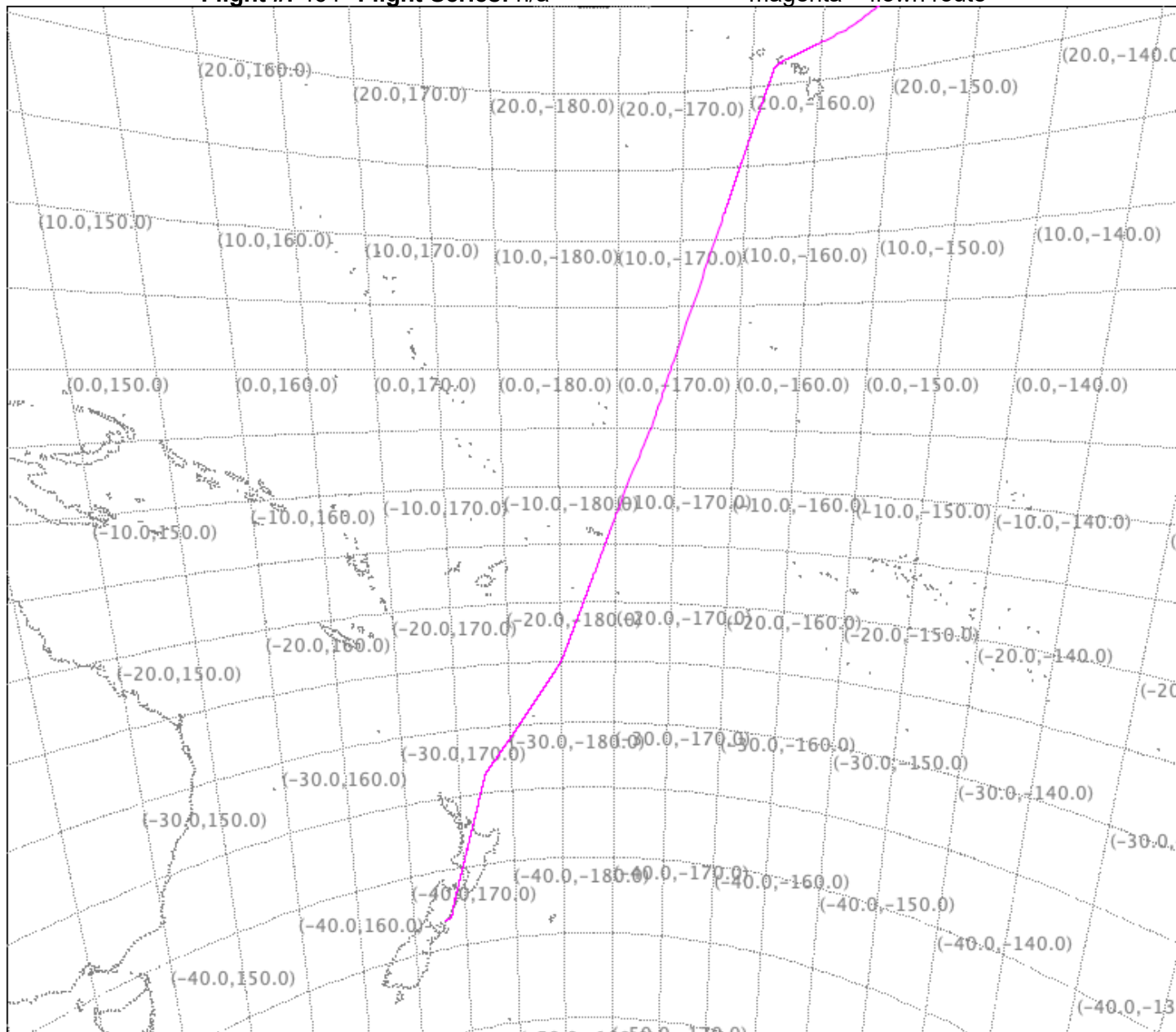
Departure UTC: 04:45
Arrival UTC: 09:54

MISSION ID: 2018-06-01_GR_F464

Date: 2018-06-01 UT Instrument: n/a

Flight #: 464 Flight Series: n/a

magenta = flown route



Flight notes:

Ferry flight from Honolulu, HI to Christchurch, New Zealand (no science planned).

Flight 464
Honolulu to
Christchurch

Mission ID 2018-06-01_GR_F464
Take off date UTC:
01-JUN-2018

Departure UTC: 13:49
Arrival UTC: 23:03

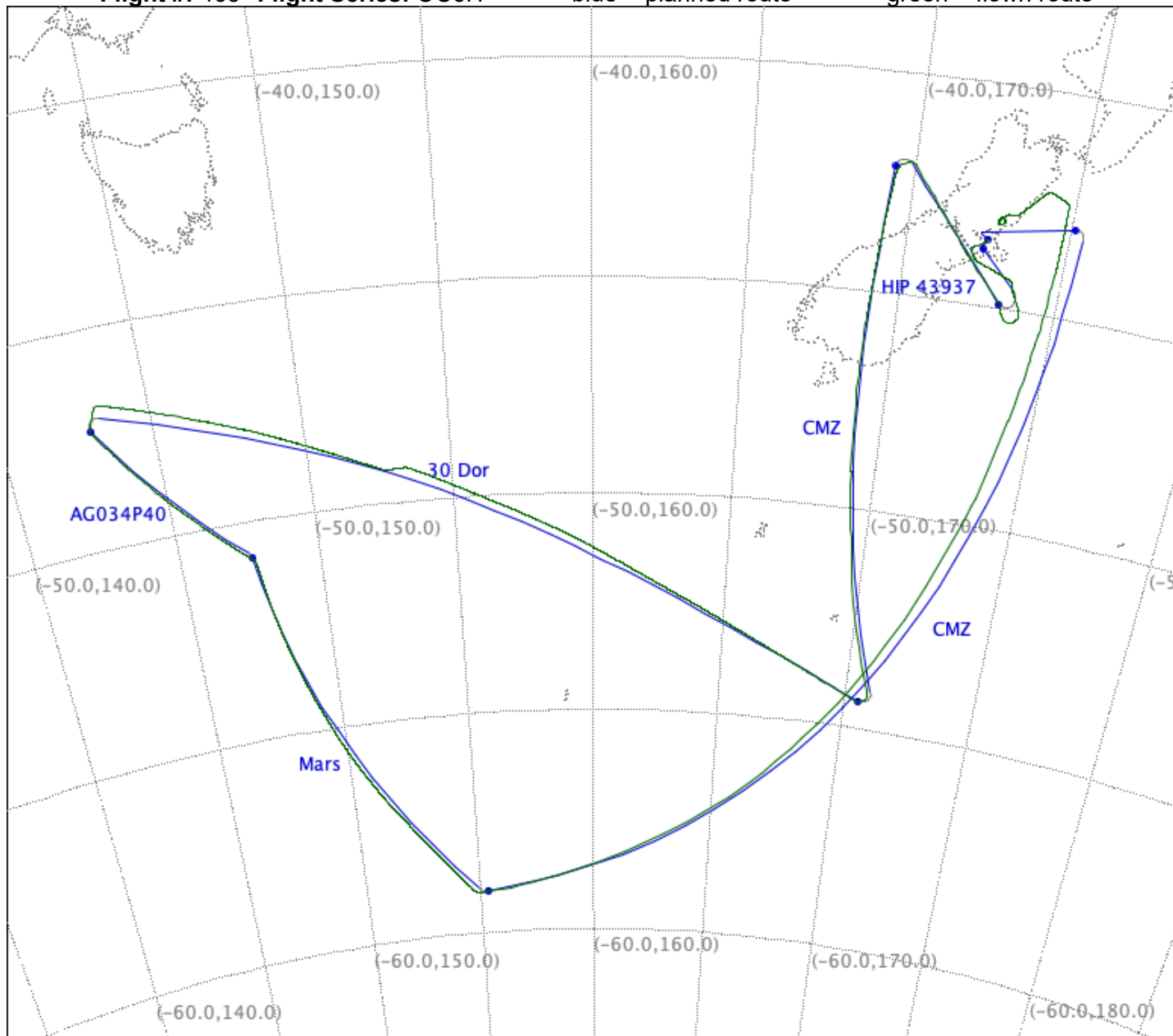
MISSION ID: 2018-06-05_GR_F465

Date: 2018-06-05 UT Instrument: GREAT

Flight #: 465 Flight Series: OC6H

blue = planned route

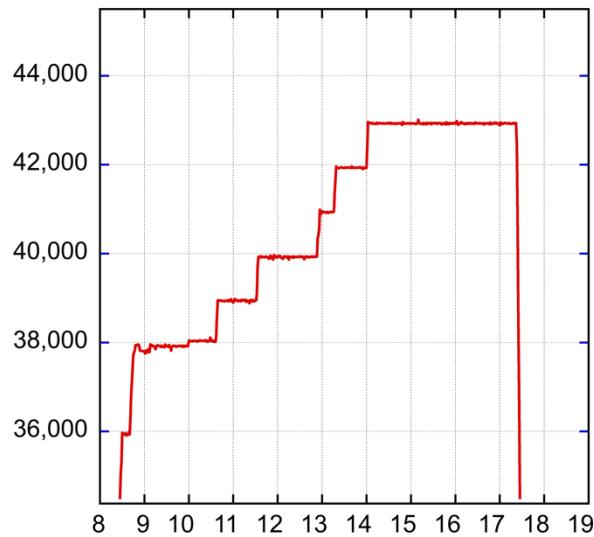
green = flown route



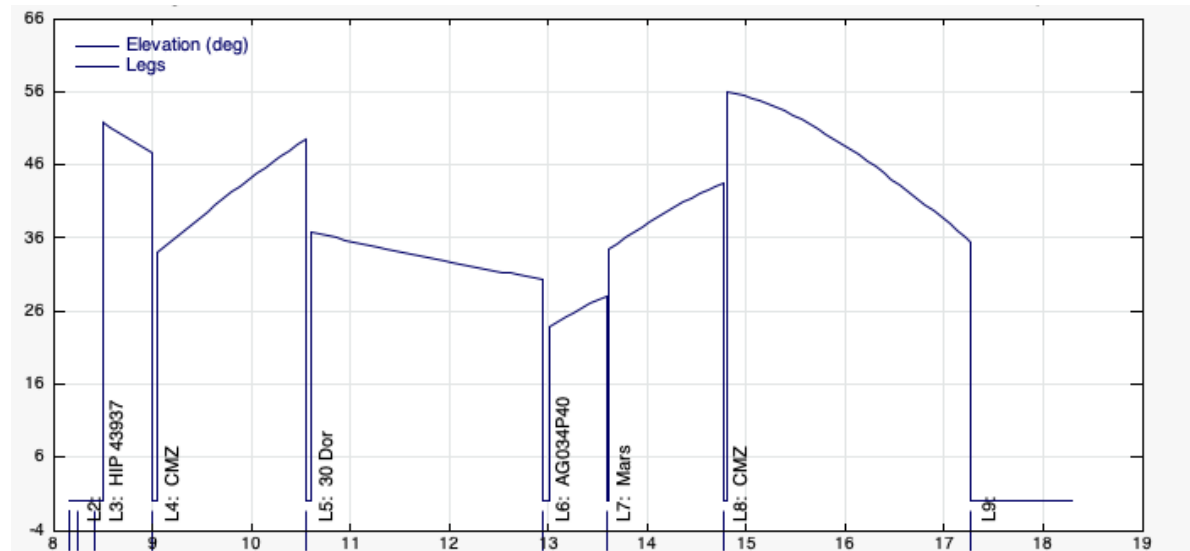
Flight notes: Variable winds (trivial data losses).

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 43937	08h56m58.42s	-59d13m45.6s	8:29	30	
4	06_0173	Harris	CMZ	17h47m24.60s	-28d23m16.3s	9:03	90	
5	06_0170	Tielens	30DOR	05h38m46.50s	-69d06m23.9s	10:36	140	
6	06_0130	Leurini	AG034P40	18h53m18.43s	01d25m02.3s	13:00	35	
7	90_0008	Calibration	Mars	20h38m06.57s	-21d45m59.5s	13:36	70	
8	06_0157	Gusten	CMZ	17h47m24.60s	-28d23m16.3s	14:48	148	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



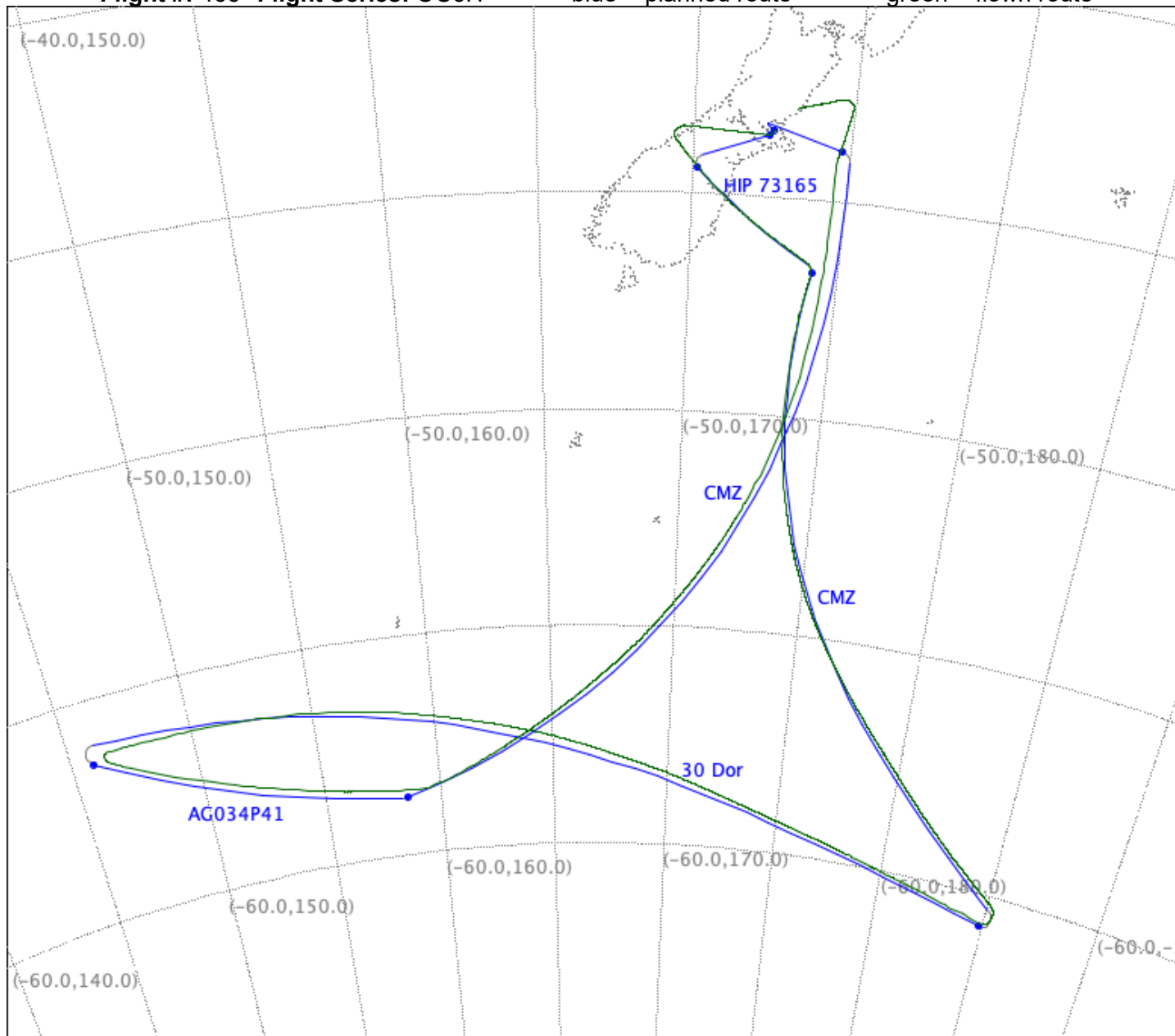
MISSION ID: 2018-06-06_GR_F466

Date: 2018-06-06 UT Instrument: GREAT

Flight #: 466 Flight Series: OC6H

blue = planned route

green = flown route



Flight notes:
No irregularities.

Flight 466 Mission ID
 Christchurch-Christchurch

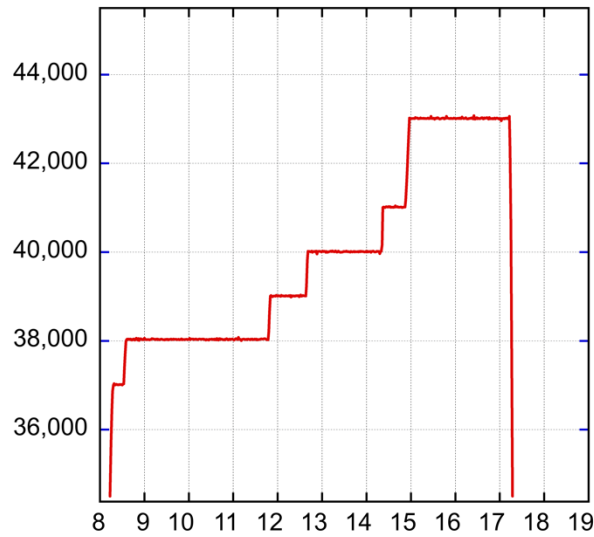
2018-06-06_GR_F466
 Take off date UTC:
 06-JUN-2018

Departure UTC: 07:47
 Arrival UTC: 17:47

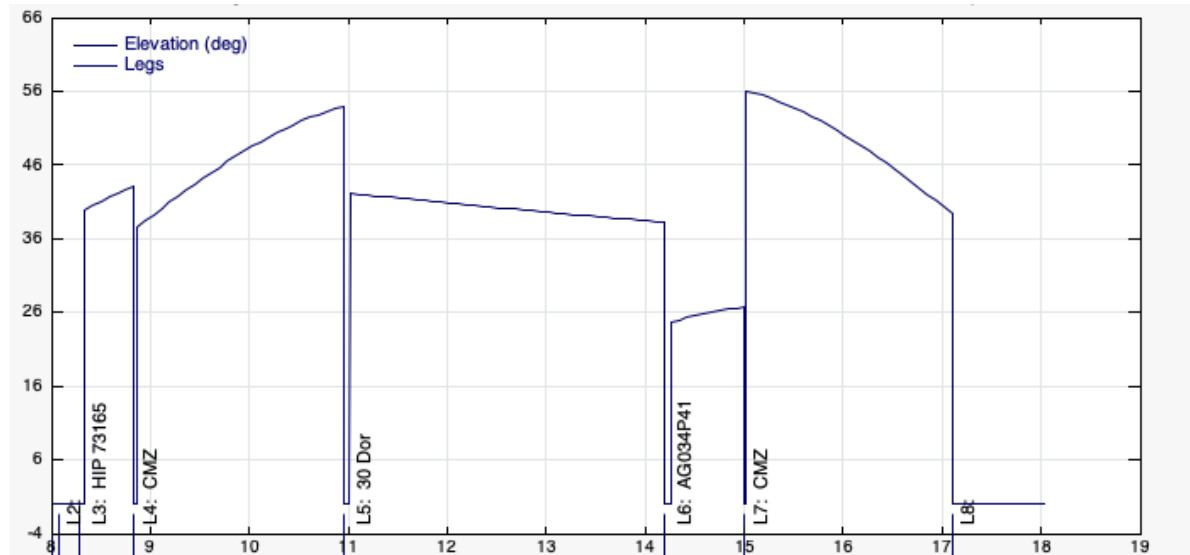
HFA/LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 73165	14h57m11.00s	-04d20m47.2s	8:19	30	
4	06_0157	Gusten	CMZ	17h47m24.60s	-28d23m16.3s	8:51	125	
5	06_0170	Tielens	30DOR	05h38m46.50s	-69d06m23.9s	11:00	190	
6	06_0130	Leurini	AG034P40	18h53m18.43s	01d25m02.3s	14:15	45	
7	06_0157	Gusten	CMZ	17h47m24.60s	-28d23m16.3s	15:00	125	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



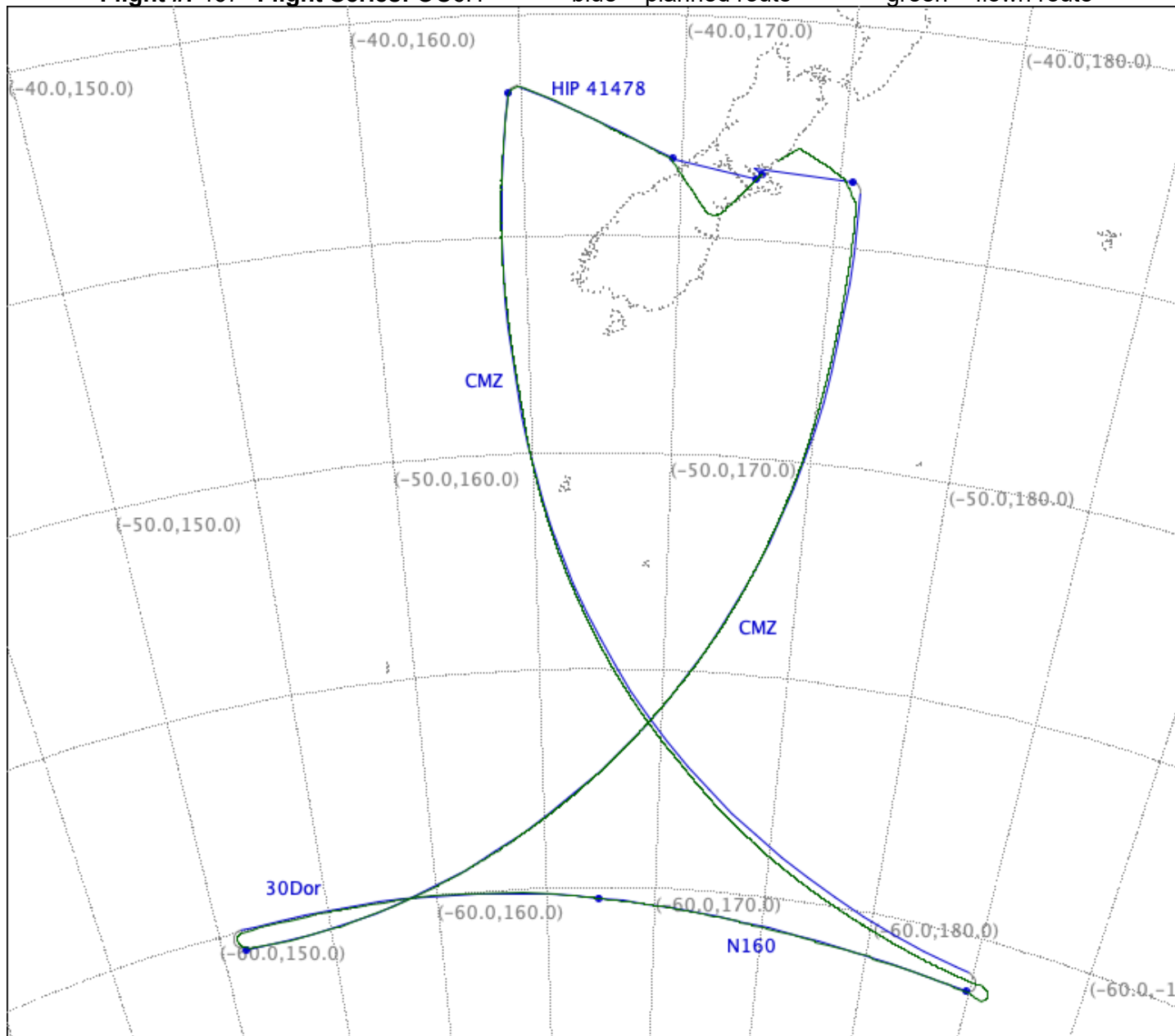
MISSION ID: 2018-06-07_GR_F467

Date: 2018-06-07 UT Instrument: GREAT

Flight #: 467 Flight Series: OC6H

blue = planned route

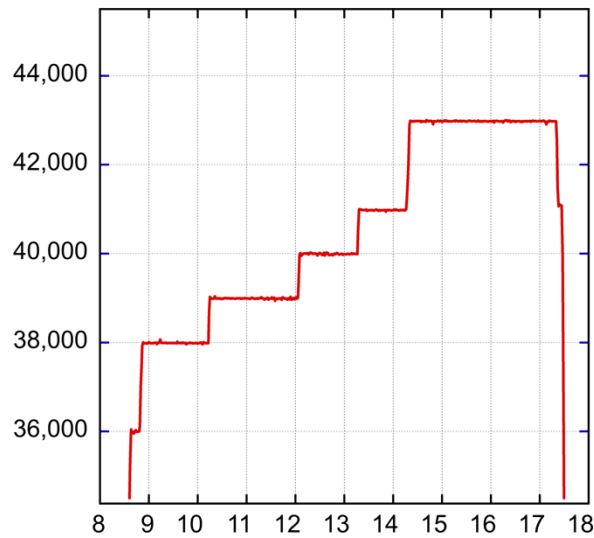
green = flown route



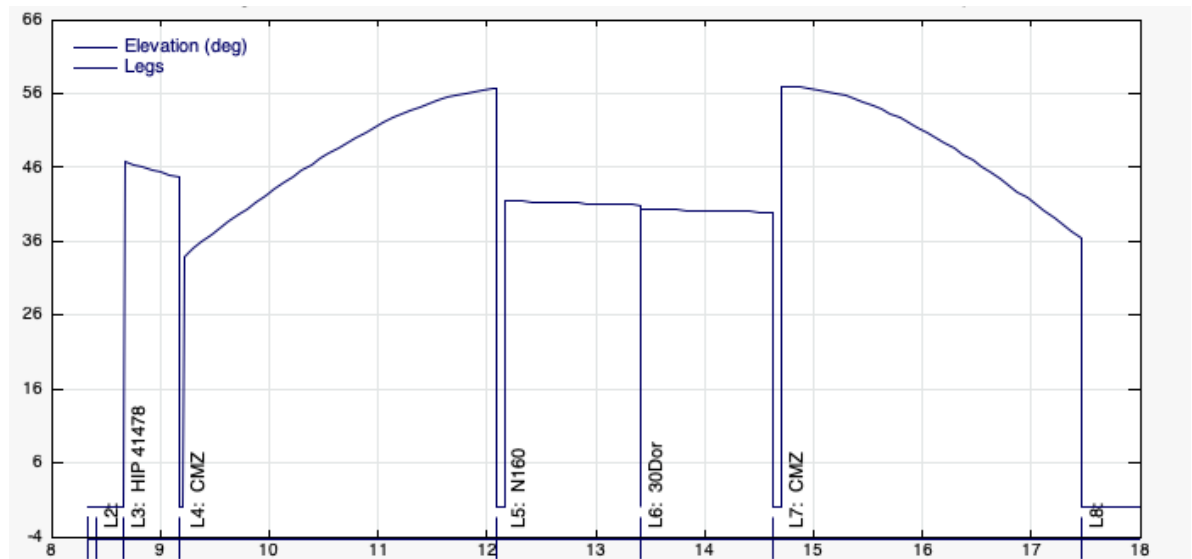
**Flight notes:
No irregularities.**

Flight 467 Christchurch- Christchurch		Mission ID 2018-06-07_GR_F467	Take off date UTC: 07-JUN-2018	Departure UTC: 08:09	Arrival UTC: 17:24	Consortium flight HFA/LFA		
Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 41478	08h27m33.80s	-75d21m31.3s	8:40	30	
4	83_0609	GREAT Consortium	CMZ	17h47m24.60s	-28d23m16.3s	9:13	172	
5	83_0610	GREAT Consortium	N160	05h39m40.30s	-69d39m01.1s	12:09	75	
6	83_0610	GREAT Consortium	30Dor	05h39m03.00s	-69d07m36.0s	13:24	73	
7	83_0609	GREAT Consortium	CMZ	17h47m24.60s	-28d23m16.3s	14:42	165	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



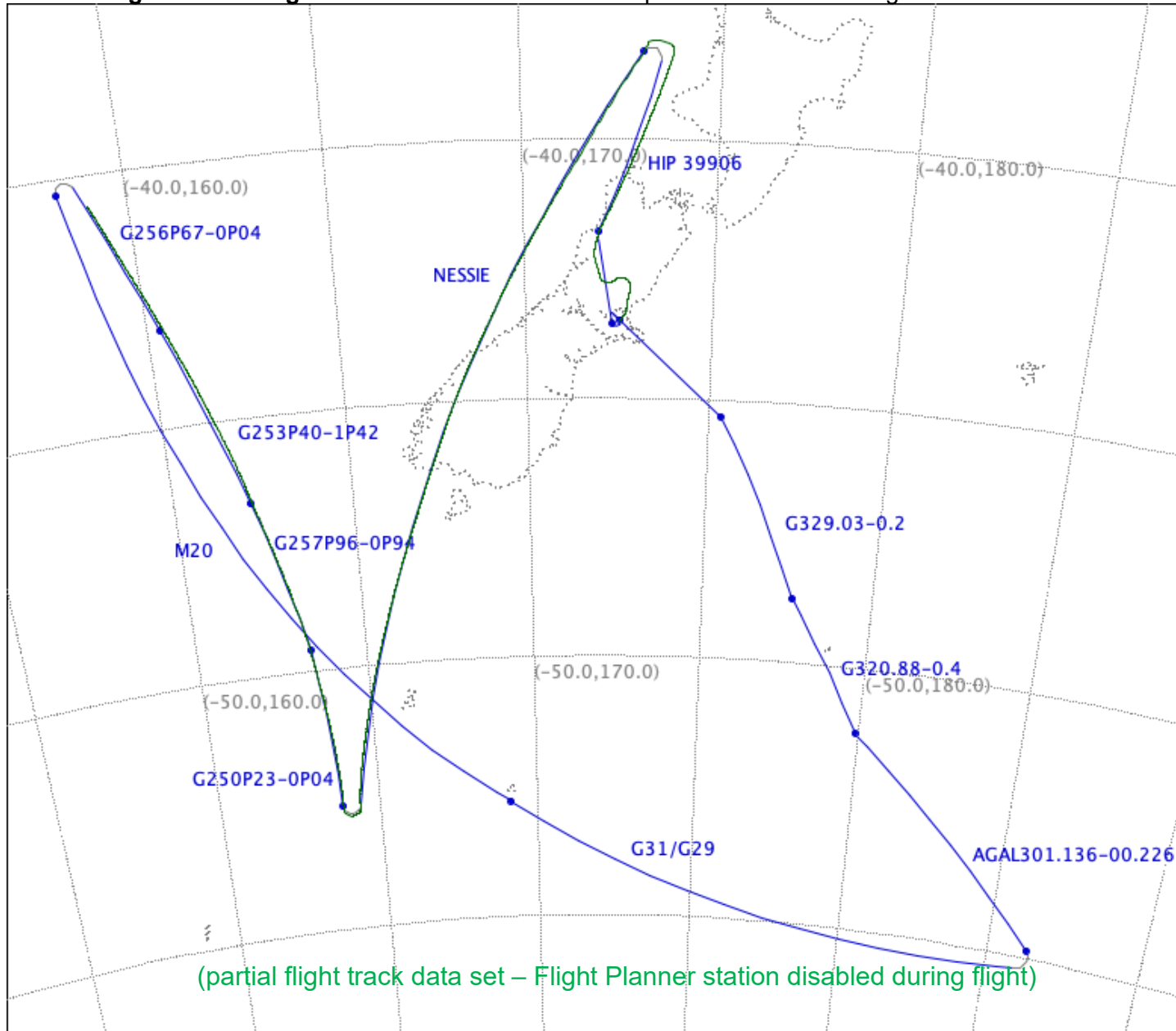
MISSION ID: 2018-06-08_GR_F468

Date: 2018-06-08 UT Instrument: GREAT

Flight #: 468 Flight Series: OC6H

blue = planned route

green = flown route



Flight notes: No irregularities.

Flight 468 Mission ID
Christchurch-Christchurch

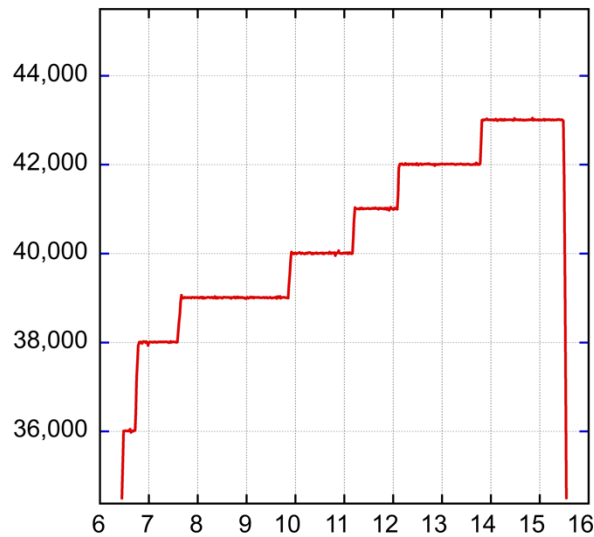
2018-06-08_GR_F468
Take off date UTC:
08-JUN-2018

Departure UTC: 06:00
Arrival UTC: 15:58

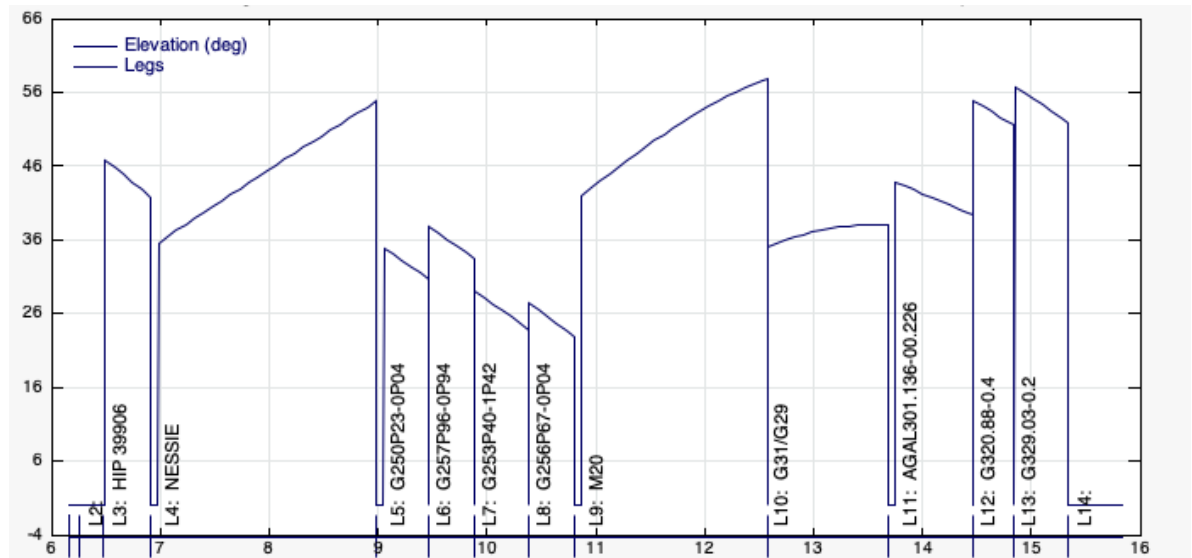
HFA/LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 39906	08h09m01.64s	-19d14m42.1s	6:29	25	
4	06_0112	Jackson	NESSIE	16h41m15.20s	-47d06m47.1s	6:58	120	
5	06_0151	König	G250P23-0P04	08h07m53.69s	-32d39m27.2s	9:03	25	
6	06_0151	König	G257P96-0P94	08h25m37.32s	-39d34m12.1s	9:28	25	
7	06_0151	König	G253P40-1P42	08h10m40.57s	-36d03m45.5s	9:53	30	
8	06_0151	König	G256P67-0P04	08h25m33.83s	-37d59m49.9s	10:23	25	
9	06_0041	Kaufman	M20	18h02m27.22s	-23d04m27.5s	10:52	102	
10	06_0171	Rugel	G29.935-0.053	18h45m18.29s	-02d43m40.9s	12:34	67	
11	06_0074	Jackson	AGAL301.136-00.226	12h35m34.89s	-63d02m32.8s	13:45	42.5	
12	06_0203	Wyrowski	G320.88-0.4	15h14m33.14s	-58d11m32.7s	14:28	22.5	
13	06_0203	Wyrowski	G329.03-0.2	16h00m56.52s	-53d17m41.6s	14:50	29.2	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



**Flight notes:
No irregularities.**

Flight 469 Mission ID
Christchurch-Christchurch

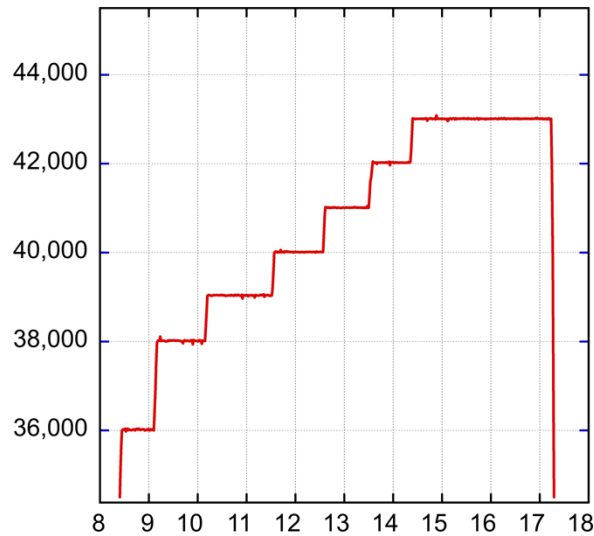
2018-06-13_GR_F469
Take off date UTC:
13-JUN-2018

Departure UTC: ~08:05
Arrival UTC: ~17.44

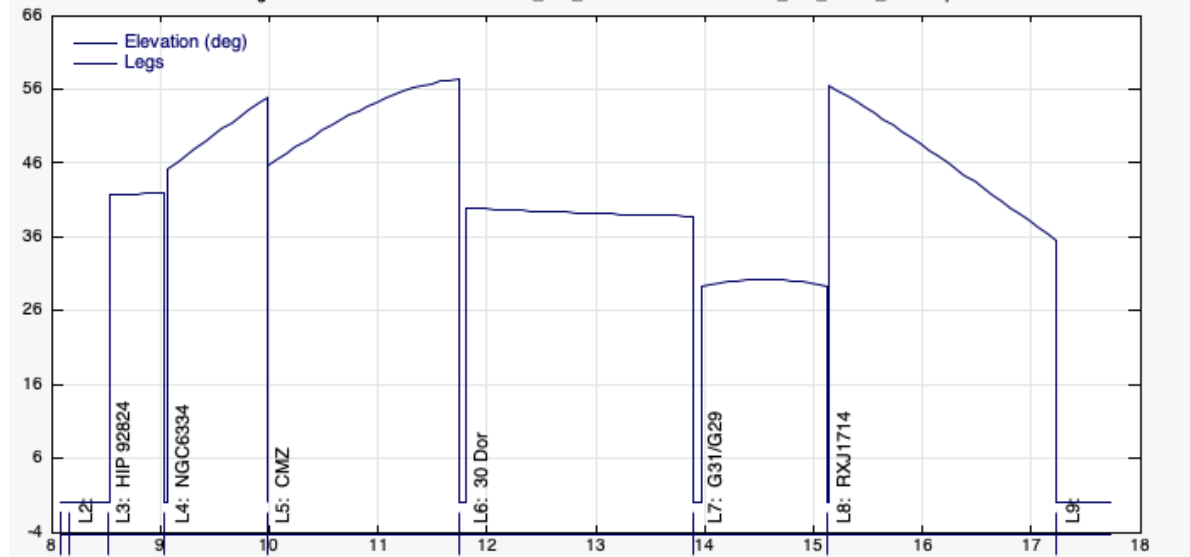
HFA/LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 92824	18h54m47.13s	-87d36m21.0s	8:32	30	
4	06_0112	Jackson	NGC6334	17h20m07.08s	-35d56m23.8s	9:04	55	
5	06_0173	Harris	CMZ	17h47m24.44s	-28d23m20.1s	9:59	105	
6	06_0170	Tielens	30DOR	05h38m46.50s	-69d06m23.9s	11:48	125	
7	06_0171	Rugel	G31.388-0.384	18h50m55.03s	-01d33m16.8s	13:58	69	
8	06_0122	Rowell	RXJ1714	17h12m02.31s	-40d04m34.7s	15:08	125	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



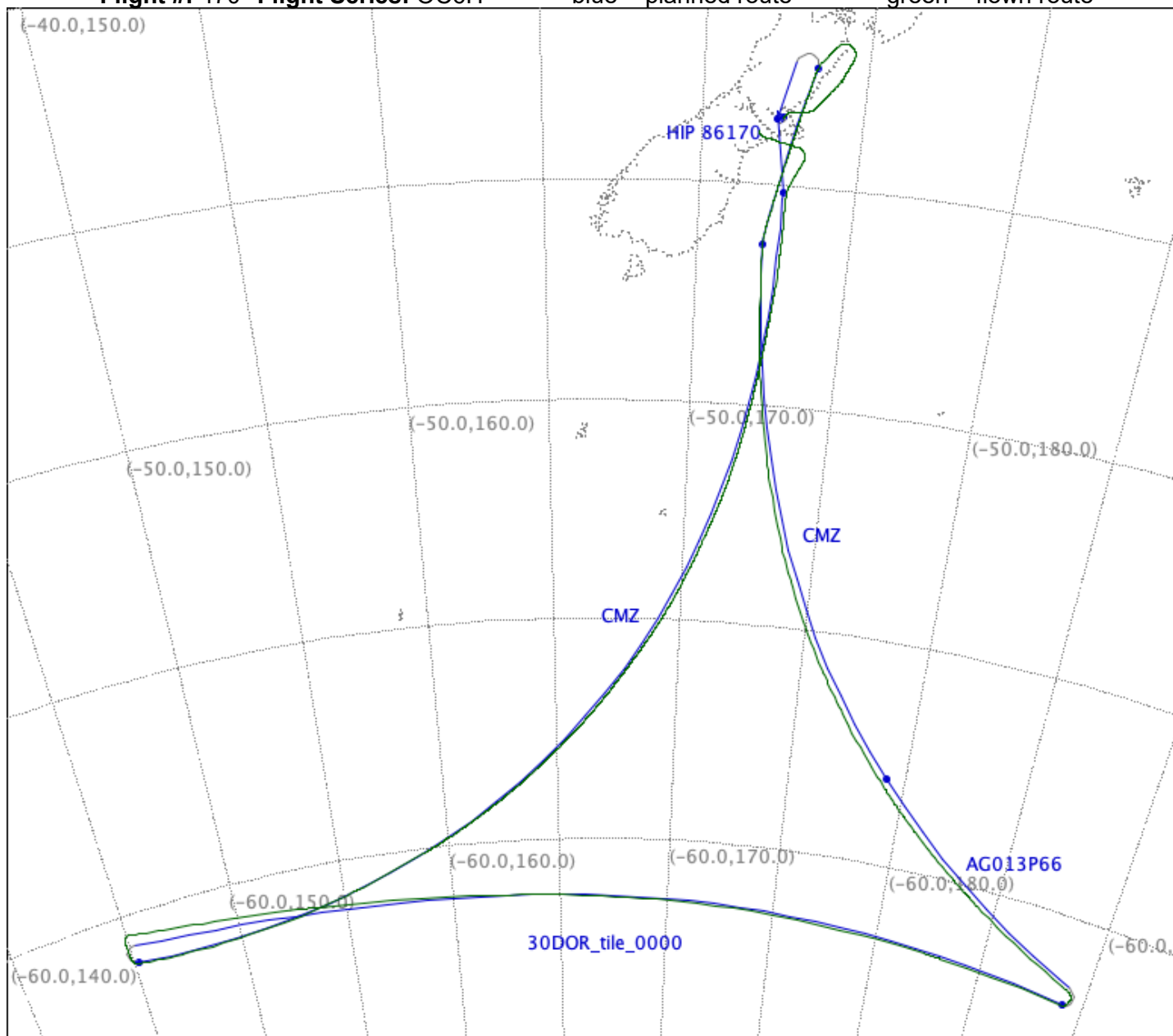
MISSION ID: 2018-06-15_GR_F470

Date: 2018-06-15 UT Instrument: GREAT

Flight #: 470 Flight Series: OC6H

blue = planned route

green = flown route



**Flight notes:
No irregularities.**

Flight 470 Mission ID
Christchurch-Christchurch

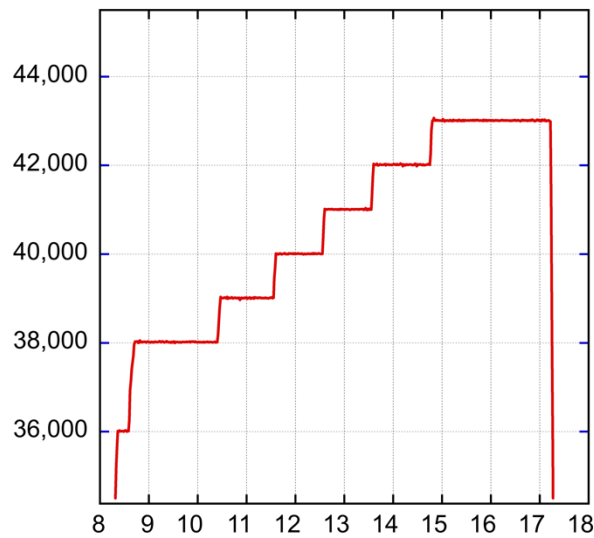
2018-06-15_GR_F470
Take off date UTC:
15-JUN-2018

Departure UTC: 07:51
Arrival UTC: ~17:39

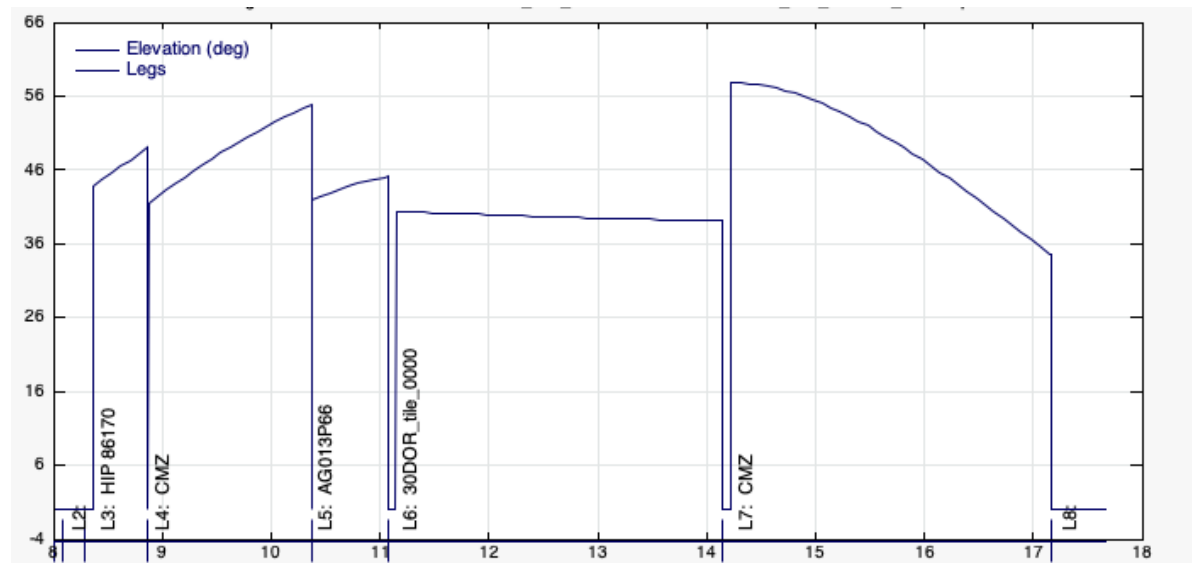
HFA/LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 86170	17h36m32.82s	-38d38m07.3s	8:22	30	
4	06_0157	Gusten	CMZ	17h47m24.44s	-28d23m20.1s	8:52	90	
5	06_0130	Leurini	AG013P66	18h17m24.36s	-17d22m11.2s	10:22	42	
6	06_0170	Tielens	30DOR	05h38m46.50s	-69d06m23.9s	11:08	180	Possible haze.
7	06_0157	Gusten	CMZ	17h47m24.44s	-28d23m20.1s	14:13	176	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



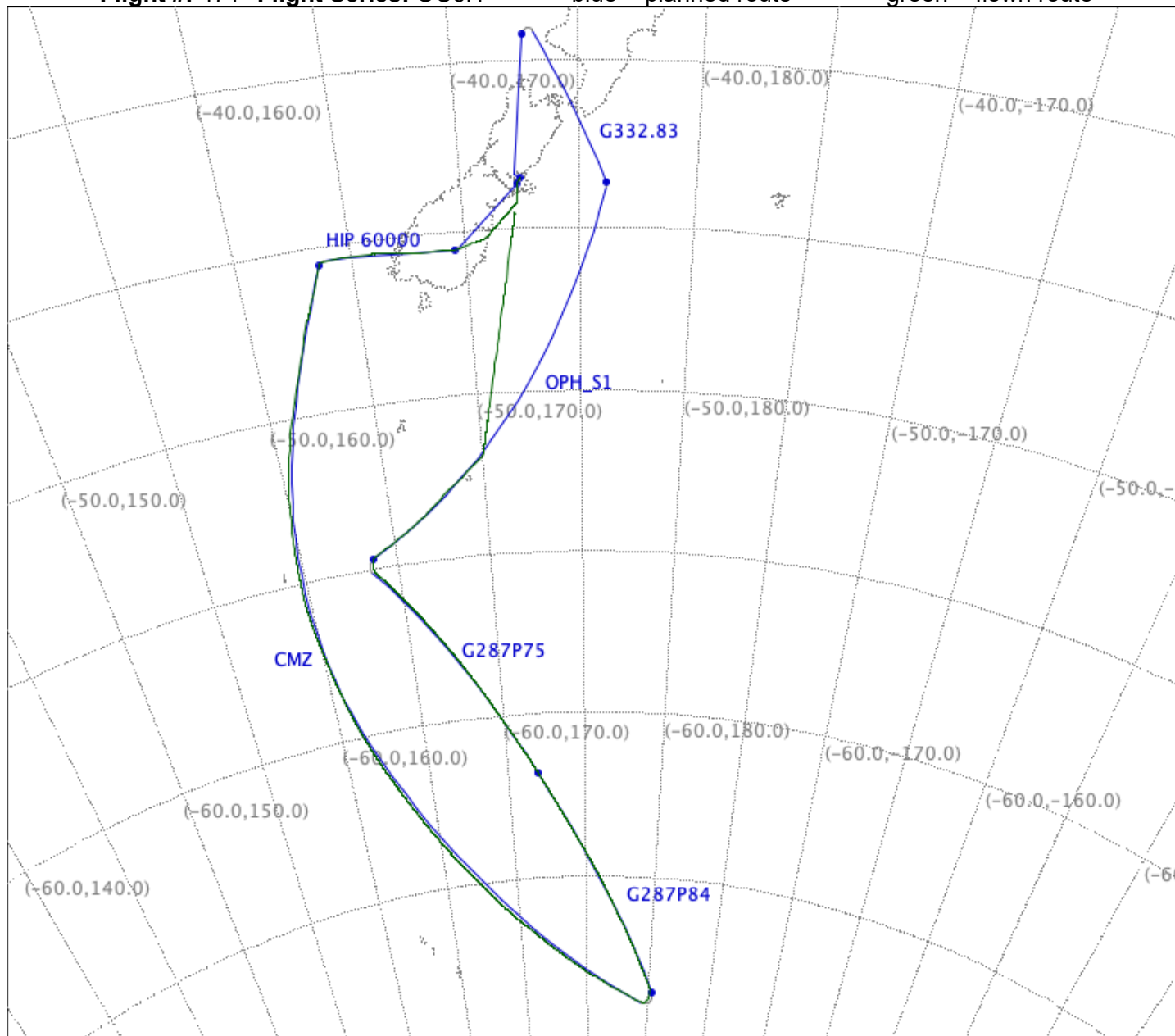
MISSION ID: 2018-06-18_GR_F471

Date: 2018-06-18 UT Instrument: GREAT

Flight #: 471 Flight Series: OC6H

blue = planned route

green = flown route

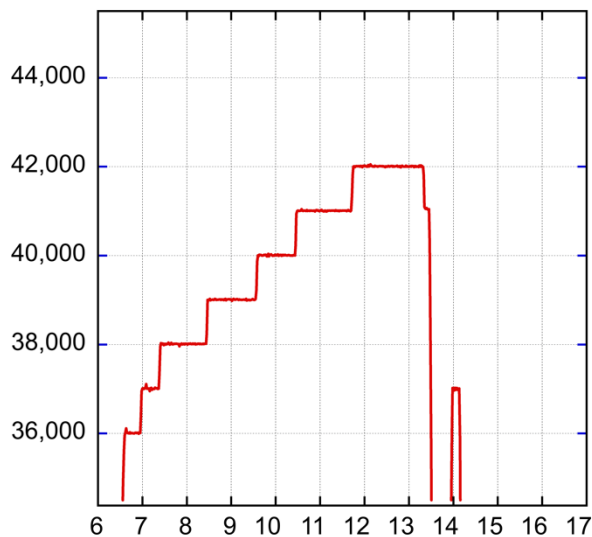


Flight notes:

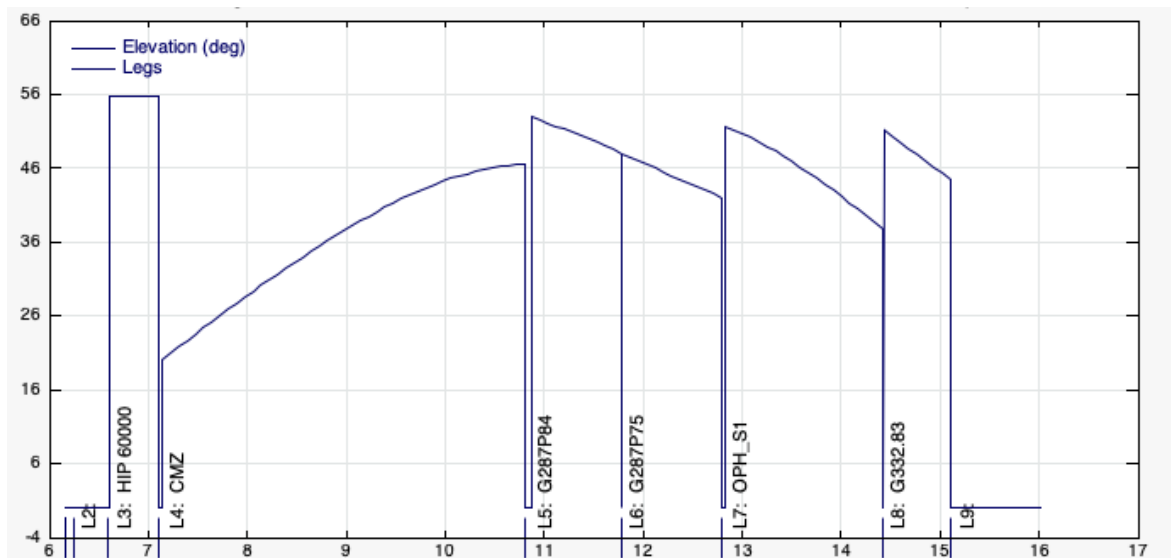
Rain predicted at Christchurch for planned landing time; early return to base to avoid weather issues

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 60000	12h18m20.83s	-79d18m44.1s	6:36	30	
4	83_0609	GREAT Consortium	CMZ	17h47m24.60s	-28d23m16.3s	7:08	220	
5	83_0613	GREAT Consortium	G287.84	10h45m55.05s	-59d57m16.7s	10:52	55	Extra time taken.
6	83_0613	GREAT Consortium	G287.75	10h46m01.25s	-59d47m32.0s	11:47	60	Less time taken.
7	83_0614	GREAT Consortium	OPH_S1	16h26m34.17s	-24d23m28.3s	12:50	95	Only 17min observed before we had to return early to Christchurch base to avoid predicted rains
8	83_0612	GREAT Consortium	G332.83	16h20m10.65s	-50d53m17.6s	14:26	40	Leg not flown; early return to base

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



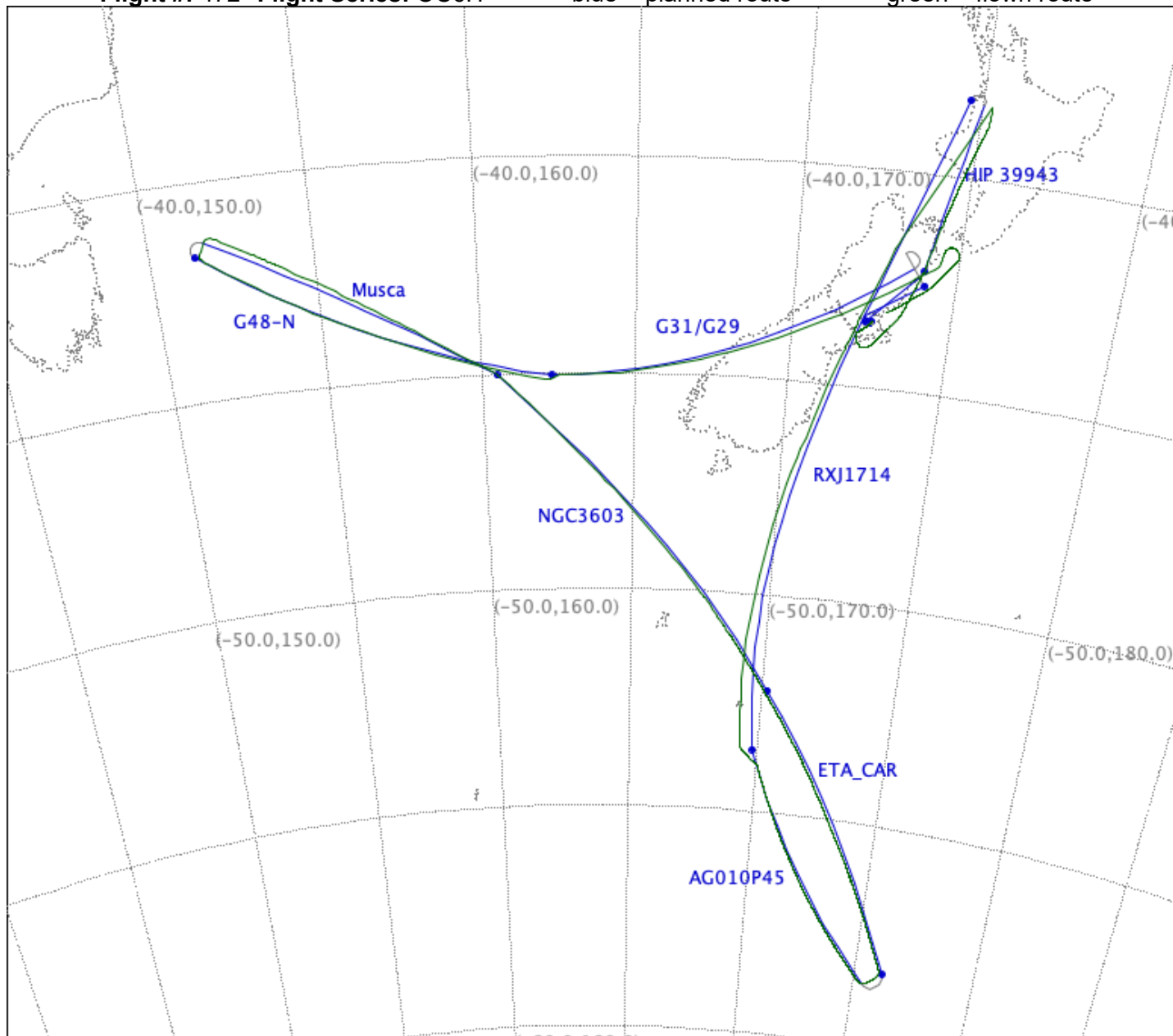
MISSION ID: 2018-06-19_GR_F472

Date: 2018-06-19 UT Instrument: GREAT

Flight #: 472 Flight Series: OC6H

blue = planned route

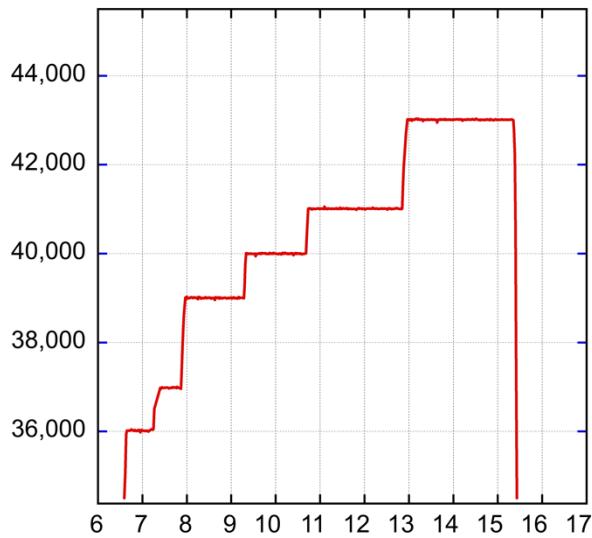
green = flown route



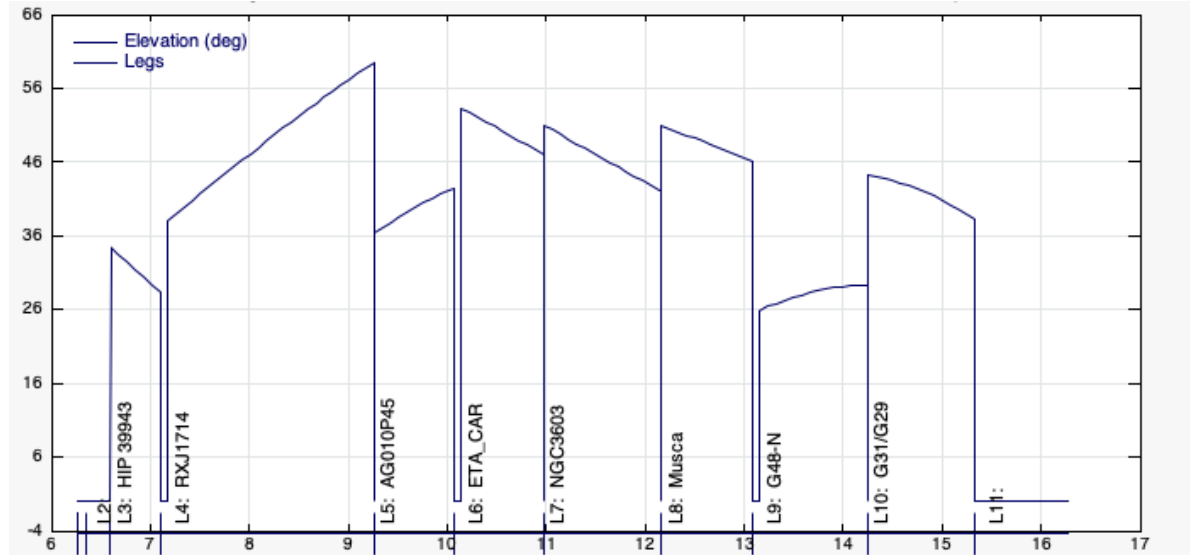
Flight notes:
No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 39943	08h09m28.53s	-16d14m56.1s	6:36	30	
4	06_0122	Rowell	RXJ1714	17h12m02.31s	-40d04m34.7s	7:10	125	Lost 30min due to observatory control software failure.
5	06_0130	Leurini	AG010P45	18h08m44.88s	-19d54m36.0s	9:15	48	
6	06_0052	Morris	ETA_CAR	10h45m03.55s	-59d41m04.0s	10:08	50	
7	06_0216	Comito	NGC3603	11h15m05.71s	-61d09m40.1s	10:58	71	
8	06_0177	Bontemps	Musca	12h24m41.60s	-71d46m41.0s	12:09	55	
9	06_0054	Ragan	G48-N	19h21m43.26s	13d50m55.5s	13:09	65	
10	06_0171	Rugel	G31.388-0.384	18h50m55.03s	-01d33m16.8s	14:14	65	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



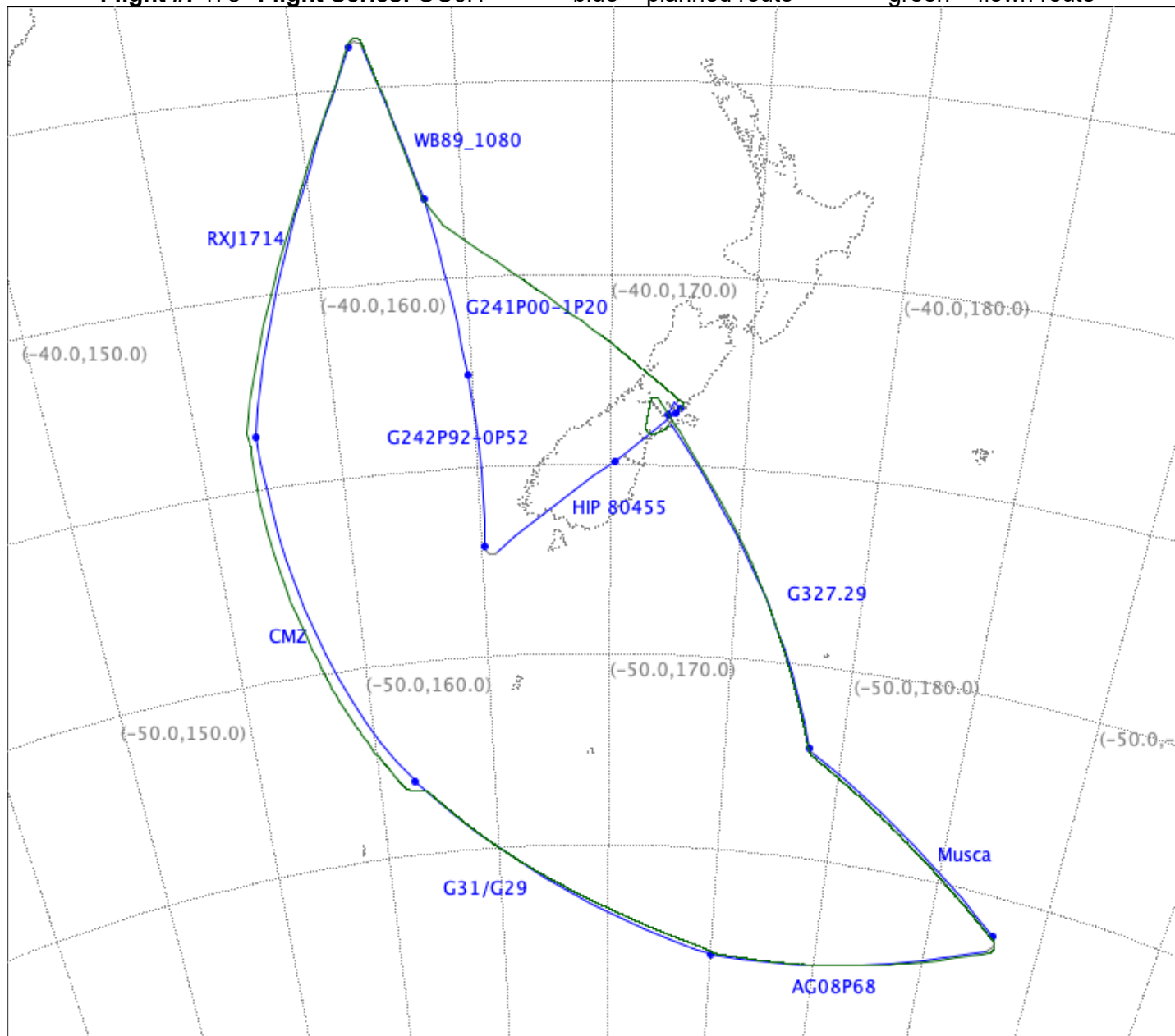
MISSION ID: 2018-06-20_GR_F473

Date: 2018-06-20 UT Instrument: GREAT

Flight #: 473 Flight Series: OC6H

blue = planned route

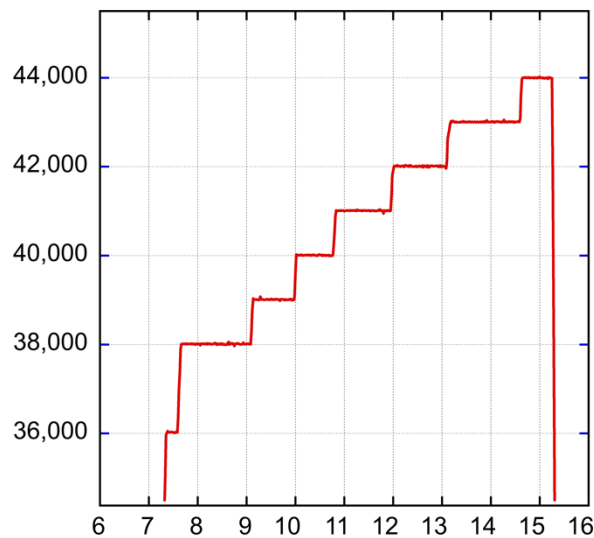
green = flown route



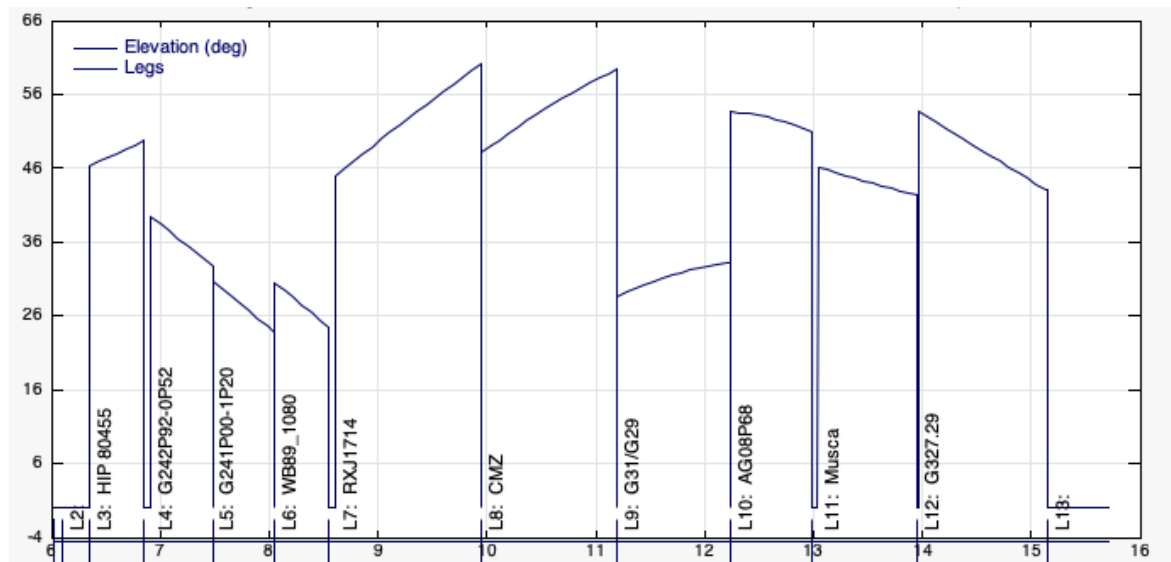
Flight notes: Late departure led to loss of first two science legs.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 80455	16h25m22.13s	-63d07m30.8s	6:21	30	
4	06_0151	König	G242P92-0P52	07h49m55.54s	-26d58m32.6s	6:54	34	Not flown; late departure
5	06_0151	König	G241P00-1P20	07h43m15.77s	-25d26m20.2s	7:28	34	Not flown; late departure
6	06_0151	König	WB89_1080	07h58m08.70s	-33d11m51.5s	8:03	30	
7	06_0122	Rowell	RXJ1714	17h12m02.31s	-40d04m34.7s	8:36	80	
8	06_0157	Gusten	CMZ	17h47m24.44s	-28d23m20.1s	9:57	75	
9	06_0171	Rugel	G31.388-0.384	18h50m55.03s	-01d33m16.8s	11:12	62	
10	06_0130	Leurini	AG08P68	18h06m23.40s	-21d37m08.0s	12:14	45	
11	06_0177	Bontemps	Musca	12h24m41.60s	-71d46m41.0s	13:02	54	
12	06_0216	Comito	G327.29	15h53m07.79s	-54d37m06.1s	13:57	71	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



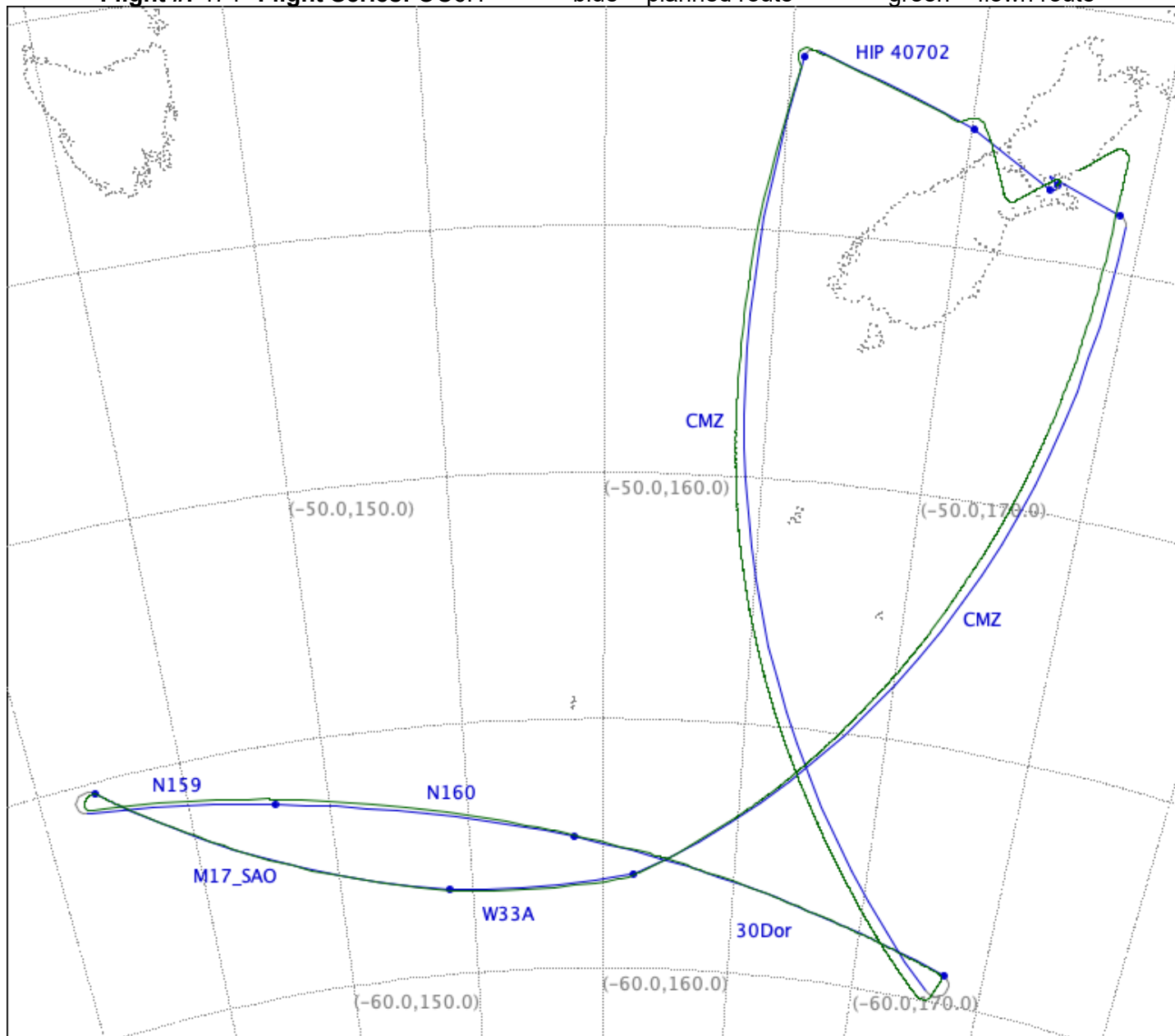
MISSION ID: 2018-06-21_GR_F474

Date: 2018-06-21 UT Instrument: GREAT

Flight #: 474 Flight Series: OC6H

blue = planned route

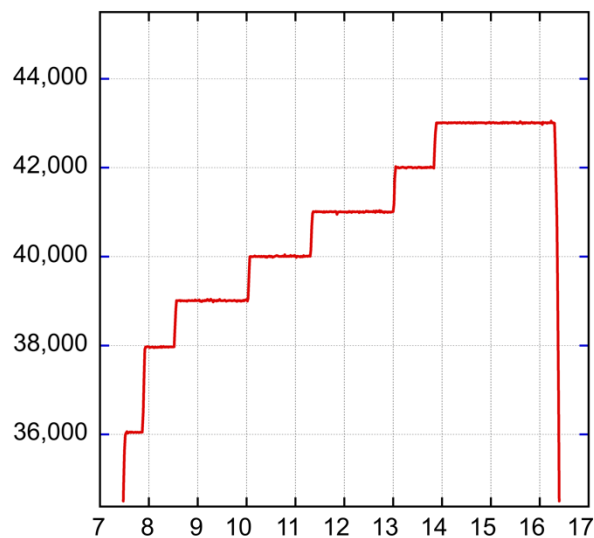
green = flown route



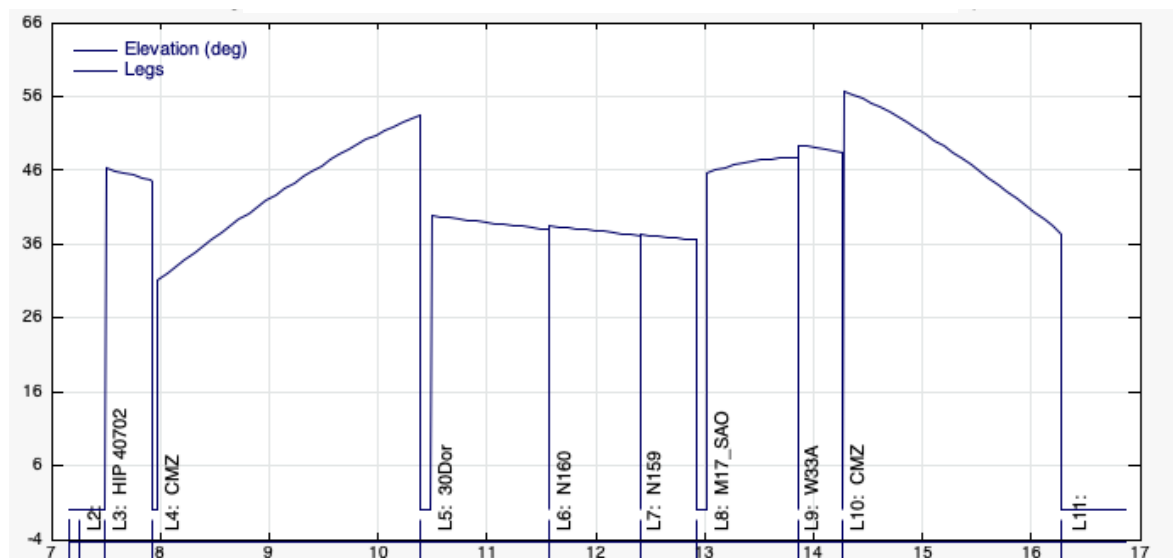
Flight notes: No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 40702	08h18m31.55s	-76d55m11.0s	7:29	26	
4	83_0609	GREAT Consortium	CMZ	17h47m24.60s	-28d23m16.3s	7:58	145	
5	83_0610	GREAT Consortium	30Dor	05h39m03.00s	-69d07m36.0s	10:29	65	
6	83_0610	GREAT Consortium	N160	05h39m40.30s	-69d39m01.1s	11:34	50	
7	83_0610	GREAT Consortium	N159	05h39m51.10s	-69d45m12.9s	12:24	31	
8	83_0611	GREAT Consortium	M17_SAO	18h20m27.64s	-16d12m00.9s	13:01	50	
9	83_0612	GREAT Consortium	W33A	18h14m39.52s	-17d52m00.5s	13:51	25	
10	83_0609	GREAT Consortium	CMZ	17h47m24.60s	-28d23m16.3s	14:16	120	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



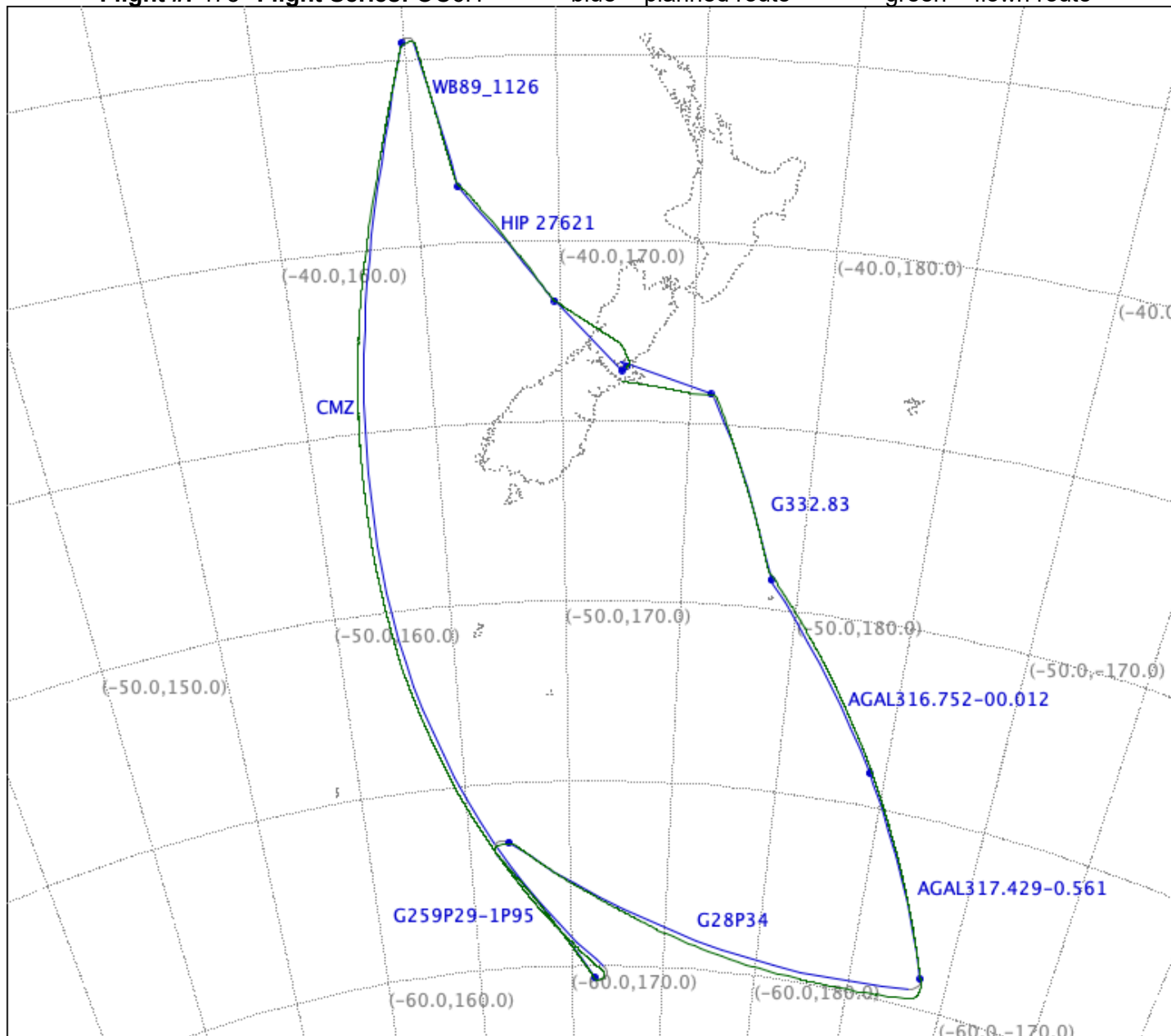
MISSION ID: 2018-06-22_GR_F475

Date: 2018-06-22 UT Instrument: GREAT

Flight #: 475 Flight Series: OC6H

blue = planned route

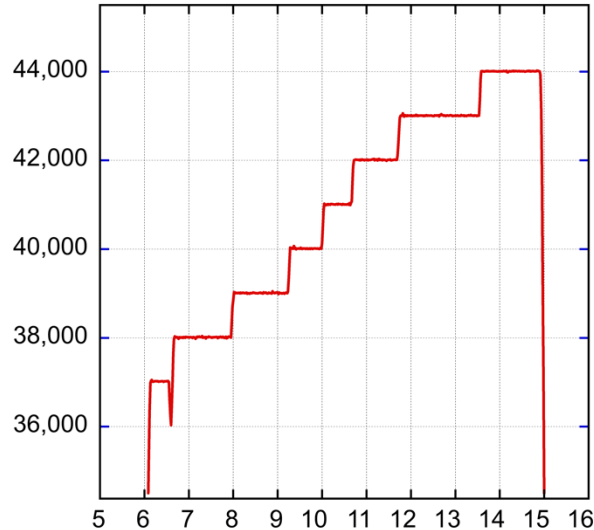
green = flown route



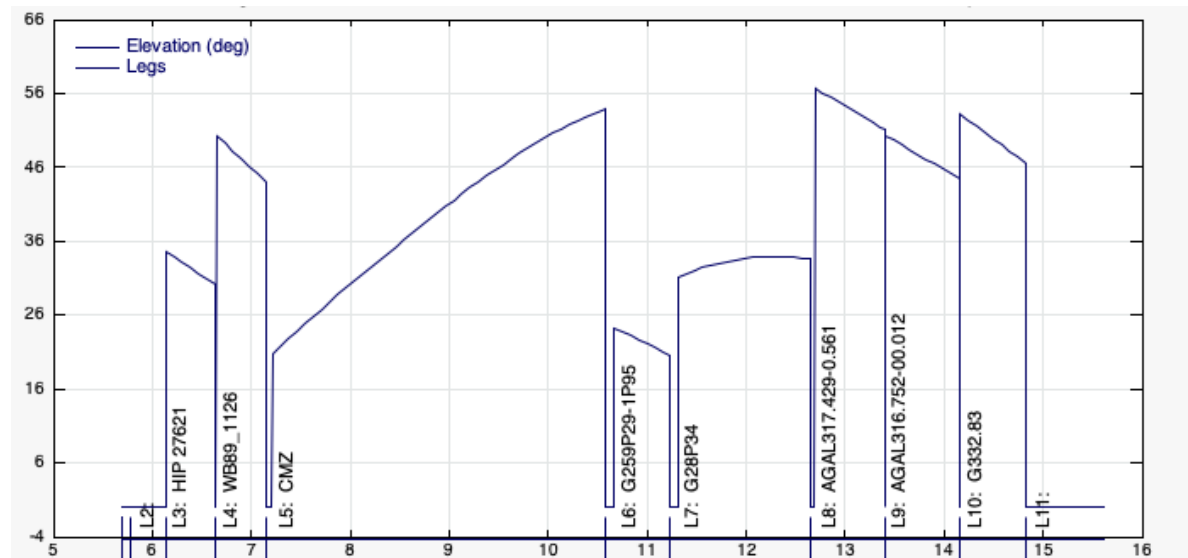
Flight notes: No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 27621	05h50m53.22s	-52d06m31.9s	6:08	30	
4	06_0151	König	WB89_1126	08h18m41.26s	-39d56m51.1s	6:38	30	
5	06_0173	Harris	CMZ	17h47m24.44s	-28d23m20.1s	7:12	202	
6	06_0151	König	G259P29-1P95	08h27m16.03s	-41d12m39.6s	10:39	34	
7	06_0214	Pillai	G28P34	18h42m51.01s	-04d02m02.0s	11:18	80	
8	06_0074	Jackson	AGAL317.429-0.561	14h51m37.77s	-60d00m20.5s	12:41	42.5	
9	06_0074	Jackson	AGAL316.752-00.012	14h44m51.75s	-59d48m18.1s	13:24	45	
10	83_0612	GREAT Consortium	G332.83	16h20m10.65s	-50d53m17.6s	14:09	40	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



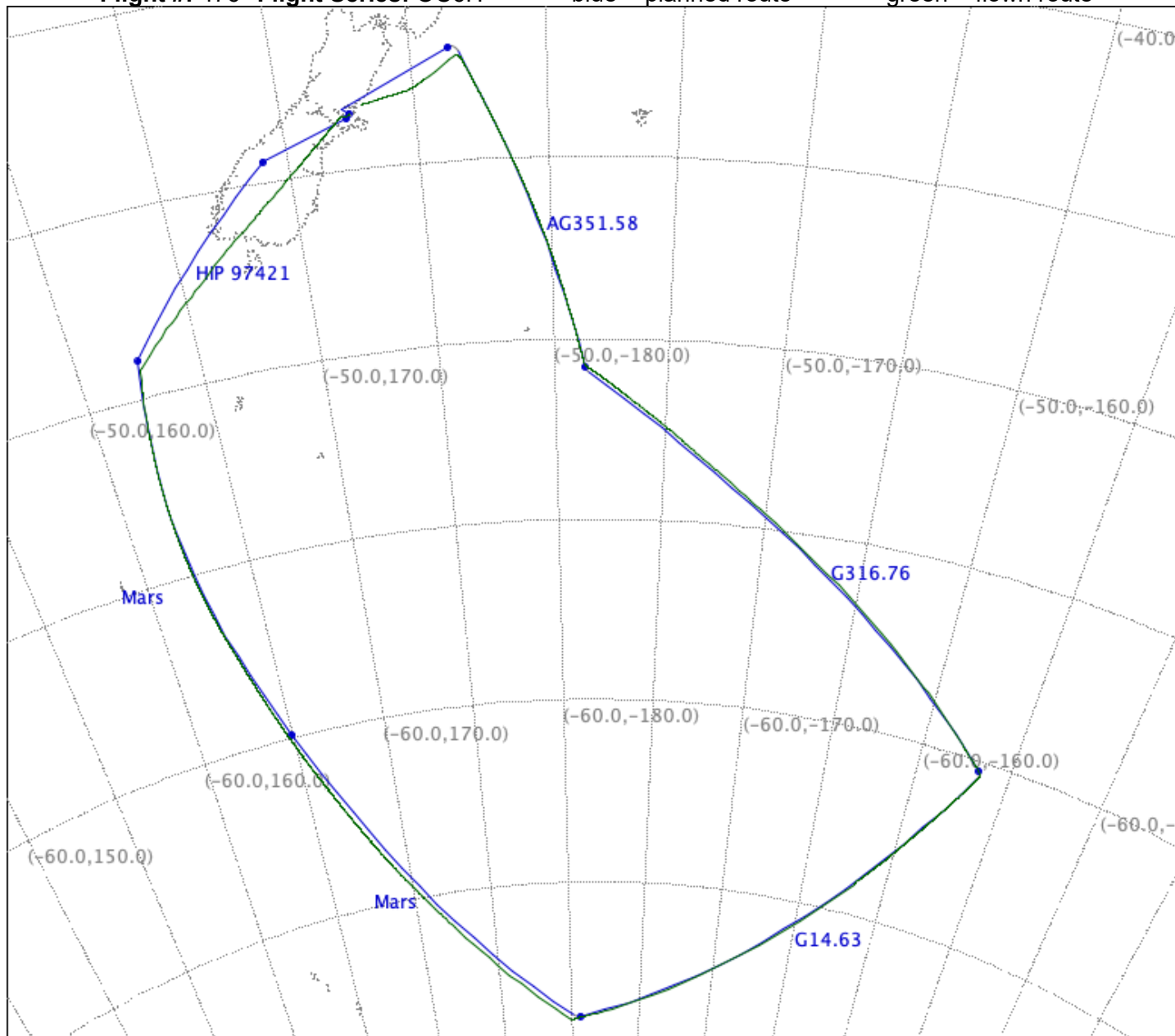
MISSION ID: 2018-06-26_GR_F476

Date: 2018-06-26 UT Instrument: GREAT

Flight #: 476 Flight Series: OC6H

blue = planned route

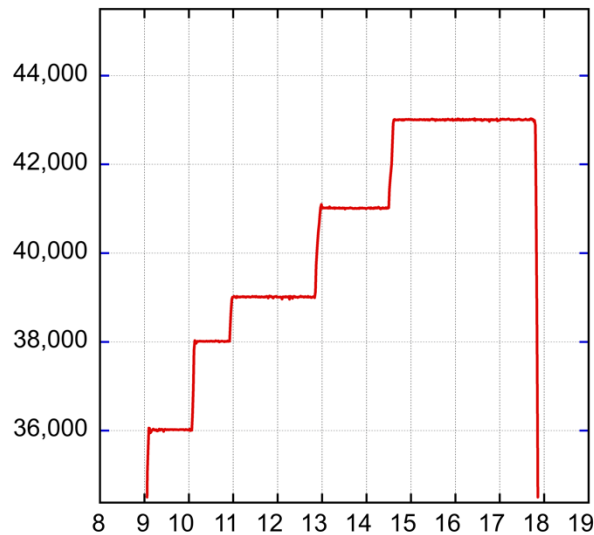
green = flown route



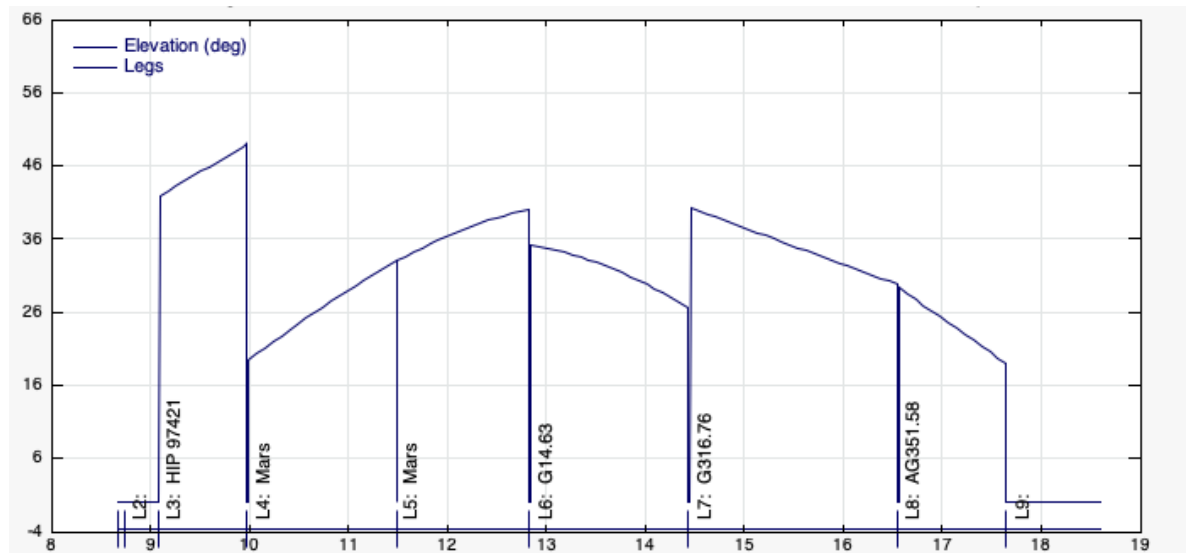
Flight notes:
No irregularities.

Flight 476 Christchurch- Christchurch		Mission ID 2018-06-26_GR_F476	Take off date UTC: 26-JUN-2018	Departure UTC: 08:41	Arrival UTC: 18:16	Consortium flight 4G-HFA		
Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 97421	19h48m01.20s	-56d21m45.4s	9:05	53	
4	90_0008	Calibration	Mars	20h50m51.42s	-22d30m32.6s	9:59	90	
5	83_0615	GREAT Consortium	Mars	20h50m51.96s	-22d30m53.8s	11:29	80	
6	83_0616	GREAT Consortium	G14.63-0.58	18h19m15.10s	-16d30m00.0s	12:50	95	
7	83_0616	GREAT Consortium	G316.76-0.01	14h44m57.11s	-59d48m01.2s	14:27	125	
8	83_0522	GREAT Consortium	AG351.58	17h25m24.90s	-36d12m44.0s	16:33	65	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



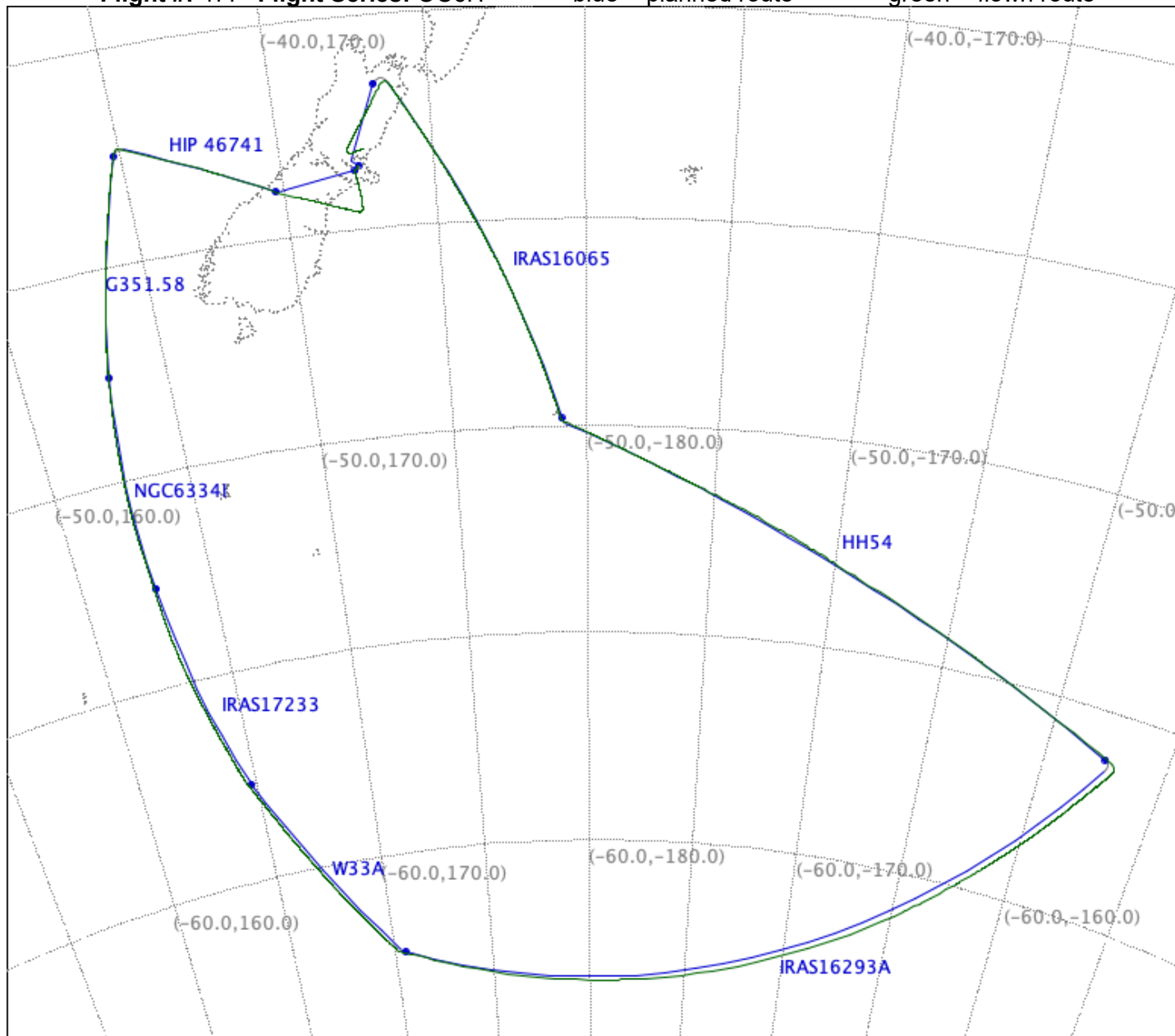
MISSION ID: 2018-06-27_GR_F477

Date: 2018-06-27 UT Instrument: GREAT

Flight #: 477 Flight Series: OC6H

blue = planned route

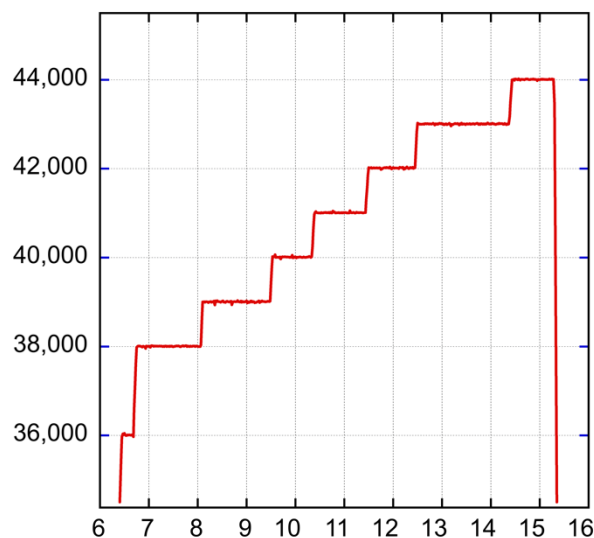
green = flown route



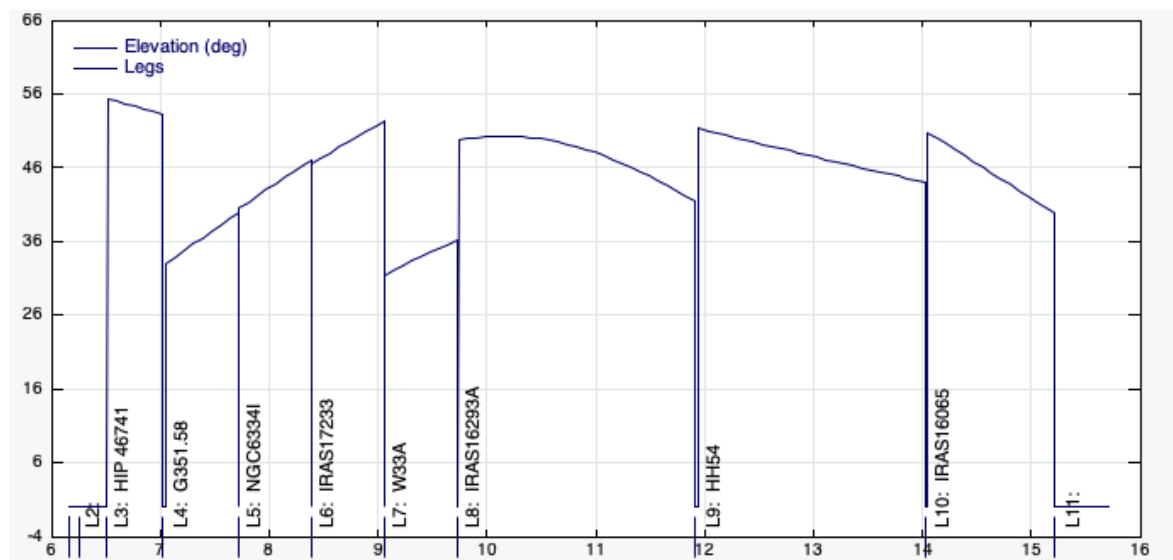
Flight notes: Full Moon near some targets making guiding difficult.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 46741	09h31m36.27s	-73d04m51.3s	6:31	30	
4	83_0612	GREAT Consortium	G351.58	17h25m25.03s	-36d12m45.3s	7:03	40	
5	83_0519	GREAT Consortium	NGC6334I	17h20m53.44s	-35d46m57.9s	7:43	40	Bright Moon nearby.
6	83_0519	GREAT Consortium	IRAS17233	17h26m42.50s	-36d09m18.1s	8:23	40	
7	83_0612	GREAT Consortium	W33A	18h14m39.52s	-17d52m00.5s	9:03	40	Bright Moon nearby.
8	83_0520	GREAT Consortium	IRAS16293A	16h32m22.74s	-24d28m34.5s	9:44	130	Target drifting during observation due to poor guide stars
9	83_0515	GREAT Consortium	HH54	12h55m50.88s	-76d56m20.8s	11:56	125	
10	83_0522	GREAT Consortium	IRAS16065	16h10m20.01s	-52d06m13.3s	14:03	70	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



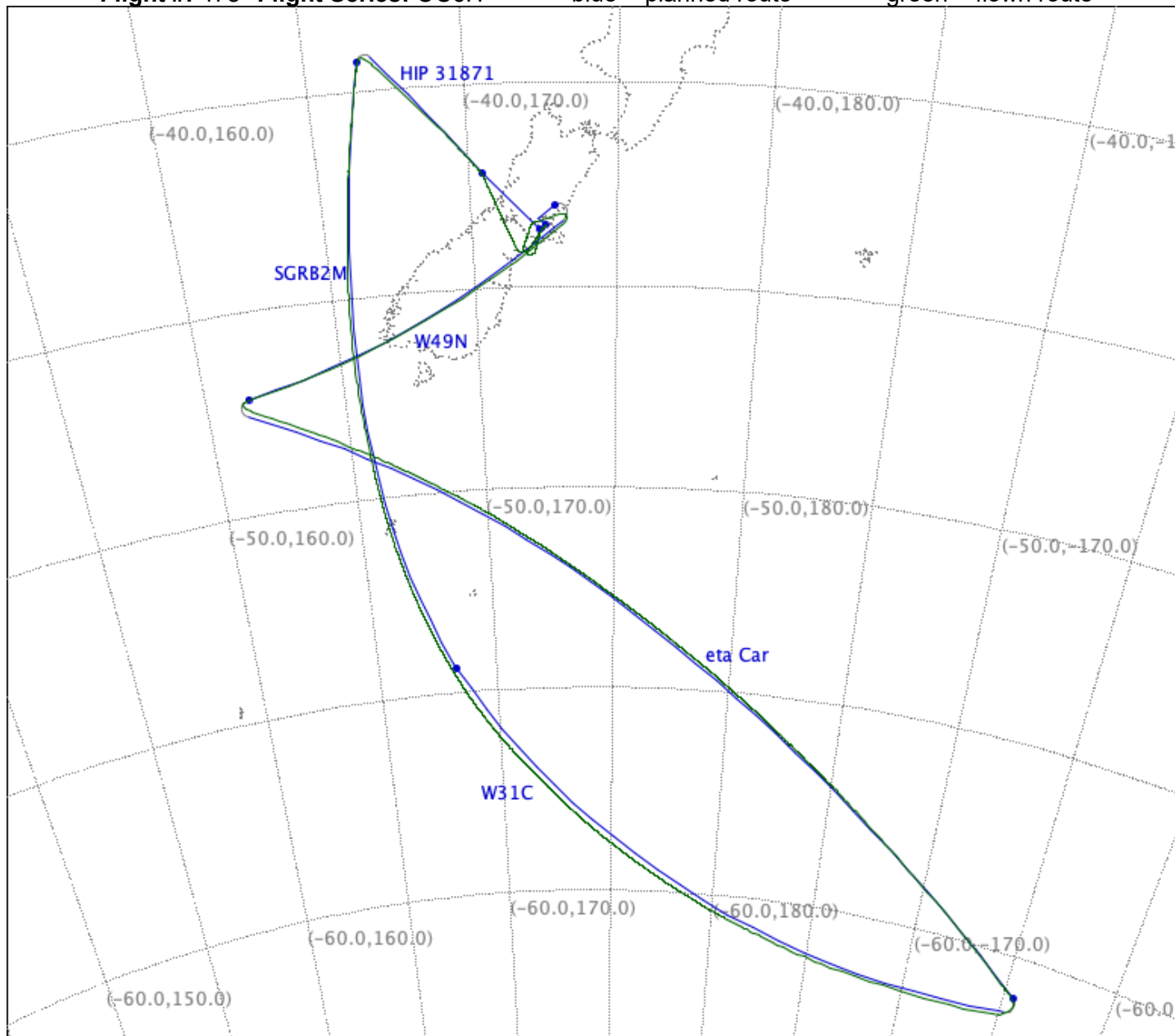
MISSION ID: 2018-06-28_GR_F478

Date: 2018-06-28 UT Instrument: GREAT

Flight #: 478 Flight Series: OC6H

blue = planned route

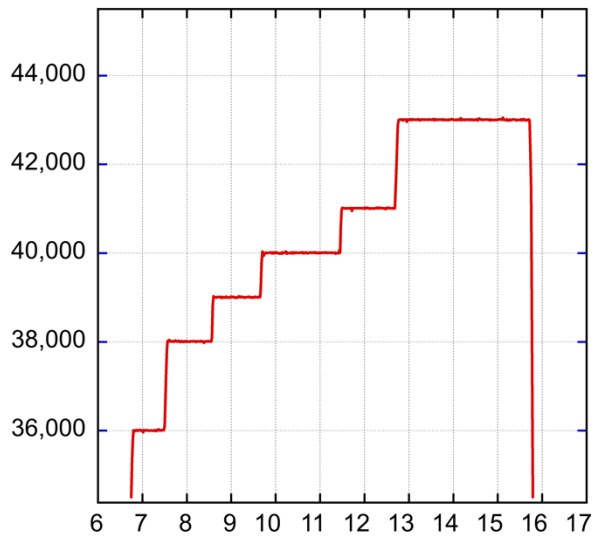
green = flown route



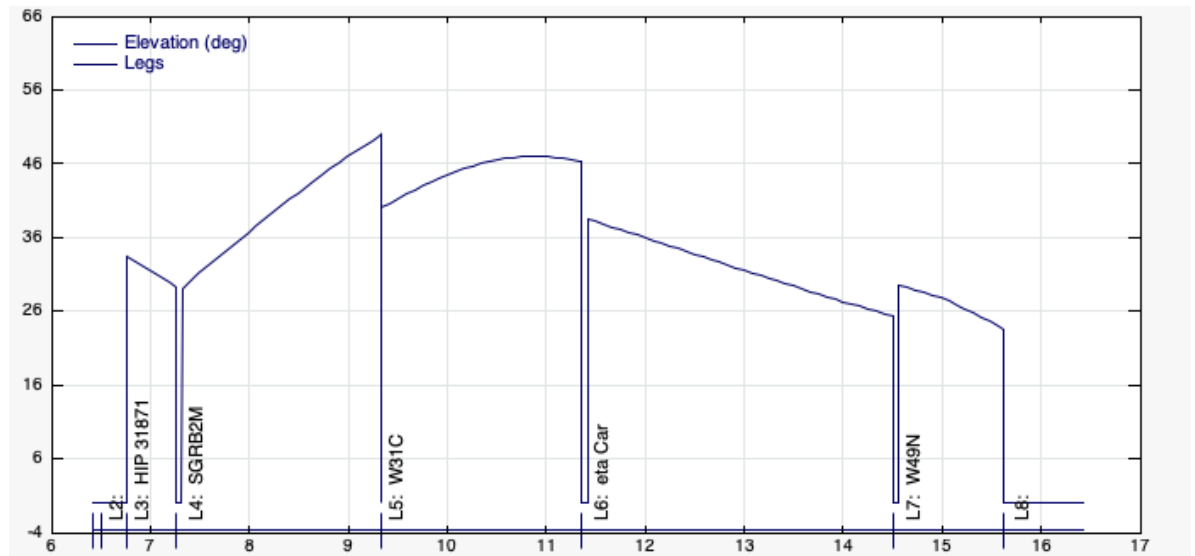
Flight notes:
No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 31871	06h39m43.33s	-53d27m05.0s	6:46	30	
4	06_0017	Neufeld	SGRB2M	17h47m20.16s	-28d23m04.5s	7:19	121	
5	06_0017	Neufeld	W31C	18h10m28.70s	-19d55m50.0s	9:20	121	Struggled to keep guiding with full Moon nearby.
6	06_0052	Morris	eta Car	10h45m03.55s	-59d41m04.0s	11:25	185	
7	06_0017	Neufeld	W49N	19h10m13.20s	09d06m11.9s	14:34	63	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



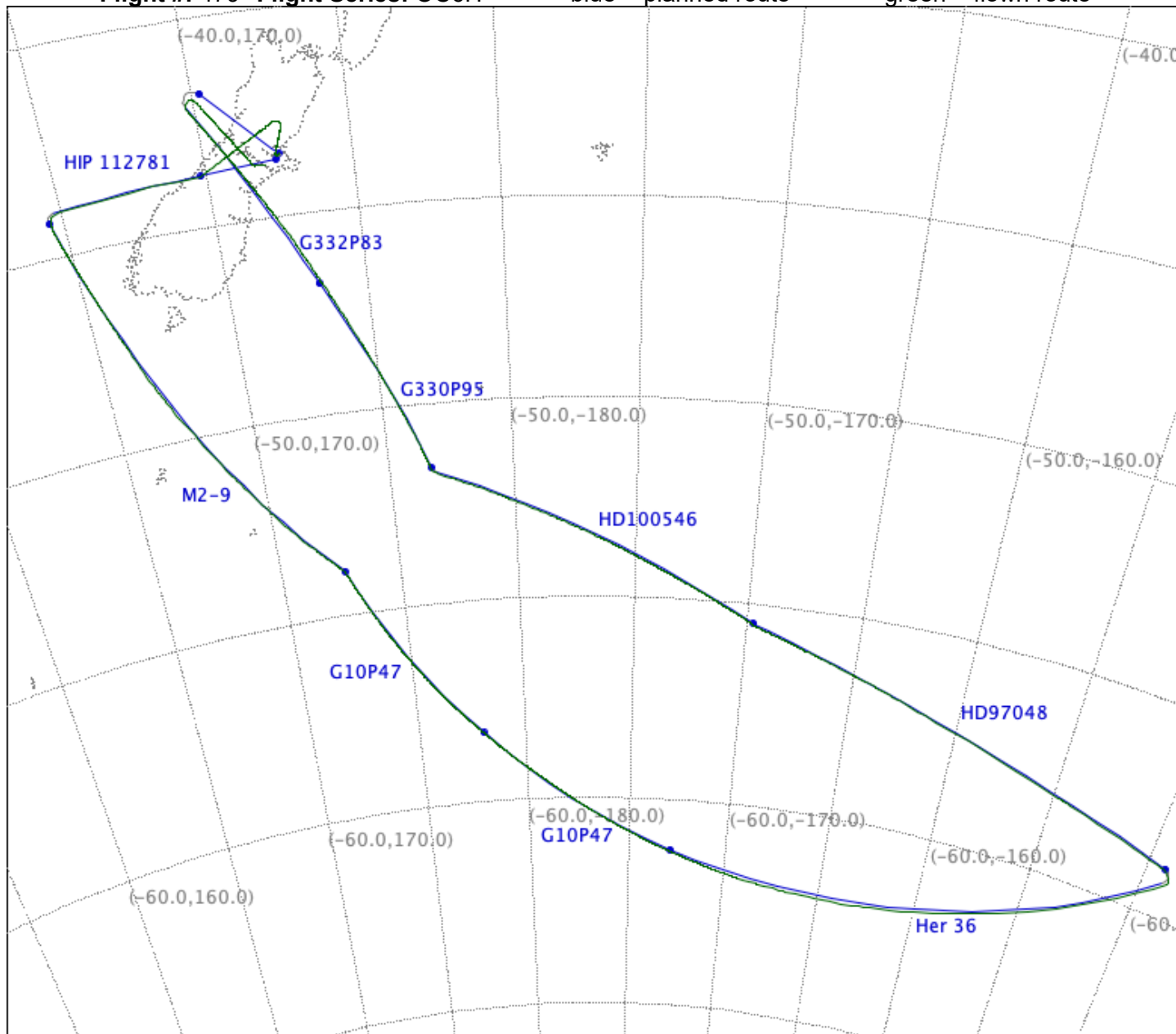
MISSION ID: 2018-06-29_GR_F479

Date: 2018-06-29 UT Instrument: GREAT

Flight #: 479 Flight Series: OC6H

blue = planned route

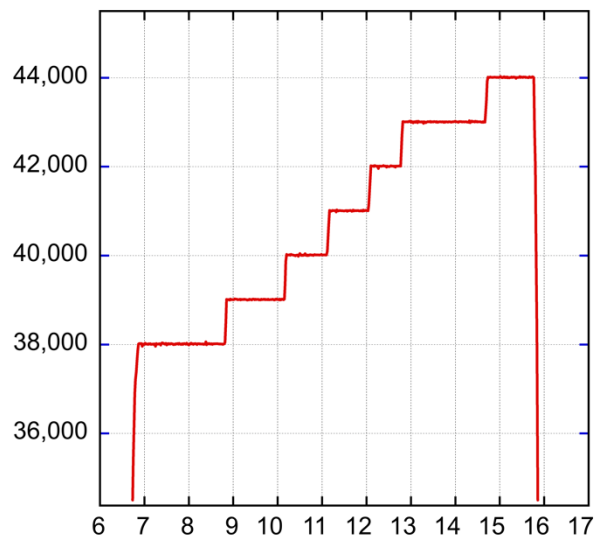
green = flown route



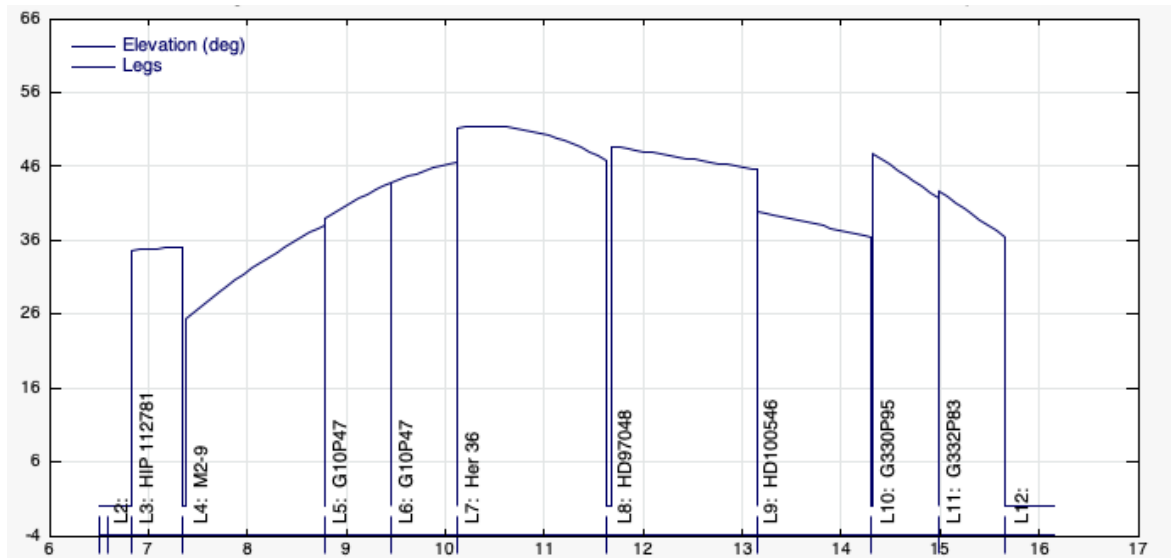
Flight notes: No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 112781	22h50m22.81s	-80d07m25.8s	6:50	30	
4	83_0602	GREAT Consortium	M2-9	17h05m37.97s	-10d08m32.6s	7:22	84	Light turbulence.
5	83_0519	GREAT Consortium	G10P47	18h08m38.20s	-19d51m50.0s	8:47	40	
6	83_0519	GREAT Consortium	G10P62	18h10m28.69s	-19d55m50.0s	9:27	40	Light turbulence.
7	83_0617	GREAT Consortium	Her 36	18h03m40.30s	-24d22m43.0s	10:07	90	
8	83_0514	GREAT Consortium	HD97048	11h08m03.32s	-77d39m17.5s	11:40	88	
9	83_0514	GREAT Consortium	HD100546	11h33m25.40s	-70d11m41.2s	13:08	69	
10	83_0519	GREAT Consortium	G330P95	16h09m53.01s	-51d54m55.0s	14:19	40	
11	83_0519	GREAT Consortium	G332P83	16h20m10.65s	-50d53m17.6s	14:59	40	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



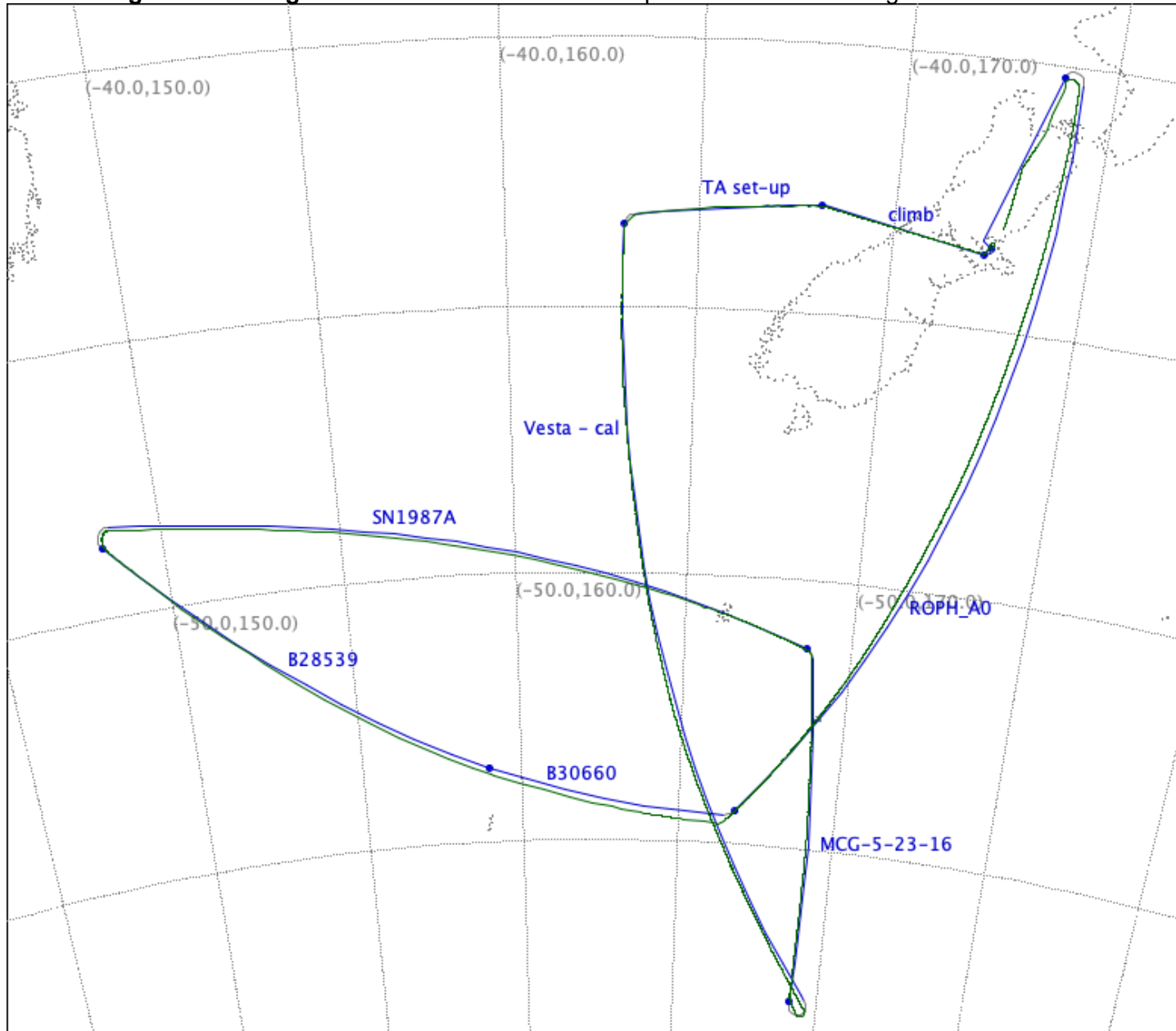
MISSION ID: 2018-07-04_HA_F480

Date: 2018-07-04 UT Instrument: HAWC+

Flight #: 480 Flight Series: OC6I

blue = planned route

green = flown route

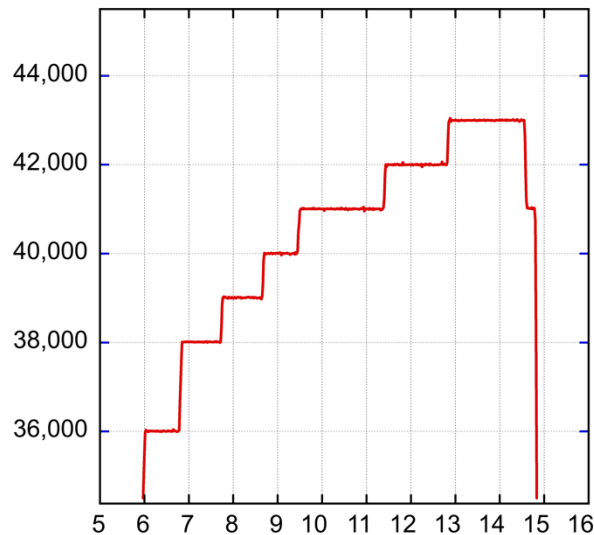


Flight notes: No irregularities.

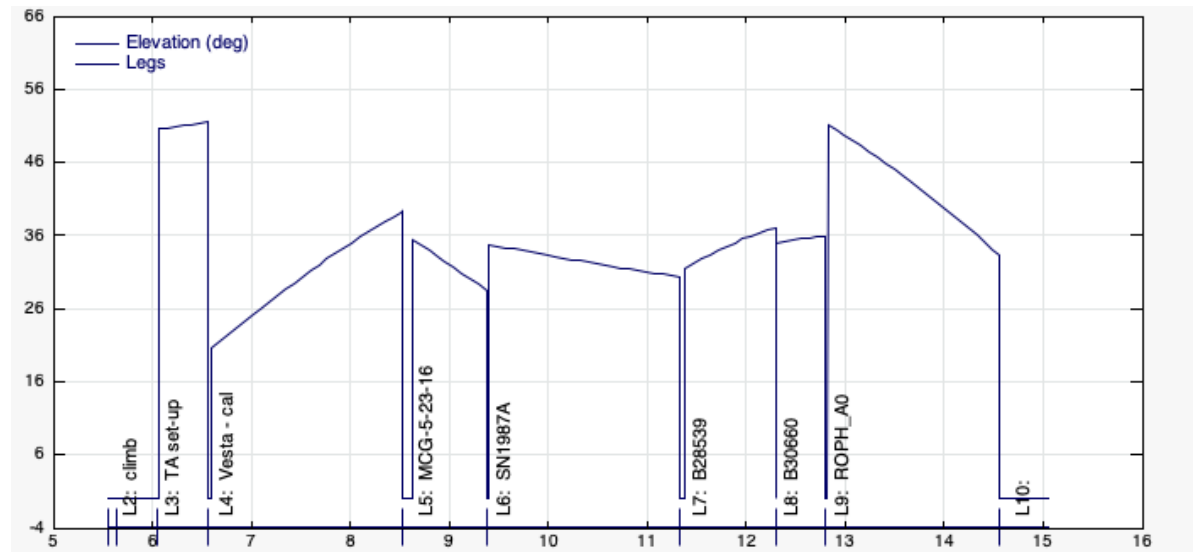
Flight 480 Mission ID 2018-07-04_HA_F480
 Christchurch-Christchurch Take off date UTC: 04-JUL-2018
 Departure UTC: 05:31 Arrival UTC: 15:12

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 72370	14h47m51.71s	-79d02m41.1s	6:03	30	
4	90_0086	Calibration	4 Vesta	17h38m20.94s	-20d49m49.7s	6:35	116	Light turbulence.
5	06_0066	Lopez-Rodriguez	MCG-5-23-16	09h47m40.17s	-30d56m55.9s	8:37	45	Light turbulence.
6	70_0609	GTO	SN1987A	05h35m28.02s	-69d16m11.1s	9:24	115	Light turbulence.
7	06_0234	Svoboda	B28539	18h44m20.06s	-04d02m00.0s	11:23	55	
8	06_0234	Svoboda	B30660	18h47m07.76s	-02d00m12.2s	12:18	30	
9	70_0609	GTO	ROPH_A0	16h26m31.91s	-24d23m27.8s	12:49	104	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



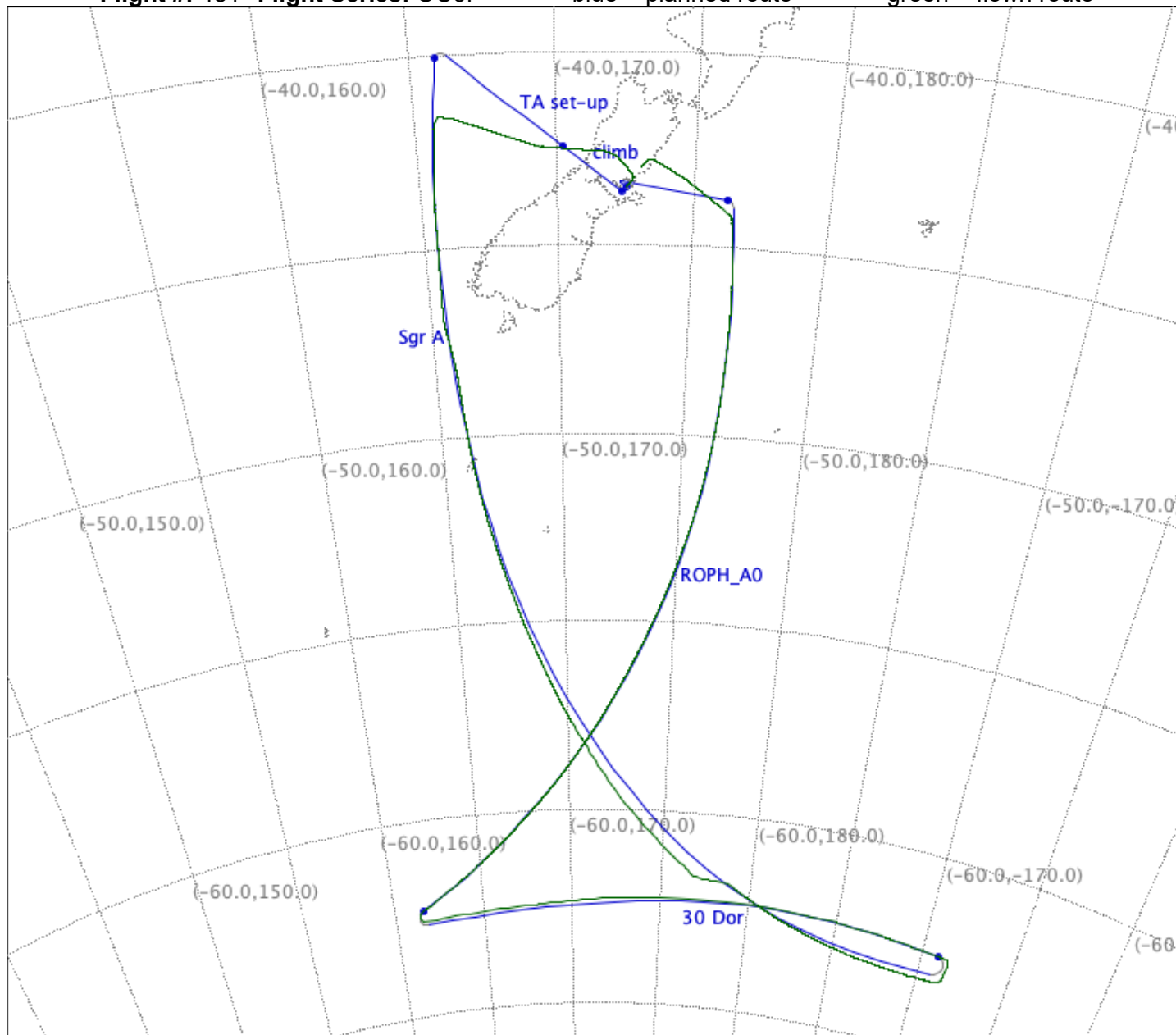
MISSION ID: 2018-07-05_HA_F481

Date: 2018-07-05 UT Instrument: HAWC+

Flight #: 481 Flight Series: OC6I

blue = planned route

green = flown route



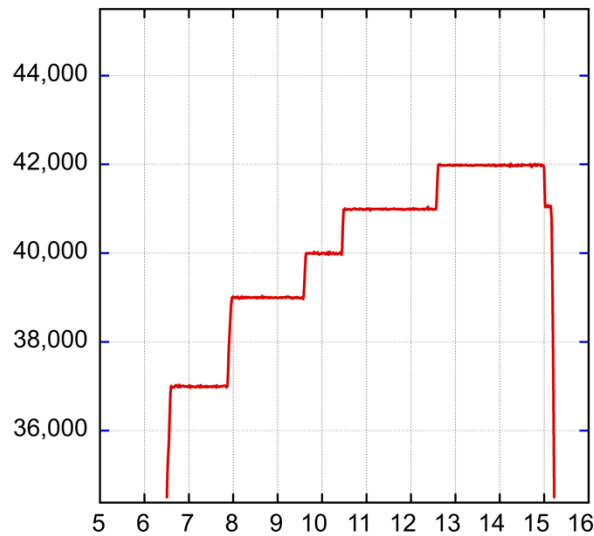
Flight notes:

Late take-off led to data losses on first science leg.

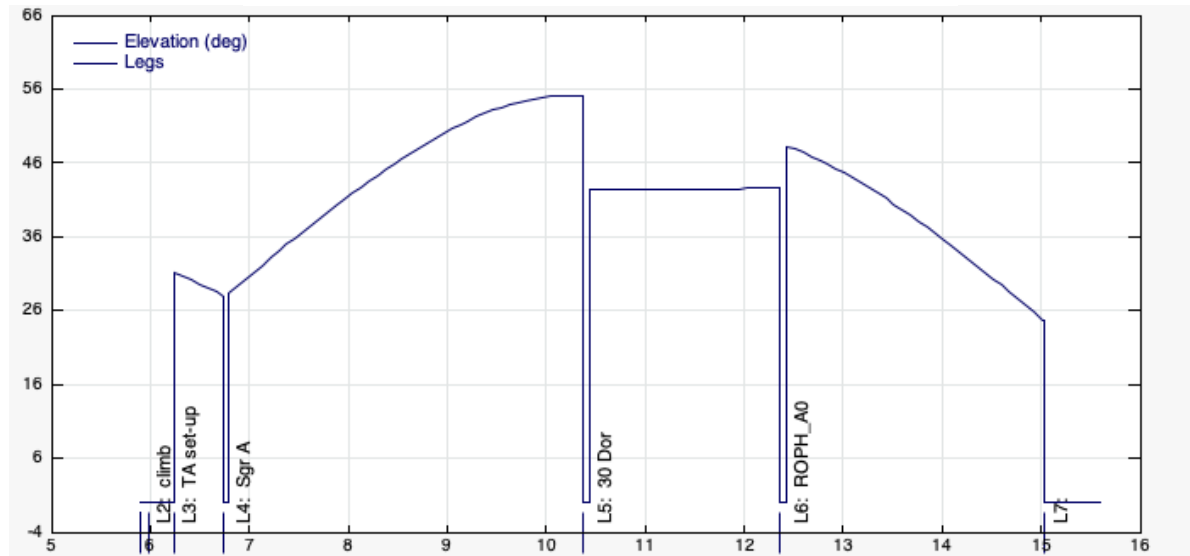
Flight 481 Mission ID 2018-07-05_HA_F481
 Christchurch-Christchurch Take off date UTC: 05-JUL-2018
 Departure UTC: 06:06 Arrival UTC: 15:48

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 26069	05h33m37.52s	-62d29m23.4s	6:14	30	
4	70_0609	GTO	Sgr A*	17h45m57.68s	-28d52m53.2s	6:47	214	Only 60% of planned data collected due to late take-off.
5	76_0001	Yorke	30 Dor N	05h38m45.04s	-69d05m06.4s	10:26	115	
6	70_0609	GTO	ROPH_A0	16h26m31.91s	-24d23m27.8s	12:25	156	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



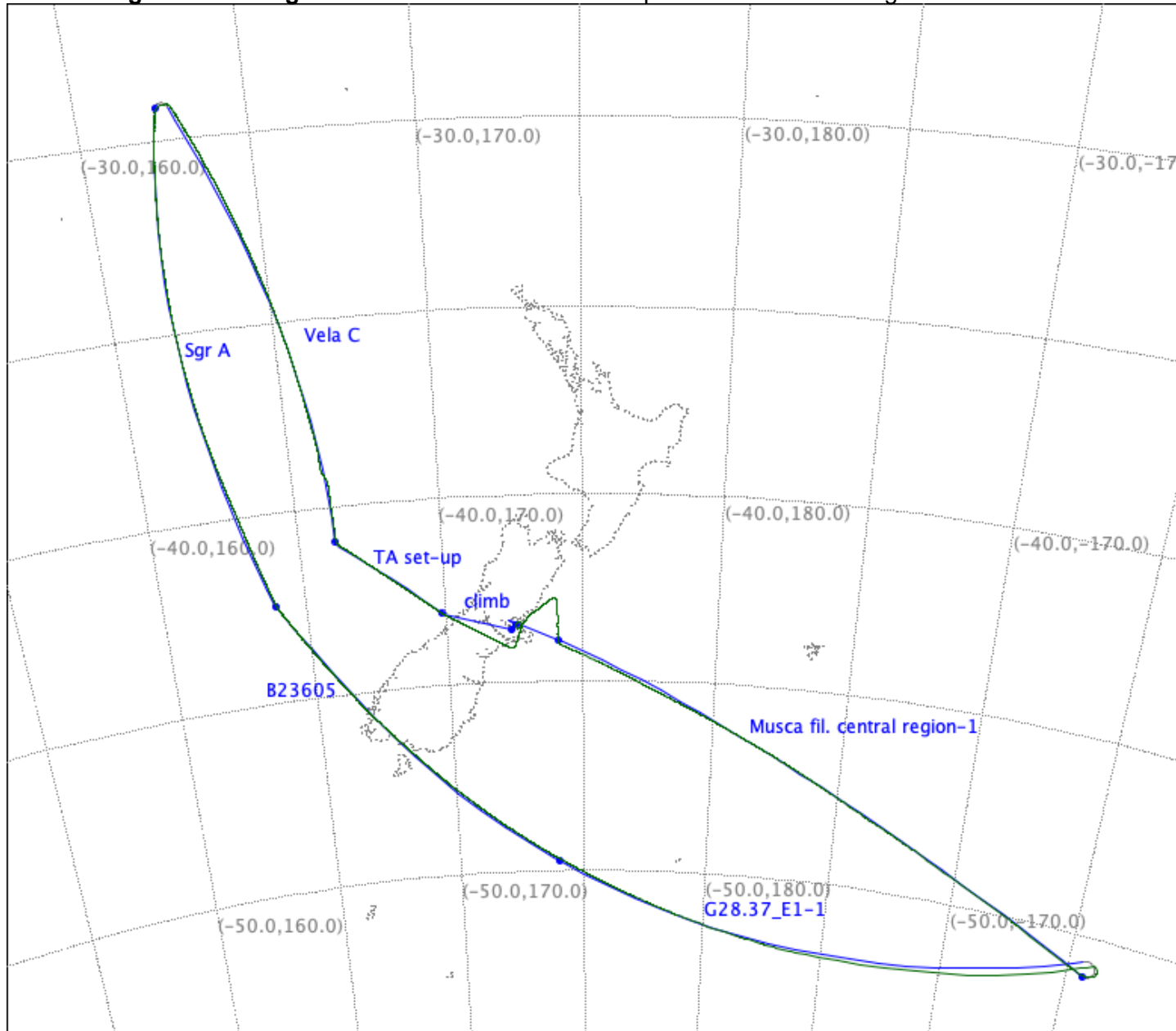
MISSION ID: 2018-07-06_HA_F482

Date: 2018-07-06 UT Instrument: HAWC+

Flight #: 482 Flight Series: OC6I

blue = planned route

green = flown route

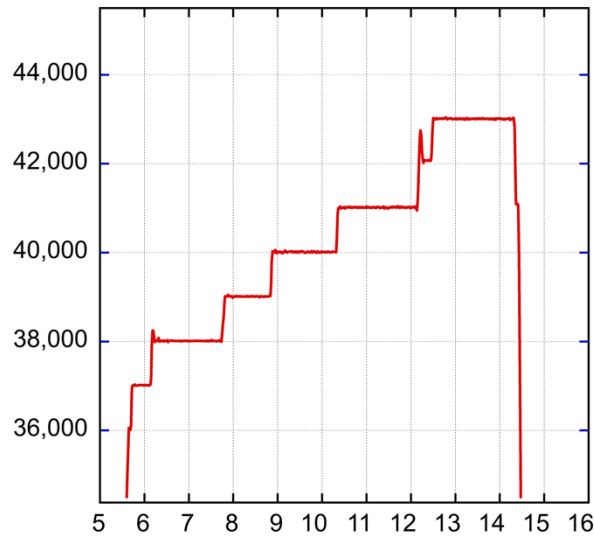


Flight notes:
No irregularities.

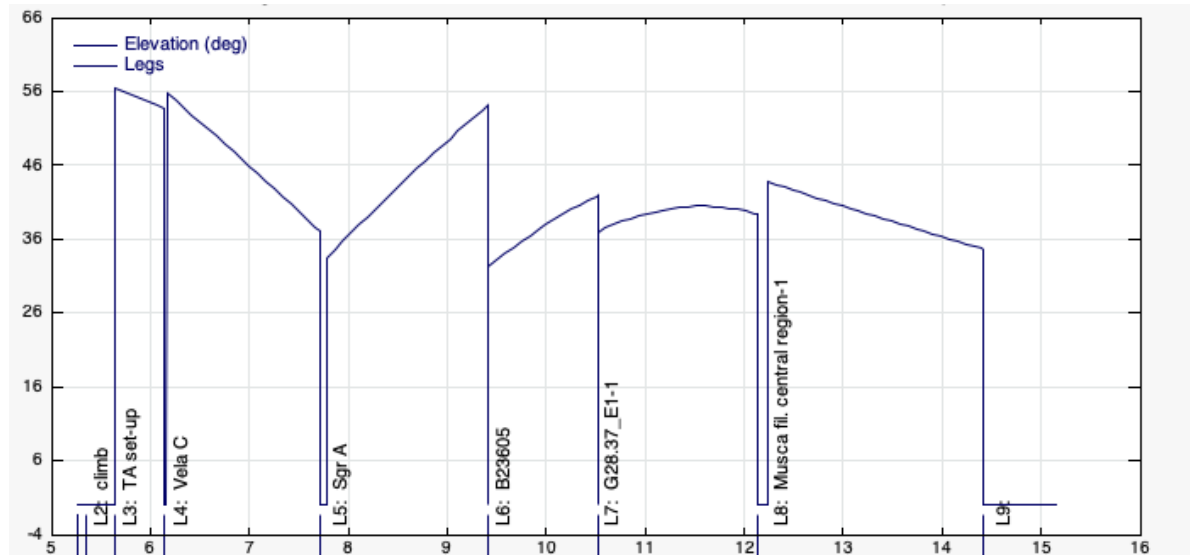
Flight 482 Mission ID 2018-07-06_HA_F482
 Christchurch-Christchurch Take off date UTC: 06-JUL-2018
 Departure UTC: 05:08 Arrival UTC: 14:54

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 45238	09h13m11.98s	-69d43m01.9s	5:38	30	
4	70_0609	GTO	VelaC_C01	08h59m28.04s	-43d44m50.5s	6:10	93	First 13min lost due to clouds
5	70_0609	GTO	sgra*	17h45m57.68s	-28d52m53.2s	7:46	98	
6	06_0234	Svoboda	B23605	18h33m35.73s	-08d22m29.3s	9:25	66	
7	06_0039	Clemens	G28.37_E1	18h42m51.92s	-04d02m11.9s	10:31	97	Faint guide stars led to guiding stability issues
8	06_0152	Soler	Musca fil. central region	12h28m44.77s	-71d17m08.0s	12:14	131	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



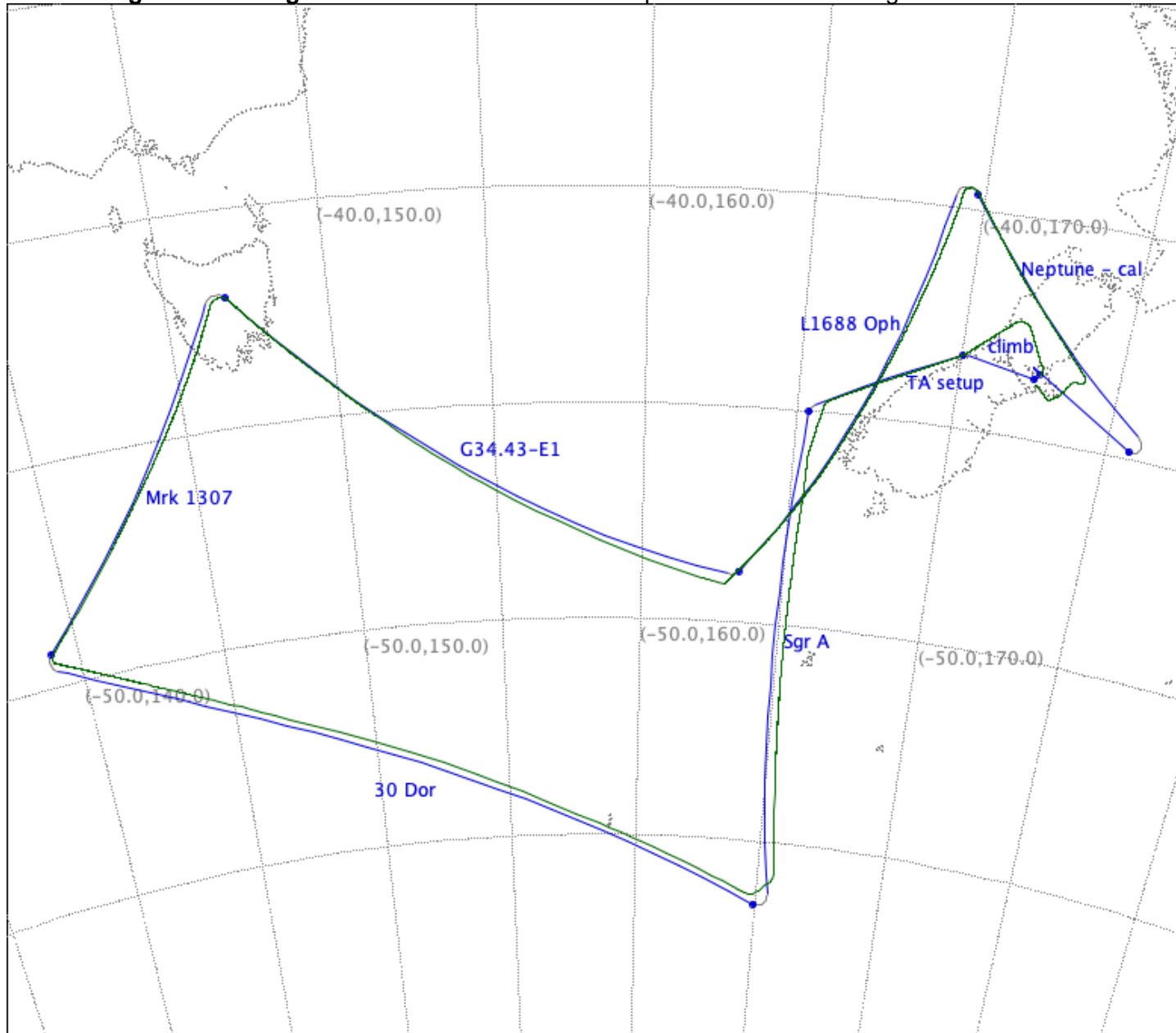
MISSION ID: 2018-07-07_HA_F483

Date: 2018-07-07 UT Instrument: HAWC+

Flight #: 483 Flight Series: OC6I

blue = planned route

green = flown route

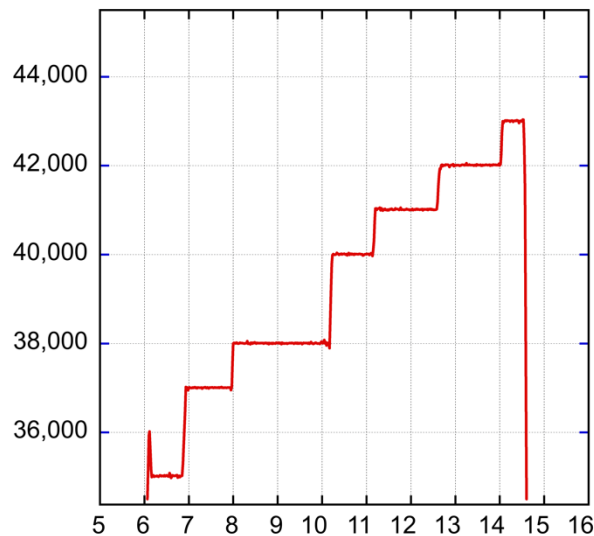


Flight notes: No irregularities.

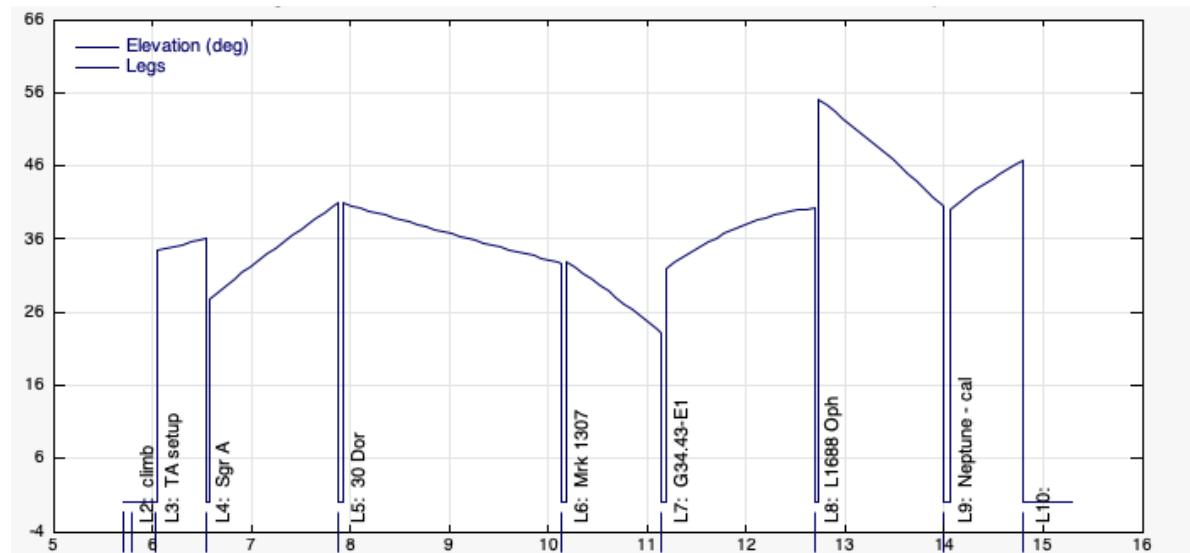
Flight 483 Mission ID 2018-07-07_HA_F483
 Christchurch-Christchurch Take off date UTC: 07-JUL-2018
 Departure UTC: 05:36 Arrival UTC: ~15:22

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 98495	20h00m35.65s	-72d54m37.8s	6:03	30	
4	70_0609	GTO	Sgr A*	17h45m57.68s	-28d52m53.2s	6:34	78	Late take-off and telescope dropping into standby led to 20min loss
5	76_0001	Yorke	30 Dor N	05h38m45.04s	-69d05m06.4s	7:56	132	
6	06_0222	Wiklind	Mrk 1307	11h52m37.19s	-02d28m09.9s	10:11	57	
7	06_0039	Clemens	G34.43-E1	18h53m19.74s	01d25m28.8s	11:12	90	
8	06_0116	Novak	L1688 Oph E Band C	16h27m15.97s	-24d38m36.1s	12:43	76	
9	90_0082	Calibration	Neptune	23h10m30.43s	-06d21m45.6s	14:04	44	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



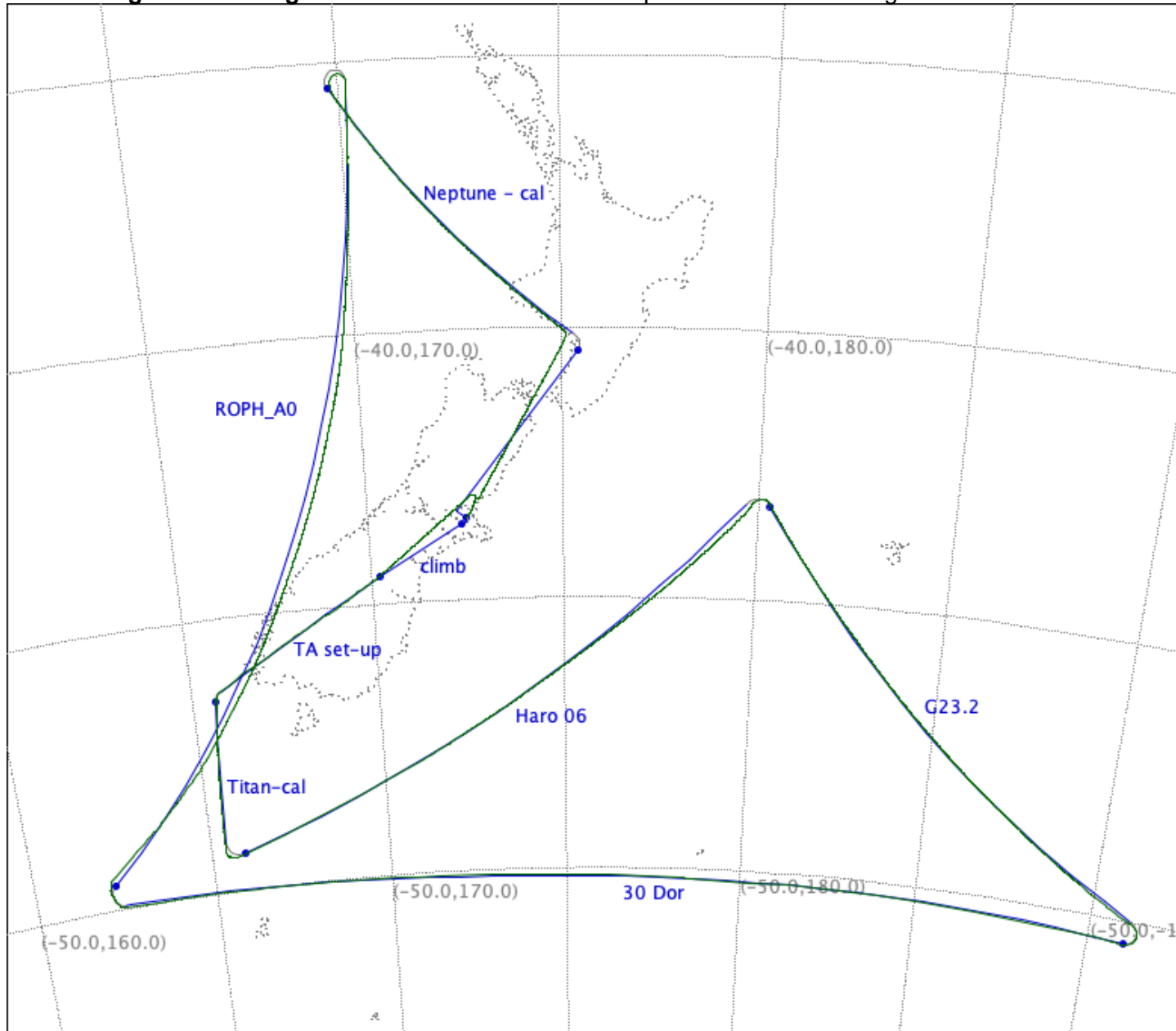
MISSION ID: 2018-07-11_HA_F484

Date: 2018-07-11 UT Instrument: HAWC+

Flight #: 484 Flight Series: OC6I

blue = planned route

green = flown route

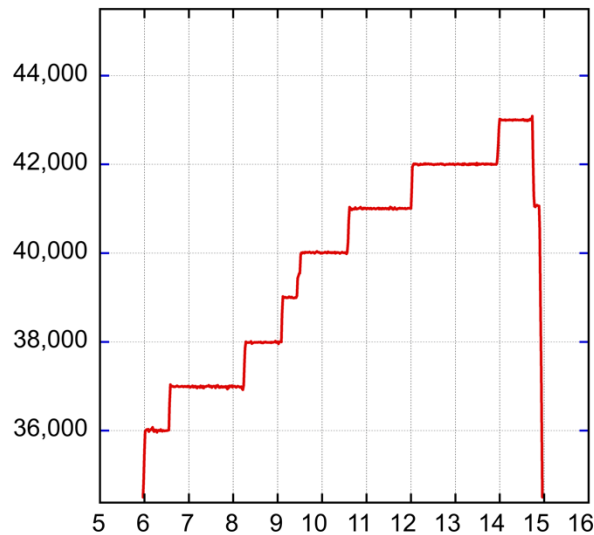


Flight notes: No irregularities.

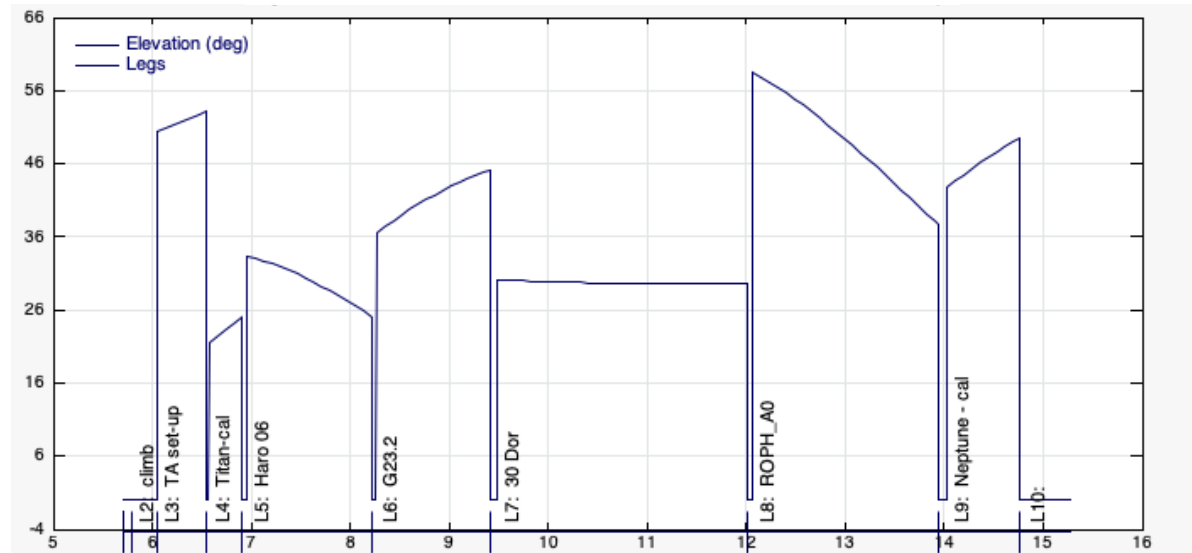
Flight 484 Mission ID 2018-07-11_HA_F484
 Christchurch-Christchurch Take off date UTC: 11-JUL-2018
 Departure UTC: 05:33 Arrival UTC: 15:30

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 82273	16h48m39.90s	-69d01m39.8s	6:03	30	
4	06_0160	Person	Titan.20180718	18h18m50.99s	-22d32m26.3s	6:34	20	
5	06_0222	Wiklind	Haro 06	12h15m18.31s	05d45m39.9s	6:58	75	
6	06_0129	Csengeri	G23.2	18h34m54.98s	-08d49m17.0s	8:16	69	
7	76_0001	Yorke	30 Dor N	05h38m45.04s	-69d04m57.8s	9:29	151	
8	70_0609	GTO	ROPH_A0	16h26m31.91s	-24d23m27.8s	12:04	112	
9	90_0082	Calibration	Neptune	23h10m21.00s	-06d22m54.8s	14:02	44	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



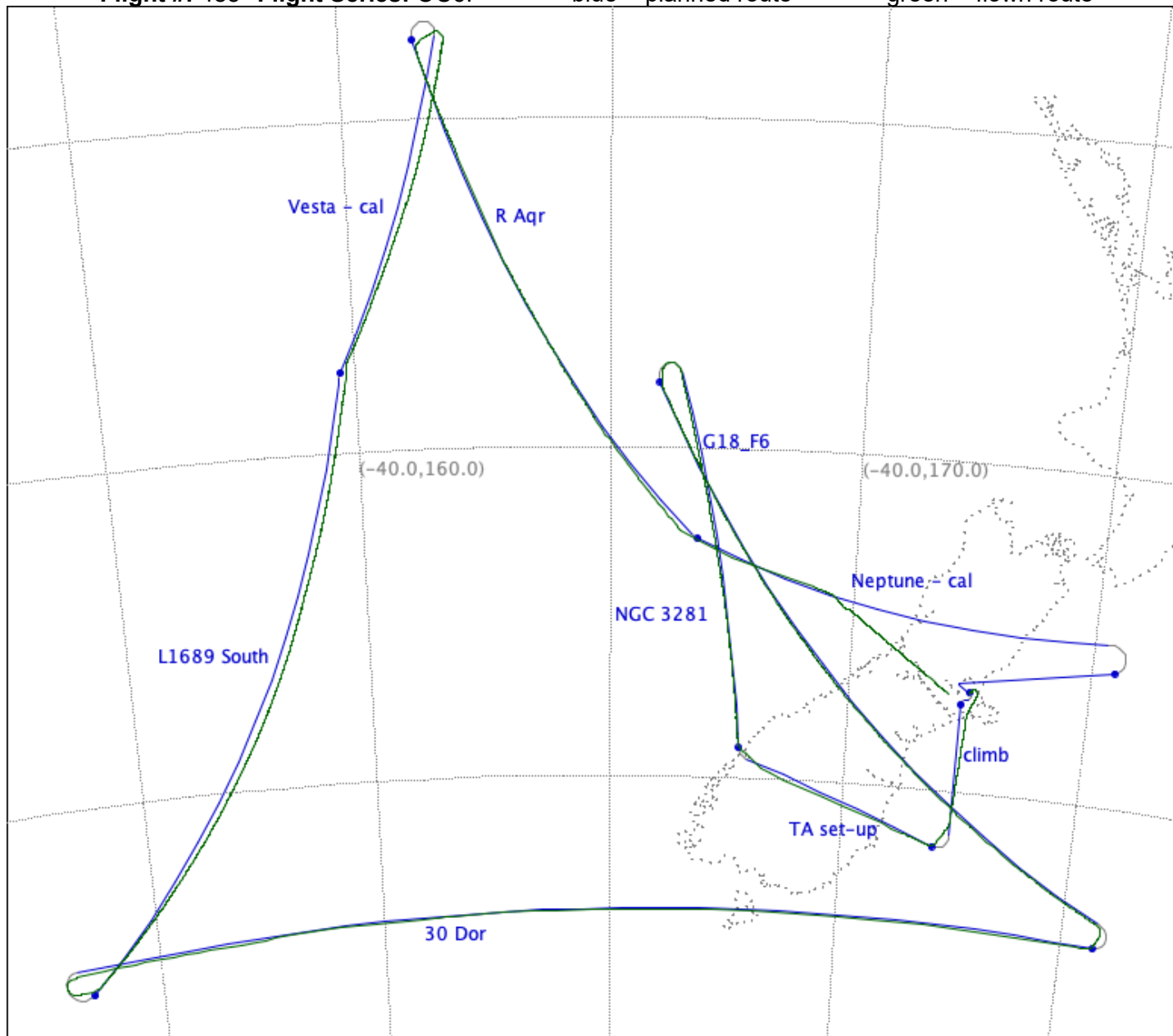
MISSION ID: 2018-07-12_HA_F485

Date: 2018-07-12 UT Instrument: HAWC+

Flight #: 485 Flight Series: OC6I

blue = planned route

green = flown route

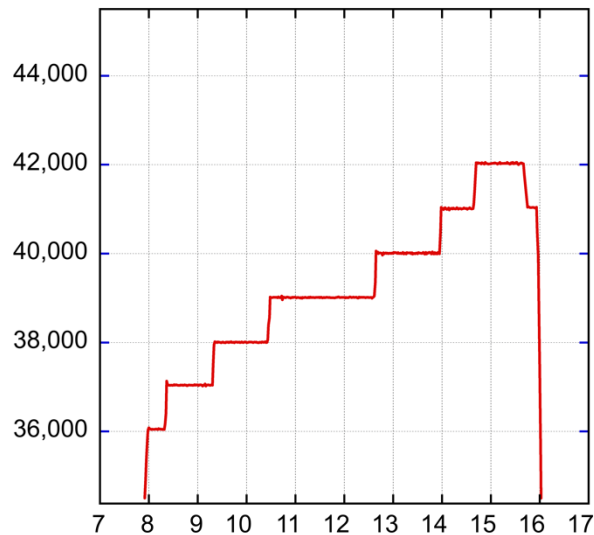


Flight notes:

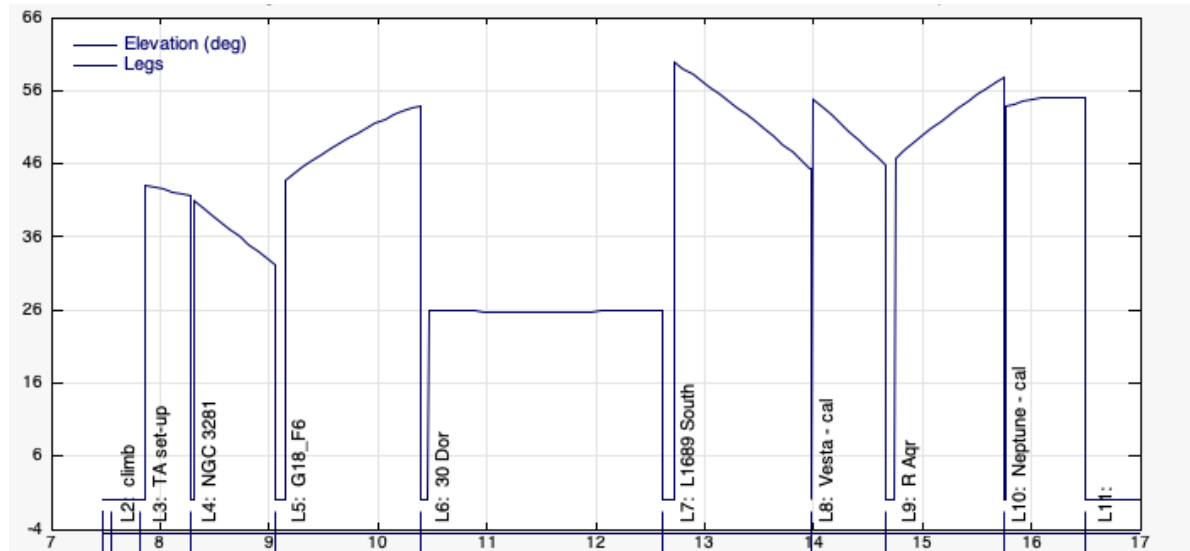
HAWC+ cooling failed near end of flight leading to an early return to Christchurch base.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 40702	08h18m31.55s	-76d55m11.0s	7:51	25	
4	06_0066	Lopez-Rodriguez	NGC 3281	10h31m52.09s	-34d51m13.4s	8:18	45	
5	06_0027	Stephens	G18_F6	18h25m10.00s	-12d43m41.2s	9:08	75	
6	76_0001	Yorke	30 Dor N	05h38m45.04s	-69d04m57.8s	10:27	129	
7	06_0116	Novak	L1689 South Band C	16h32m09.73s	-24d44m45.8s	12:42	76	Faint guide stars led to guiding stability issues; only half of the planned data collected
8	90_0086	Calibration	4 Vesta	17h31m49.77s	-21d25m42.5s	13:59	40	
9	06_0005	Omelian	R Aqr	23h43m49.46s	-15d17m04.1s	14:44	60	
10	90_0082	Calibration	Neptune	23h10m18.26s	-06d23m14.6s	15:45	44	HAWC+ cooling failed before leg began; no data collected; return to base

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



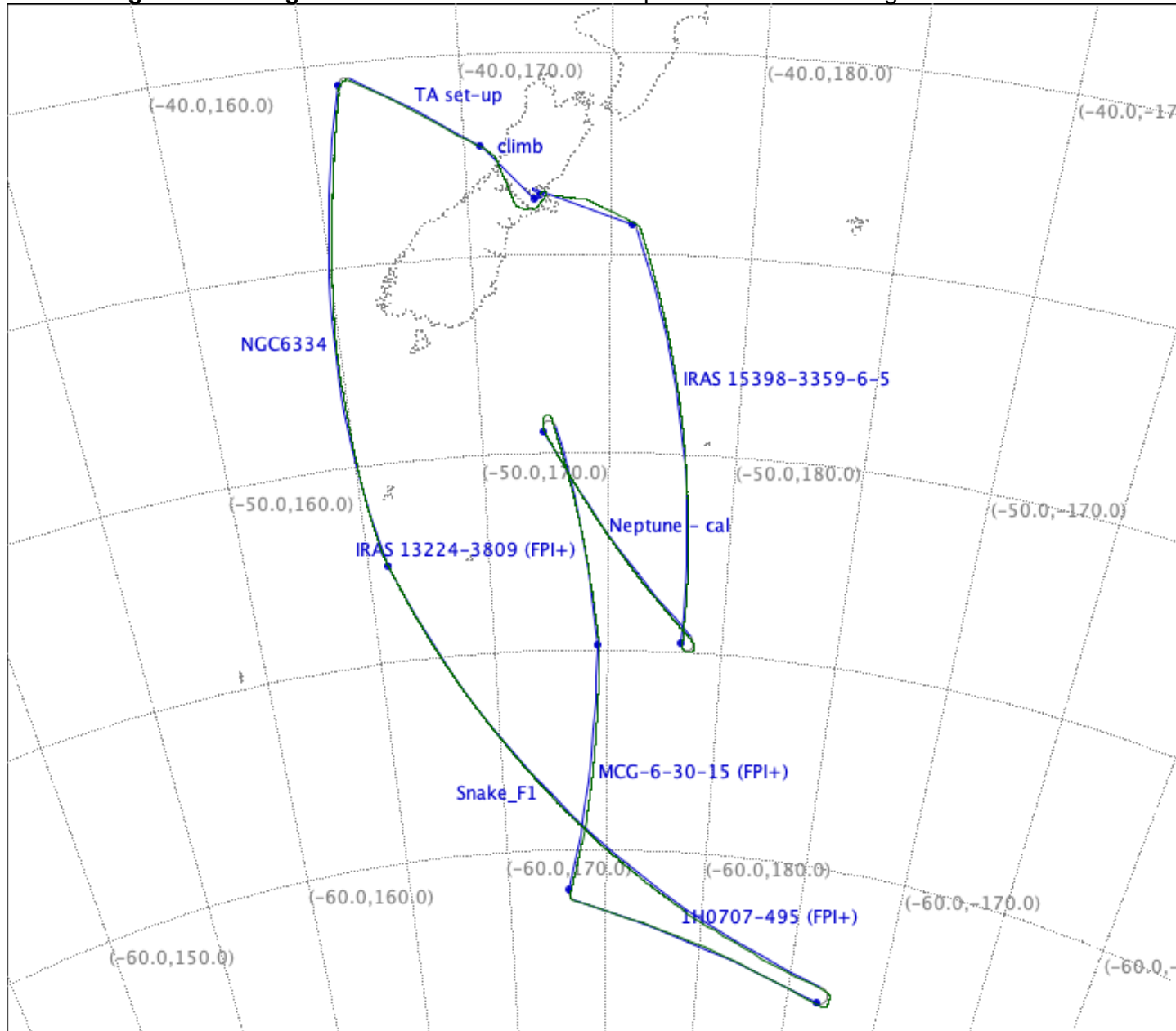
MISSION ID: 2018-07-13_HA_F486

Date: 2018-07-13 UT Instrument: HAWC+

Flight #: 486 Flight Series: OC6I

blue = planned route

green = flown route

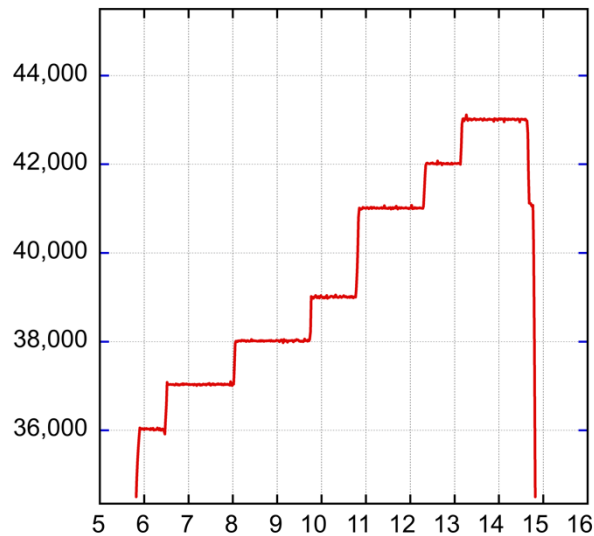


Flight notes: HAWC+ and FPI+ science observations on flight.

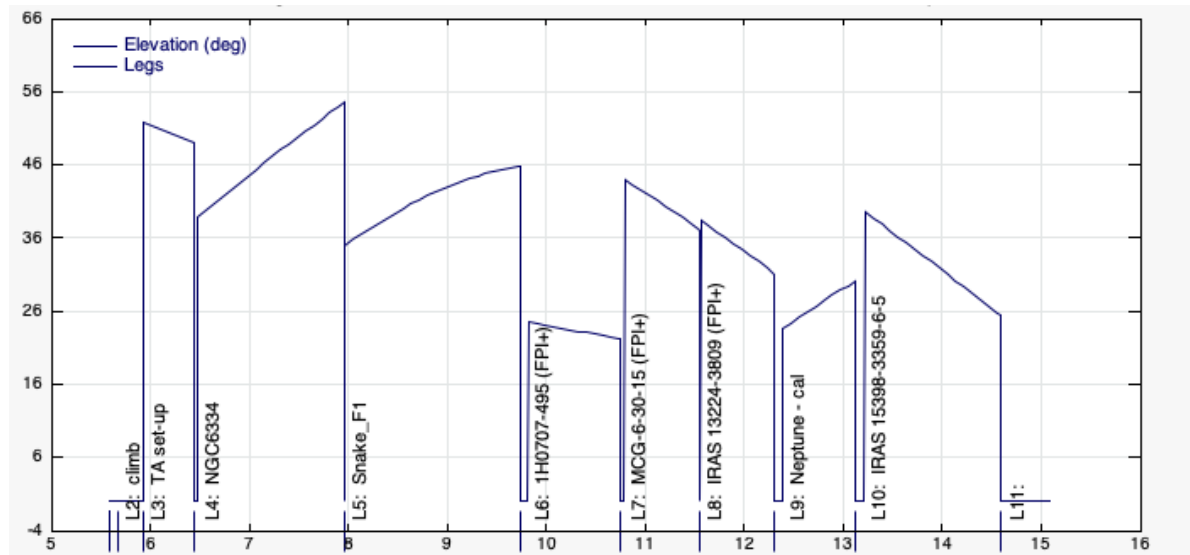
Flight 486 Mission ID 2018-07-13_HA_F486
 Christchurch-Christchurch Take off date UTC: 13-JUL-2018
 Departure UTC: 05:26 Arrival UTC: 15:09

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 45238	09h13m11.98s	-69d43m01.9s	5:56	30	
4	70_0609	GTO	NGC6334	17h20m25.72s	-35d53m15.1s	6:29	89	
5	06_0027	Stephens	Snake_F1	18h10m25.68s	-19d20m17.0s	7:58	106	
6	06_0221	Chary	1H0707-495	07h08m41.50s	-49d33m07.0s	9:49	56	FPI+ science
7	06_0221	Chary	MCG-6-30-15	13h35m53.70s	-34d17m44.0s	10:47	46	FPI+ science
8	06_0221	Chary	IRAS 13224-3809	13h25m19.40s	-38d24m53.0s	11:33	45	FPI+ science
9	90_0082	Calibration	Neptune	23h10m15.87s	-06d23m31.8s	12:23	44	
10	06_0086	Redaelli	IRAS 15398-3359-6-5	15h42m57.54s	-34d08m58.6s	13:13	82	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



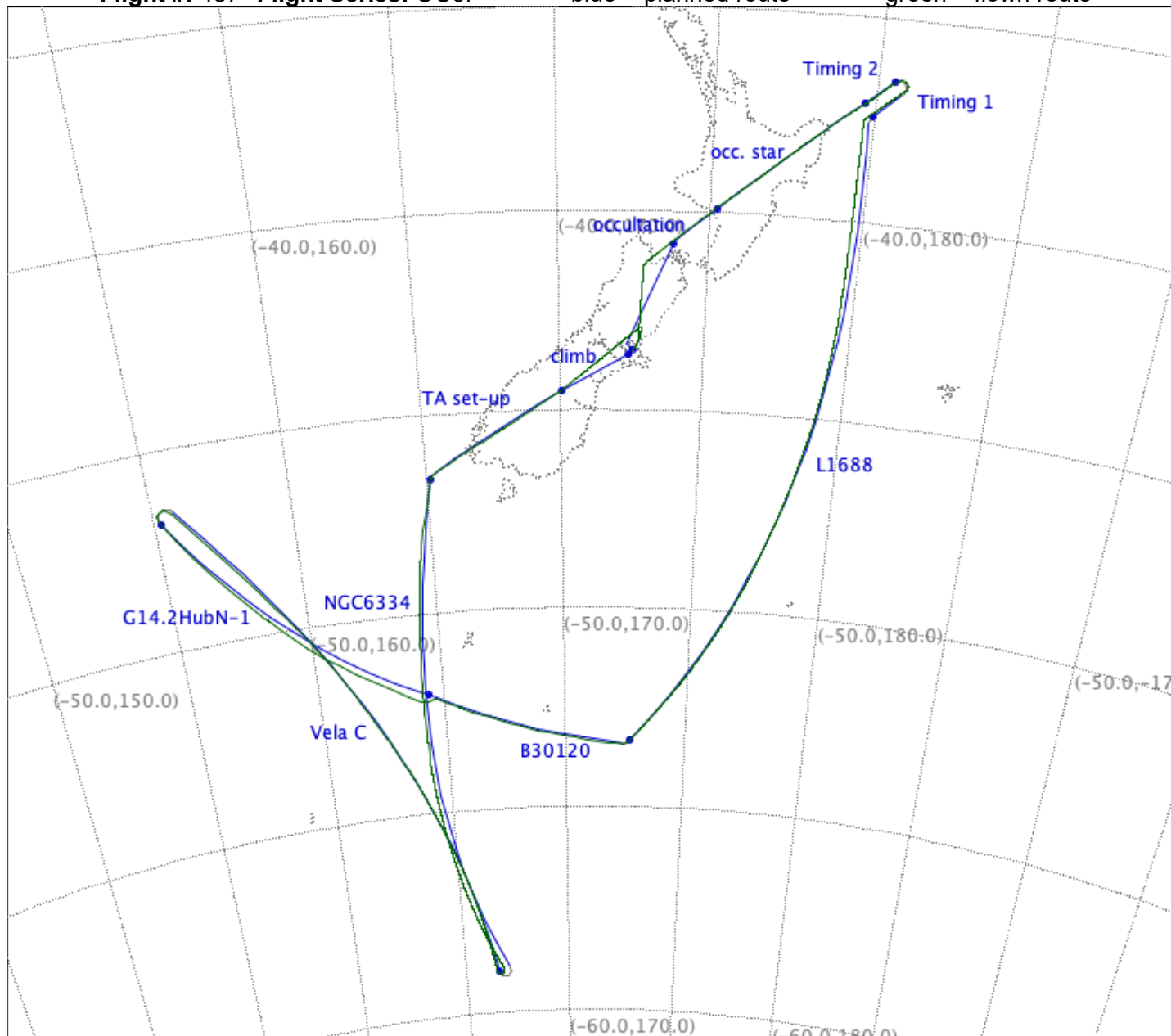
MISSION ID: 2018-07-14_HA_F487

Date: 2018-07-14 UT Instrument: HAWC+

Flight #: 487 Flight Series: OC6I

blue = planned route

green = flown route

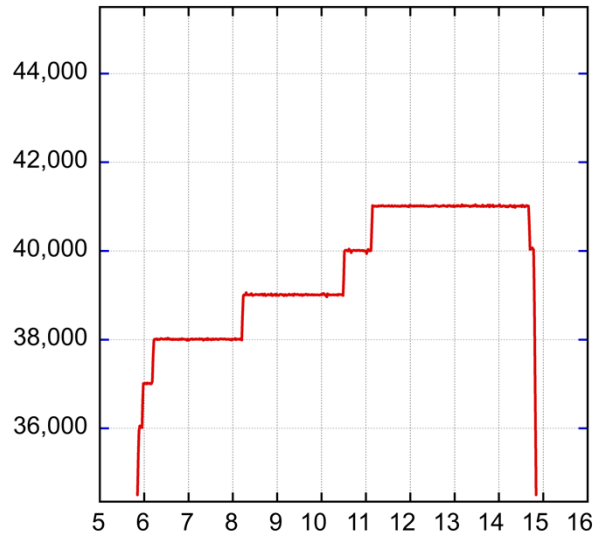


Flight notes: No irregularities.

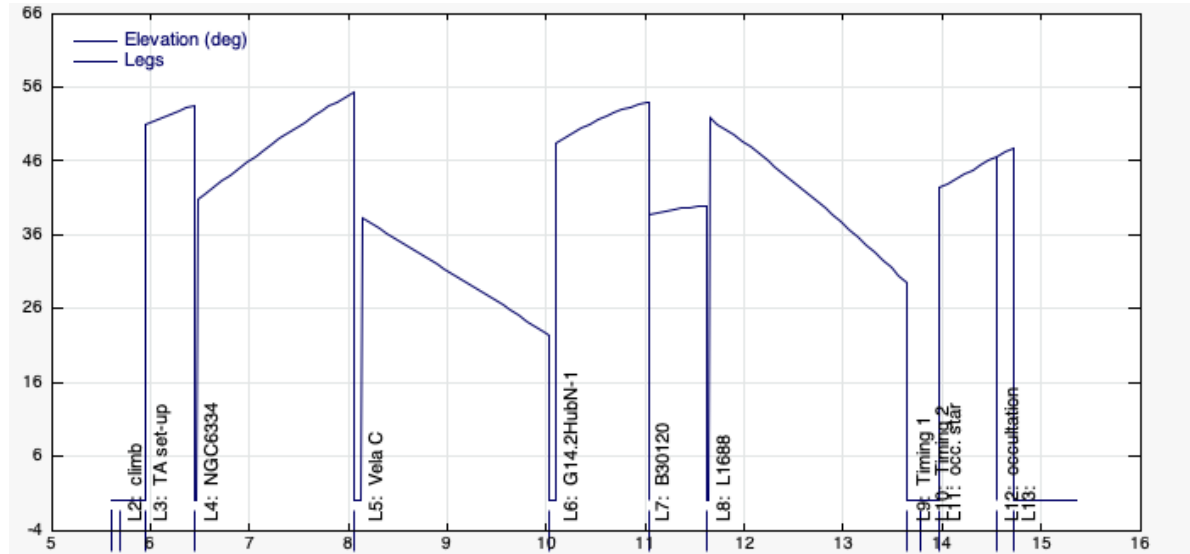
Flight 487 Mission ID 2018-07-14_HA_F487
 Christchurch-Christchurch Take off date UTC: 14-JUL-2018
 Departure UTC: ~05:37 Arrival UTC: ~15:14

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
3			HIP 82273	16h48m39.90s	-69d01m39.8s	5:57	30	
4	70_0609	GTO	NGC6334	17h20m25.72s	-35d53m15.1s	6:28	95	
5	70_0609	GTO	VelaC_C01	08h59m28.04s	-43d44m50.5s	8:08	113	
6	06_0183	Santos	G14.2HubN	18h18m12.60s	-16d53m44.2s	10:06	56	
7	06_0234	Svoboda	B30120	18h50m23.54s	-03d01m31.6s	11:02	35	
8	06_0116	Novak	L1688 Oph E Band C	16h27m15.97s	-24d38m36.1s	11:38	120	
11			HIP 9236	01h58m46.14s	-61d34m11.4s	13:57	35	Occultation practice.
12			HIP 9236	01h58m46.14s	-61d34m11.4s	14:32	10	Occultation practice.

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



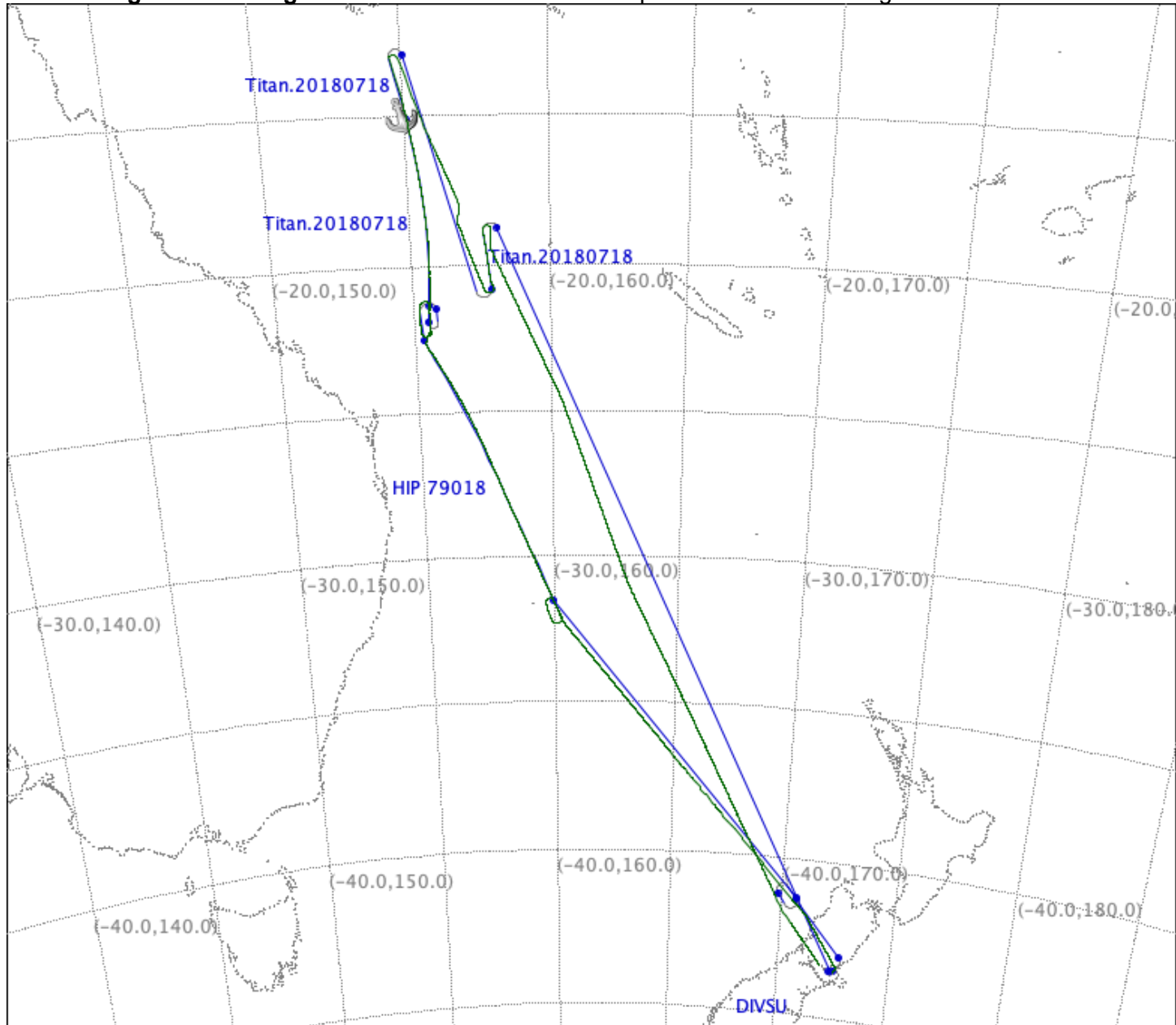
MISSION ID: 2018-07-18_FF_F488

Date: 2018-07-18 UT Instrument: FPI+

Flight #: 488 Flight Series: n/a

blue = planned route

green = flown route

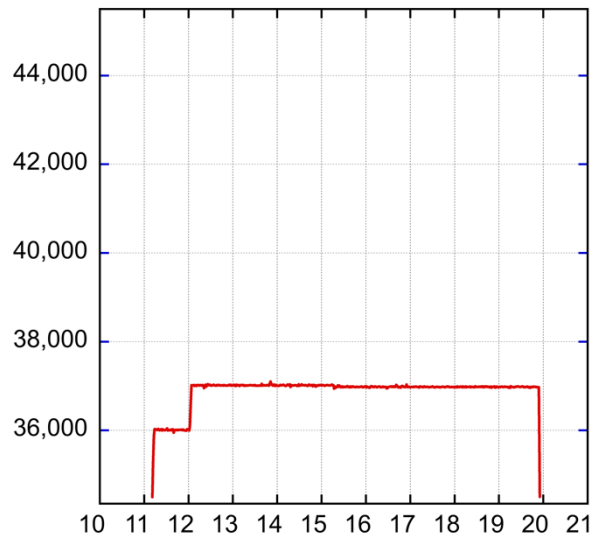


Flight notes: Titan occultation flight using FPI+. Daylight landing.

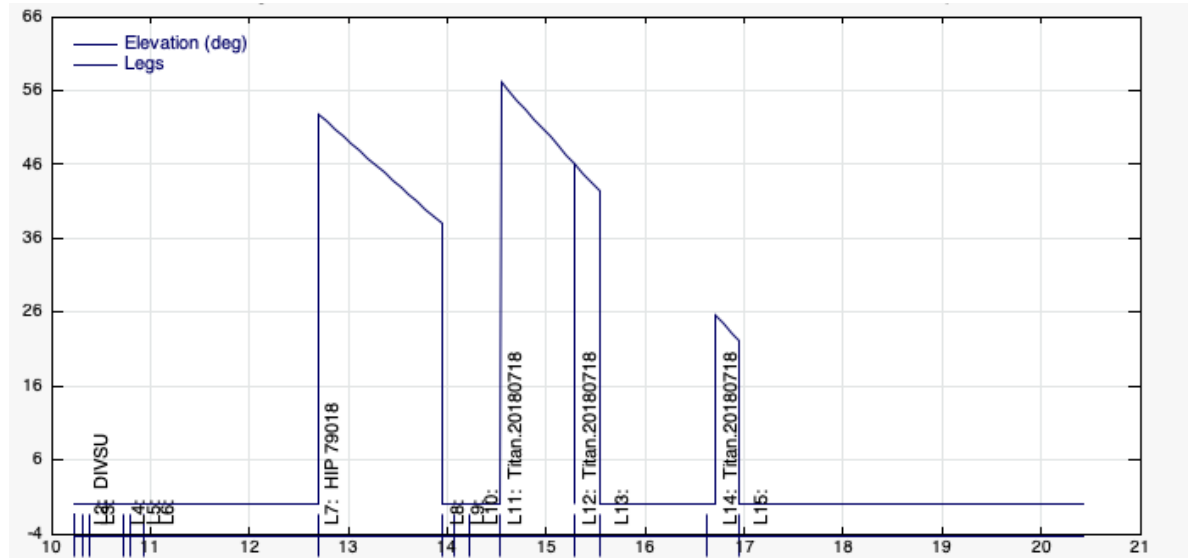
Flight 488 Mission ID 2018-07-18_FF_F488
 Christchurch-Christchurch Take off date UTC: 18-JUL-2018
 Departure UTC: 10:13 Arrival UTC: 20:21

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
7			HIP 79018	16h07m44.06s	-46d31m31.2s	12:41	75	
11	06_0160	Person	Titan.20180718	18h17m53.27s	-22d34m35.7s	14:22	45	First minute of occultation lost due to recovery from the telescope going into standby.
12	06_0160	Person	Titan.20180718	18h17m53.27s	-22d34m35.7s	15:07	15	
14	06_0160	Person	Titan.20180718	18h17m53.27s	-22d34m35.7s	16:32	14	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

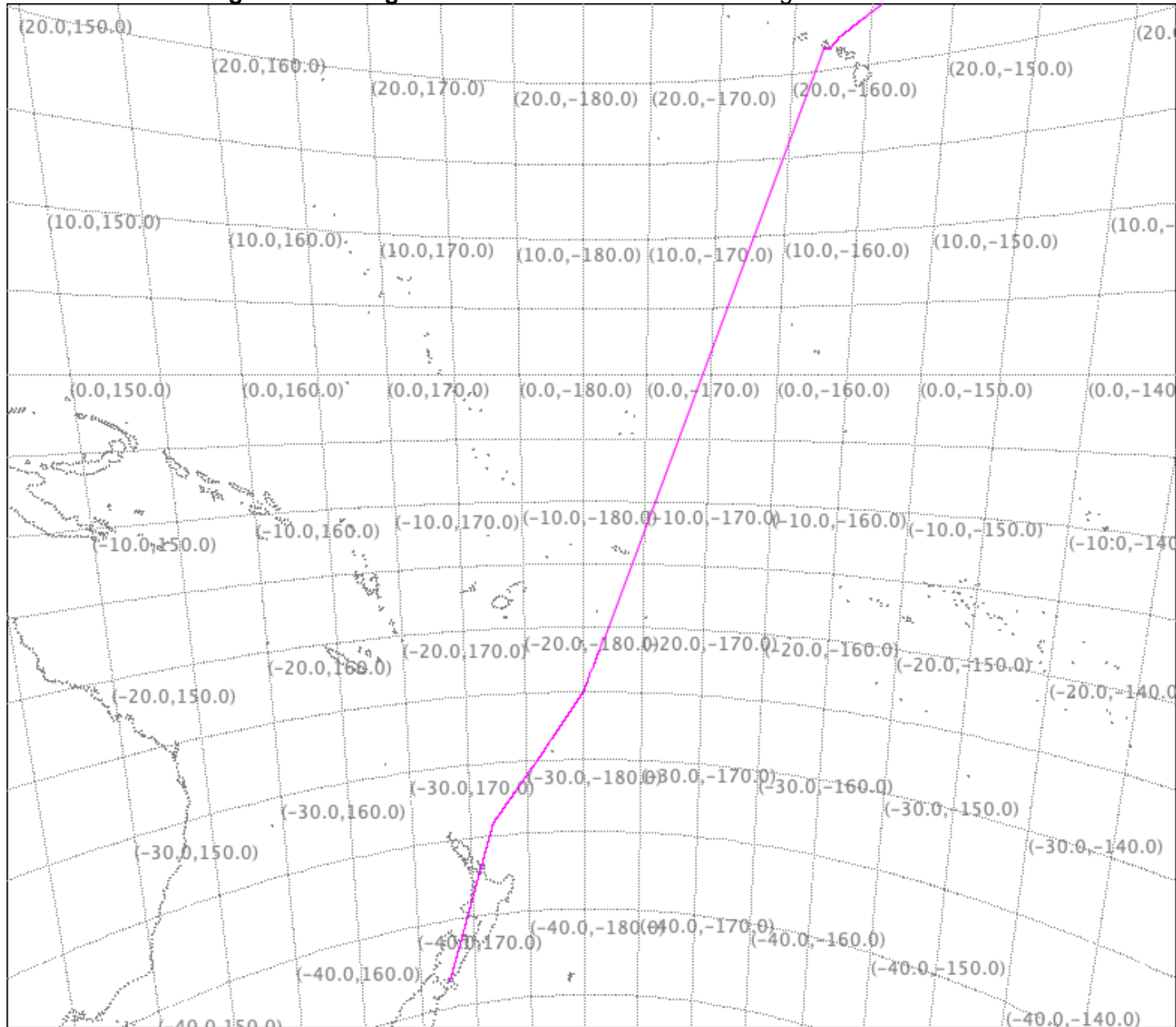


MISSION ID: 2018-07-20_HA_F489

Date: 2018-07-20 UT Instrument: n/a

Flight #: 489 Flight Series: n/a

magenta = flown route



Flight notes:

Ferry flight from Christchurch, New Zealand to Honolulu, HI (no science planned).

Flight 489
Christchurch
to Honolulu

Mission ID 2018-07-20_HA_F489
Take off date UTC:
20-JULY-2018

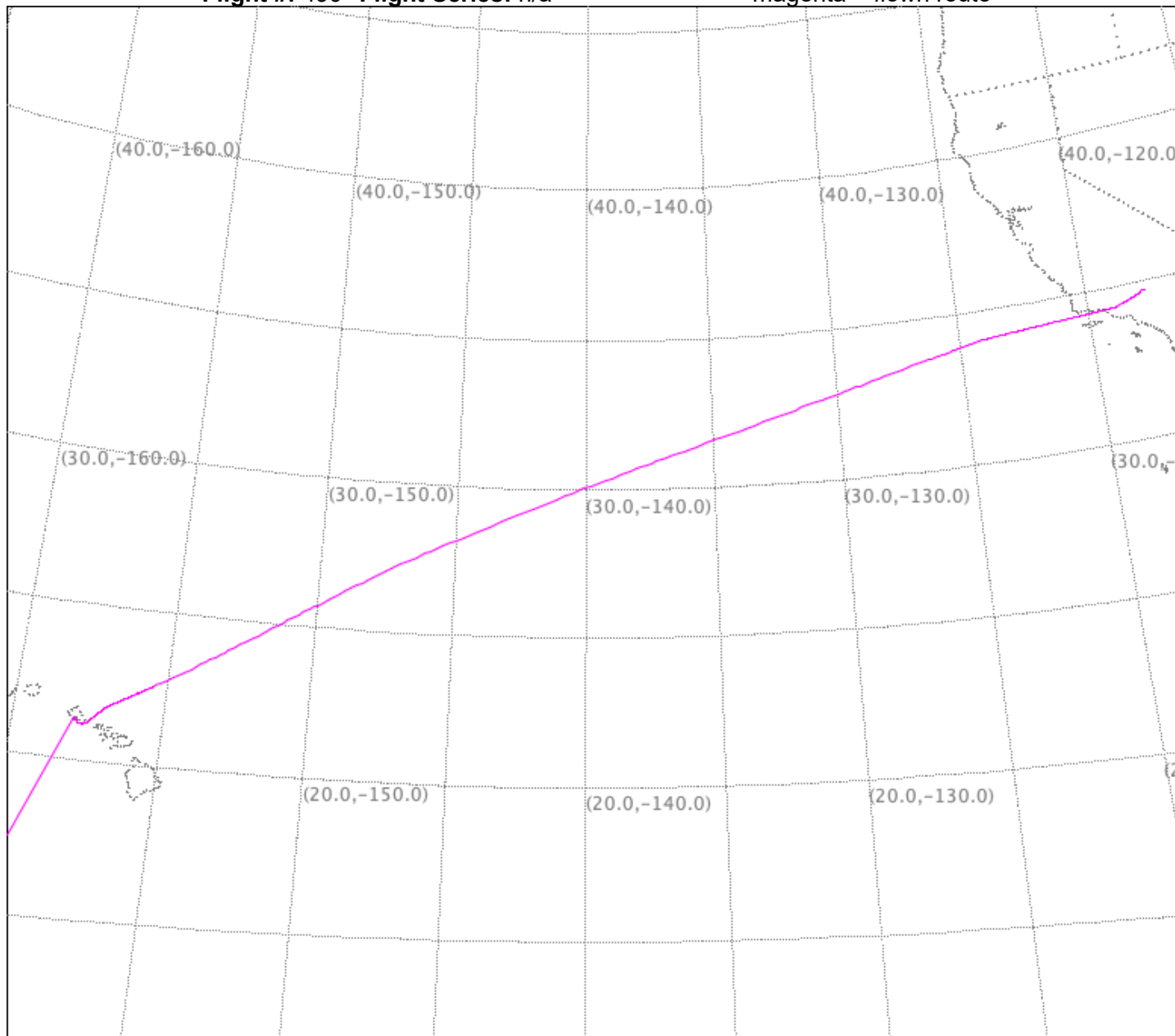
Departure UTC: 19:29
Arrival UTC: 09:47

MISSION ID: 2018-07-20_HA_F490

Date: 2018-07-20 UT Instrument: n/a

Flight #: 490 Flight Series: n/a

magenta = flown route



Flight notes:

Ferry flight from Honolulu, HI to Palmdale, CA (no science planned).

Flight 490
Honolulu to
Palmdale

Mission ID 2018-07-20_HA_F490
Take off date UTC:
20-JULY-2018

Departure UTC: 13:49
Arrival UTC: 04:26 +1 day

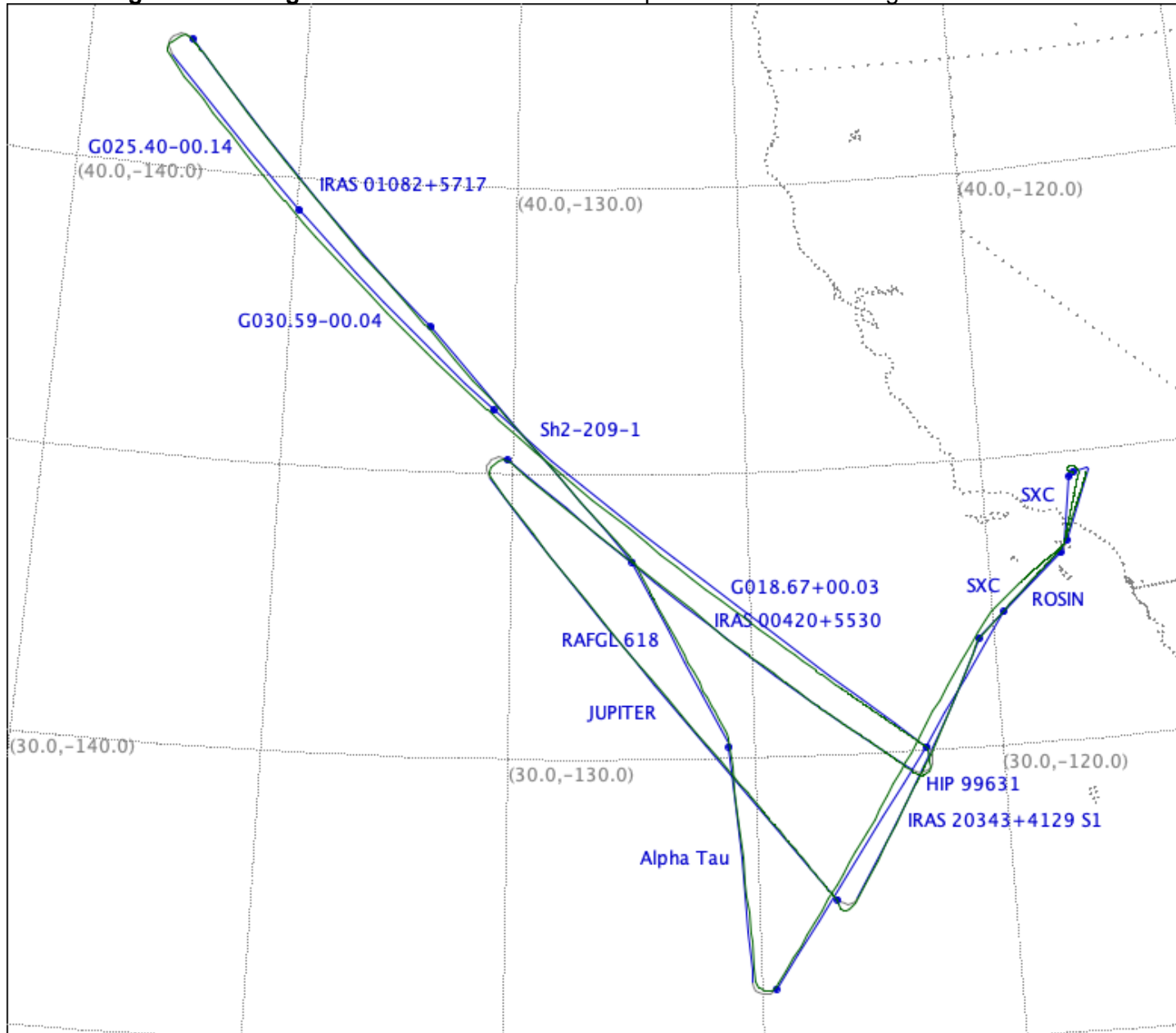
MISSION ID: 2018-08-22_FO_F492

Date: 2018-08-22 UT Instrument: FORCAST

Flight #: 492 Flight Series: OC6J

blue = planned route

green = flown route



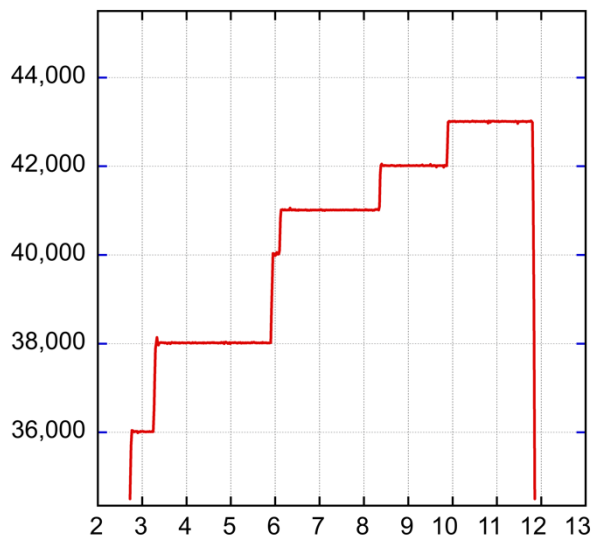
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect).

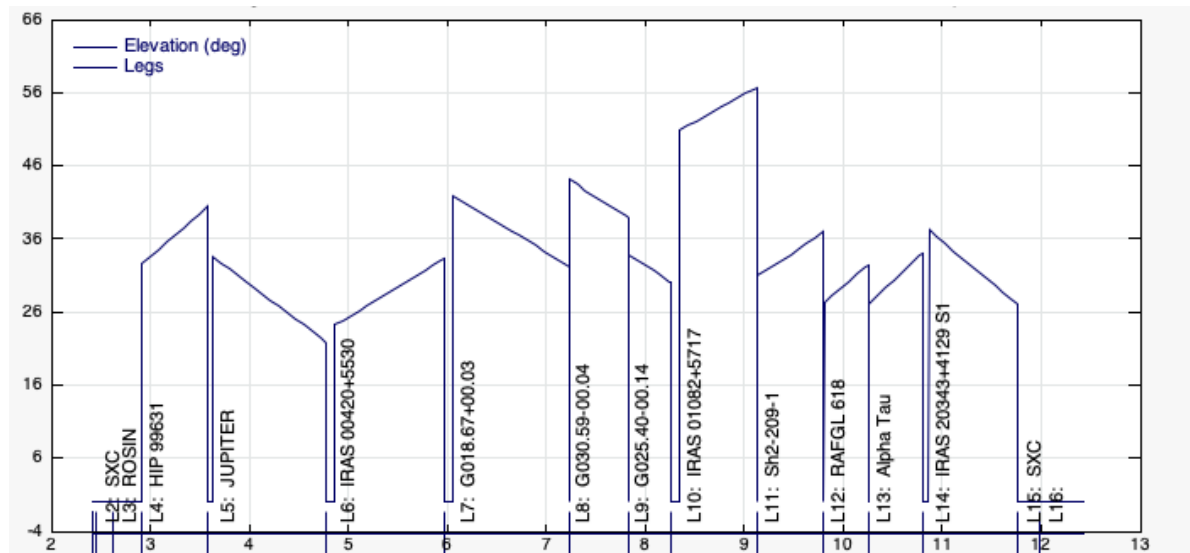
Flight 492 Mission ID 2018-08-22_FO_F492
 Palmdale to Palmdale Take off date UTC: 22-AUG-2018 Departure UTC: 02:22 Arrival UTC: 12:14

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 99631	20h13m13.87s	-01d00m33.8s	2:55	40	
5	06_0009	de Pater	JUPITER	14h53m52.18s	-15d40m49.9s	3:38	69	Scripting and telescope control issues led to loss of most planned observations
6	06_0058	Tan	IRAS 00420+5530	00h44m58.00s	55d47m00.0s	4:51	67	
7	06_0042	Tan	G018.67+00.03	18h24m52.62s	-12d39m19.8s	6:04	70	
8	06_0042	Tan	G030.59-00.04	18h47m18.88s	-02d06m17.3s	7:14	36	
9	06_0042	Tan	G025.40-00.14	18h38m08.27s	-06d45m58.2s	7:50	26	
10	06_0058	Tan	IRAS 01082+5717	01h11m21.00s	57d33m20.0s	8:21	47	
11	06_0072	Lau	Sh2-209	04h11m09.00s	51d09m54.9s	9:08	40	
12	06_0100	Kraemer	RAFGL 618	04h42m53.64s	36d06m53.4s	9:48	27	
13	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	10:16	32	Entire leg lost debugging pointing issues.
14	06_0058	Tan	IRAS 20343+4129 S1	20h36m07.53s	41d40m09.1s	10:52	54	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



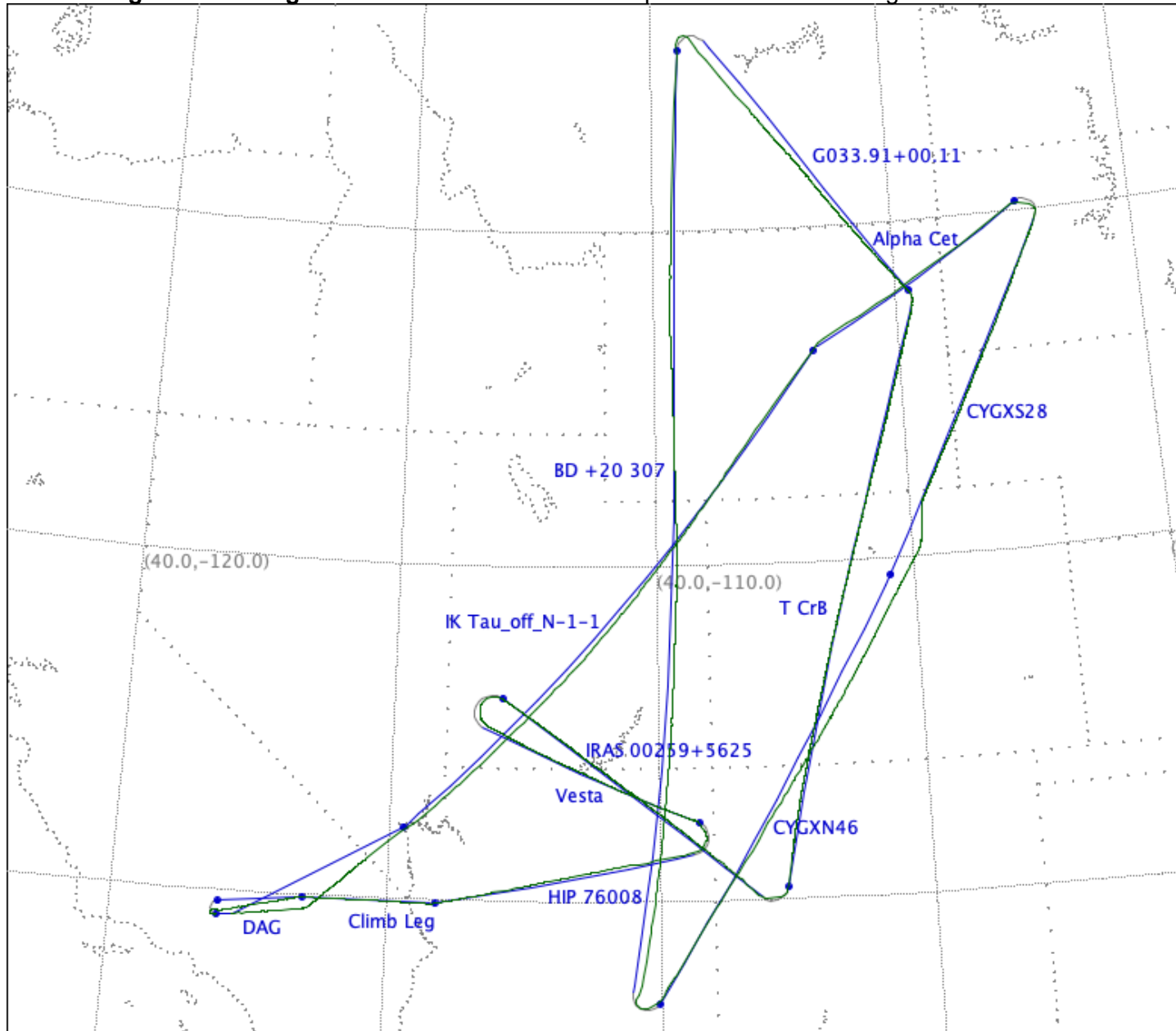
MISSION ID: 2018-08-23_FO_F493

Date: 2018-08-23 UT Instrument: FORCAST

Flight #: 493 Flight Series: OC6J

blue = planned route

green = flown route



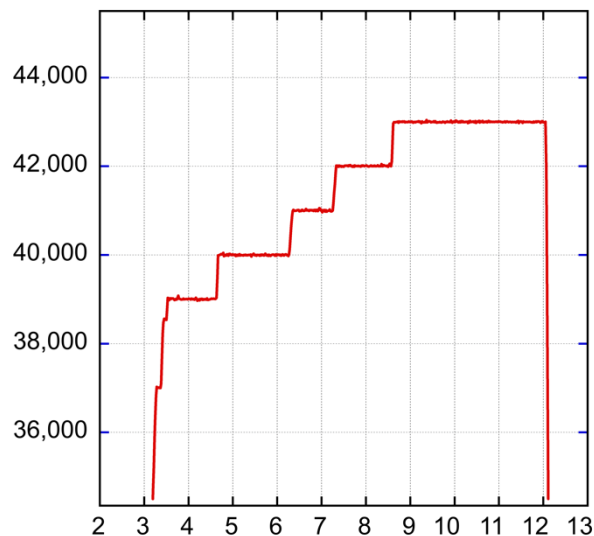
Flight notes:

Multiple instrument issues led to some data losses. Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

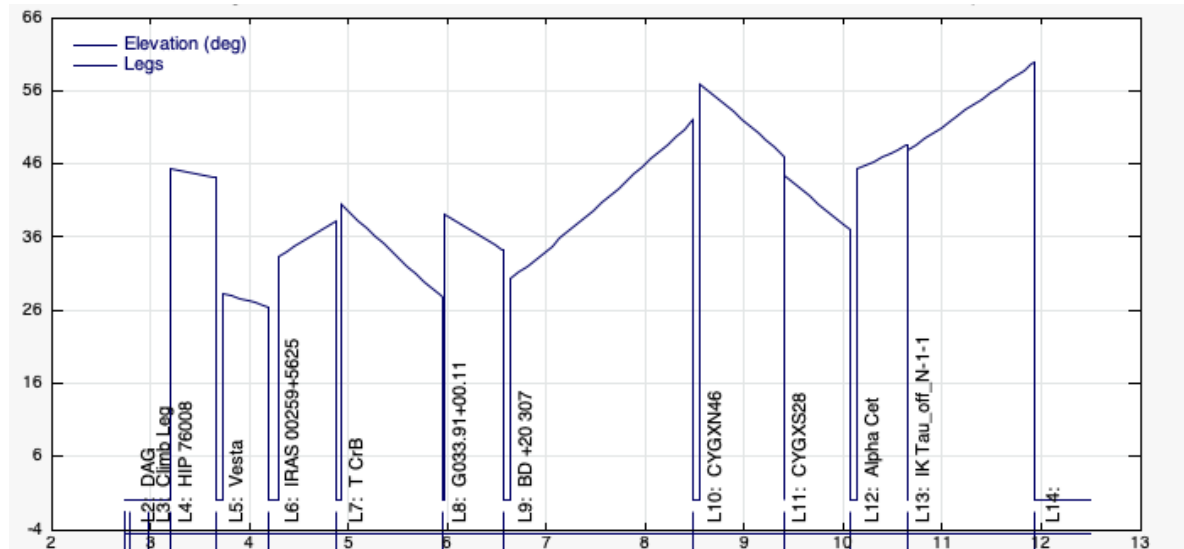
Flight 493 Mission ID 2018-08-23_FO_F493
 Palmdale to Palmdale Take off date UTC: 23-AUG-2018
 Departure UTC: 02:43 Arrival UTC: 12:32

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 76008	15h31m24.92s	77d20m57.7s	3:12	27	
5	90_0072	Calibration	Vesta	17h32m16.59s	-24d08m45.5s	3:43	28	
6	06_0058	Tan	IRAS 00259+5625	00h28m42.00s	56d42m00.0s	4:17	35	30% of leg lost due to clouds
7	06_0096	Evans	T CrB	15h59m30.16s	25d55m12.6s	4:55	61	
8	06_0042	Tan	G033.91+00.11	18h52m50.43s	00d55m28.7s	5:58	36	
9	06_0167	Weinberger	BD +20 307	01h54m50.34s	21d18m22.5s	6:38	110.8	
10	06_0162	Hora	CYGXN46	20h39m01.25s	42d19m53.8s	8:33	51.1	Instrument control and pointing errors; only 40% of planned data obtained
11	06_0162	Hora	CYGXS28	20h29m36.80s	39d01m12.0s	9:24	39.6	Instrument control and pointing errors; only 60% of planned data obtained
12	90_0071	Calibration	Alpha Cet	03h02m16.77s	04d05m23.1s	10:08	30.2	FORCAST lost connect to observatory control system; 75% complete
13	06_0038	Andersson	IK Tau_off_N	03h53m28.81s	11d24m22.3s	10:39	77	FORCAST lost connect to observatory control system; 80% complete

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



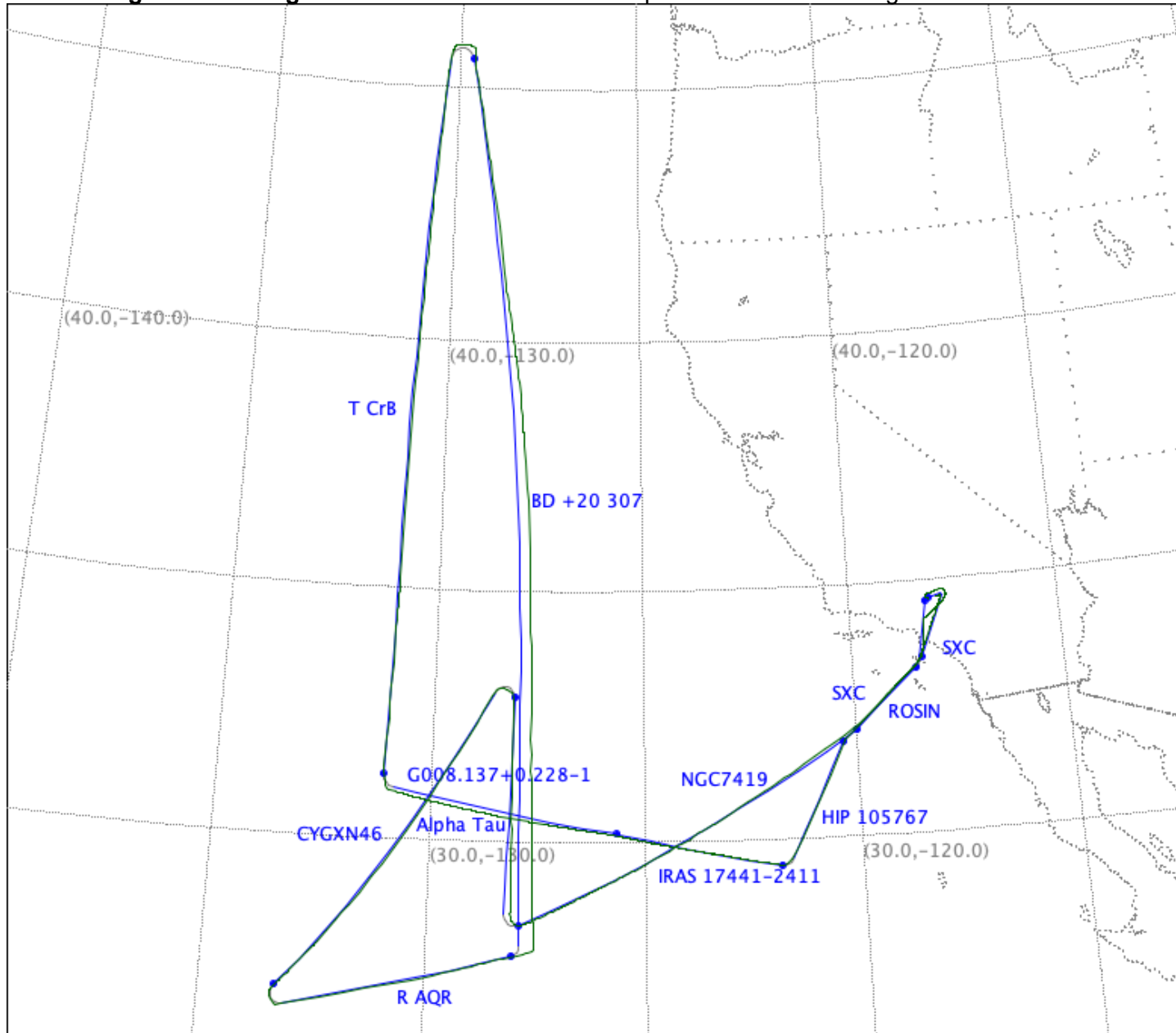
MISSION ID: 2018-08-24_FO_F494

Date: 2018-08-24 UT Instrument: FORCAST

Flight #: 494 Flight Series: OC6J

blue = planned route

green = flown route



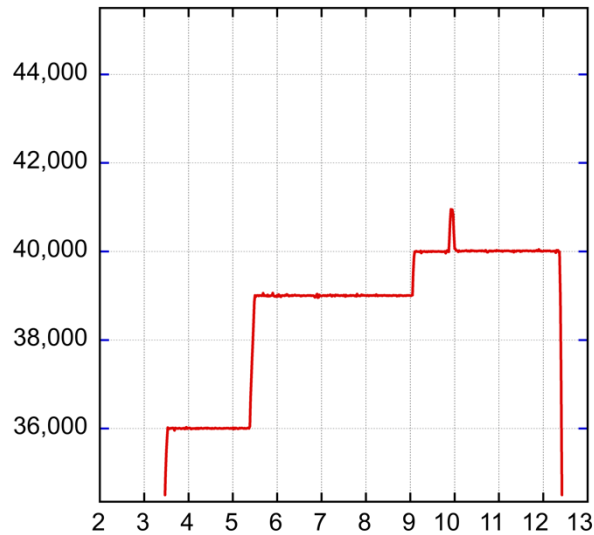
Flight notes:

Kept at low altitude for most of flight by Air Traffic Control. High water vapor most of flight. Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

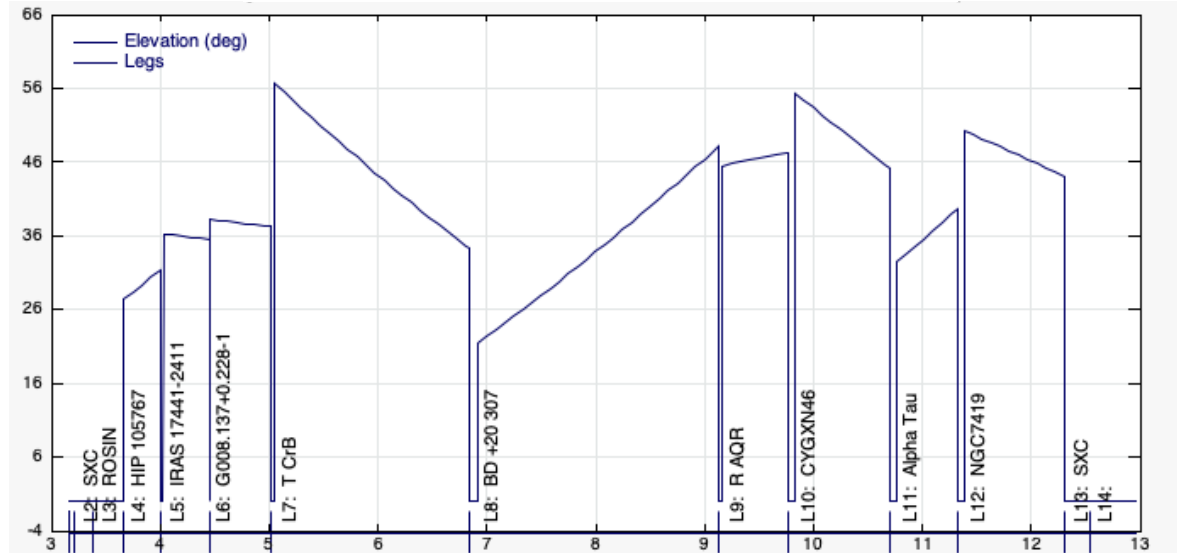
Flight 494 Mission ID 2018-08-24_FO_F494
 Palmdale to Palmdale Take off date UTC: 24-AUG-2018
 Departure UTC: 03:04 Arrival UTC: 12:50

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 105767	21h25m16.96s	-03d33m24.3s	3:40	20	
5	06_0100	Kraemer	IRAS 17441-2411	17h47m13.49s	-24d12m51.4s	4:01	25	
6	06_0011	De Buizer	G008.137+0.228	18h03m01.12s	-21d48m07.3s	4:27	33.8	
7	06_0096	Evans	T CrB	15h59m30.16s	25d55m12.6s	5:03	107	
8	06_0167	Weinberger	BD +20 307	01h54m50.34s	21d18m22.5s	6:54	133	Data adversely affected by high water vapor.
9	06_0005	Omelian	R AQR	23h43m49.46s	-15d17m04.1s	9:09	36	
10	06_0162	Hora	CYGXN46	20h39m01.25s	42d19m53.8s	9:49	52	
11	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	10:45	34	
12	06_0089	Humphreys	NGC7419	22h54m22.37s	60d48m51.1s	11:23	55	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



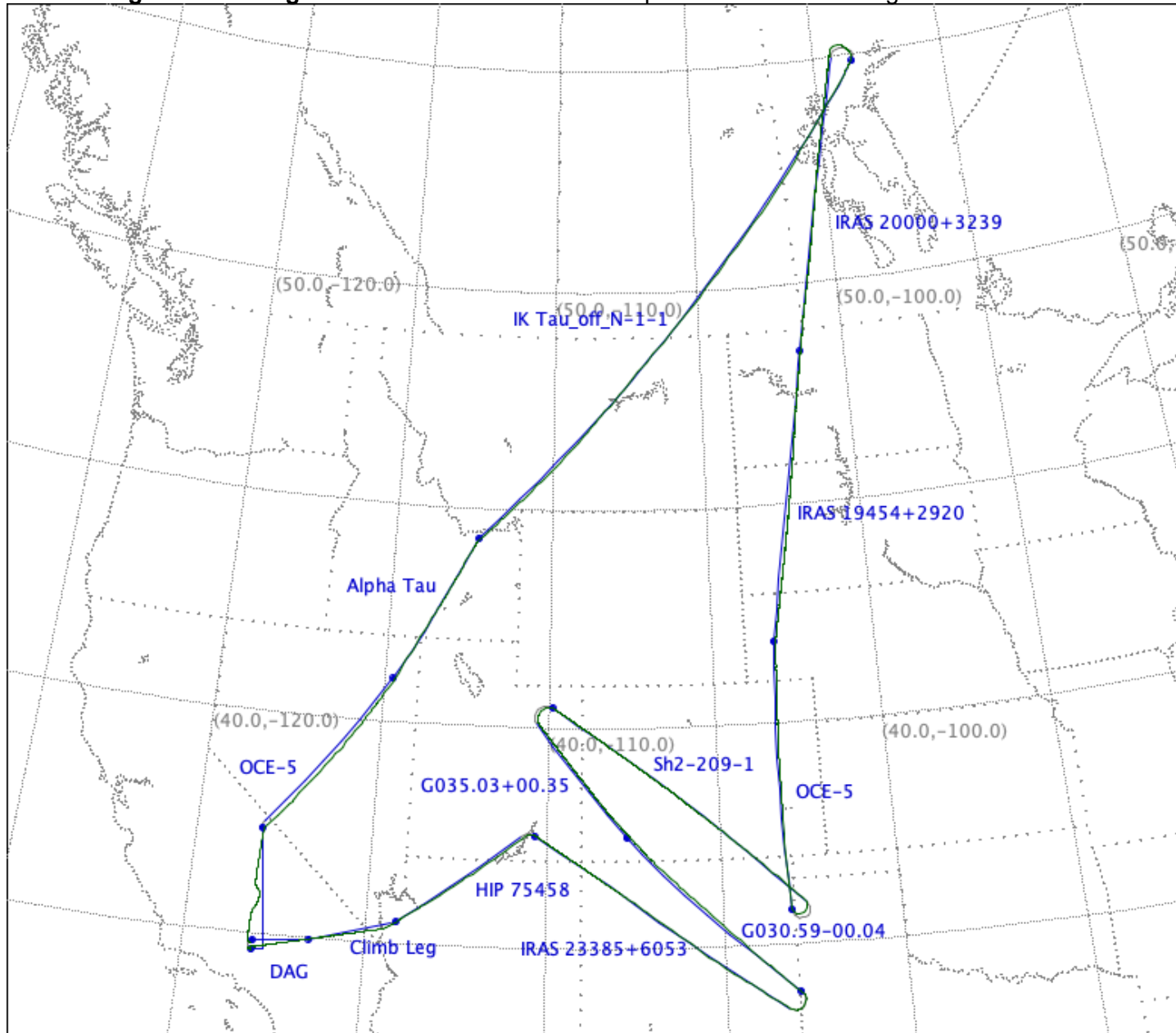
MISSION ID: 2018-08-25_FO_F495

Date: 2018-08-25 UT Instrument: FORCAST

Flight #: 495 Flight Series: OC6J

blue = planned route

green = flown route



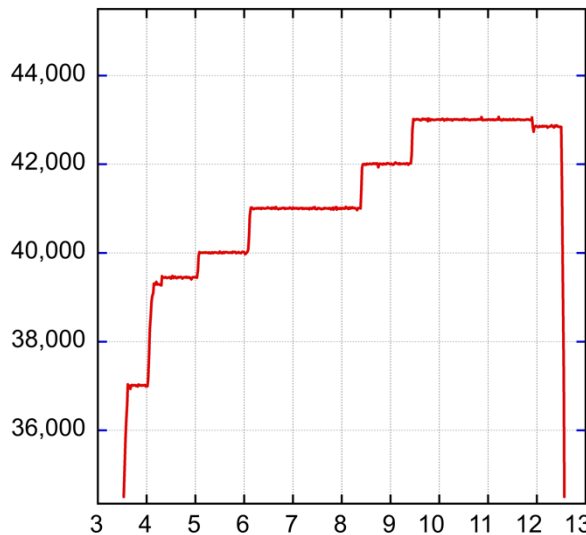
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

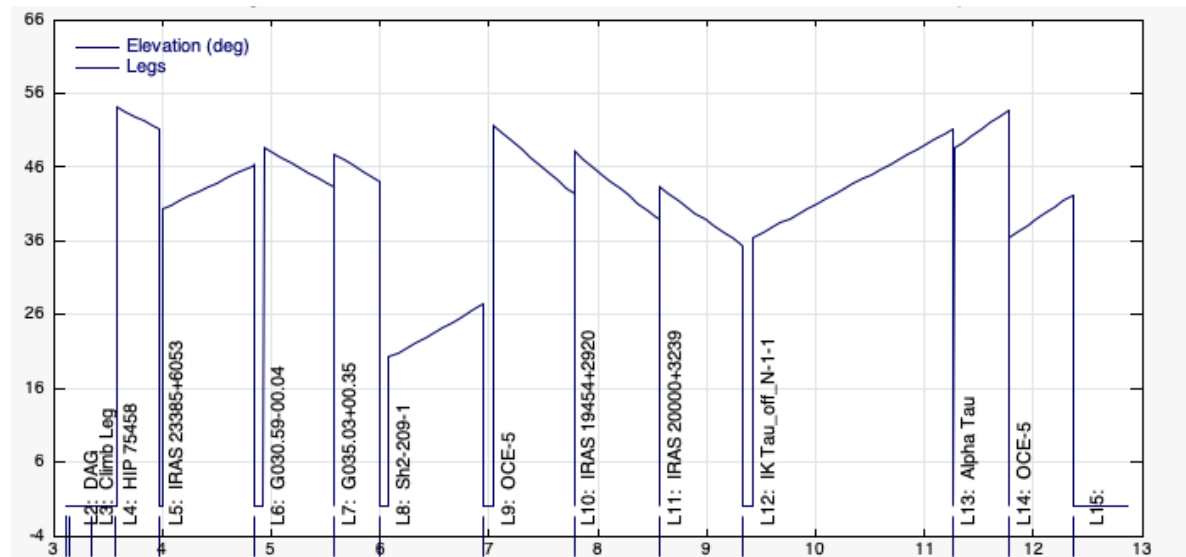
Flight 495 Mission ID 2018-08-25_FO_F495
 Palmdale to Palmdale Take off date UTC: 25-AUG-2018
 Departure UTC: 03:06 Arrival UTC: 13:02

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 75458	15h24m55.77s	58d57m57.8s	3:34	23	
5	06_0058	Tan	IRAS 23385+6053	23h40m54.50s	61d10m28.1s	4:00	51	Scripting error and telescope dropping into standby led to 30% loss on leg.
6	06_0042	Tan	G030.59-00.04	18h47m18.88s	-02d06m17.3s	4:56	39	
7	06_0058	Tan	G035.03+00.35	18h54m00.49s	02d01m18.2s	5:35	25	
8	06_0072	Lau	Sh2-209	04h11m09.00s	51d09m54.9s	6:05	52	
9		engineering	HIP 96417	19h36m08.36s	22d35m08.6s	7:03	44	
10	06_0100	Kraemer	IRAS 19454+2920	19h47m24.80s	29d28m10.8s	7:47	47	
11	06_0100	Kraemer	IRAS 20000+3239	20h01m59.52s	32d47m32.9s	8:34	46	FORCAST lost connection to the observatory control system several times; 10min lost
12	06_0038	Andersson	IK Tau	03h53m28.81s	11d24m22.3s	9:26	110.1	
13	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	11:16	30.2	
14		engineering	HIP 24203 A	05h11m45.36s	01d02m13.0s	11:46	35.2	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



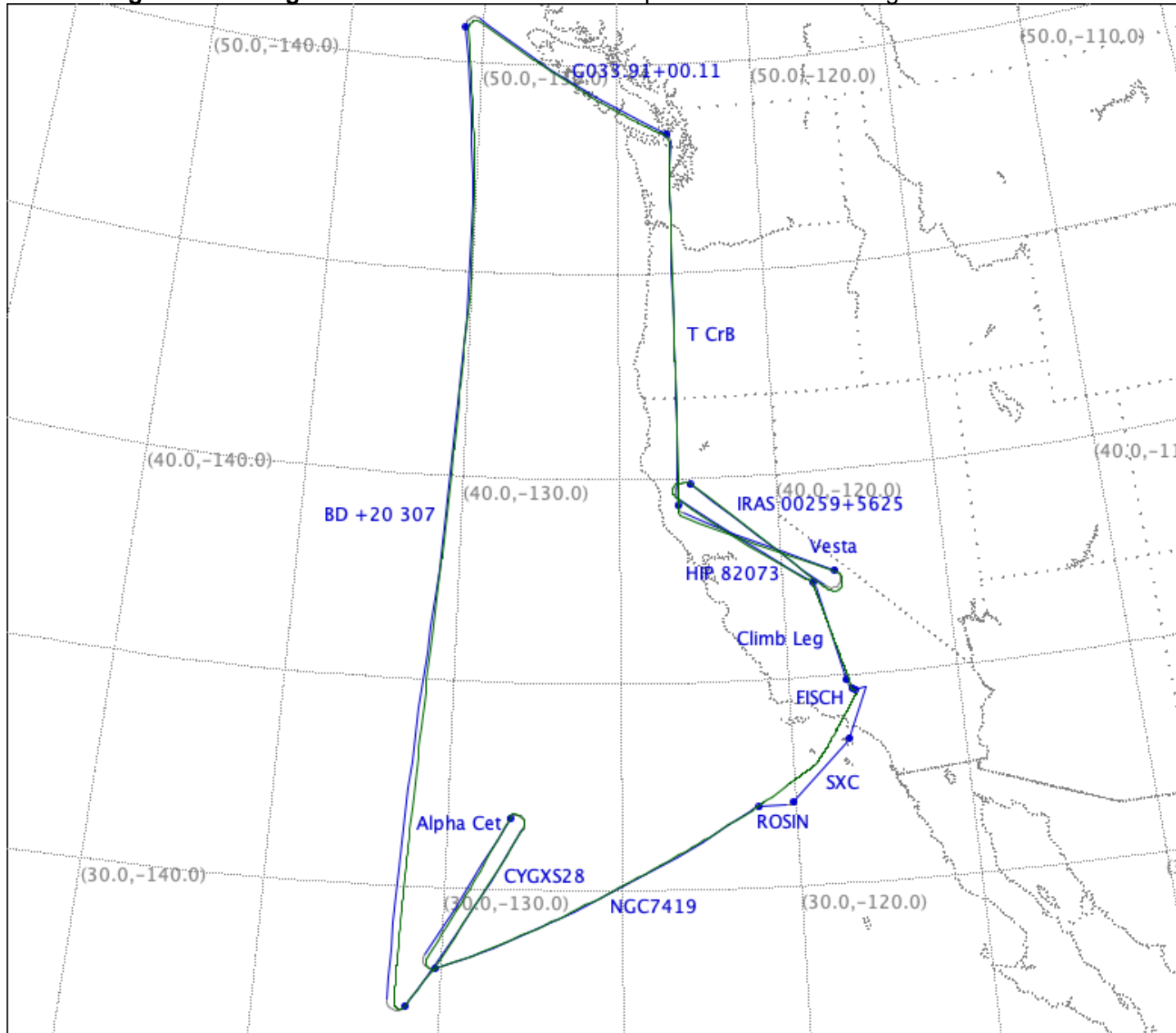
MISSION ID: 2018-08-28_FO_F496

Date: 2018-08-28 UT Instrument: FORCAST

Flight #: 496 Flight Series: OC6J

blue = planned route

green = flown route



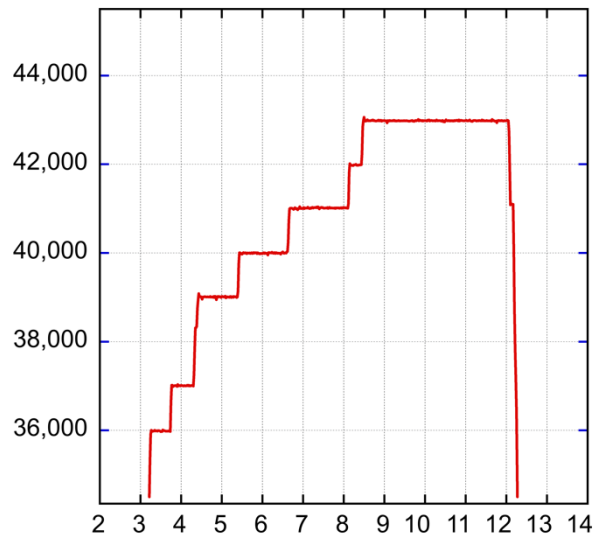
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

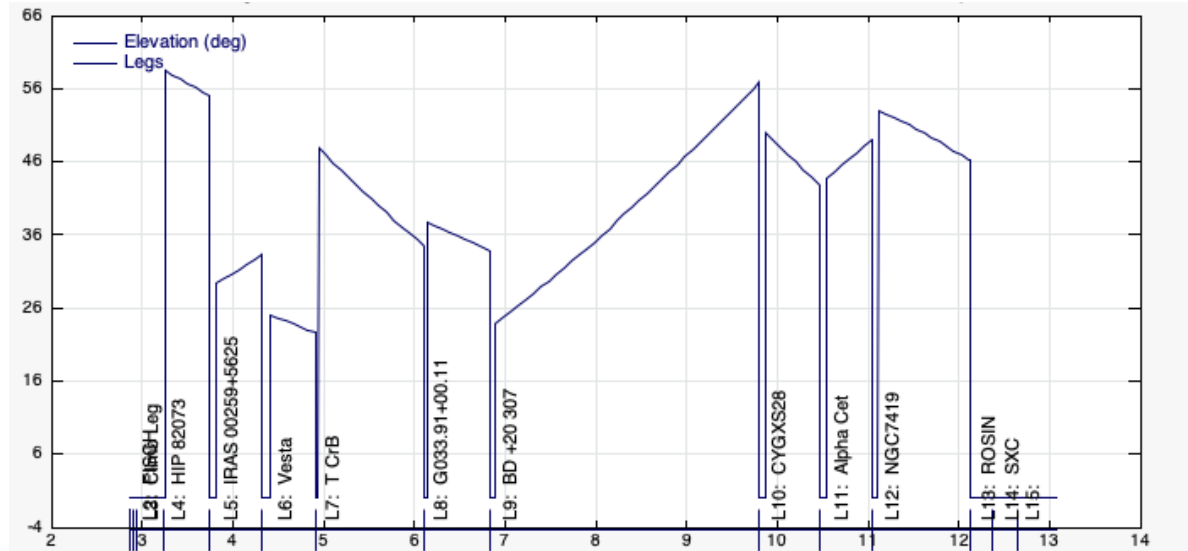
Flight 496 Mission ID 2018-08-28_FO_F496
 Palmdale to Palmdale Take off date UTC: 28-AUG-2018
 Departure UTC: 02:49 Arrival UTC: 12:41

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 82073	16h45m49.89s	08d34m57.4s	3:15	29	
5	06_0058	Tan	IRAS 00259+5625	00h28m42.00s	56d42m00.0s	3:49	30	Acquisition problems; 5min loss
6	90_0072	Calibration	Vesta	17h36m06.71s	-24d25m18.9s	4:25	30	
7	06_0096	Evans	T CrB	15h59m30.16s	25d55m12.6s	4:56	70	
8	06_0042	Tan	G033.91+00.11	18h52m50.43s	00d55m28.7s	6:08	42	
9	06_0167	Weinberger	BD +20 307	01h54m50.34s	21d18m22.5s	6:54	174	
10	06_0162	Hora	CYGXS28	20h29m36.80s	39d01m12.0s	9:52	35.6	Target acquisition took longer than normal; 7min loss
11	90_0071	Calibration	Alpha Cet	03h02m16.77s	04d05m23.1s	10:32	30.2	
12	06_0089	Humphreys	NGC7419	22h54m22.37s	60d48m51.1s	11:07	60.6	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



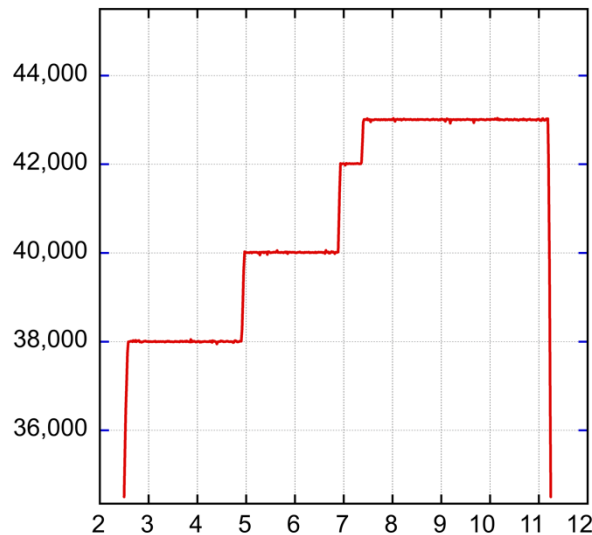
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

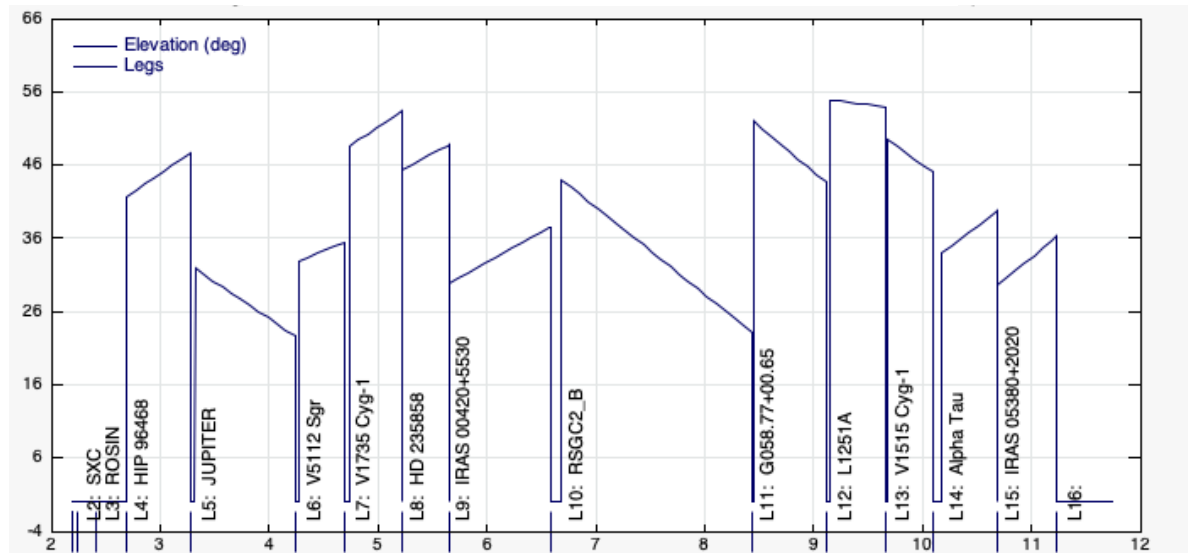
Flight 497 Mission ID 2018-08-29_FO_F497
 Palmdale to Palmdale Take off date UTC: 29-AUG-2018
 Departure UTC: 02:08 Arrival UTC: 11:38

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 96468	19h36m43.27s	-01d17m11.8s	2:41	35	
5	06_0009	de Pater	JUPITER	14h57m17.15s	-15d57m09.1s	3:19	55	
6	06_0100	Kraemer	V5112 Sgr	19h52m52.70s	-17d01m50.3s	4:16	25	
7	06_0062	Green	V1735 Cyg	21h47m20.66s	47d32m03.6s	4:44	29	
8	06_0100	Kraemer	HD 235858	22h29m10.37s	54d51m06.4s	5:13	25.8	Turbulence briefly threw telescope into standby.
9	06_0058	Tan	IRAS 00420+5530	00h44m58.00s	55d47m00.0s	5:39	56.4	Scripting error threw off pointing; 7min to recover
10	06_0089	Humphreys	RSGC2_B	18h39m19.53s	-06d01m19.0s	6:41	105	
11	06_0042	Tan	G058.77+00.65	19h38m48.65s	23d08m40.1s	8:27	40	
12	06_0165	Huard	L1251A	22h35m23.30s	75d17m08.0s	9:09	30	
13	06_0062	Green	V1515 Cyg	20h23m48.02s	42d12m25.8s	9:41	25	
14	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	10:11	30.2	
15	06_0058	Tan	IRAS 05380+2020	05h40m54.00s	20d22m45.0s	10:41	33	Pilots request early descent; last 15min lost.

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



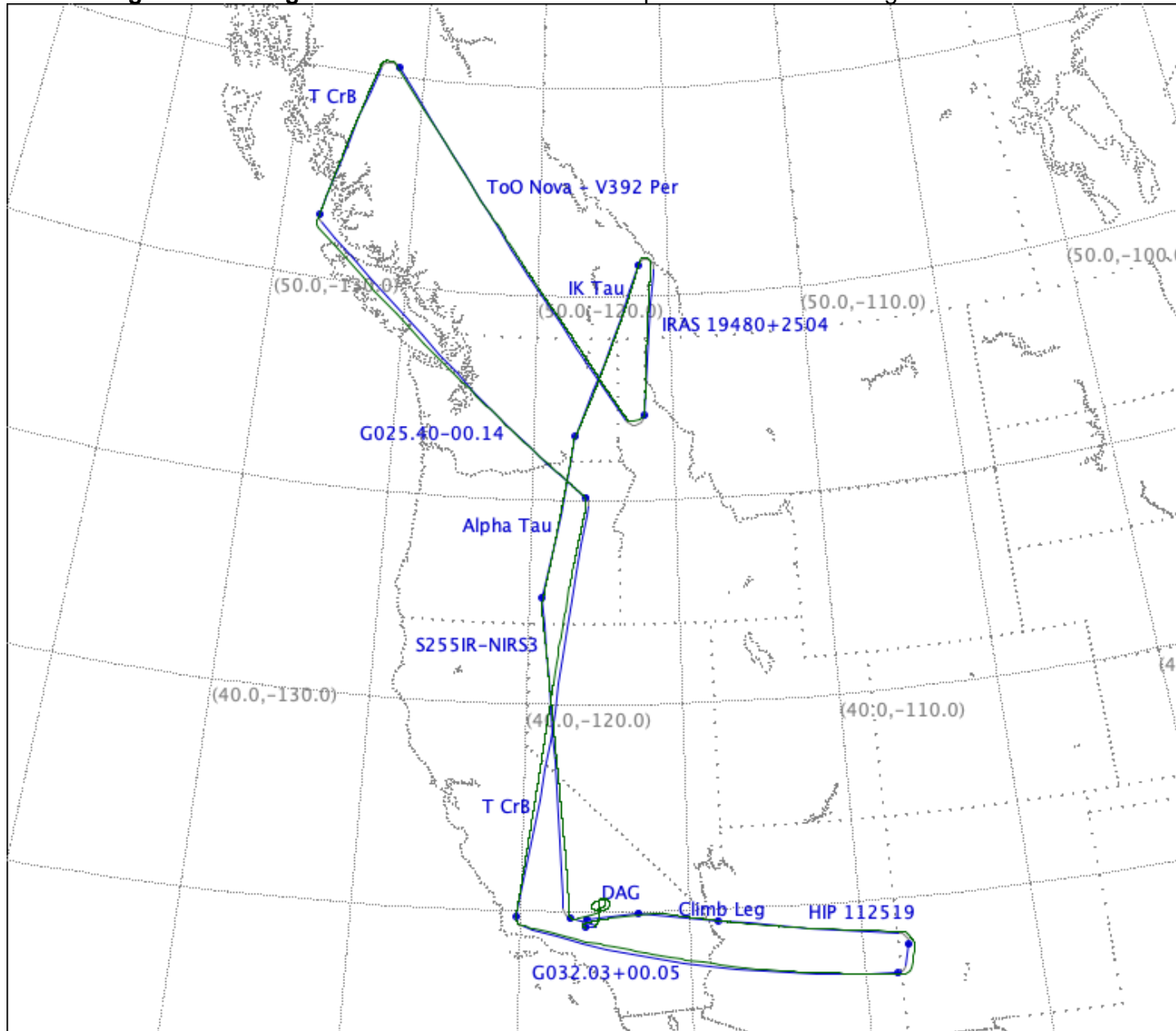
MISSION ID: 2018-08-30_FO_F498

Date: 2018-08-30 UT Instrument: FORCAST

Flight #: 498 Flight Series: OC6J

blue = planned route

green = flown route



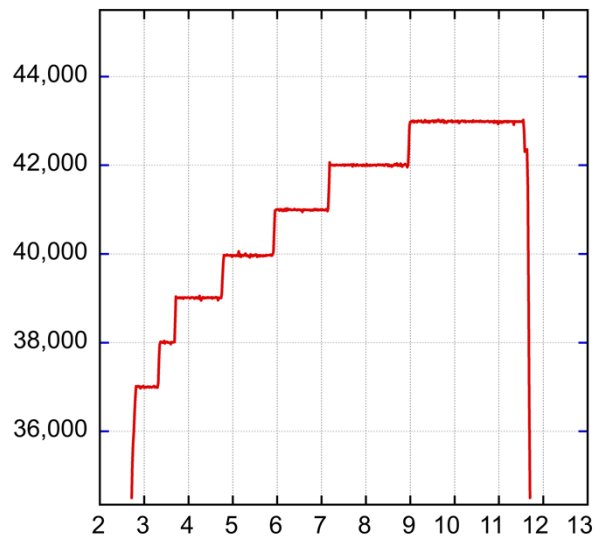
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

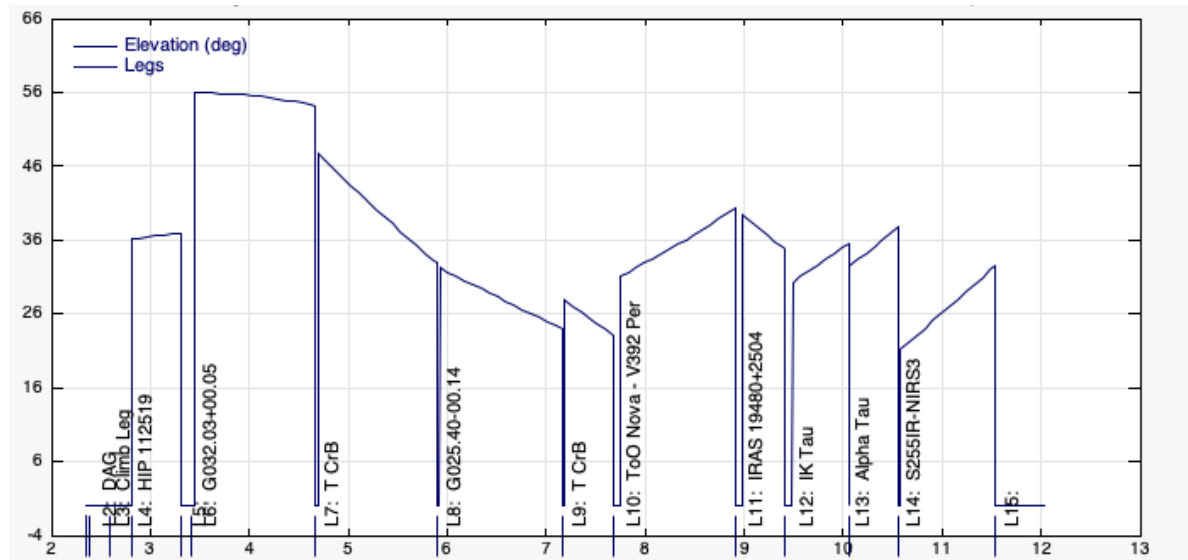
Flight 498 Mission ID 2018-08-30_FO_F498
 Palmdale to Palmdale Take off date UTC: 30-AUG-2018 Departure UTC: 02:18 Arrival UTC: 12:10

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 112519	22h47m29.06s	83d09m13.8s	2:48	30	
6	06_0042	Tan	G032.03+00.05	18h49m37.05s	-00d46m50.2s	3:26	72.3	Scripting error, light turbulence led to 7min loss
7	06_0096	Evans	T CrB	15h59m30.16s	25d55m12.6s	4:41	72	
8	06_0042	Tan	G025.40-00.14	18h38m08.27s	-06d45m58.2s	5:55	74	
9	06_0096	Evans	T CrB	15h59m30.16s	25d55m12.6s	7:10	30	
10	06_0094	Gehrz	ToO Nova - V392 Per	04h43m21.39s	47d21m25.8s	7:44	70	
11	06_0100	Kraemer	IRAS 19480+2504	19h50m08.27s	25d12m00.9s	8:58	26	
12	06_0038	Andersson	IK Tau	03h53m28.81s	11d24m22.3s	9:28	34	Positioning array on source properly took extra time; 10min lost
13	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	10:03	30.2	
14	06_0182	Stecklum	S255IR-NIRS3	06h12m54.01s	17d59m23.1s	10:34	57.3	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



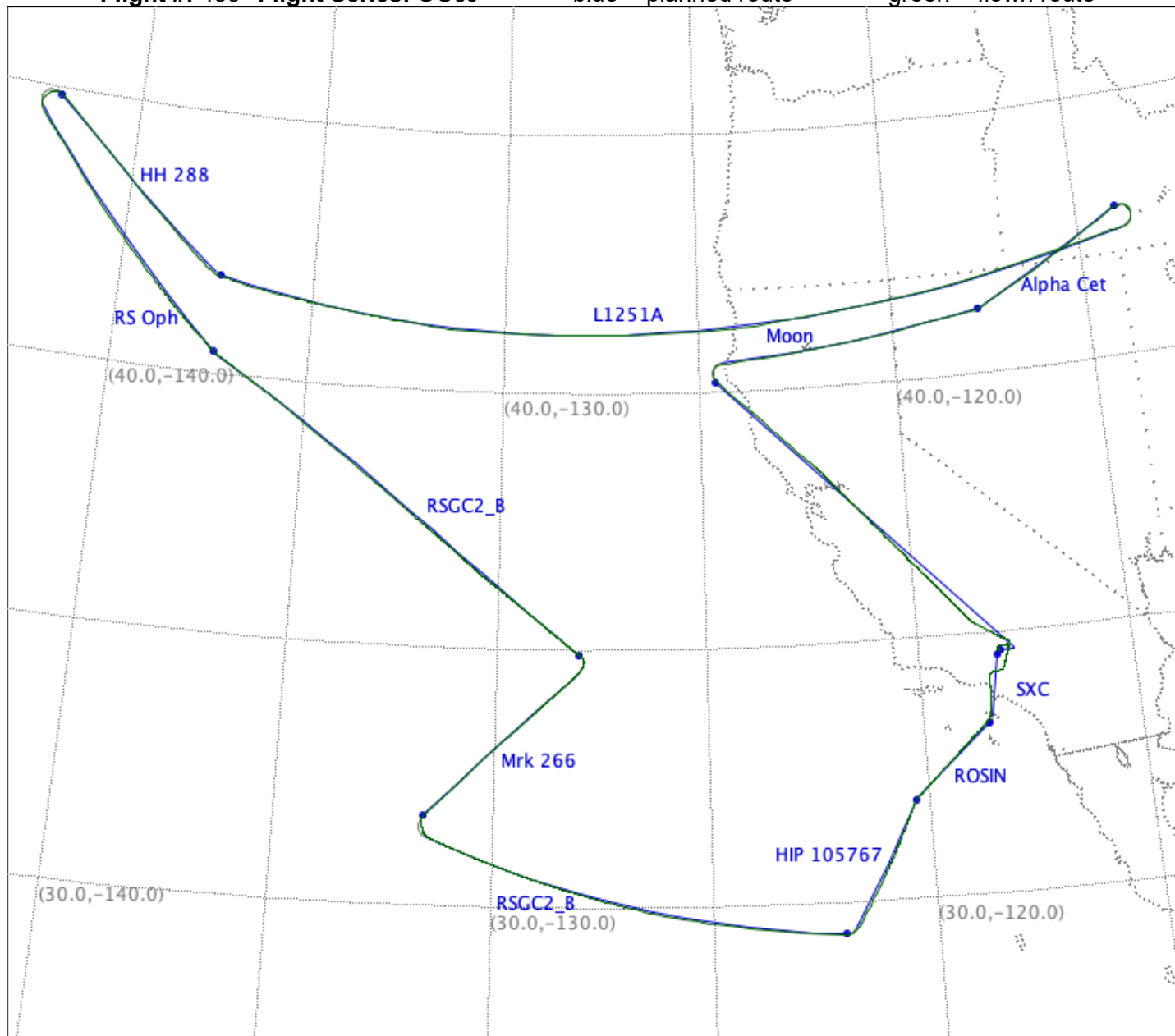
MISSION ID: 2018-08-31_FO_F499

Date: 2018-08-31 UT Instrument: FORCAST

Flight #: 499 Flight Series: OC6J

blue = planned route

green = flown route



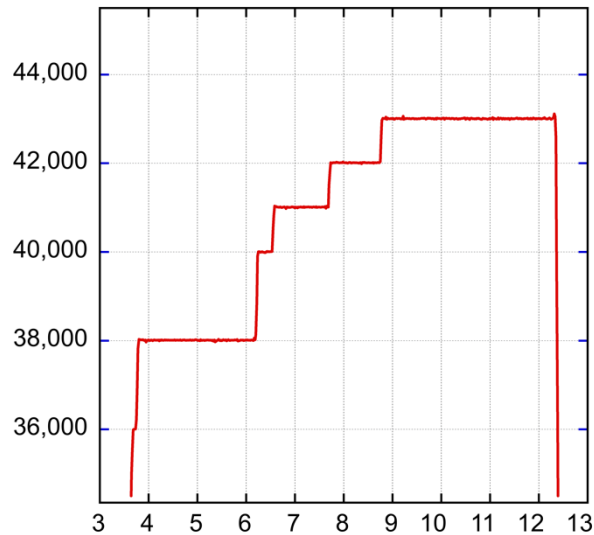
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

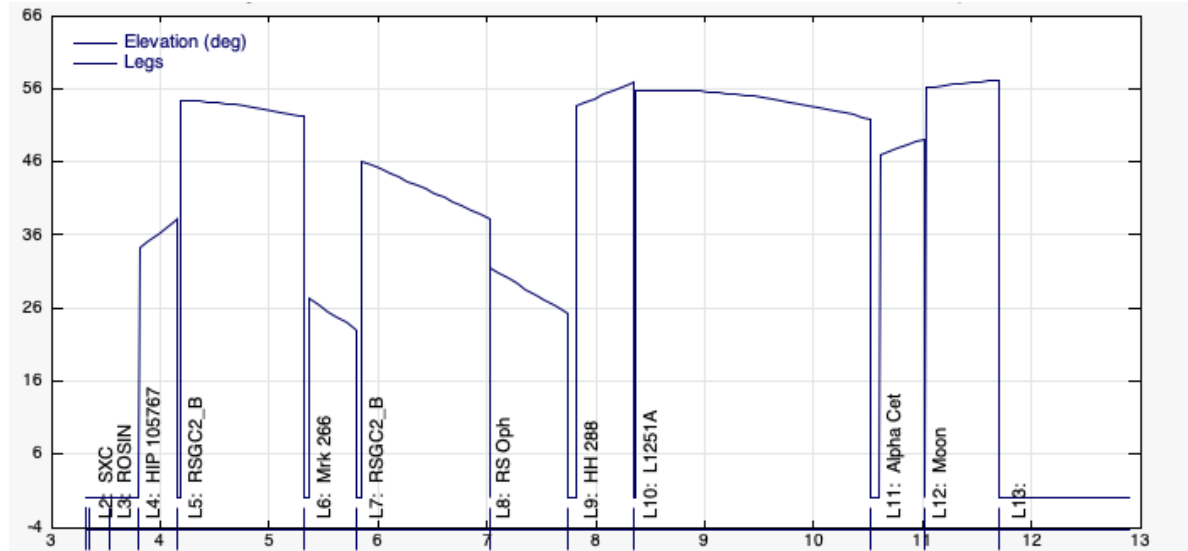
Flight 499 Mission ID 2018-08-31_FO_F499
 Palmdale to Palmdale Take off date UTC: 31-AUG-2018
 Departure UTC: 03:14 Arrival UTC: 12:53

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 105767	21h25m16.96s	-03d33m24.3s	3:48	21	
5	06_0089	Humphreys	RSGC2_B	18h39m19.53s	-06d01m19.0s	4:11	67.7	
6	06_0211	Muller-Sanchez	Mrk 266	13h38m17.81s	48d16m41.2s	5:22	26	
7	06_0089	Humphreys	RSGC2_B	18h39m19.53s	-06d01m19.0s	5:51	70	
8	06_0096	Evans	RS Oph	17h50m13.20s	-06d42m28.5s	7:01	43	
9	06_0058	Tan	HH 288	00h37m13.60s	64d04m15.0s	7:49	32	
10	06_0165	Huard	L1251A	22h35m23.30s	75d17m08.0s	8:22	129	
11	90_0071	Calibration	Alpha Cet	03h02m16.77s	04d05m23.1s	10:36	25	
12	75_0034	Discretionary	Moon	02h19m28.20s	08d24m37.4s	11:02	40	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



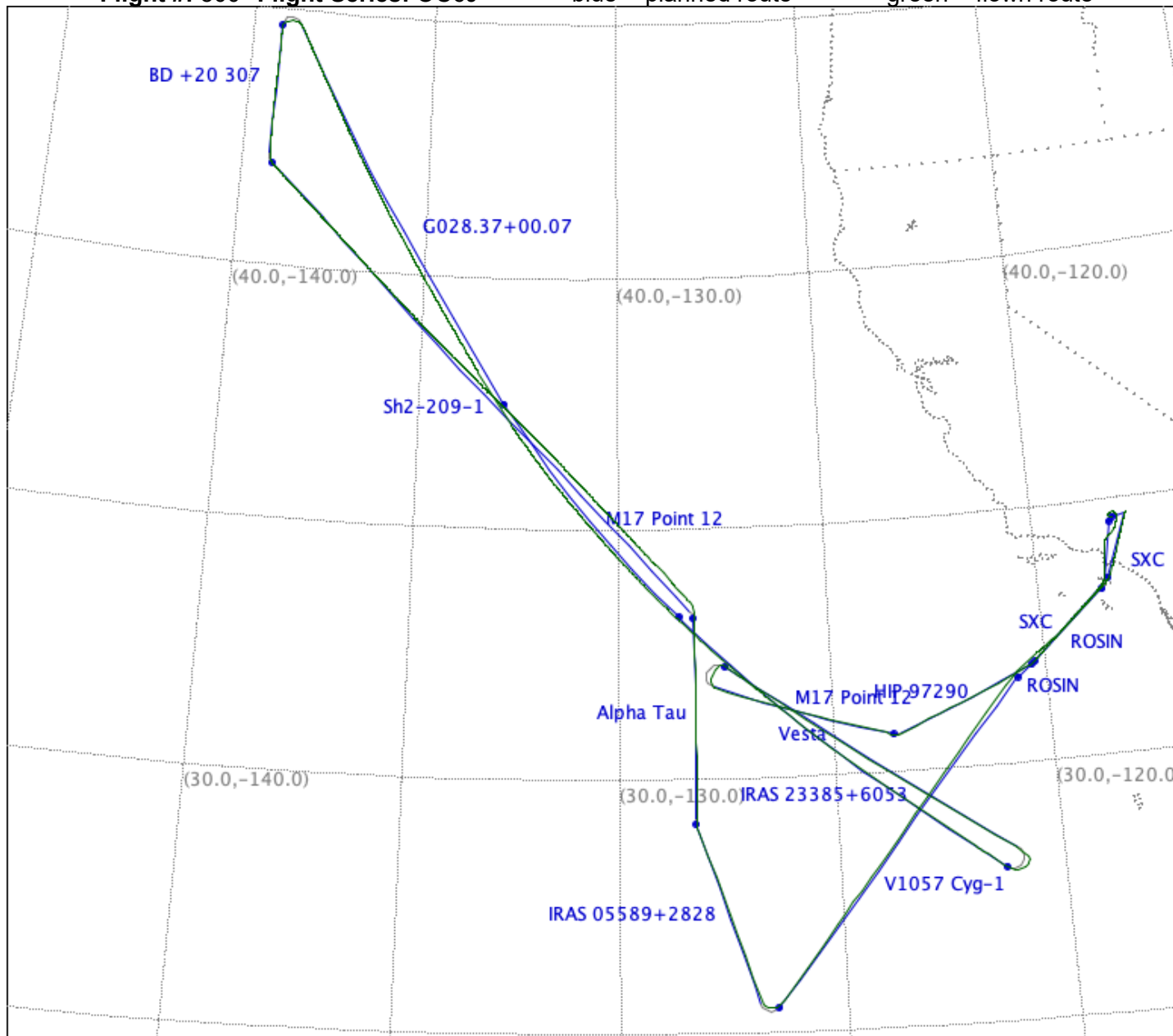
MISSION ID: 2018-09-06_FO_F500

Date: 2018-09-06 UT Instrument: FORCAST

Flight #: 500 Flight Series: OC6J

blue = planned route

green = flown route



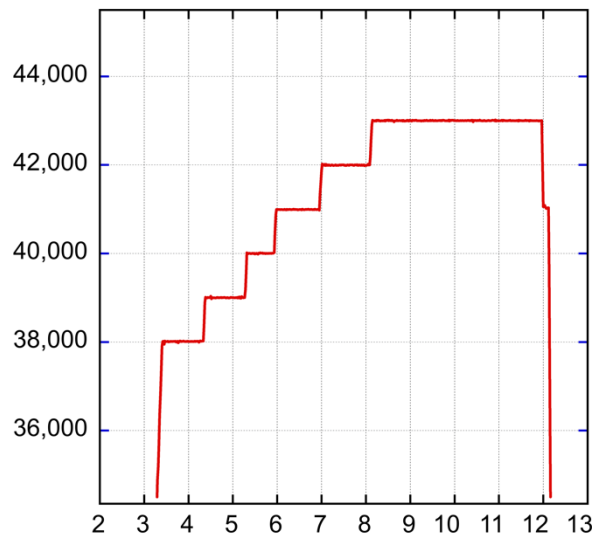
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

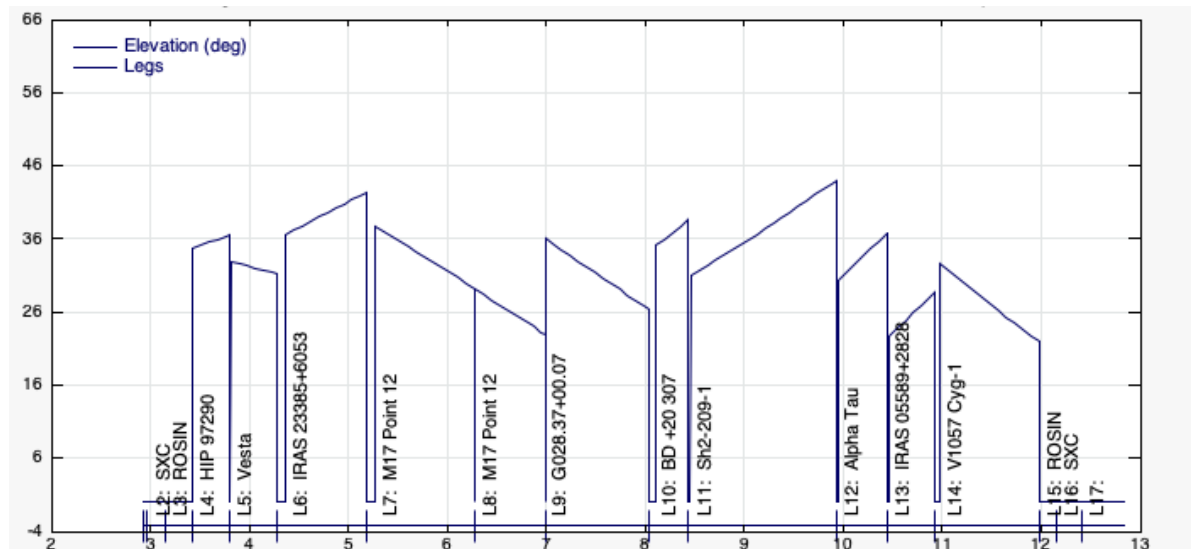
Flight 500 Mission ID 2018-09-06_FO_F500
 Palmdale to Palmdale Take off date UTC: 06-SEP-2018
 Departure UTC: 02:51 Arrival UTC: 12:33

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 97290	19h46m21.74s	-19d45m40.0s	3:24	22	
5	90_0072	Calibration	Vesta	17h44m34.90s	-24d51m51.9s	3:47	28	
6	06_0058	Tan	IRAS 23385+6053	23h40m54.50s	61d10m28.1s	4:20	49	
7	06_0011	De Buizer	M17 Point 12	18h20m19.60s	-16d09m46.7s	5:14	60.8	
8	06_0011	De Buizer	M17 Point 12	18h20m30.58s	-16d11m52.5s	6:15	42.2	
9	06_0042	Tan	G028.37+00.07	18h42m52.52s	-04d00m15.0s	6:57	63	
10	06_0167	Weinberger	BD +20 307	01h54m50.34s	21d18m22.5s	8:04	20	
11	06_0072	Lau	Sh2-209	04h11m09.00s	51d09m54.9s	8:26	88	
12	90_0071	Calibration	Alpha Tau	04h35m55.24s	16d30m33.5s	9:55	30.2	FORCAST lost connection to observatory control software; half of leg loss recovering
13	06_0211	Muller-Sanchez	IRAS 05589+2828	06h02m10.48s	28d28m19.4s	10:26	28	
14	06_0062	Green	V1057 Cyg	20h58m53.72s	44d15m28.3s	10:57	60	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



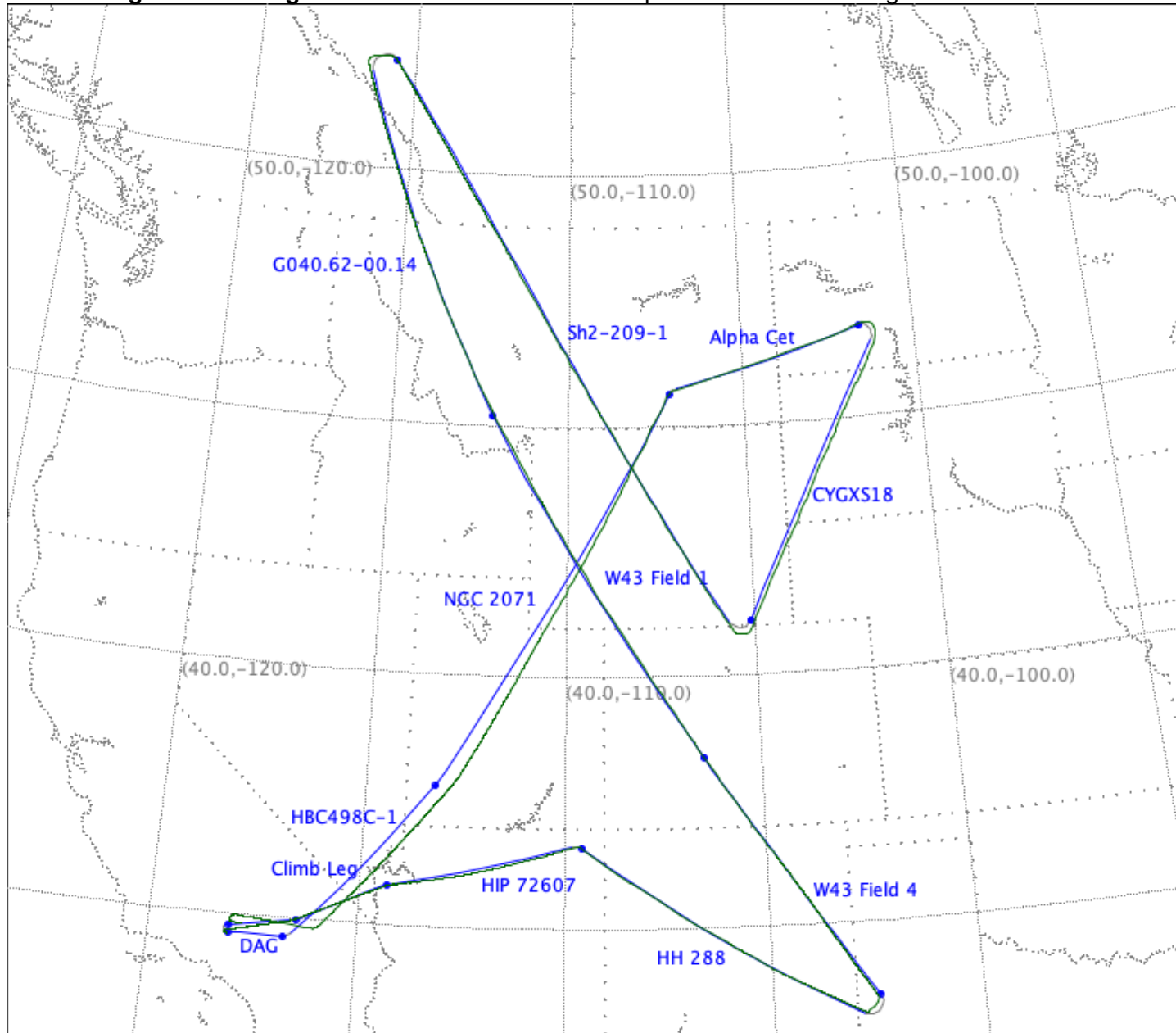
MISSION ID: 2018-09-07_FO_F501

Date: 2018-09-07 UT Instrument: FORCAST

Flight #: 501 Flight Series: OC6J

blue = planned route

green = flown route



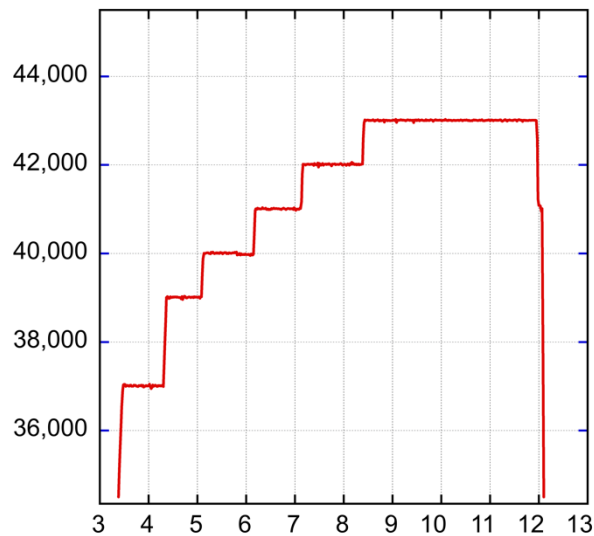
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

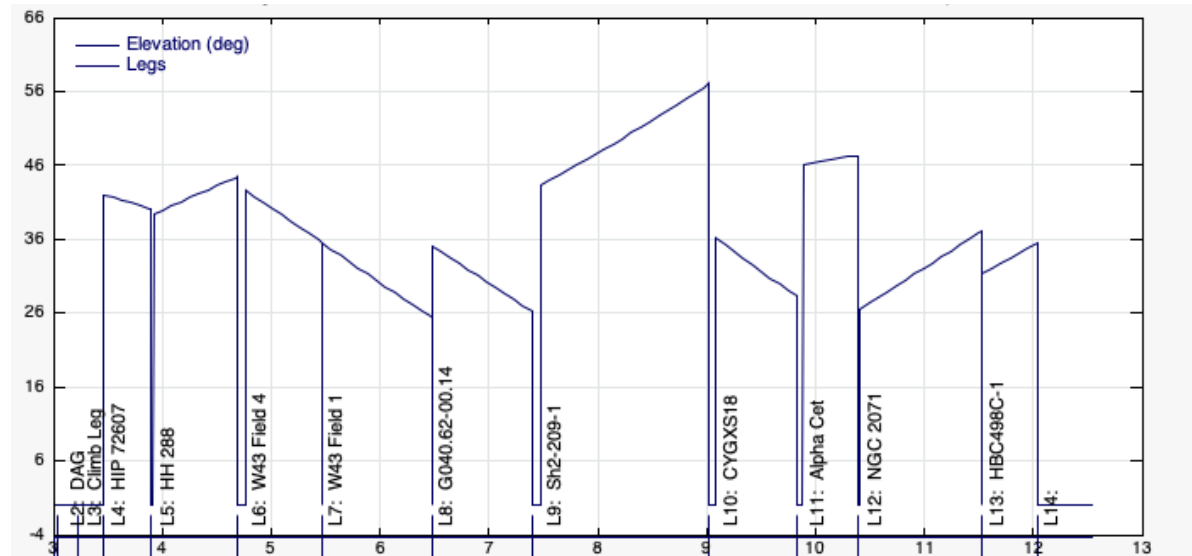
Flight 501 Mission ID 2018-09-07_FO_F501
 Palmdale to Palmdale Take off date UTC: 07-SEP-2018
 Departure UTC: 02:58 Arrival UTC: 12:24

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 72607	14h50m42.33s	74d09m19.8s	3:27	26	
5	06_0058	Tan	HH 288	00h37m13.60s	64d04m15.0s	3:55	46	
6	06_0011	De Buizer	W43 Field 4	18h47m40.08s	-01d54m05.8s	4:45	42.2	
7	06_0011	De Buizer	W43 Field 1	18h47m30.37s	-01d58m30.2s	5:28	60.8	
8	06_0058	Tan	G040.62-00.14	19h06m01.63s	06d46m36.9s	6:28	55	
9	06_0072	Lau	Sh2-209-1	04h11m09.00s	51d09m54.9s	7:28	93	
10	06_0162	Hora	CYGXS18	20h27m26.85s	37d22m52.9s	9:05	44.2	
11	90_0071	Calibration	Alpha Cet	03h02m16.77s	04d05m23.1s	9:53	30.2	
12	06_0058	Tan	NGC 2071	05h47m04.70s	00d21m44.0s	10:24	67.3	
13	06_0051	Reipurt	HBC498C	05h40m49.50s	-08d06m15.0s	11:32	30	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



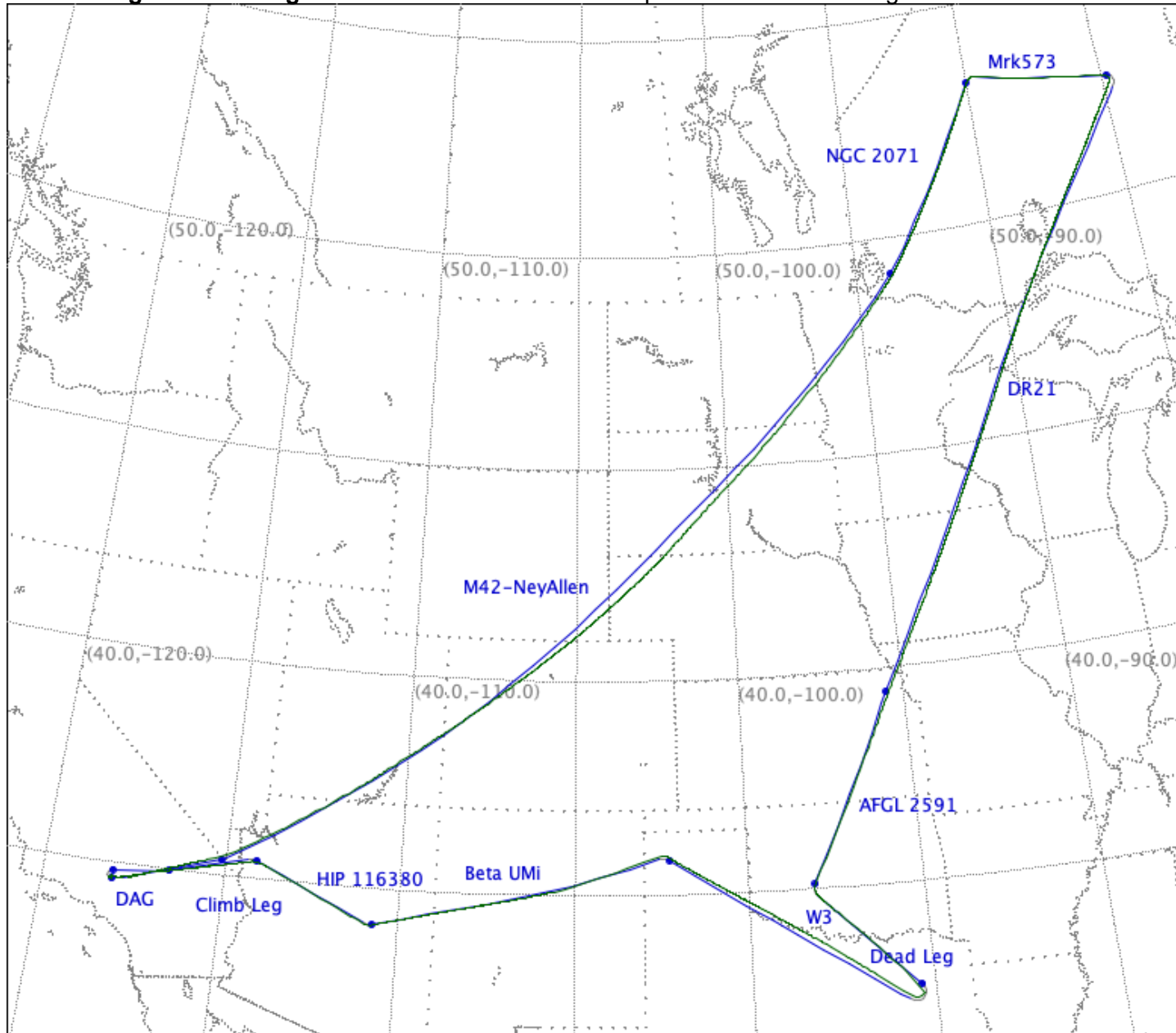
MISSION ID: 2018-09-08_FO_F502

Date: 2018-09-08 UT Instrument: FORCAST

Flight #: 502 Flight Series: OC6J

blue = planned route

green = flown route



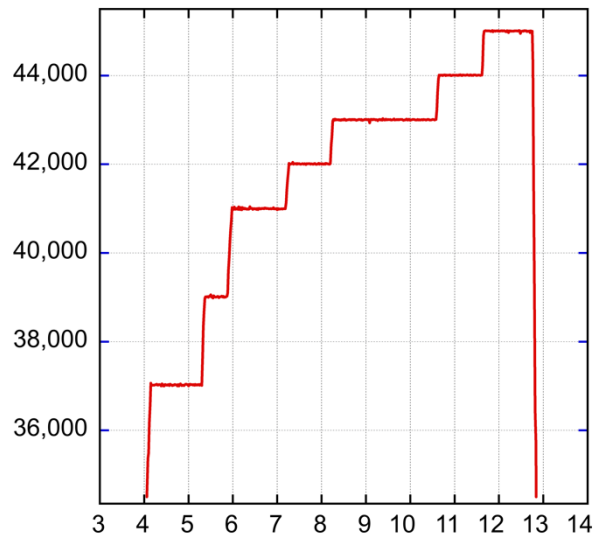
Flight notes:

Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

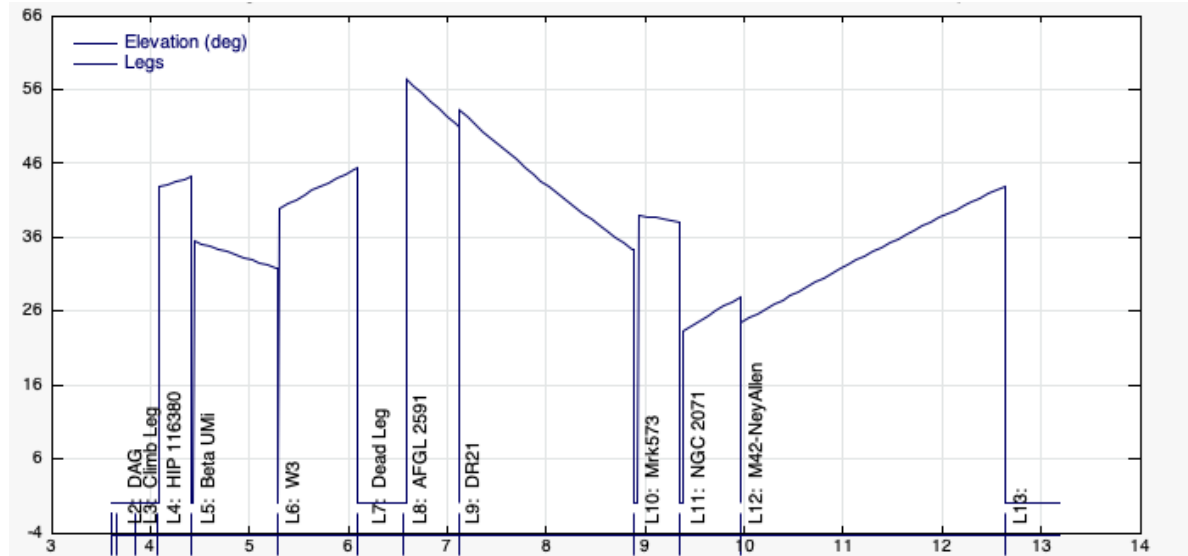
Flight 502 Mission ID 2018-09-08_FO_F502
 Palmdale to Palmdale Take off date UTC: 08-SEP-2018 Departure UTC: 03:38 Arrival UTC: 13:12

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 116380	23h34m59.04s	71d38m31.4s	4:05	20	
5	90_0071	Calibration	Beta UMi	14h50m42.33s	74d09m19.8s	4:26	50.3	
6	76_0002	Yorke	W3	02h25m38.45s	62d06m13.4s	5:18	47	Hard time maintaining pointing during acquisition; trouble zeroing large offsets of ~25 pix. 30% of leg lost. Potential haze.
8	06_0058	Tan	AFGL 2591	20h29m24.90s	40d11m20.3s	6:35	32	
9	76_0002	Yorke	DR21	20h39m01.85s	42d20m44.0s	7:07	106	
10	06_0066	Lopez-Rodriguez	Mrk573	01h43m57.76s	02d20m59.7s	8:56	25	
11	06_0058	Tan	NGC 2071	05h47m04.70s	00d21m44.0s	9:23	35	
12	76_0002	Yorke	M42-NeyAllen	05h35m16.50s	-05d23m30.6s	9:58	160	Light turbulence.

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



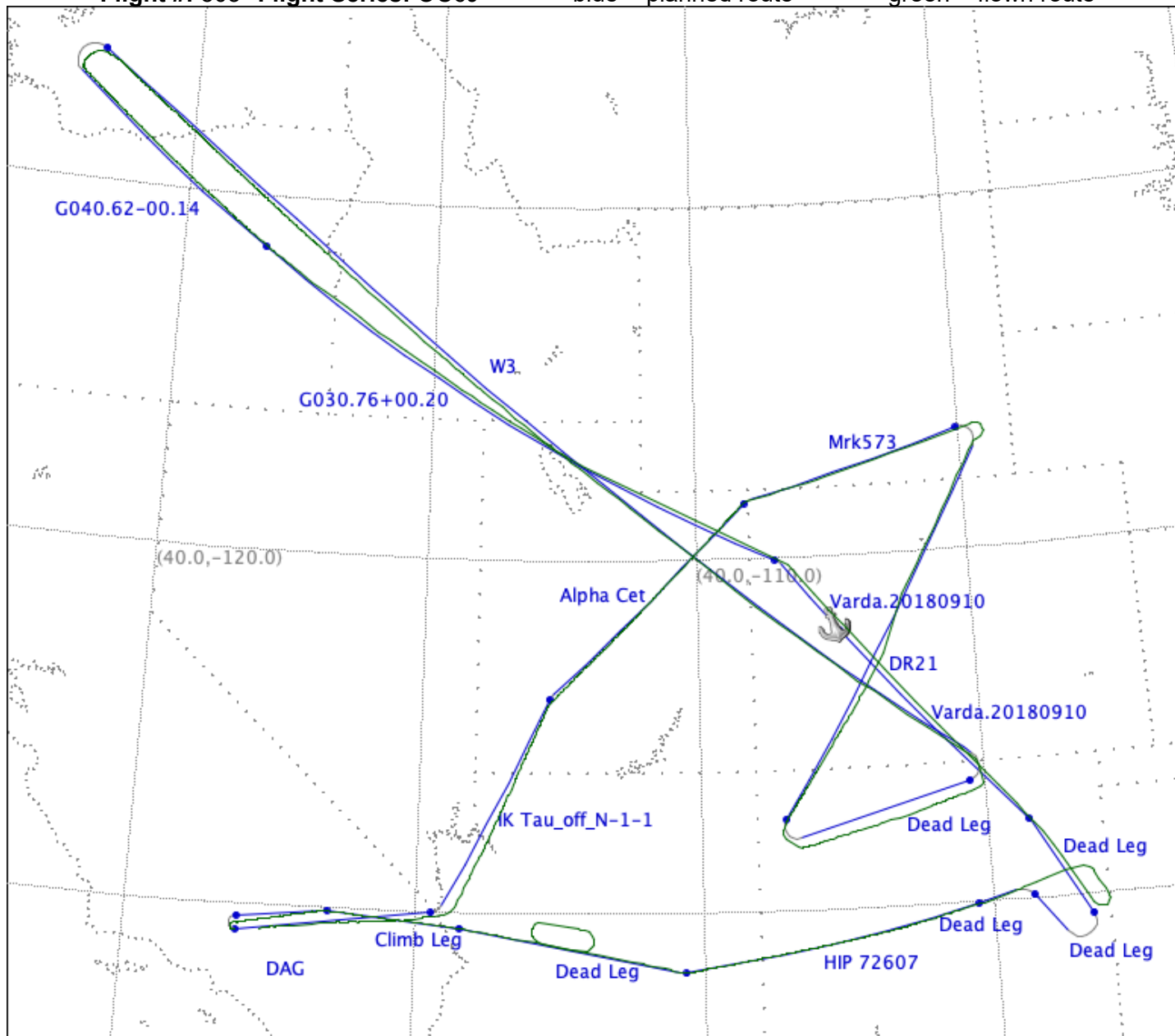
MISSION ID: 2018-09-10_FO_F503

Date: 2018-09-10 UT Instrument: FORCAST

Flight #: 503 Flight Series: OC6J

blue = planned route

green = flown route



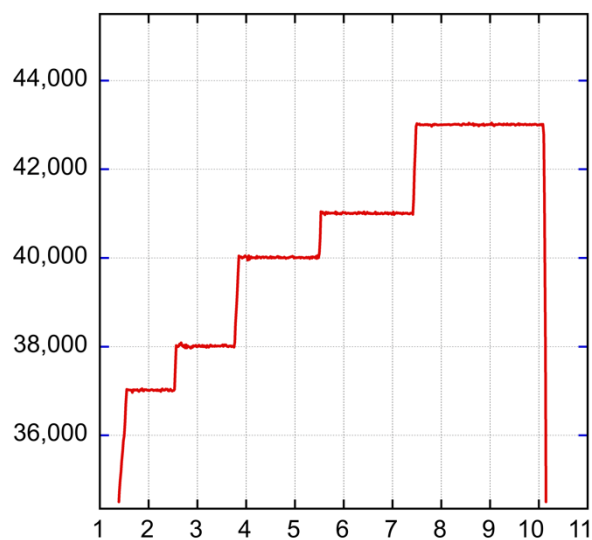
Flight notes:

Occultation observations of Varda using FPI+ at beginning of flight. Rest of flight FORCAST science. Large-scale, high-amplitude, low spatial frequency background offsets seen in all imaging data (a.k.a Cat's Eye effect)

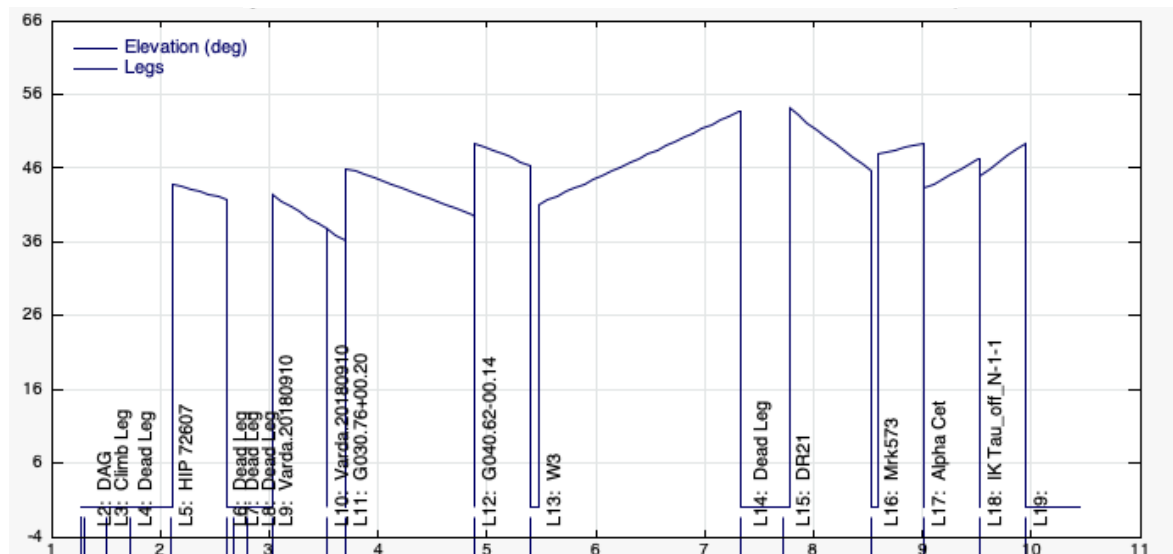
Flight 503 Mission ID 2018-09-10_FO_F503
 Palmdale to Palmdale Take off date UTC: 10-SEP-2018
 Departure UTC: 00:58 Arrival UTC: 10:35

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
5			HIP 72607	14h50m42.33s	74d09m19.8s	2:06	30	
9	06_0220	Wolf	Varda.20180910	17h18m25.12s	-02d05m14.4s	3:04	30	Timing for occultation was near perfect, only 5 nm east of planned position. No occultation seen.
10	06_0220	Wolf	Varda.20180910	17h18m25.12s	-02d05m14.4s	3:34	10	
11	06_0042	Tan	G030.76+00.20	18h46m44.53s	-01d50m28.6s	3:45	71	
12	06_0058	Tan	G040.62-00.14	19h06m01.63s	06d46m36.9s	4:56	30	
13	76_0002	Yorke	W3	02h25m38.45s	62d06m13.4s	5:31	111	
15	76_0002	Yorke	DR21	20h39m01.85s	42d20m44.0s	5:31	45	29min lost to observatory control software crash
16	06_0066	Lopez-Rodriguez	Mrk573	01h43m57.76s	02d20m59.7s	7:49	25	
17	90_0071	Calibration	Alpha Cet	03h02m16.77s	04d05m23.1s	8:38	30.3	
18	06_0038	Andersson	IK Tau	03h53m28.81s	11d24m22.3s	9:04	25	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



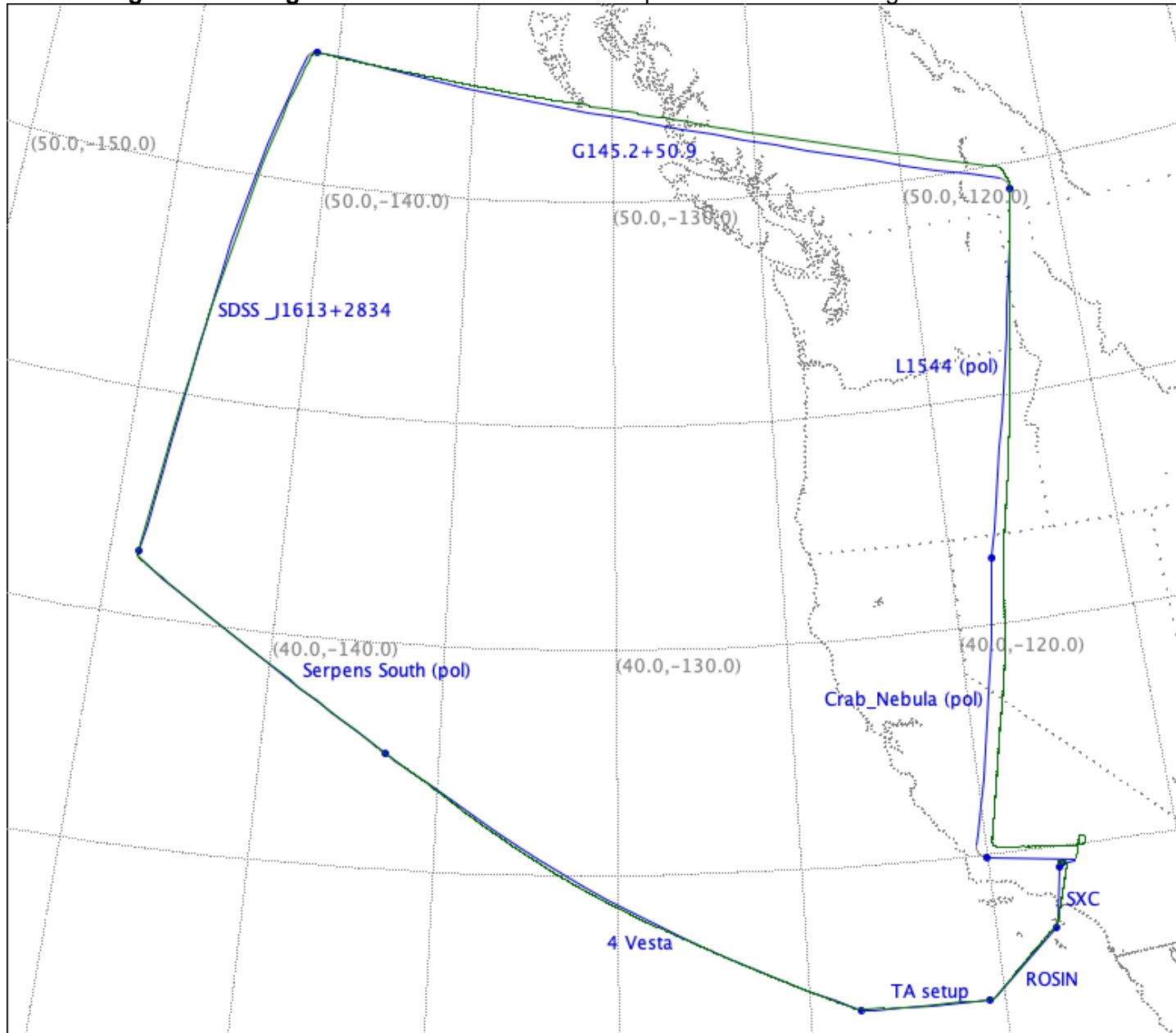
MISSION ID: 2018-09-13_HA_F504

Date: 2018-09-13 UT Instrument: HAWC+

Flight #: 504 Flight Series: OC6K

blue = planned route

green = flown route

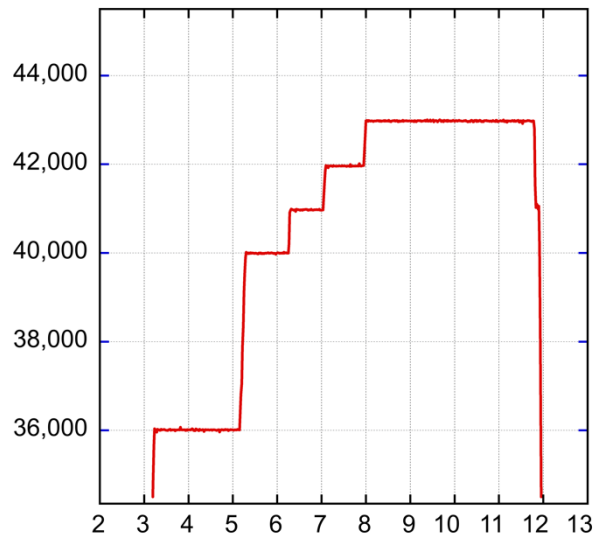


Flight notes: No irregularities.

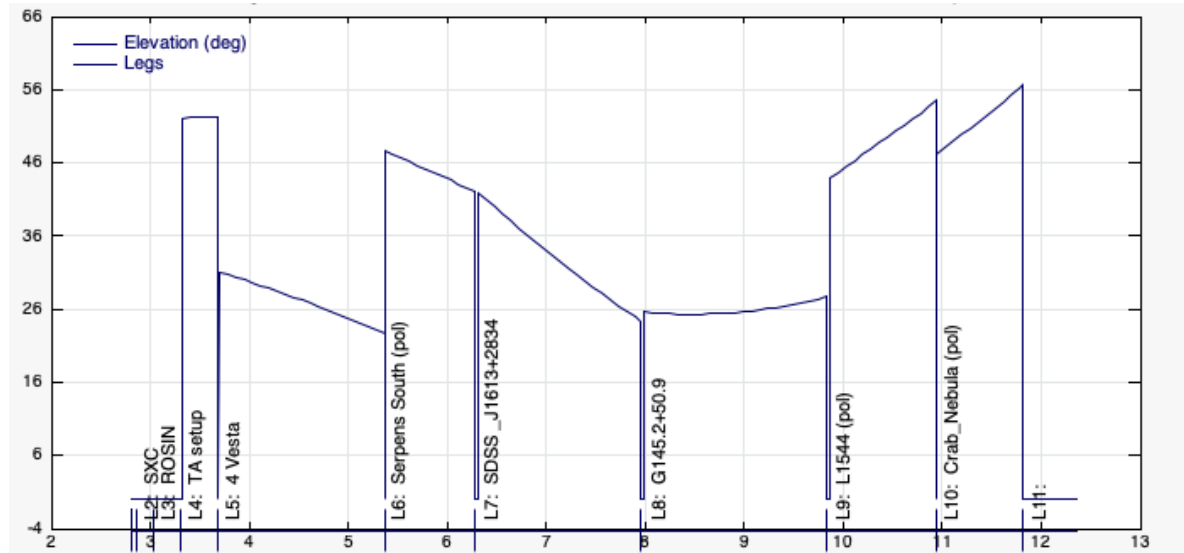
Flight 504 Mission ID 2018-09-13_HA_F504
 Palmdale to Palmdale Take off date UTC: 13-SEP-2018
 Departure UTC: 02:44 Arrival UTC: 12:23

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 93429	19h01m40.83s	-05d44m20.7s	3:19	22	
5	90_0086	Calibration	4 Vesta	17h52m32.26s	-25d09m34.8s	3:42	100	
6	06_0088	Goldsmith	Serpens South	18h30m08.55s	-02d05m36.5s	5:22	55	
7	06_0191	Tremonti	SDSS_J1613+2834	16h13m32.50s	28d34m14.8s	6:18	99	
8	06_0131	Chary	G145.2+50.9	10h53m22.56s	60d51m49.0s	7:59	110	
9	06_0012	Clemens	L1544 Core D1	05h04m15.29s	25d12m11.7s	9:51	65	Large guiding errors seen (~2arcsec).
10	06_0193	De Looze	Crab_Nebula_HAWC+_Cpart1	05h34m32.45s	22d00m40.9s	10:57	52	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



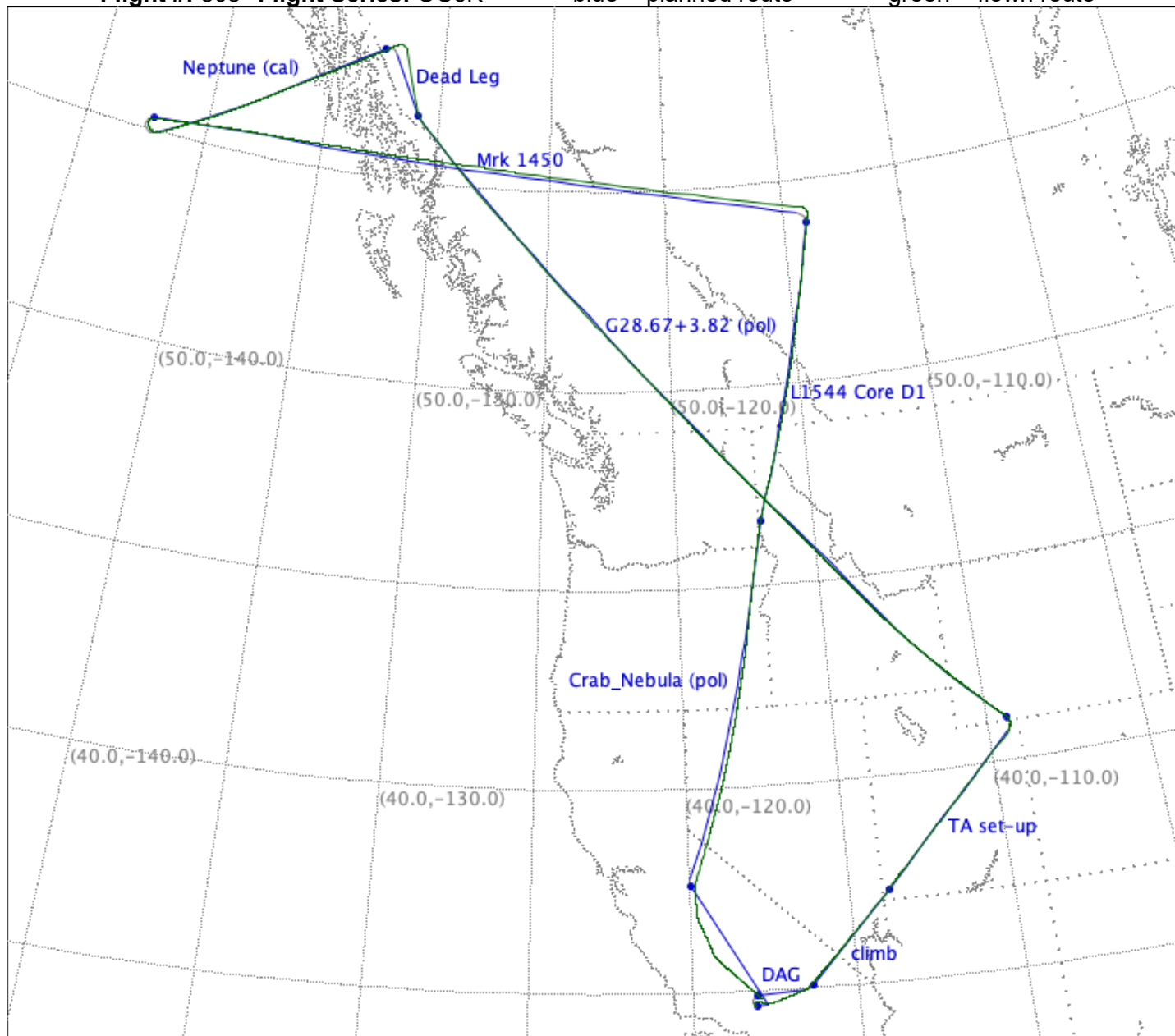
MISSION ID: 2018-09-14_HA_F505

Date: 2018-09-14 UT Instrument: HAWC+

Flight #: 505 Flight Series: OC6K

blue = planned route

green = flown route

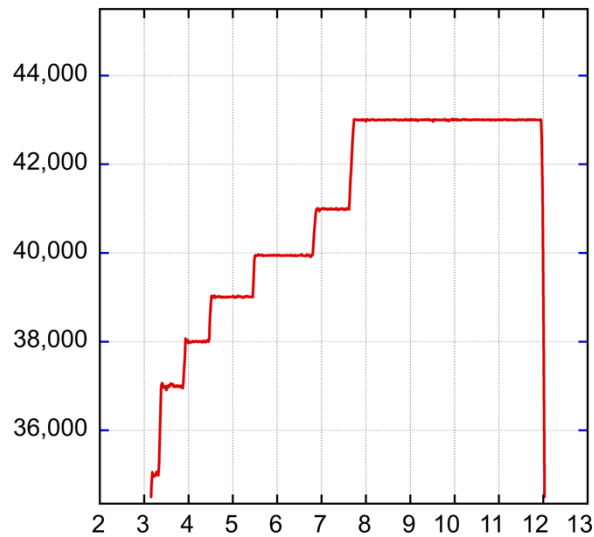


Flight notes:
No irregularities.

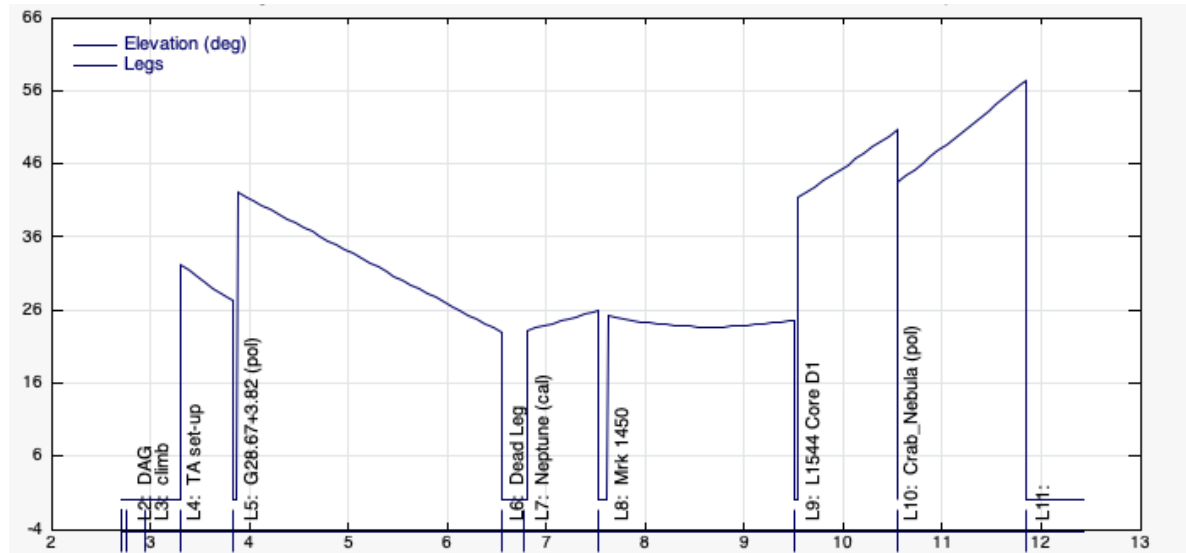
Flight 505 Mission ID 2018-09-14_HA_F505
 Palmdale to Palmdale Take off date UTC: 14-SEP-2018
 Departure UTC: 02:42 Arrival UTC: 12:32

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 67301	13h47m32.44s	49d18m47.8s	3:18	32	
5	06_0180	Pillai	G28.67+3.82	18h30m00.00s	-02d01m00.3s	3:53	160	
7	90_0082	Calibration	Neptune	23h04m57.55s	-06d58m18.2s	6:49	43.3	
8	06_0222	Wikind	Mrk 1450	11h38m35.68s	57d52m26.9s	7:37	113	Guiding not sending corrections to telescope; 12min lost correcting
9	06_0012	Clemens	L1544 Core D1	05h04m15.29s	25d12m11.7s	9:33	60	
10	06_0193	De Looze	Crab_Nebula_HAWC+ Cpart1	05h34m32.45s	22d00m40.9s	10:33	78	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



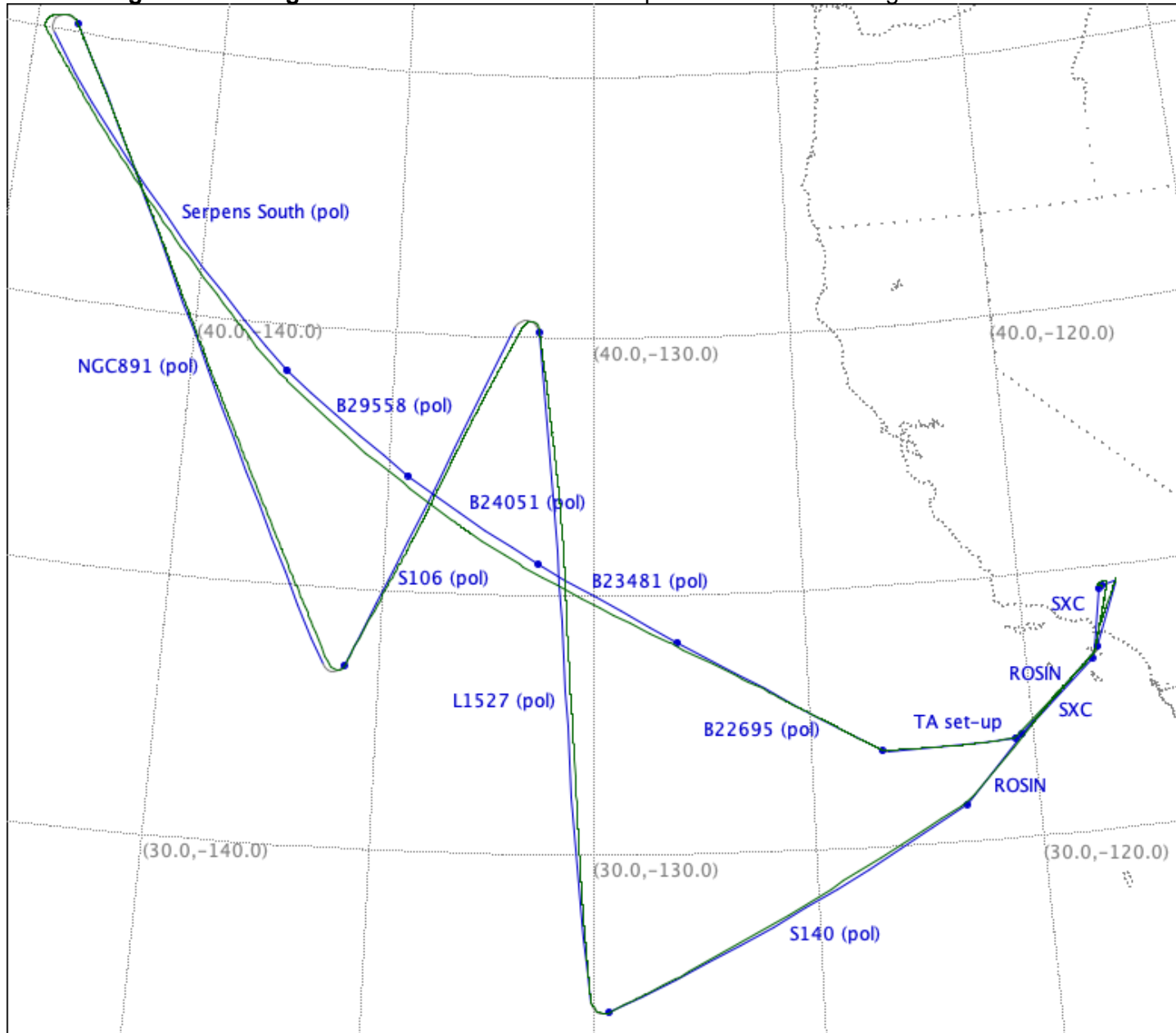
MISSION ID: 2018-09-19_HA_F506

Date: 2018-09-19 UT Instrument: HAWC+

Flight #: 506 Flight Series: OC6K

blue = planned route

green = flown route

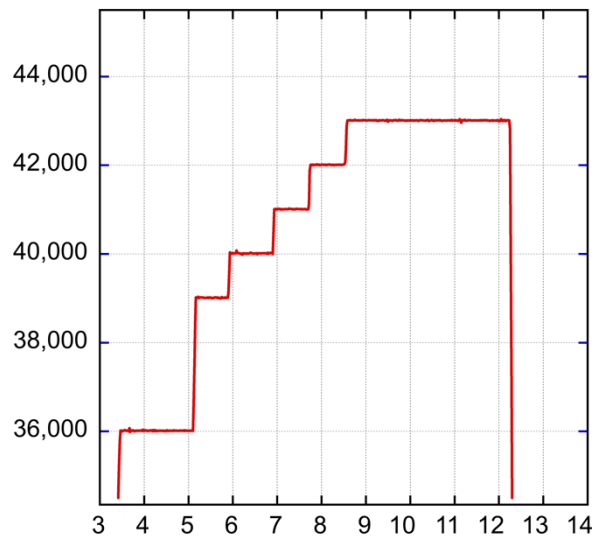


Flight notes: No irregularities.

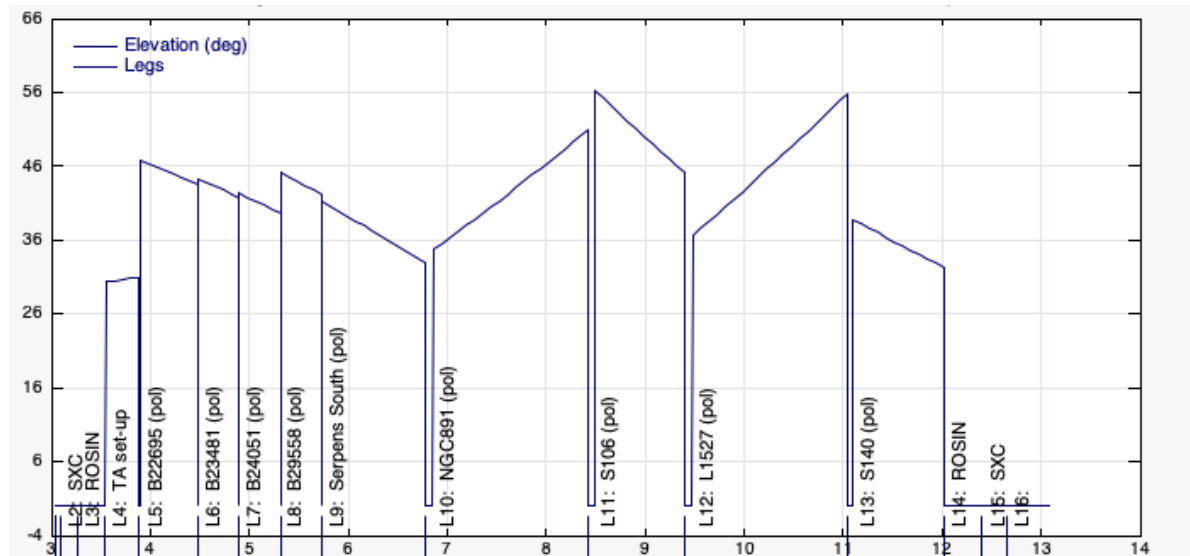
Flight 506 Mission ID 2018-09-19_HA_F506
 Palmdale to Palmdale Take off date UTC: 19-SEP-2018
 Departure UTC: 02:59 Arrival UTC: 12:52

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 98162	19h56m56.83s	-27d10m11.6s	3:34	20	
5	06_0234	Svoboda	B22695	18h34m14.58s	-09d18m35.8s	3:55	35	Held to low altitude (36k ft) by air traffic control (ATC)
6	06_0234	Svoboda	B23481	18h35m59.56s	-08d39m02.5s	4:30	25	Held to low altitude (36k ft) by ATC
7	06_0234	Svoboda	B24051	18h35m54.40s	-07d59m44.6s	4:55	25	Held to low altitude (36k ft) by ATC until middle of leg.
8	06_0234	Svoboda	B29558	18h44m37.07s	-02d55m04.4s	5:20	25	
9	06_0088	Goldsmith	Serpens South	18h30m08.55s	-02d05m36.5s	5:45	62	
10	70_0609	GTO	NGC891	02h22m32.99s	42d20m54.9s	6:52	94	
11	06_0014	Clemens	S106-E	20h27m26.45s	37d22m49.9s	8:30	55	
12	70_0609	GTO	L1527	04h39m54.00s	26d03m10.0s	9:29	94	
13	06_0014	Clemens	S140-E	22h19m18.70s	63d18m54.0s	11:07	55	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



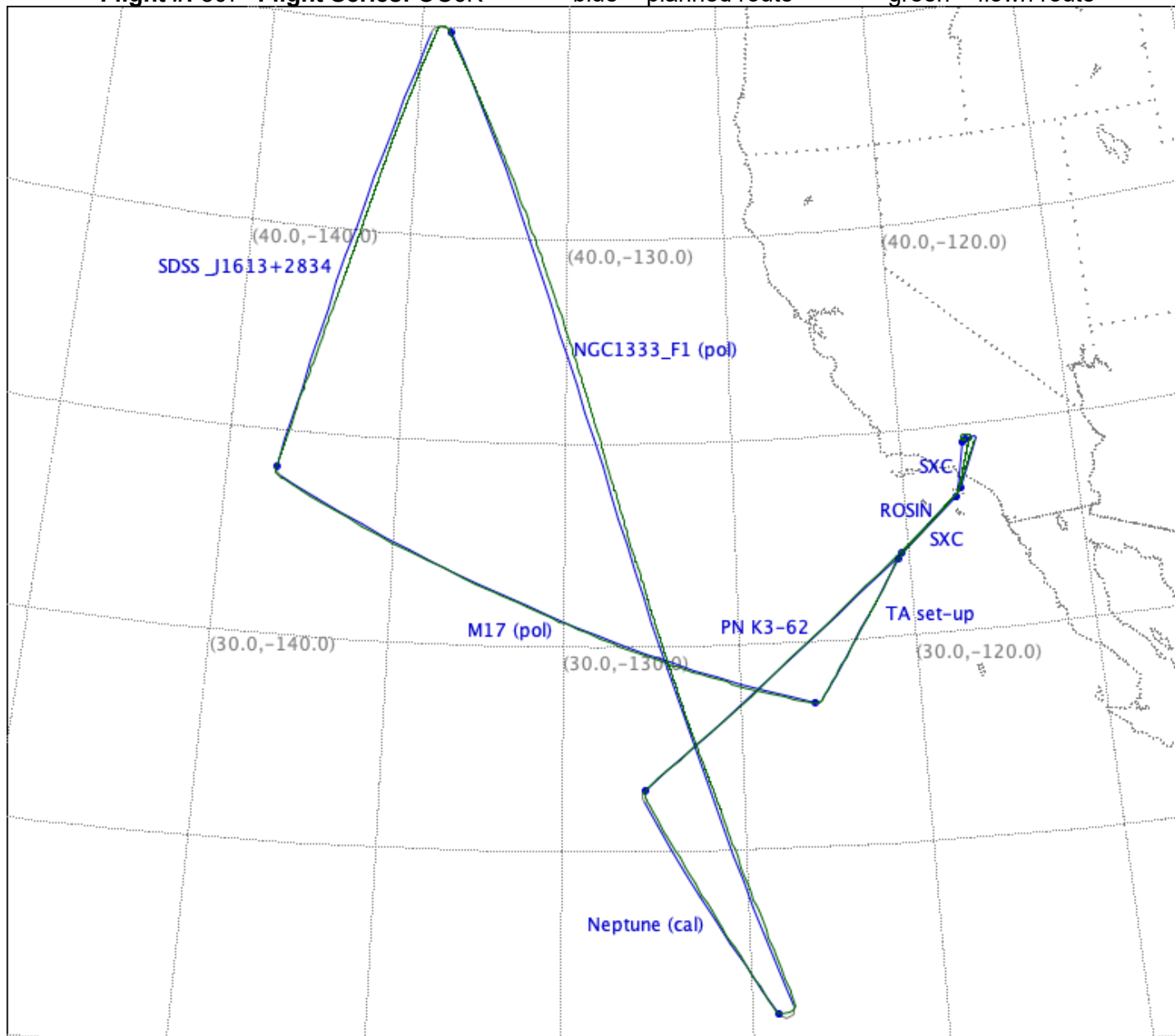
MISSION ID: 2018-09-20_HA_F507

Date: 2018-09-20 UT Instrument: HAWC+

Flight #: 507 Flight Series: OC6K

blue = planned route

green = flown route

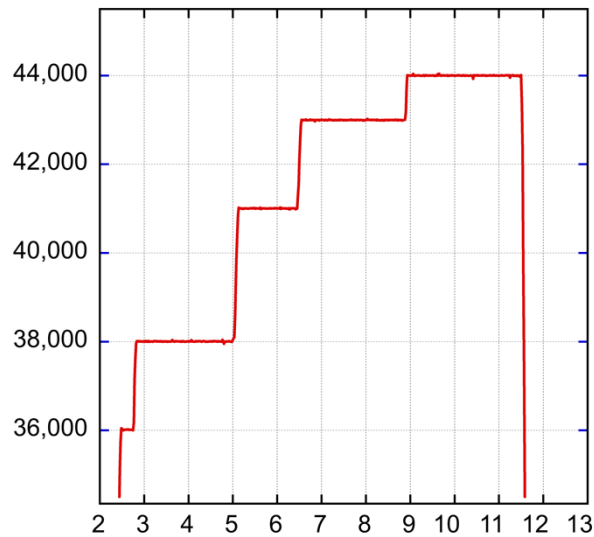


Flight notes: No irregularities.

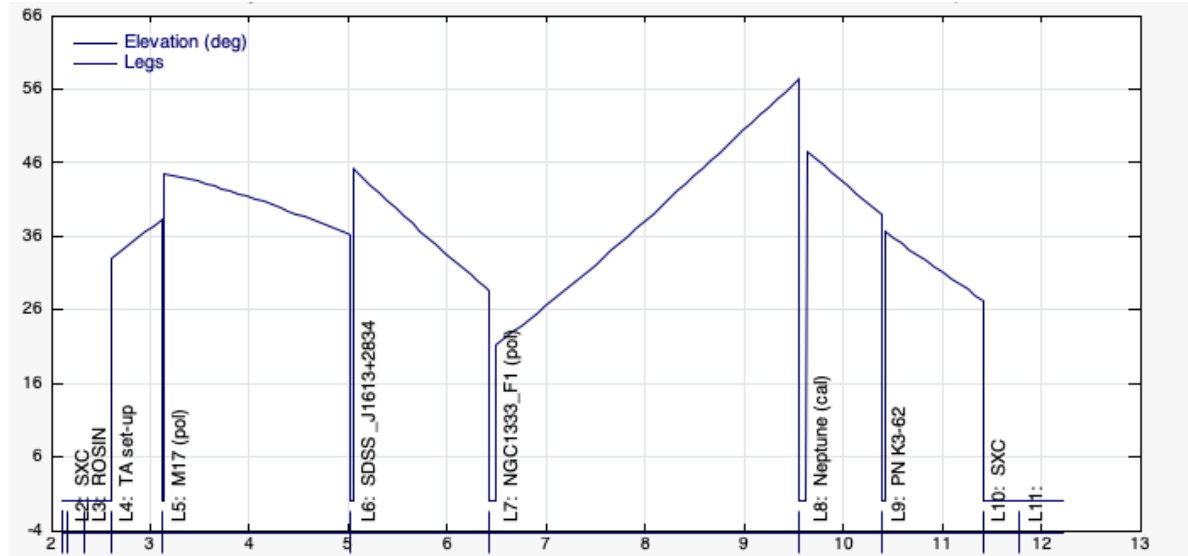
Flight 507 Mission ID 2018-09-20_HA_F507
 Palmdale to Palmdale Take off date UTC: 20-SEP-2018
 Departure UTC: 02:02 Arrival UTC: 12:00

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 106278	21h31m33.53s	-05d34m16.2s	2:36	30	
5	70_0609	GTO	M17	18h20m25.48s	-16d11m37.7s	3:08	113	
6	06_0191	Tremonti	SDSS_J1613+2834	16h13m32.50s	28d34m14.8s	5:03	82	
7	06_0098	Stephens	NGC1333_F1	03h28m58.66s	31d18m08.6s	6:29	184	Lost guiding with FPI, switched to FFI guiding (with larger guiding errors).
8	90_0082	Calibration	Neptune	23h04m20.63s	-07d02m09.7s	9:37	45	
9	06_0237	Cami	PN K3-62	21h31m50.18s	52d33m51.6s	10:25	60	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



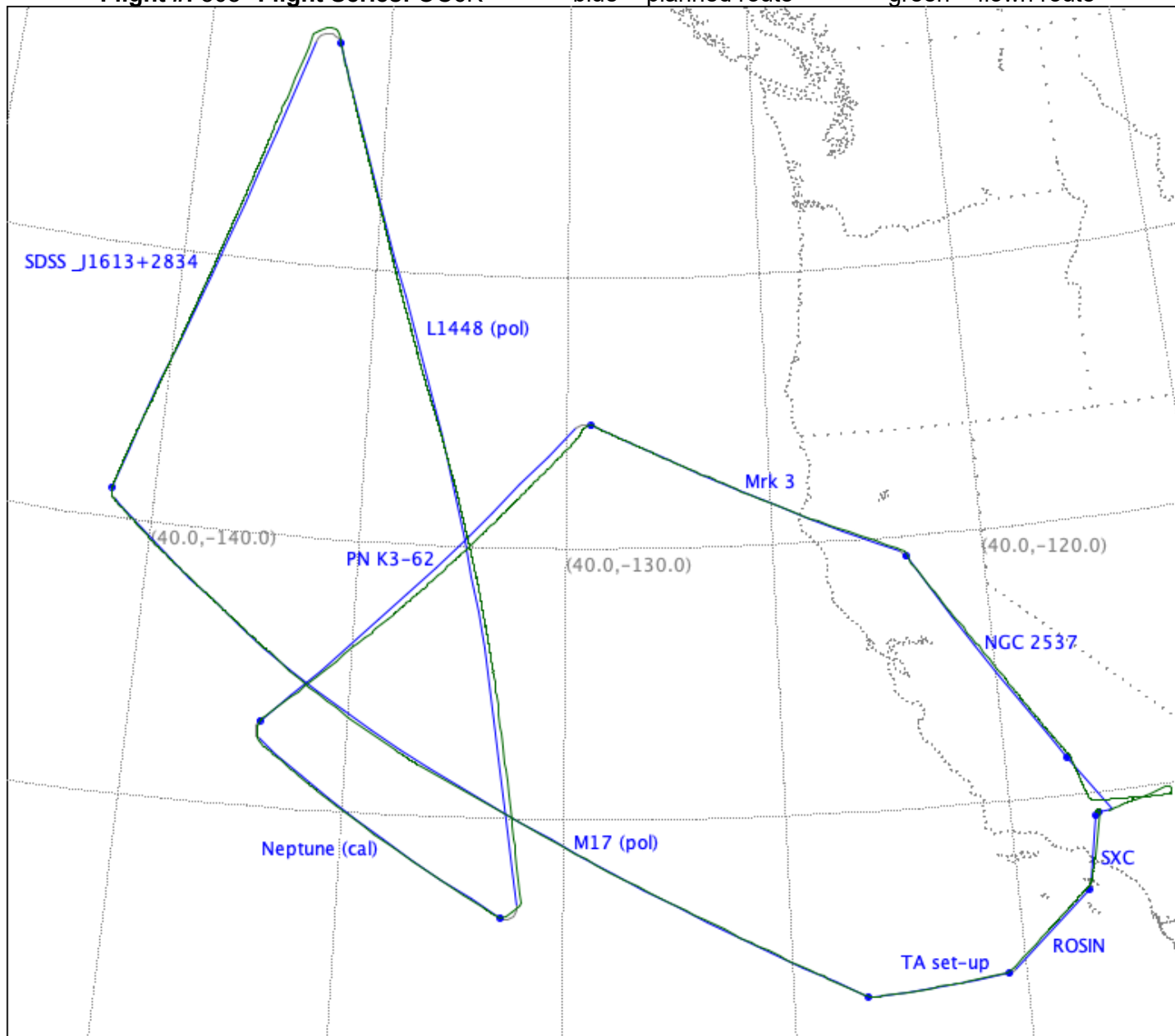
MISSION ID: 2018-09-21_HA_F508

Date: 2018-09-21 UT Instrument: HAWC+

Flight #: 508 Flight Series: OC6K

blue = planned route

green = flown route

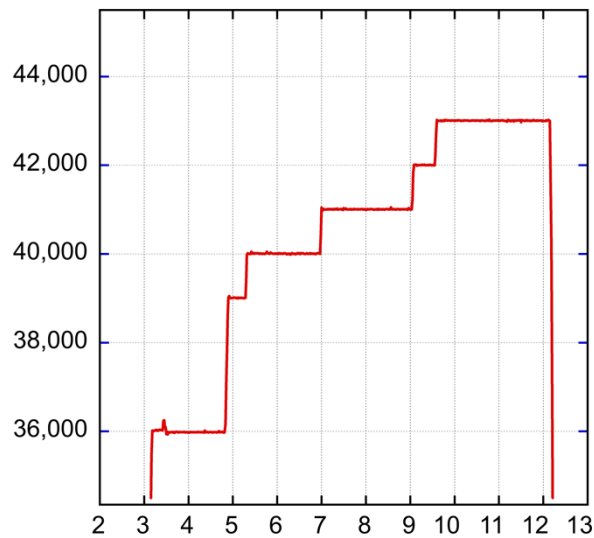


Flight notes: No irregularities.

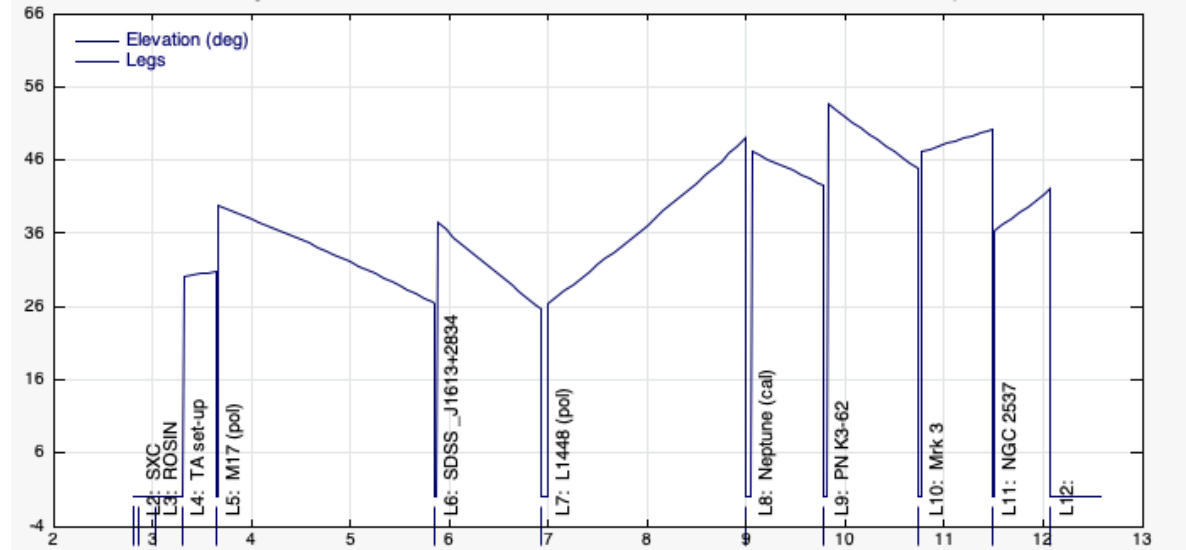
Flight 508 Mission ID 2018-09-21_HA_F508
 Palmdale to Palmdale Take off date UTC: 21-SEP-2018
 Departure UTC: 02:44 Arrival UTC: 12:44

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 98162	19h56m56.83s	-27d10m11.6s	3:19	30	
5	70_0609	GTO	M17	18h20m25.48s	-16d11m37.7s	3:40	131	
6	06_0191	Tremonti	SDSS_J1613+2834	16h13m32.50s	28d34m14.8s	5:52	63	
7	06_0047	Clemens	L1448-E1	03h25m28.10s	30d44m19.2s	7:00	120	Some parts of this object required FFI tracking and errors were ~5 arcsec
8	90_0082	Calibration	Neptune	23h04m14.70s	-07d02m46.7s	9:03	43.3	
9	06_0237	Cami	PN K3-62	21h31m50.18s	52d33m51.6s	9:49	55	
10	06_0066	Lopez-Rodriguez	Mrk 3	06h15m36.46s	71d02m15.2s	10:46	43	
11	06_0222	Wiklind	NGC 2537	08h13m14.64s	45d59m23.3s	11:30	34	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



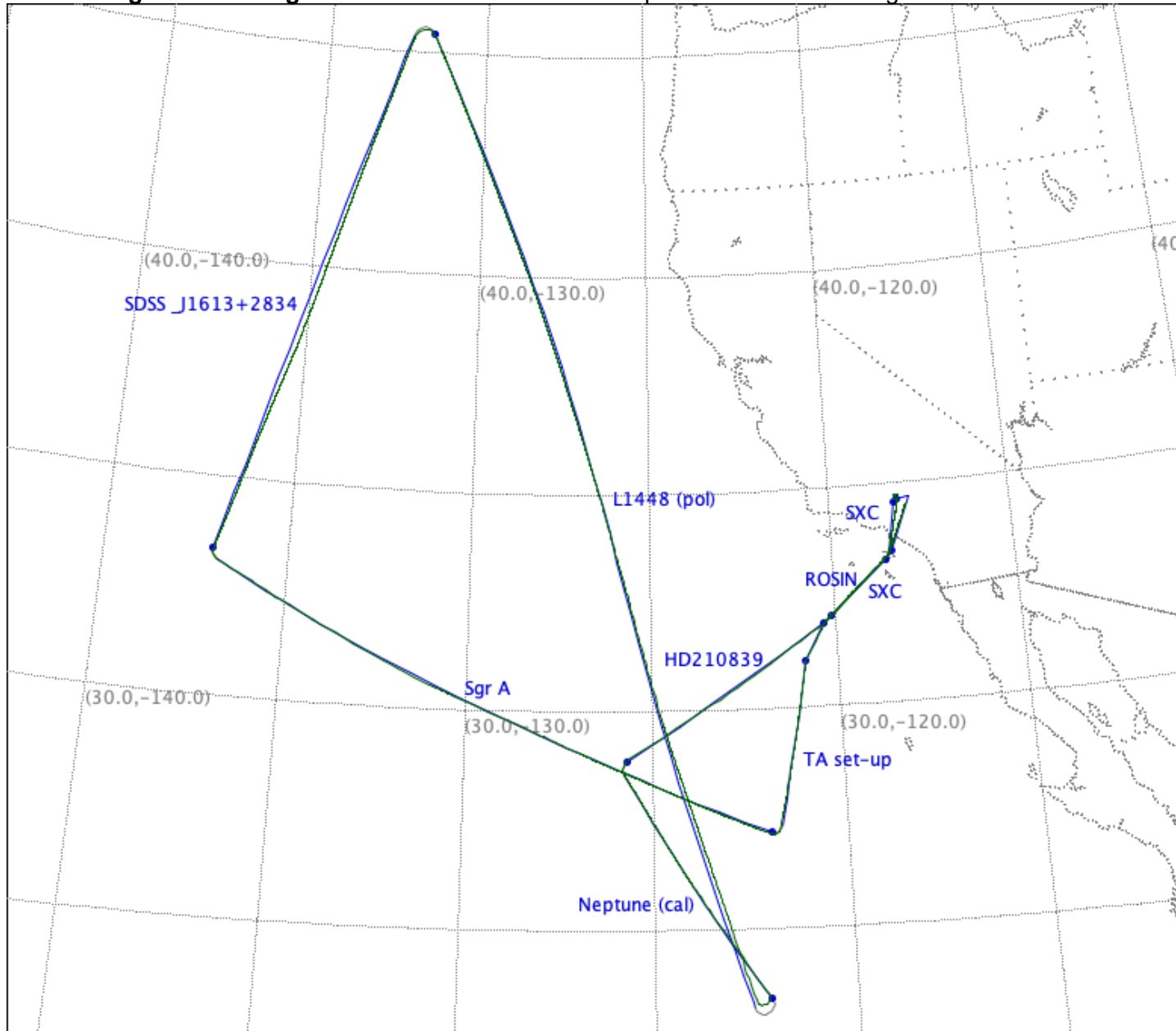
MISSION ID: 2018-09-22_HA_F509

Date: 2018-09-22 UT Instrument: HAWC+

Flight #: 509 Flight Series: OC6K

blue = planned route

green = flown route

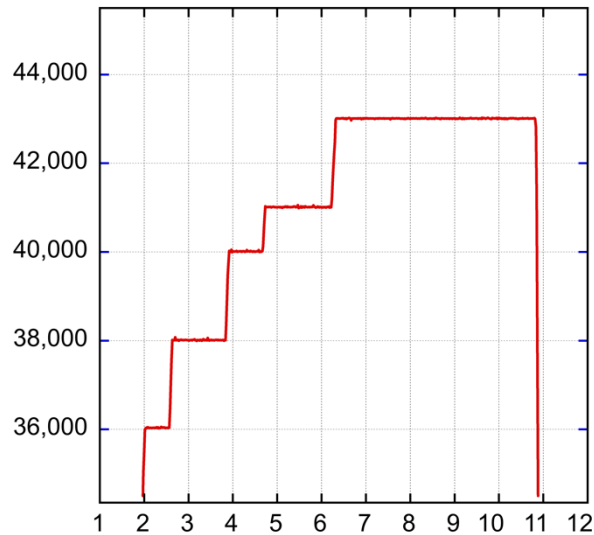


Flight notes: No irregularities.

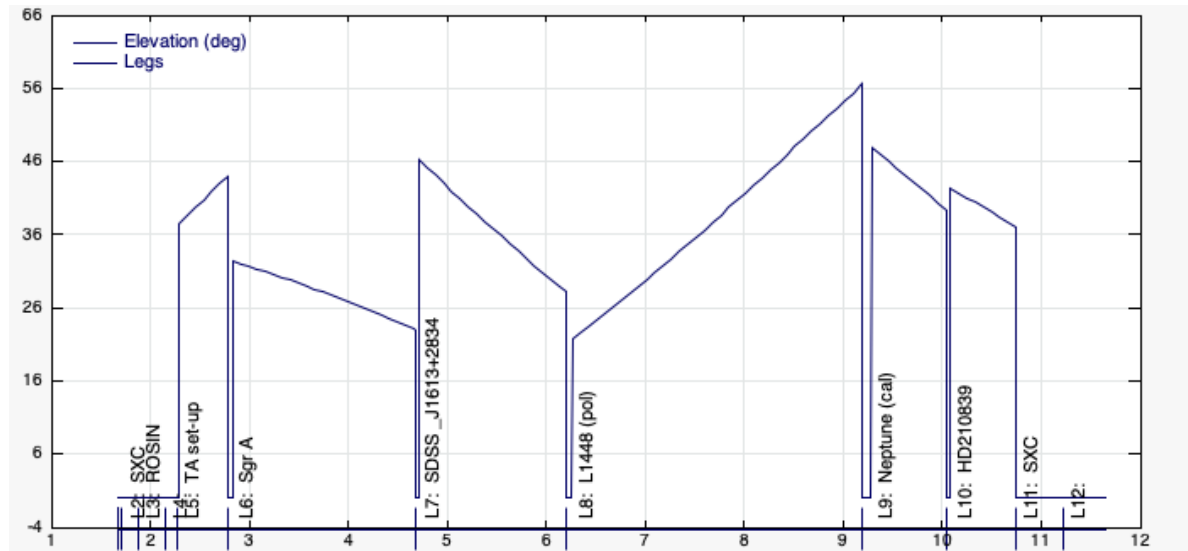
Flight 509 Mission ID 2018-09-22_HA_F509
 Palmdale to Palmdale Take off date UTC: 22-SEP-2018
 Departure UTC: 01:35 Arrival UTC: 11:11

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
5			HIP 107315	21h44m11.19s	09d52m30.1s	2:17	30	
6	70_0609	GTO	Sgr A*	17h45m57.68s	-28d52m53.2s	2:50	111	Telescope configuration error (gate value closed); 20min lost
7	06_0191	Tremonti	SDSS_J1613+2834	16h13m32.50s	28d34m14.8s	4:43	89	
8	06_0047	Clemens	L1433	03h25m28.10s	30d44m19.2s	6:16	176	Incorrect pointing and large guiding errors; 35min lost
9	90_0082	Calibration	Neptune	23h04m08.79s	-07d03m23.6s	9:17	45	
10	06_0154	Siebenmorgen	HD210839	22h11m30.58s	59d24m52.2s	10:05	40	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



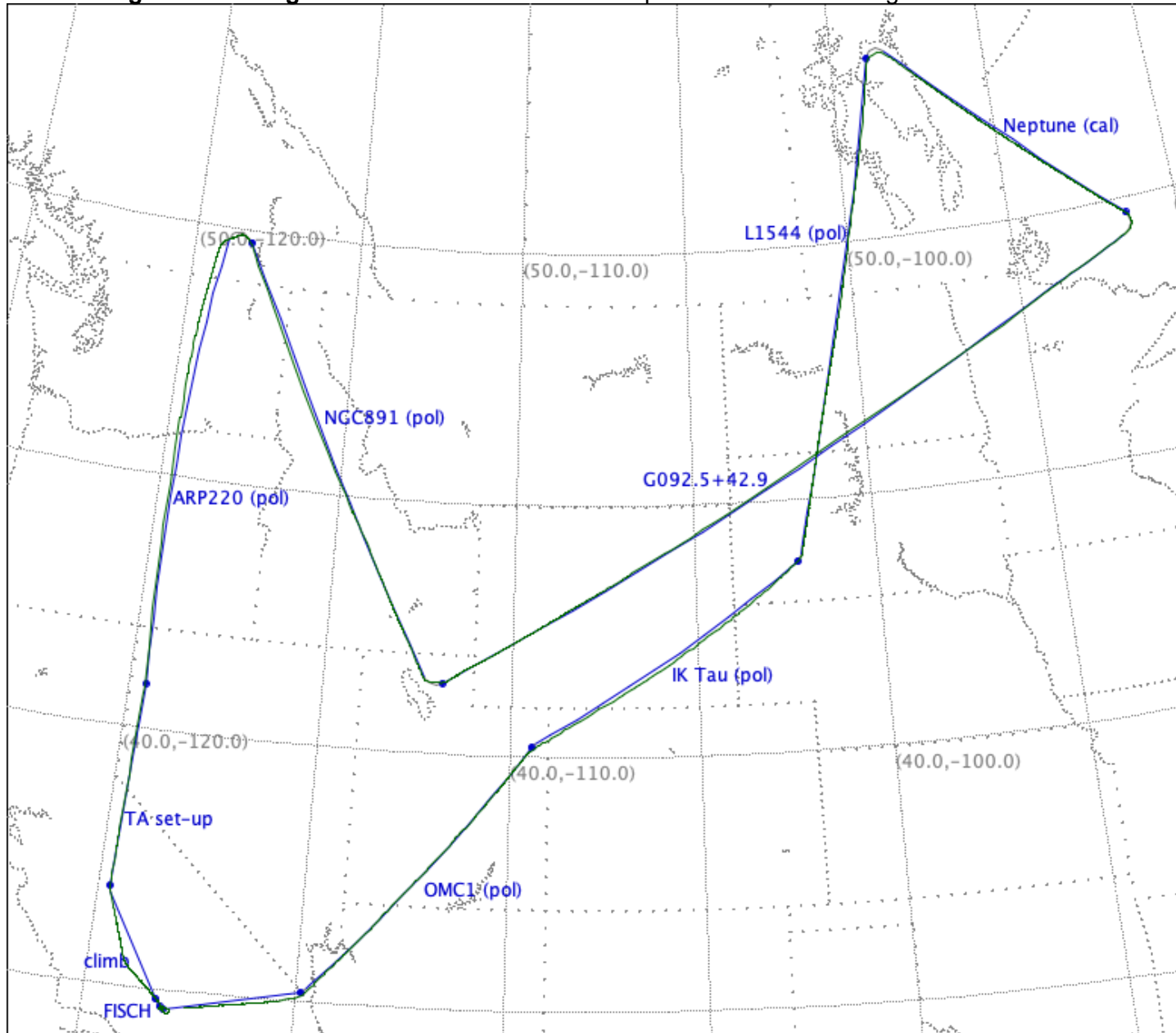
MISSION ID: 2018-09-25_HA_F510

Date: 2018-09-25 UT Instrument: HAWC+

Flight #: 510 Flight Series: OC6K

blue = planned route

green = flown route

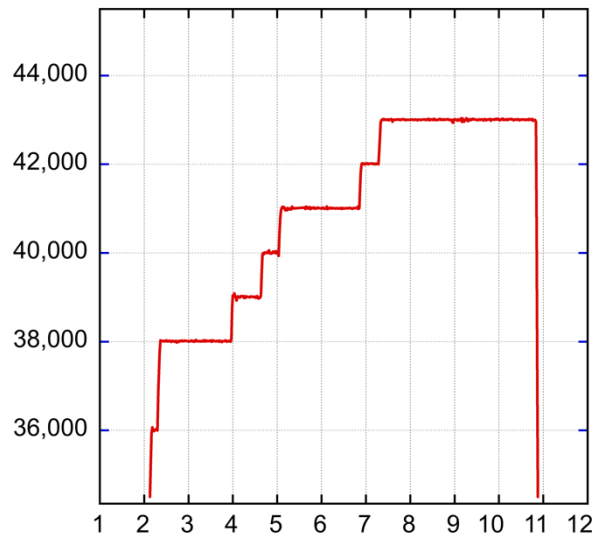


Flight notes: No irregularities.

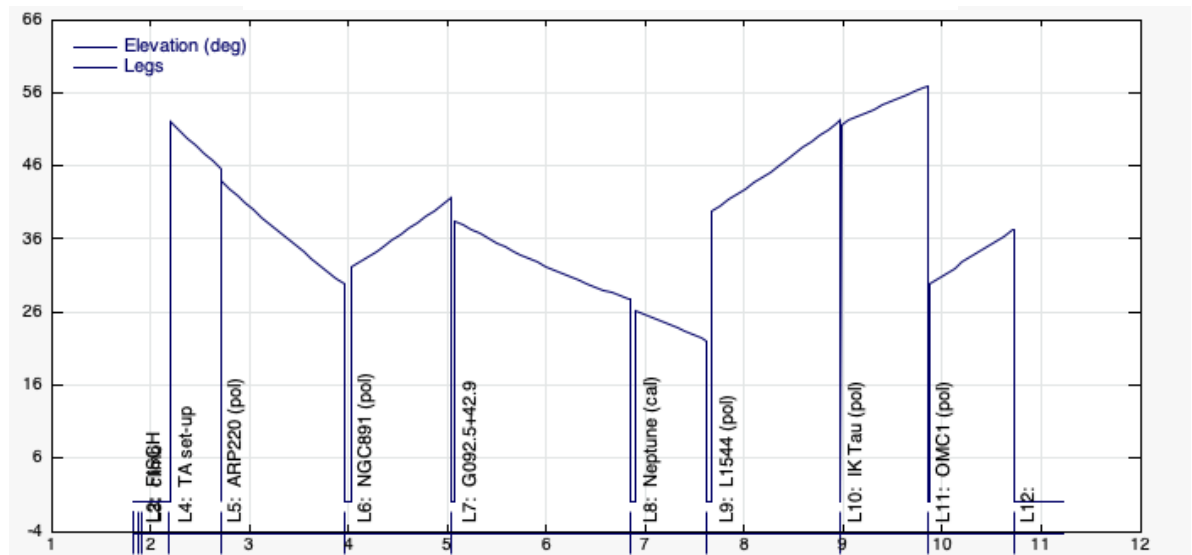
Flight 510 Mission ID 2018-09-25_HA_F510
 Palmdale to Palmdale Take off date UTC: 25-SEP-2018
 Departure UTC: 01:44 Arrival UTC: 11:14

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 76267	15h34m41.27s	26d42m52.9s	2:12	30	
5	70_0609	GTO	ARP220	15h34m57.25s	23d30m11.3s	2:42	75	
6	70_0609	GTO	NGC891	02h22m32.99s	42d20m54.9s	4:01	60	
7	06_0131	Chary	G092.5+42.9	16h09m17.76s	60d45m21.0s	5:04	106	Technical control failure; 25min lost recovering
8	90_0082	Calibration	Neptune	23h03m52.01s	-07d05m08.0s	6:54	43.3	
9	06_0012	Clemens	L1544 Core D1	05h04m15.29s	25d12m11.7s	7:40	77	
10	06_0038	Andersson	IK Tau	03h53m28.87s	11d24m21.7s	8:58	53	
11	70_0609	GTO	OMC1	05h35m13.26s	-05d23m23.9s	9:52	51	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

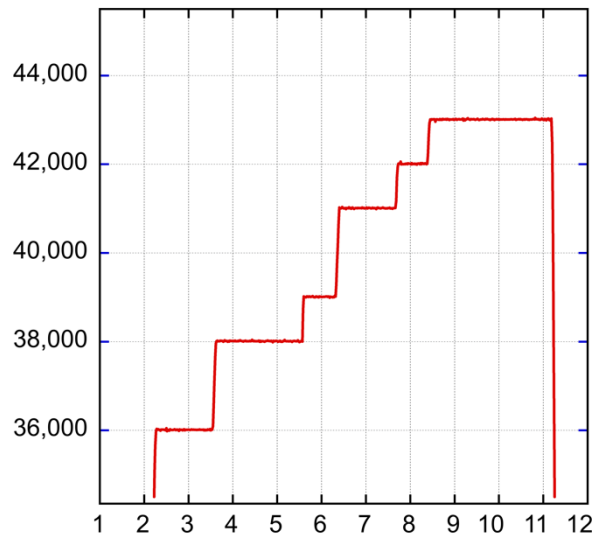


Flight notes: Early clouds.

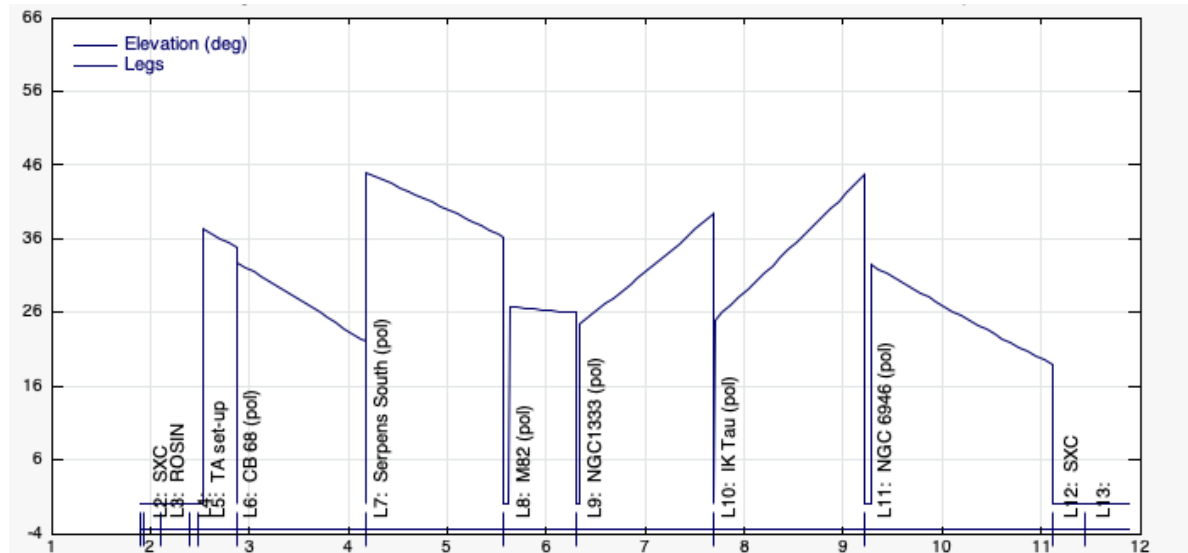
Flight 511 Mission ID 2018-09-27_HA_F511
 Palmdale to Palmdale Take off date UTC: 27-SEP-2018
 Departure UTC: 01:48 Arrival UTC: 11:46

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
5			HIP 84012	17h10m22.69s	-15d43m29.7s	2:31	20	
6	06_0076	Heese	CB 68	16h57m19.63s	-16d09m23.3s	2:51	78	Clouds – no data.
7	06_0088	Goldsmith	Serpens South	18h30m08.55s	-02d05m36.5s	4:09	83	Clouds most of leg; only 20min of data collected
8	70_0609	GTO	M82	09h55m52.43s	69d40m46.9s	5:36	41	
9	06_0099	Santos	NGC1333	03h29m09.70s	31d22m10.0s	6:19	81	
10	06_0038	Andersson	IK Tau	03h53m28.87s	11d24m21.7s	7:41	91	
11	76_0003	Yorke	NGC 6946-west	20h35m03.17s	60d09m13.2s	9:15	110	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



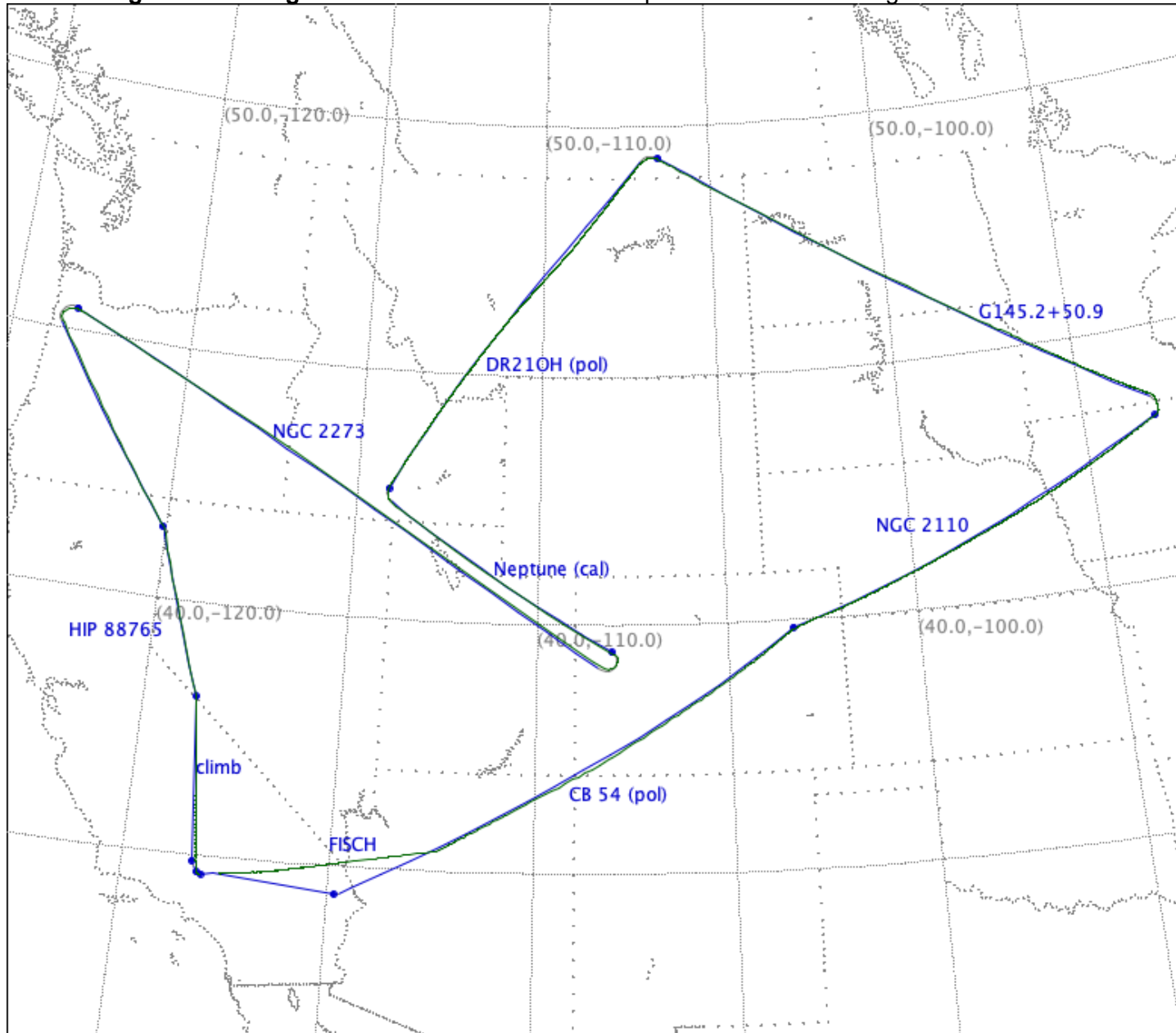
MISSION ID: 2018-09-28_HA_F512

Date: 2018-09-28 UT Instrument: HAWC+

Flight #: 512 Flight Series: OC6K

blue = planned route

green = flown route

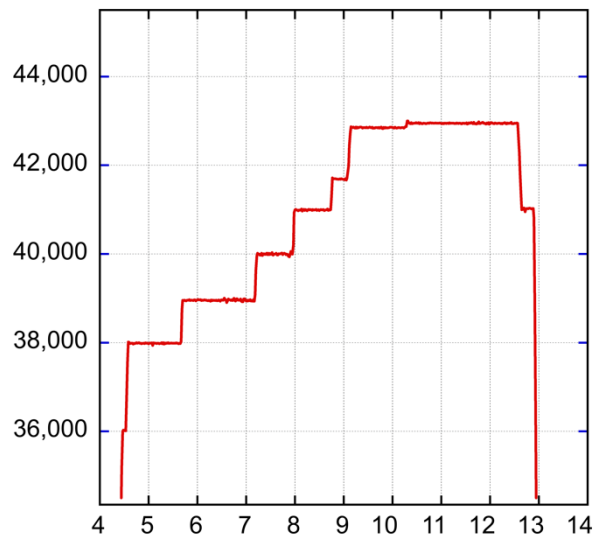


Flight notes: No irregularities.

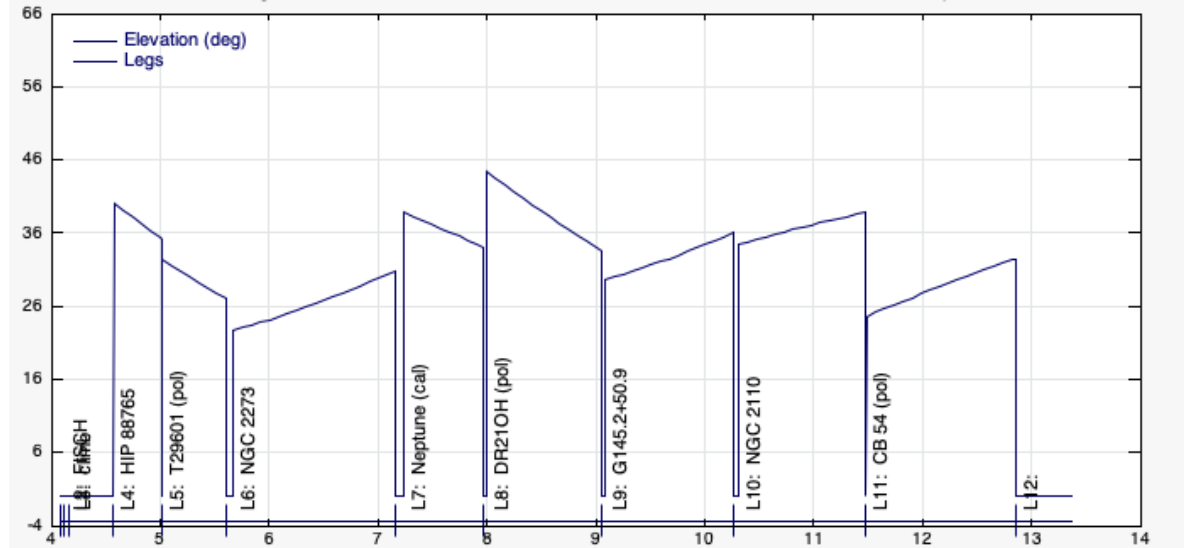
Flight 512 Mission ID 2018-09-28_HA_F512
 Palmdale to Palmdale Take off date UTC: 28-SEP-2018
 Departure UTC: 04:05 Arrival UTC: 13:25

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 88765	18h07m18.36s	08d44m01.9s	4:34	26	
5	06_0234	Svoboda	T29601	18h47m25.20s	-03d13m26.0s	5:01	35	
6	06_0066	Lopez-Rodriguez	NGC 2273	06h50m08.66s	60d50m44.5s	5:40	89	
7	90_0082	Calibration	Neptune	23h03m34.61s	-07d06m55.8s	7:14	43.3	
8	06_0014	Clemens	DR21OH-E	20h39m00.70s	42d22m00.6s	7:59	63	Light turbulence.
9	06_0131	Chary	G145.2+50.9	10h53m22.56s	60d51m49.0s	9:05	70	Light turbulence.
10	06_0066	Lopez-Rodriguez	NGC 2110	05h52m11.40s	-07d27m22.2s	10:18	70	Light turbulence.
11	06_0076	Heese	CB 54	07h04m20.81s	-16d23m26.2s	11:29	82	Bright dawn skies led to loss of guiding; stopped observing 20min early

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



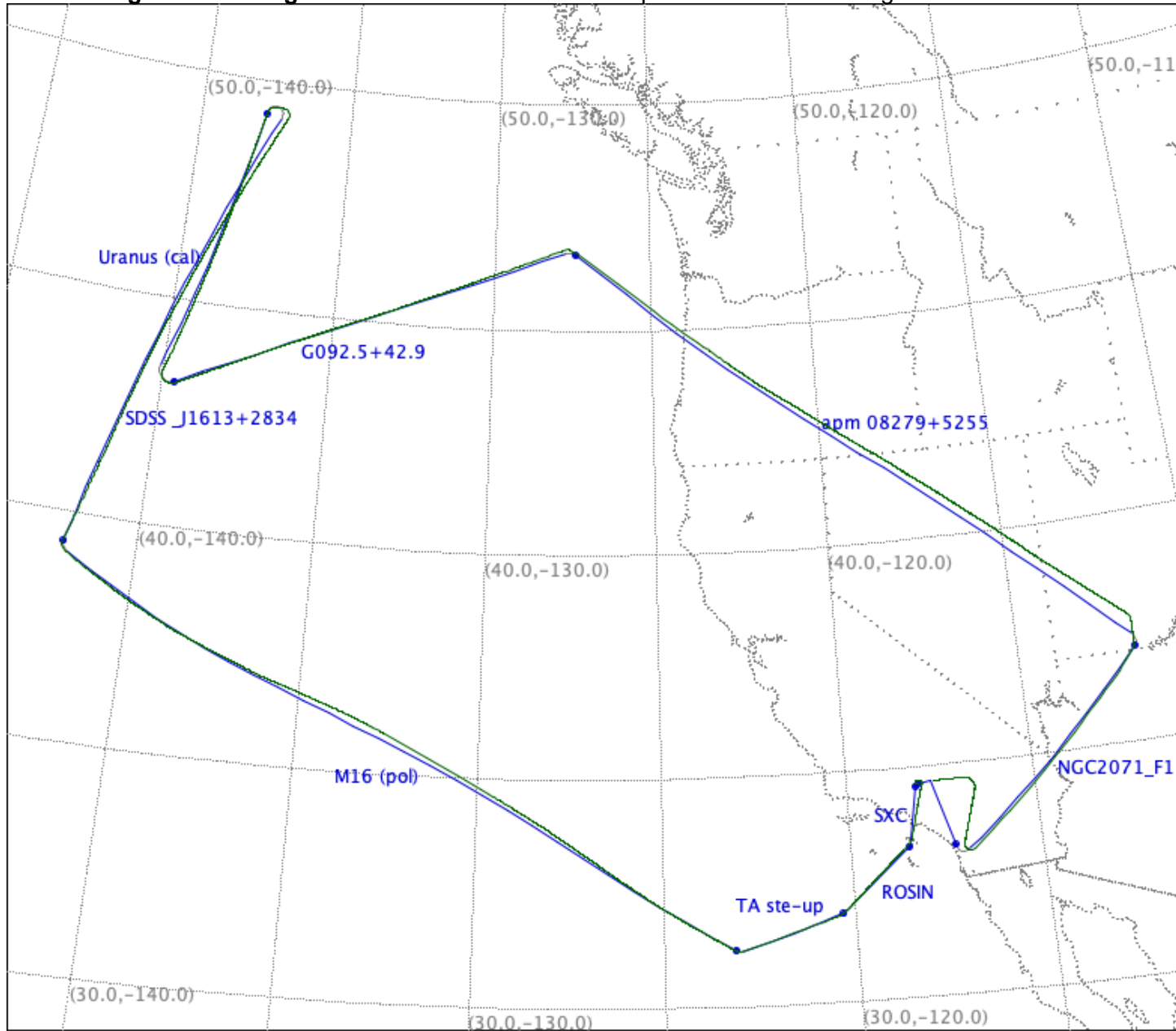
MISSION ID: 2018-10-02_HA_F513

Date: 2018-10-02 UT Instrument: HAWC+

Flight #: 513 Flight Series: OC6K

blue = planned route

green = flown route

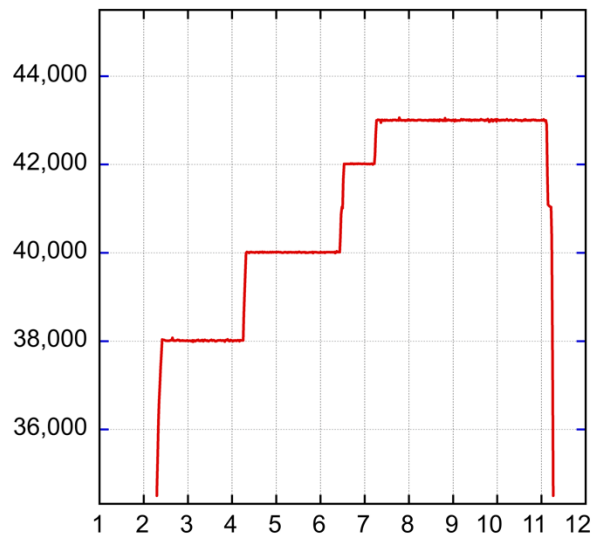


Flight notes: No irregularities.

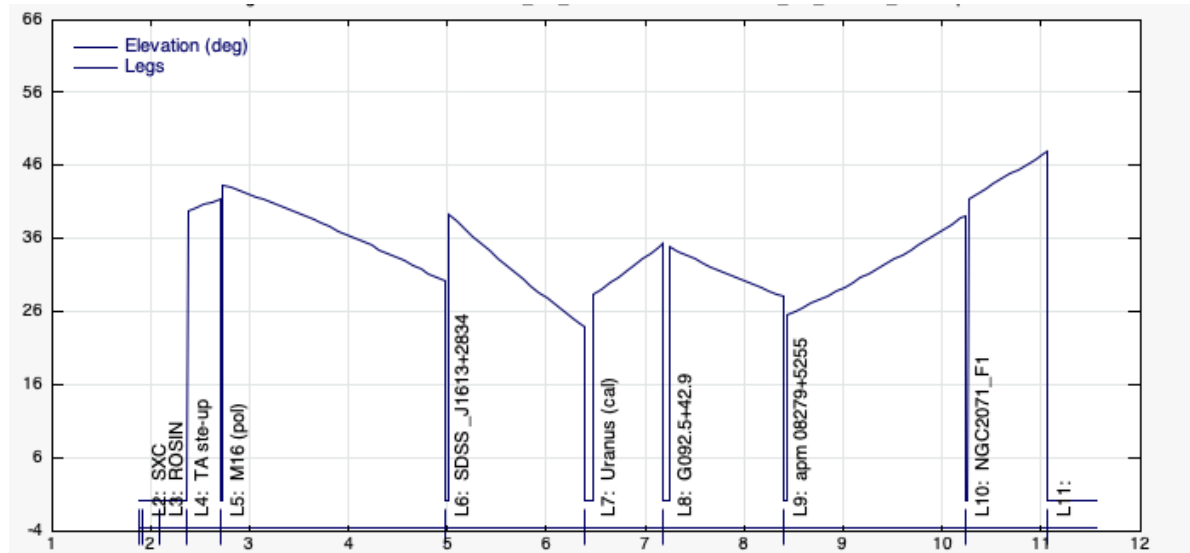
Flight 513 Mission ID 2018-10-02_HA_F513
 Palmdale to Palmdale Take off date UTC: 02-OCT-2018
 Departure UTC: 01:48 Arrival UTC: 11:34

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 100345	20h21m00.65s	-14d46m53.4s	2:24	20	
5	06_0059	Pound	M16-DE-POL	18h18m52.74s	-13d50m06.3s	2:45	135	
6	06_0191	Tremonti	SDSS_J1613+2834	16h13m32.50s	28d34m14.8s	5:02	83	
7	90_0082	Calibration	Uranus	01h56m51.30s	11d20m55.2s	6:30	42.3	
8	06_0131	Chary	G092.5+42.9	16h09m17.76s	60d45m21.0s	7:16	69	
9	06_0019	Riechers	apm 08279+5255	08h31m41.70s	52d45m17.5s	8:27	108	
10	06_0119	Stephens	NGC2071_F1	05h47m09.29s	00d20m48.5s	10:17	48	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



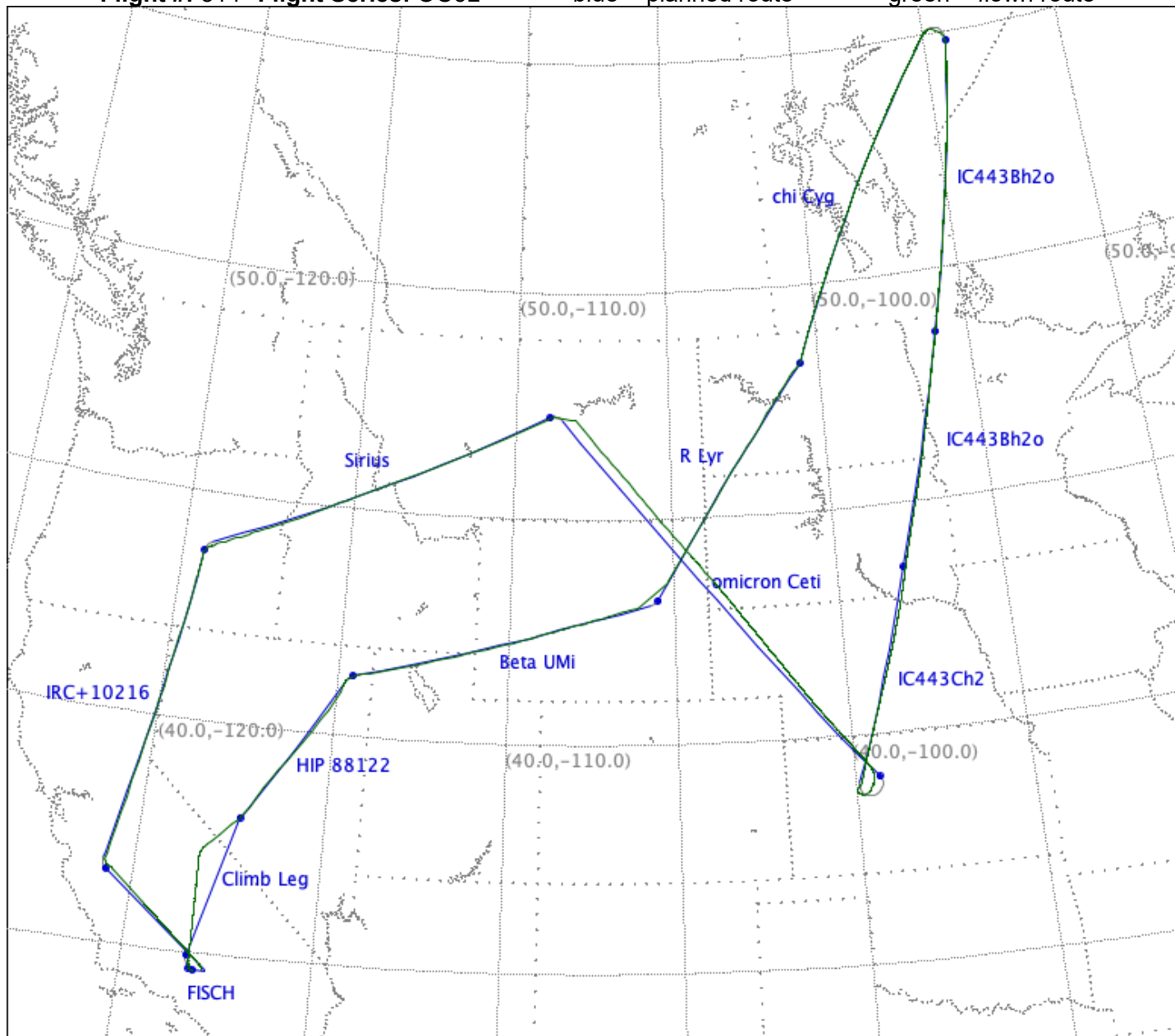
MISSION ID: 2018-10-18_EX_F514

Date: 2018-10-18 UT Instrument: EXES

Flight #: 514 Flight Series: OC6L

blue = planned route

green = flown route

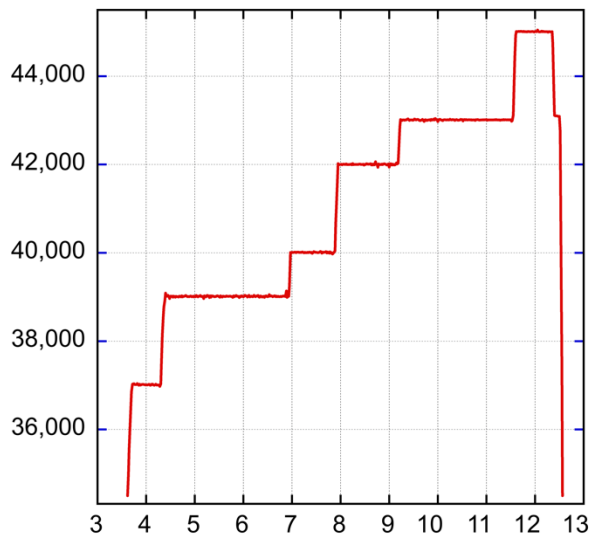


Flight notes: No irregularities.

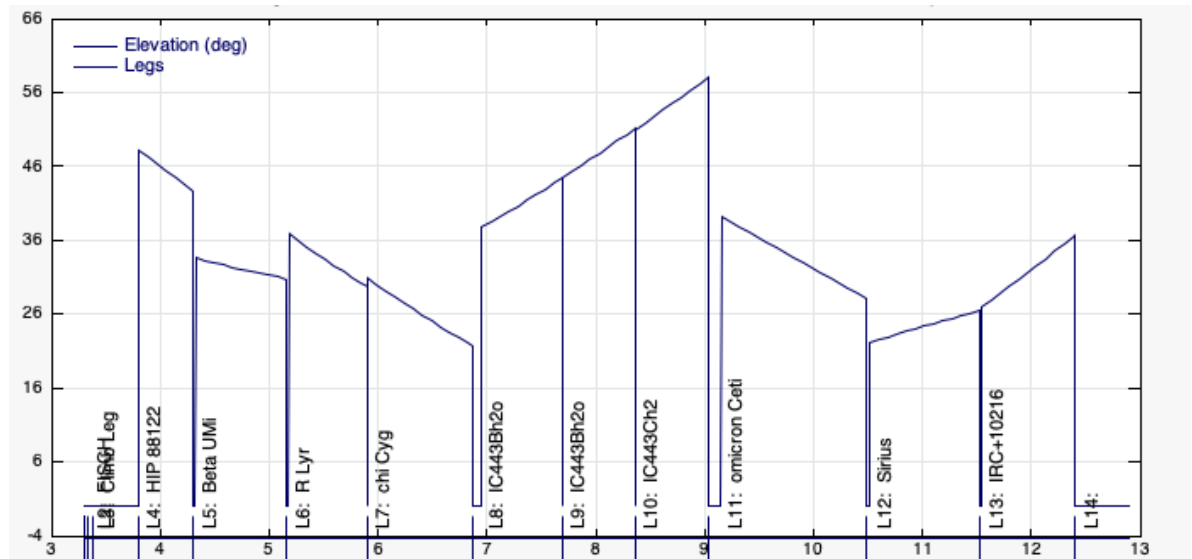
Flight 514 Mission ID 2018-10-18_EX_F514
 Palmdale to Palmdale Take off date UTC: 18-OCT-2018
 Departure UTC: 03:15 Arrival UTC: 12:54

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 88122	17h59m56.21s	45d30m05.0s	3:48	30	
5			Beta UMi	14h50m42.33s	74d09m19.8s	4:19	50	
6	06_0056	Kraemer	R Lyr	18h55m20.10s	43d56m45.9s	5:10	43	
7	06_0144	Montiel	chi Cyg	19h50m33.92s	32d54m50.6s	5:54	58	
8	06_0001	Reach	IC443Bh2o	06h17m16.07s	22d25m15.2s	6:56	45	
9	06_0001	Reach	IC443Bh2o	06h17m16.07s	22d25m15.2s	7:41	40	Short integrations and long nod throws may have compromised data quality.
10	06_0001	Reach	IC443Ch2	06h17m42.44s	22d21m22.2s	8:21	40	
11	06_0093	Hinkle	omicron Ceti	02h19m20.79s	-02d58m39.5s	9:08	80	
12	06_0056	Kraemer	Sirius	06h45m08.92s	-16d42m58.0s	10:31	60	
13	06_0144	Montiel	IRC+10216	09h47m57.41s	13d16m43.6s	11:32	51	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



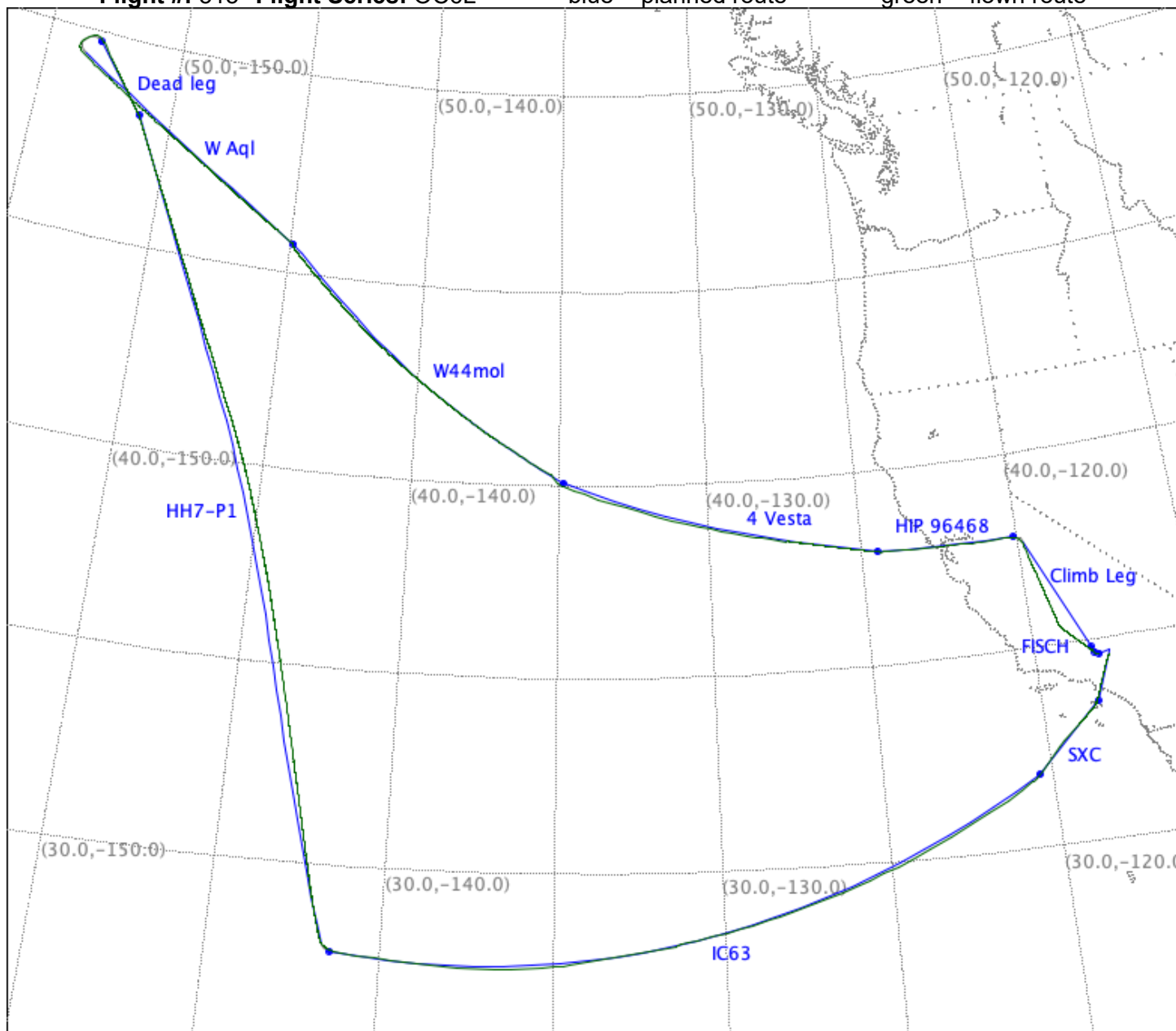
MISSION ID: 2018-10-19_EX_F515

Date: 2018-10-19 UT Instrument: EXES

Flight #: 515 Flight Series: OC6L

blue = planned route

green = flown route

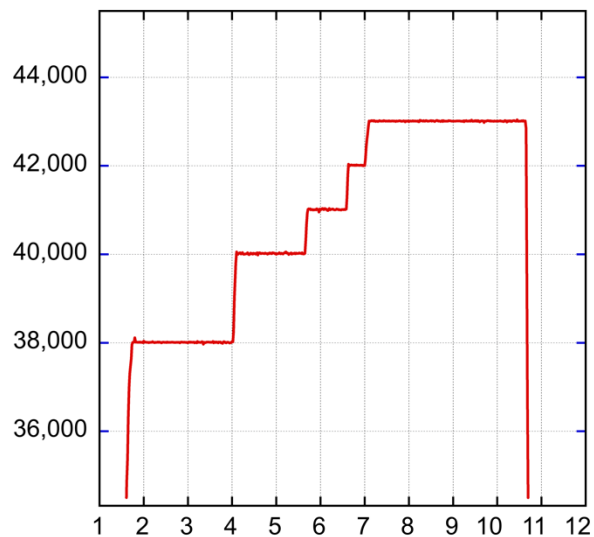


Flight notes: No irregularities.

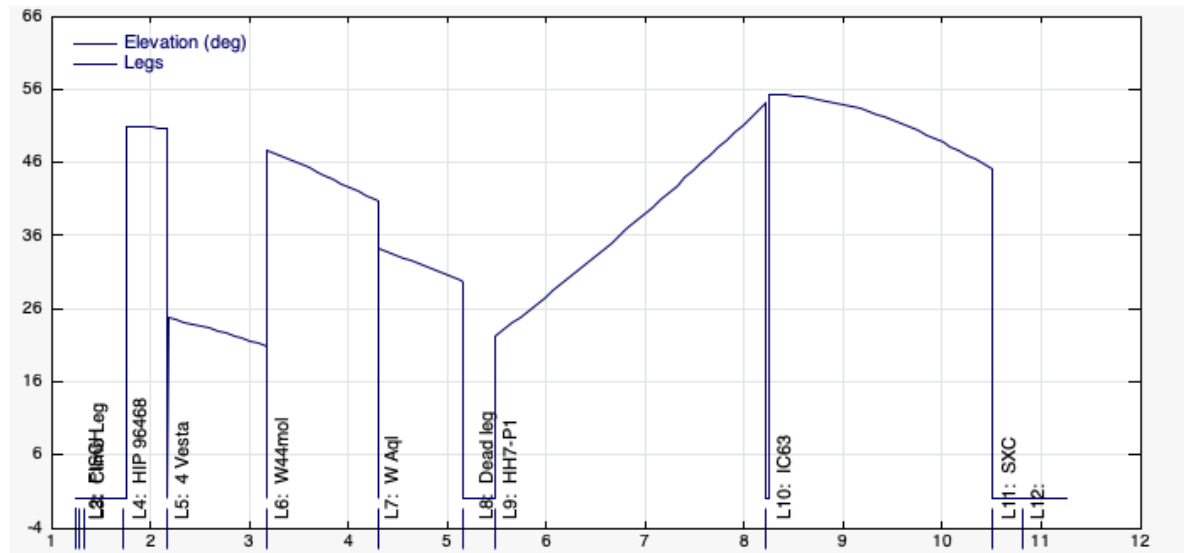
Flight 515 Mission ID 2018-10-19_EX_F515
 Palmdale to Palmdale Take off date UTC: 19-OCT-2018
 Departure UTC: 01:14 Arrival UTC: 11:04

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 96468	19h36m43.28s	-01d17m11.8s	1:45	25	
5	06_0144	Montiel	4 Vesta	18h47m11.57s	-25d42m44.9s	2:10	60	Trouble focusing led to loss of entire leg
6	06_0001	Reach	W44mol	18h56m28.59s	01d29m44.3s	3:11	67	
7	06_0144	Montiel	W Aql	19h15m23.35s	-07d02m50.3s	4:18	51	
9	06_0022	Neufeld	HH7-P1	03h29m08.46s	31d15m29.2s	5:29	164	
10	75_0032	Discretionary	IC63	00h58m59.86s	60d53m39.9s	8:15	135	Nod throws appear to be too small (large background variation present) most of leg lost to adjusting for this

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



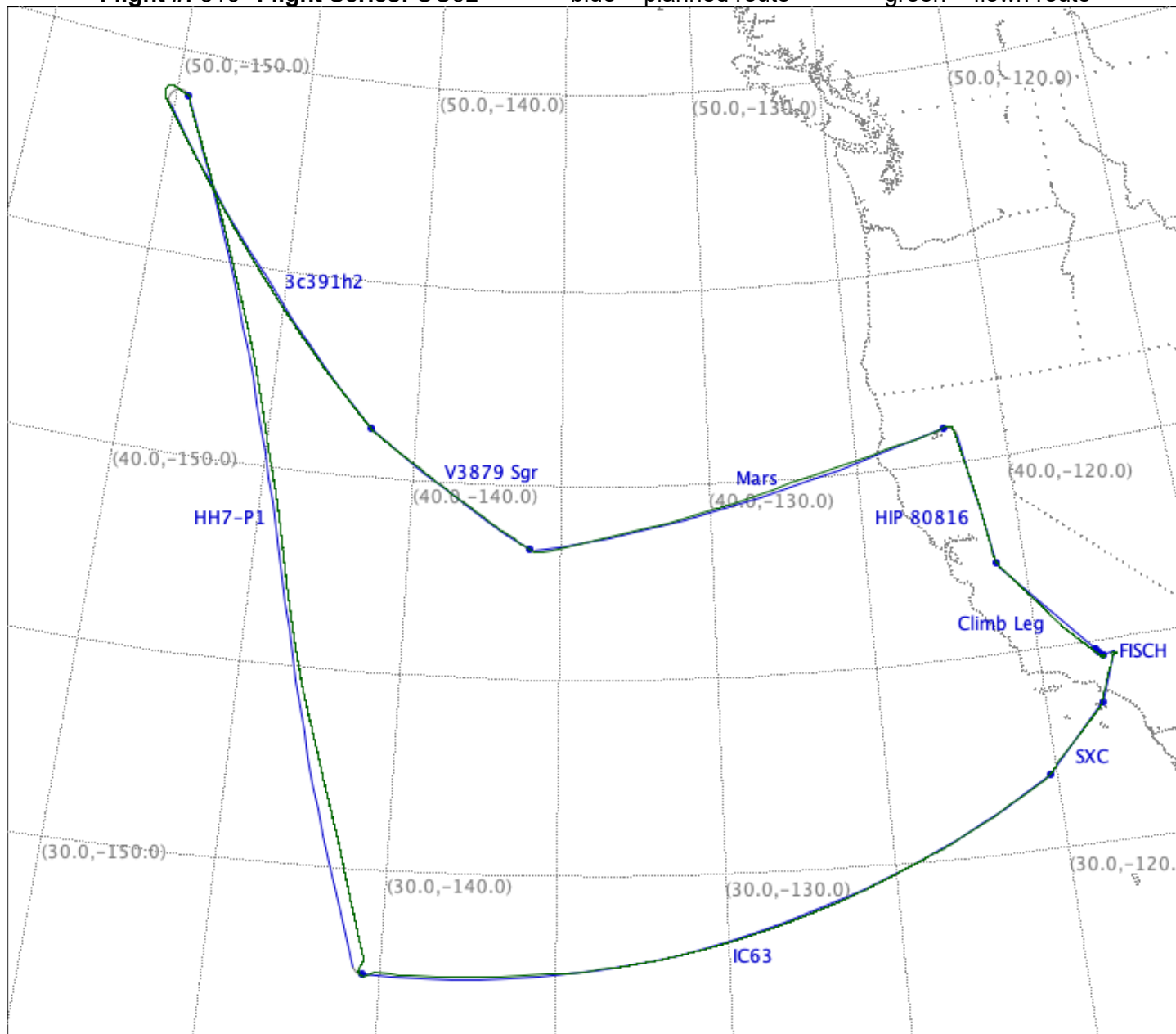
MISSION ID: 2018-10-20_EX_F516

Date: 2018-10-20 UT Instrument: EXES

Flight #: 516 Flight Series: OC6L

blue = planned route

green = flown route

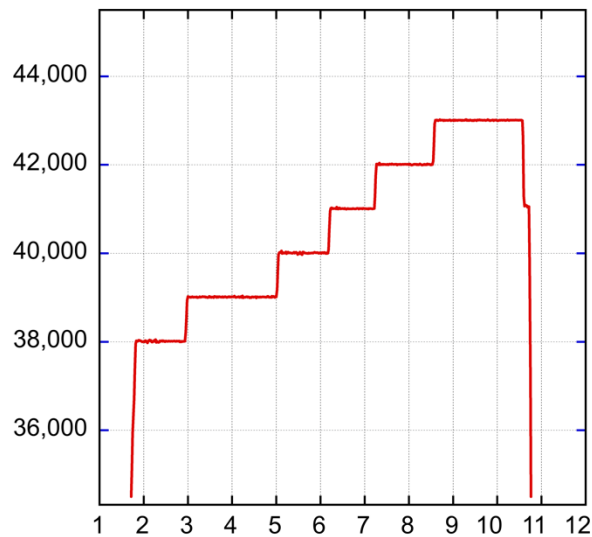


Flight notes: No irregularities.

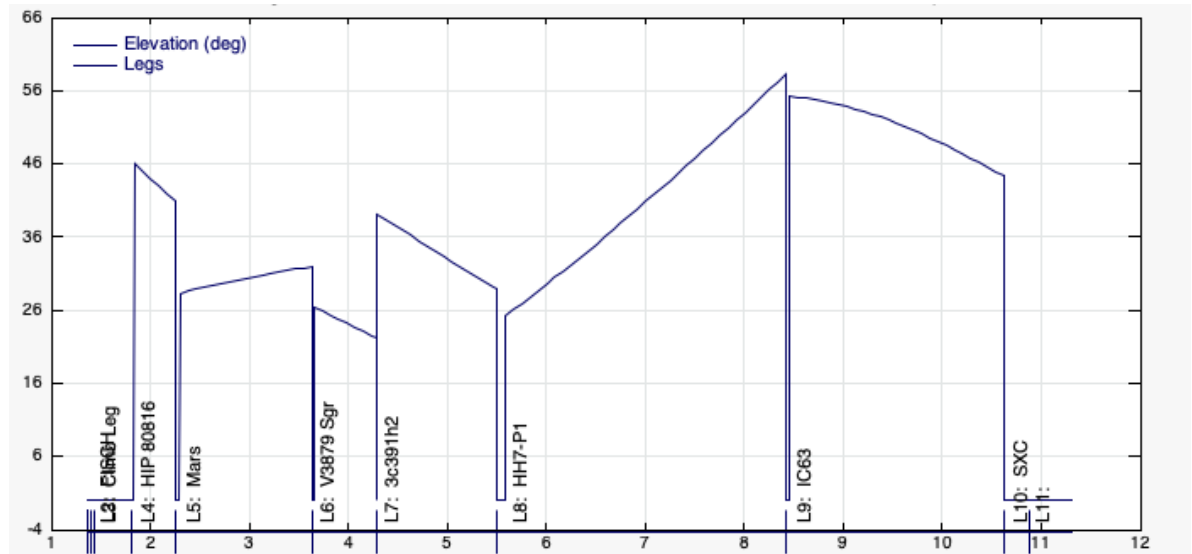
Flight 516 Mission ID 2018-10-20_EX_F516
 Palmdale to Palmdale Take off date UTC: 20-OCT-2018
 Departure UTC: 01:16 Arrival UTC: 11:12

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 80816	16h30m13.20s	21d29m22.7s	1:50	25	
5	06_0085	AOKI	Mars	21h11m12.85s	-19d13m34.1s	2:17	80	
6	06_0056	Kraemer	V3879 Sgr	18h42m55.10s	-19d17m03.2s	3:39	38.3	
7	06_0001	Reach	3c391h2	18h49m22.40s	-00d57m18.9s	4:17	72	Background residuals in nod data; adjusted nod settle time.
8	06_0022	Neufeld	HH7-P1	03h29m08.46s	31d15m29.2s	5:35	170	
9	75_0032	Discretionary	IC63	00h58m59.86s	60d53m39.9s	8:27	130	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



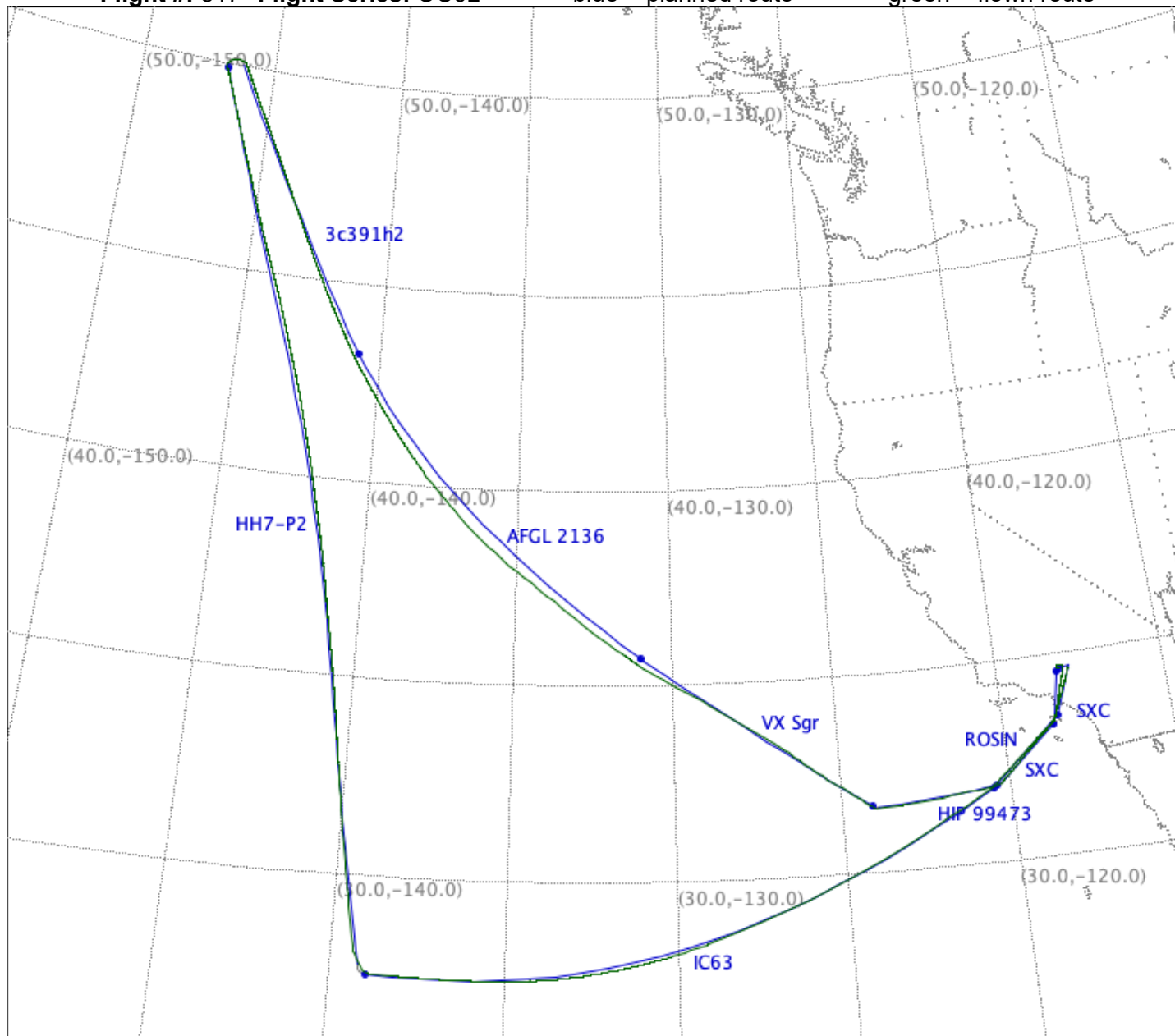
MISSION ID: 2018-10-24_EX_F517

Date: 2018-10-24 UT Instrument: EXES

Flight #: 517 Flight Series: OC6L

blue = planned route

green = flown route

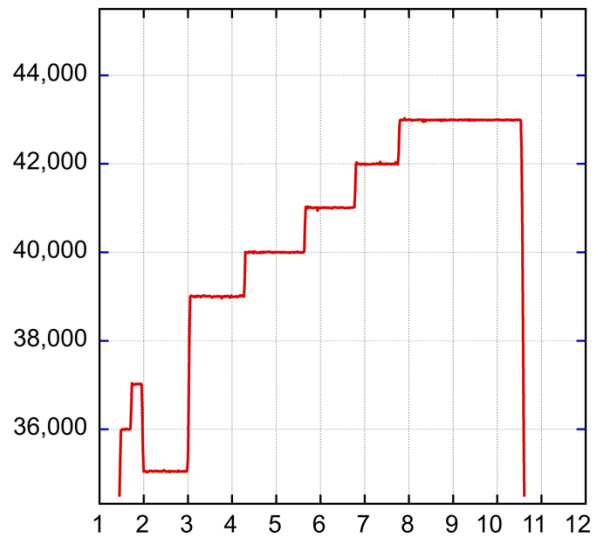


Flight notes: No irregularities.

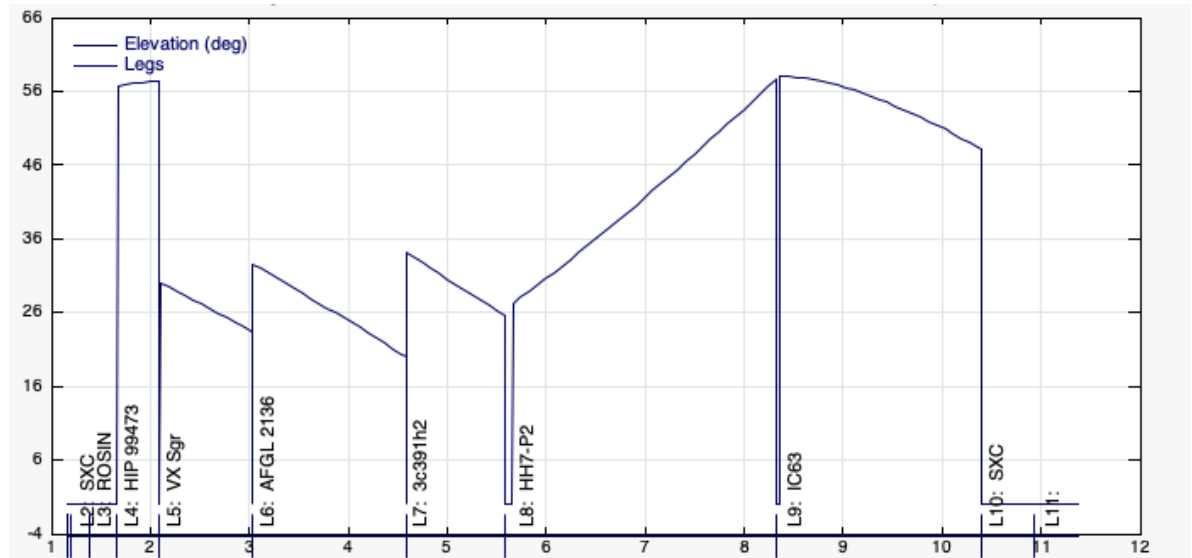
Flight 517 Mission ID 2018-10-24_EX_F517
 Palmdale to Palmdale Take off date UTC: 24-OCT-2018
 Departure UTC: 01:04 Arrival UTC: 11:03

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 99473	20h11m18.28s	-00d49m17.3s	1:40	25	
5	06_0144	Montiel	VX Sgr	18h08m04.05s	-22d13m26.6s	2:06	56	Air traffic control holding us at 38K ft. Clouds and high water vapor.
6	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	3:02	93	
7	06_0001	Reach	3c391h2	18h49m22.40s	-00d57m18.9s	4:35	60	25min lost due to EXES computer crash
8	06_0022	Neufeld	HH7-P2	03h29m08.38s	31d15m26.3s	5:39	160	
9	75_0032	Discretionary	IC63	00h58m59.86s	60d53m39.9s	8:21	122	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



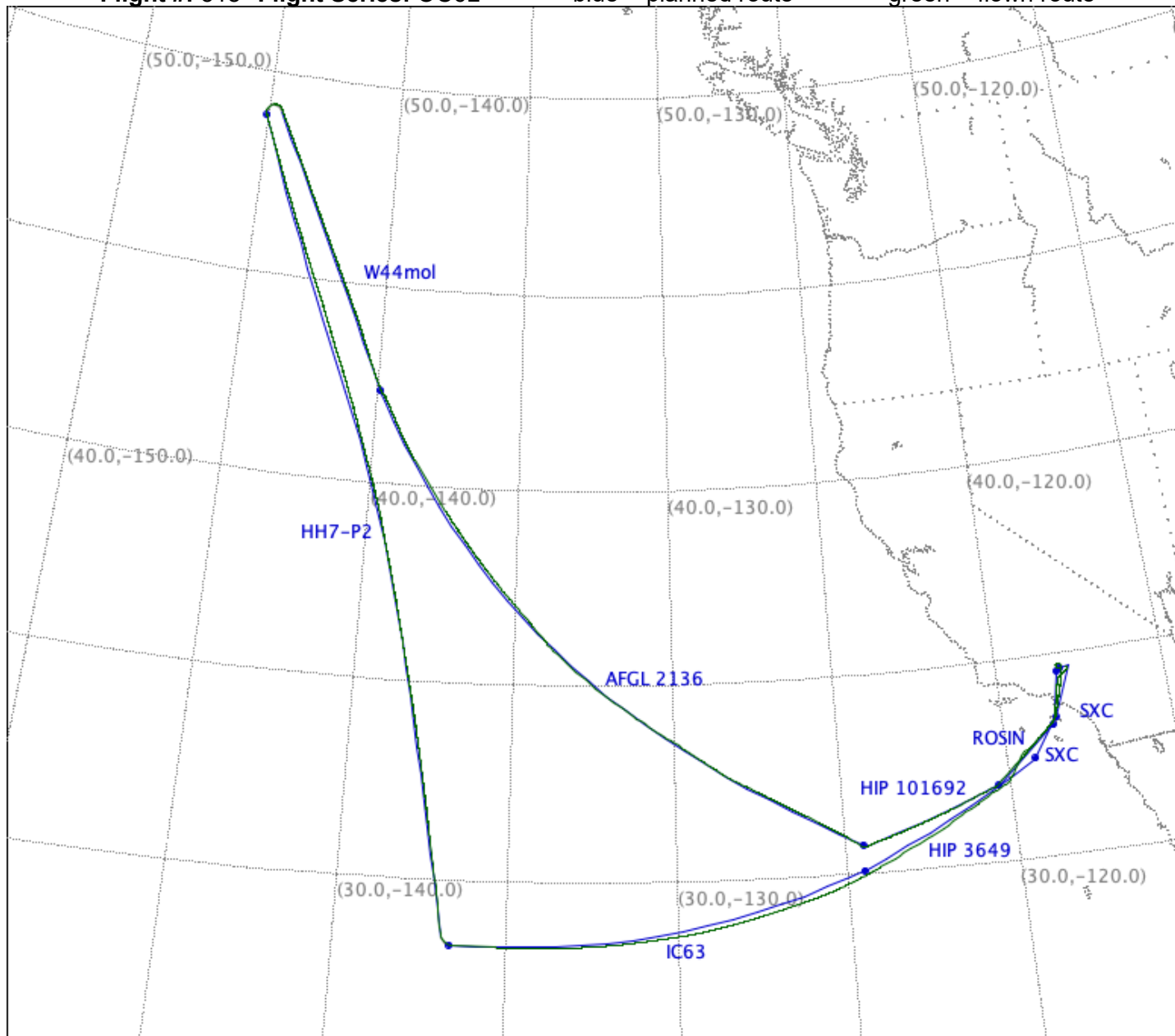
MISSION ID: 2018-10-25_EX_F518

Date: 2018-10-25 UT Instrument: EXES

Flight #: 518 Flight Series: OC6L

blue = planned route

green = flown route



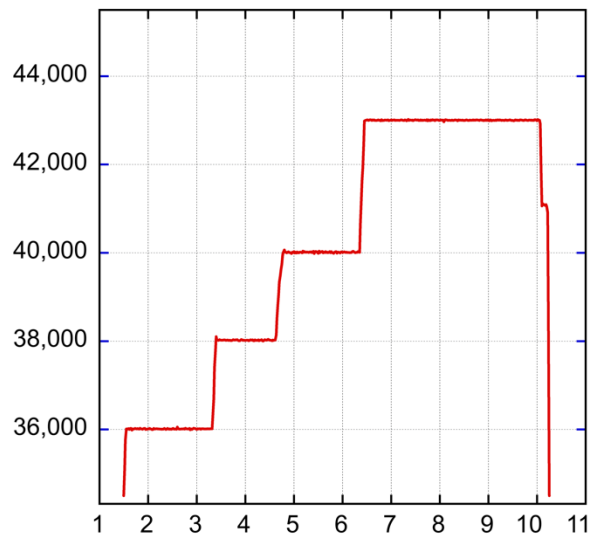
Flight notes:

Several issues with EXES being able to properly control telescope nods.

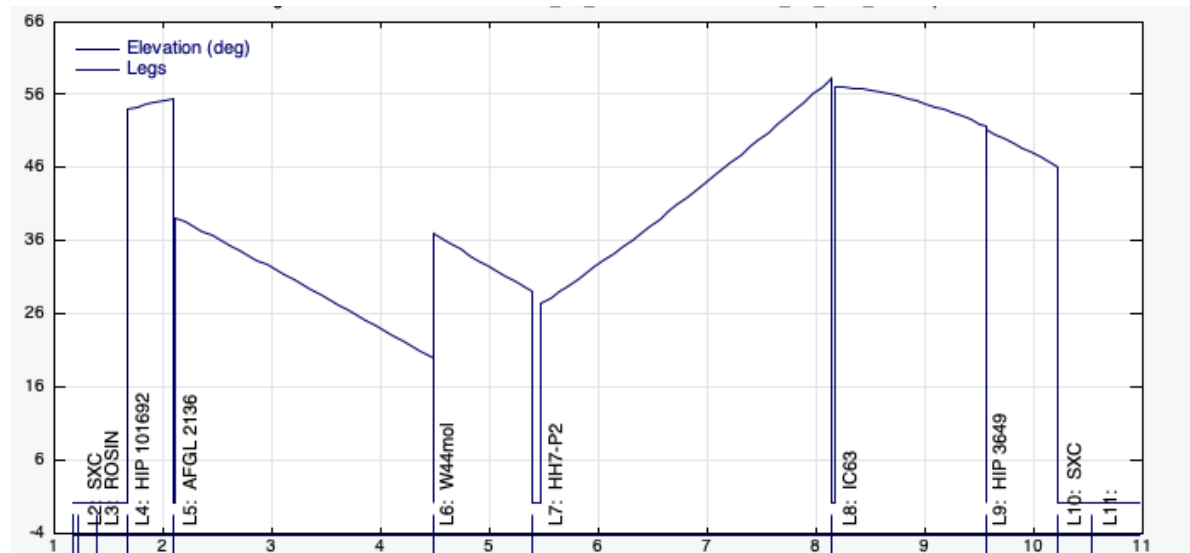
Flight 518 Mission ID 2018-10-25_EX_F518
 Palmdale to Palmdale Take off date UTC: 25-OCT-2018
 Departure UTC: 01:06 Arrival UTC: 10:43

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 101692	20h36m43.63s	-02d32m59.8s	1:38	25	
5	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	2:04	142	EXES software having trouble connecting to observatory control software; whole leg lost diagnosing and recovering
6	06_0001	Reach	W44mol	18h56m28.59s	01d29m44.3s	4:26	55	
7	06_0022	Neufeld	HH7-P2	03h29m08.38s	31d15m26.3s	5:26	160	
8	75_0032	Discretionary	IC63	00h58m59.86s	60d53m39.9s	8:08	83	Nodding issues; 40% of leg lost
9		engineering	HIP 3649	00h46m42.46s	59d34m28.3s	9:31	40	Engineering leg; no science data

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



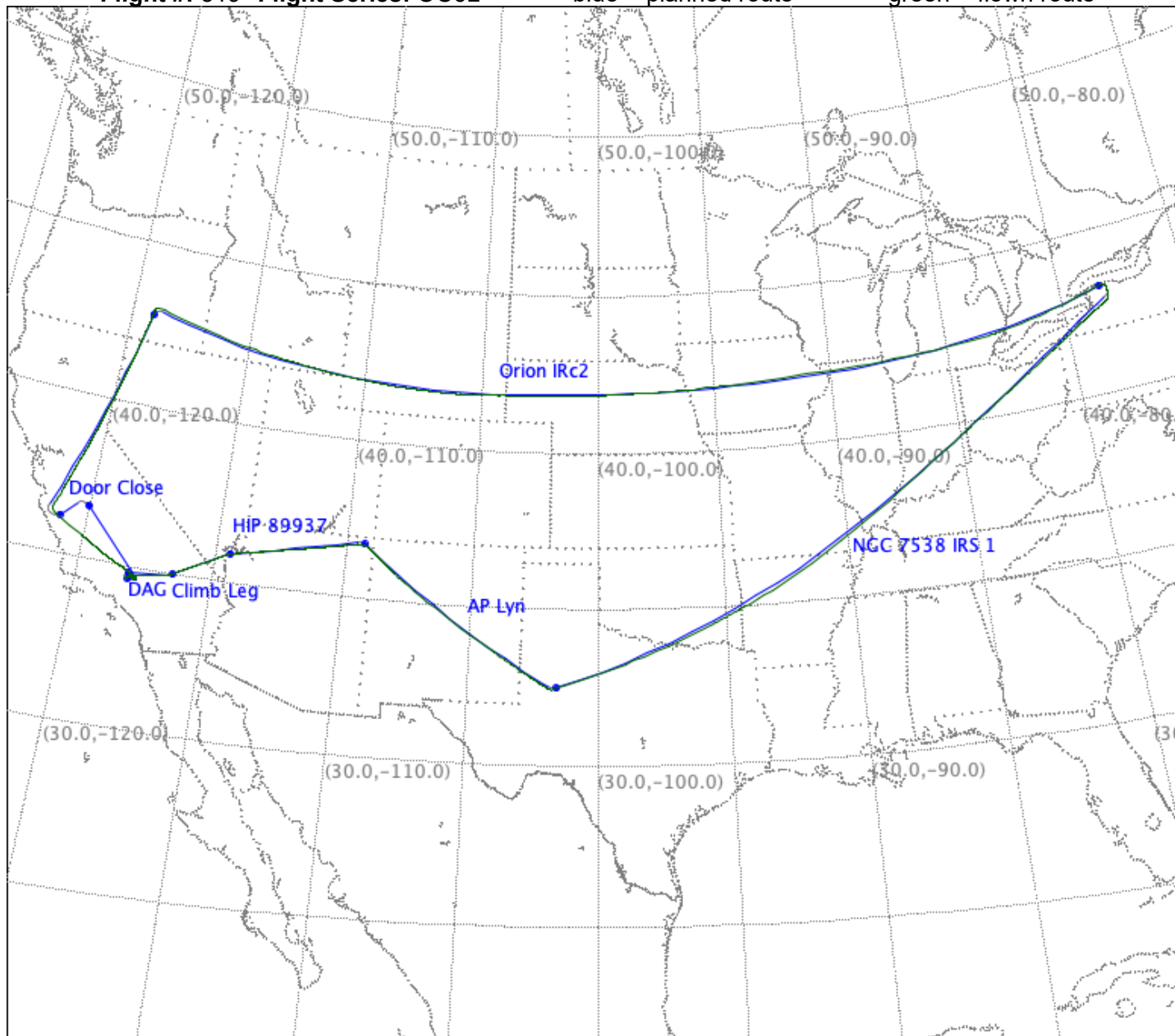
MISSION ID: 2018-10-26_EX_F519

Date: 2018-10-26 UT Instrument: EXES

Flight #: 519 Flight Series: OC6L

blue = planned route

green = flown route

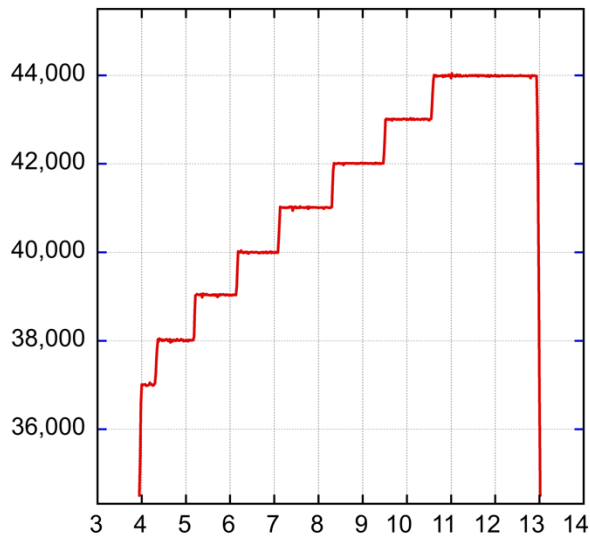


Flight notes: No irregularities.

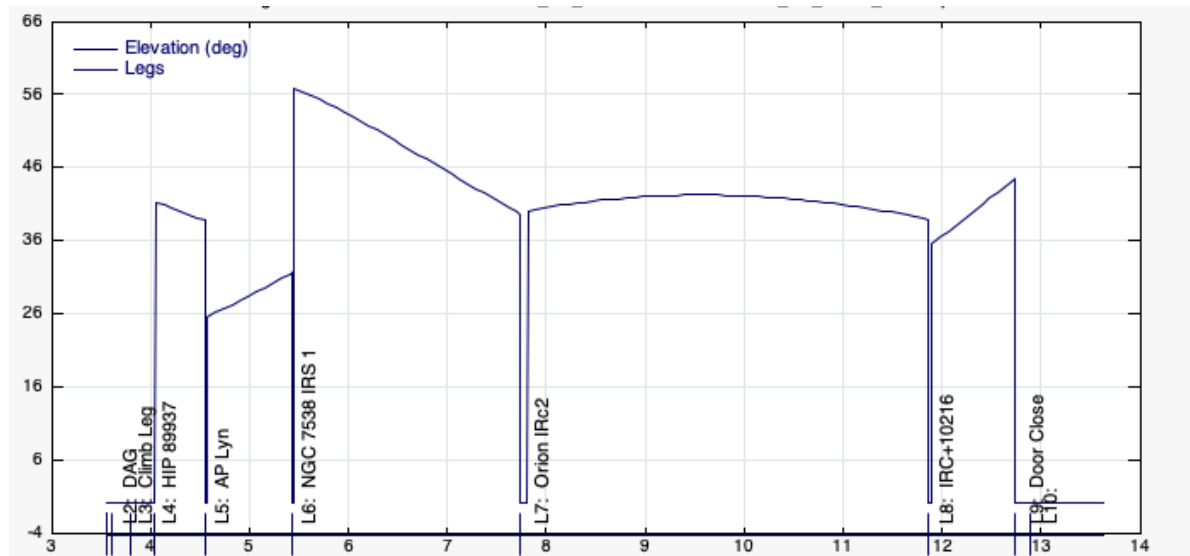
Flight 519 Mission ID 2018-10-26_EX_F519
 Palmdale to Palmdale Take off date UTC: 26-OCT-2018
 Departure UTC: 03:34 Arrival UTC: 13:23

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 89937	18h21m03.38s	72d43m58.3s	4:03	30	
5	75_0027	Discretionary	AP Lyn	06h34m33.39s	60d56m27.9s	4:35	51.3	
6	75_0024	Discretionary	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	5:28	137	
7	05_0043	Rangwala	Orion IRc2	05h35m14.40s	-05d22m29.0s	7:49	243	
8	06_0172	Fonfria	IRC+10216	09h47m57.41s	13d16m43.6s	11:54	50	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



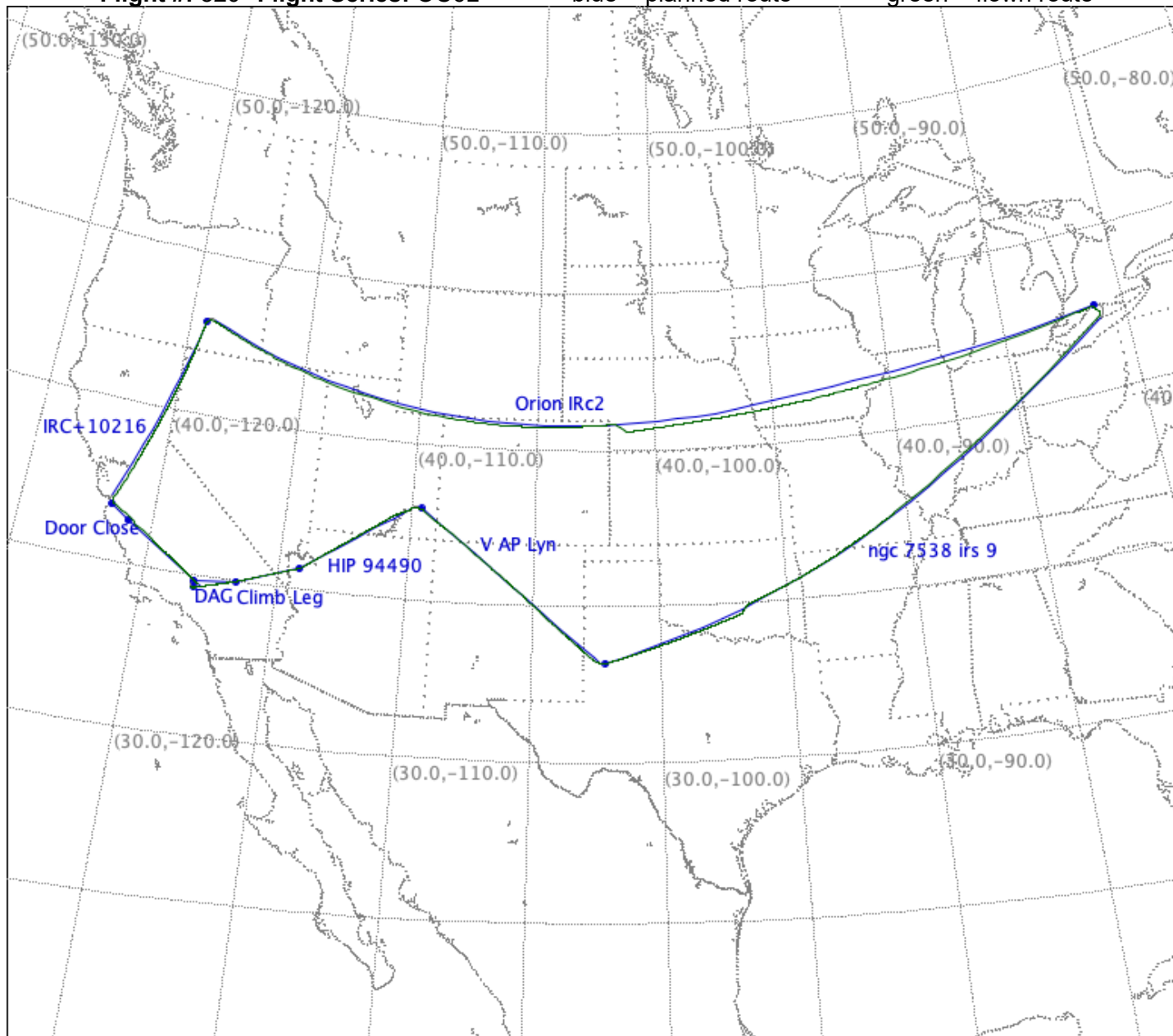
MISSION ID: 2018-10-27_EX_F520

Date: 2018-10-27 UT Instrument: EXES

Flight #: 520 Flight Series: OC6L

blue = planned route

green = flown route

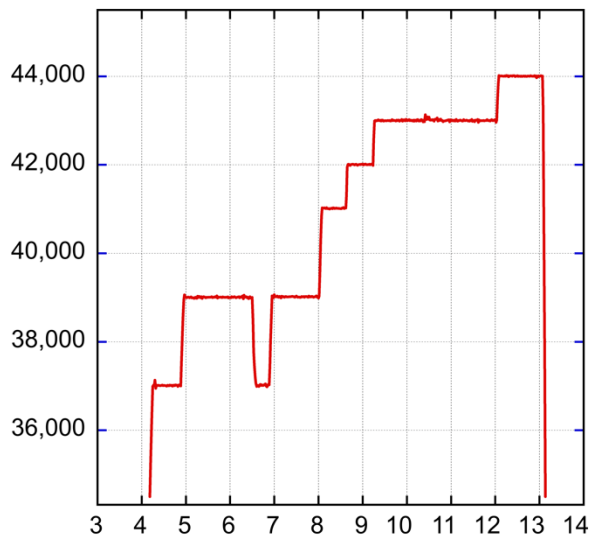


Flight notes: No irregularities.

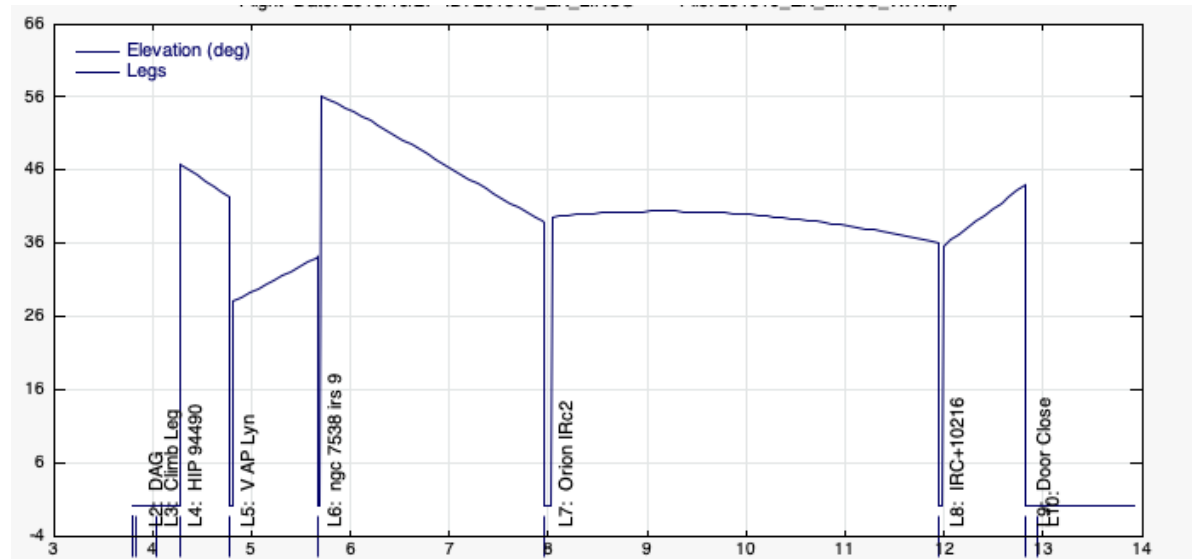
Flight 520 Mission ID 2018-10-27_EX_F520
 Palmdale to Palmdale Take off date UTC: 27-OCT-2018
 Departure UTC: 03:47 Arrival UTC: 13:28

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 94490	19h13m55.12s	57d42m18.3s	4:17	30	
5	75_0027	Discretionary	V* AP Lyn	06h34m33.39s	60d56m27.9s	4:49	51.3	
6	75_0024	Discretionary	ngc 7538 irs 9	23h14m01.63s	61d27m20.2s	5:42	136	Strong turbulence;descending to 37k ft to avoid (25min lost)
7	05_0043	Rangwala	Orion IRc2	05h35m14.40s	-05d22m29.0s	8:02	235	
8	06_0172	Fonfria	IRC+10216	09h47m57.41s	13d16m43.6s	12:00	50	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



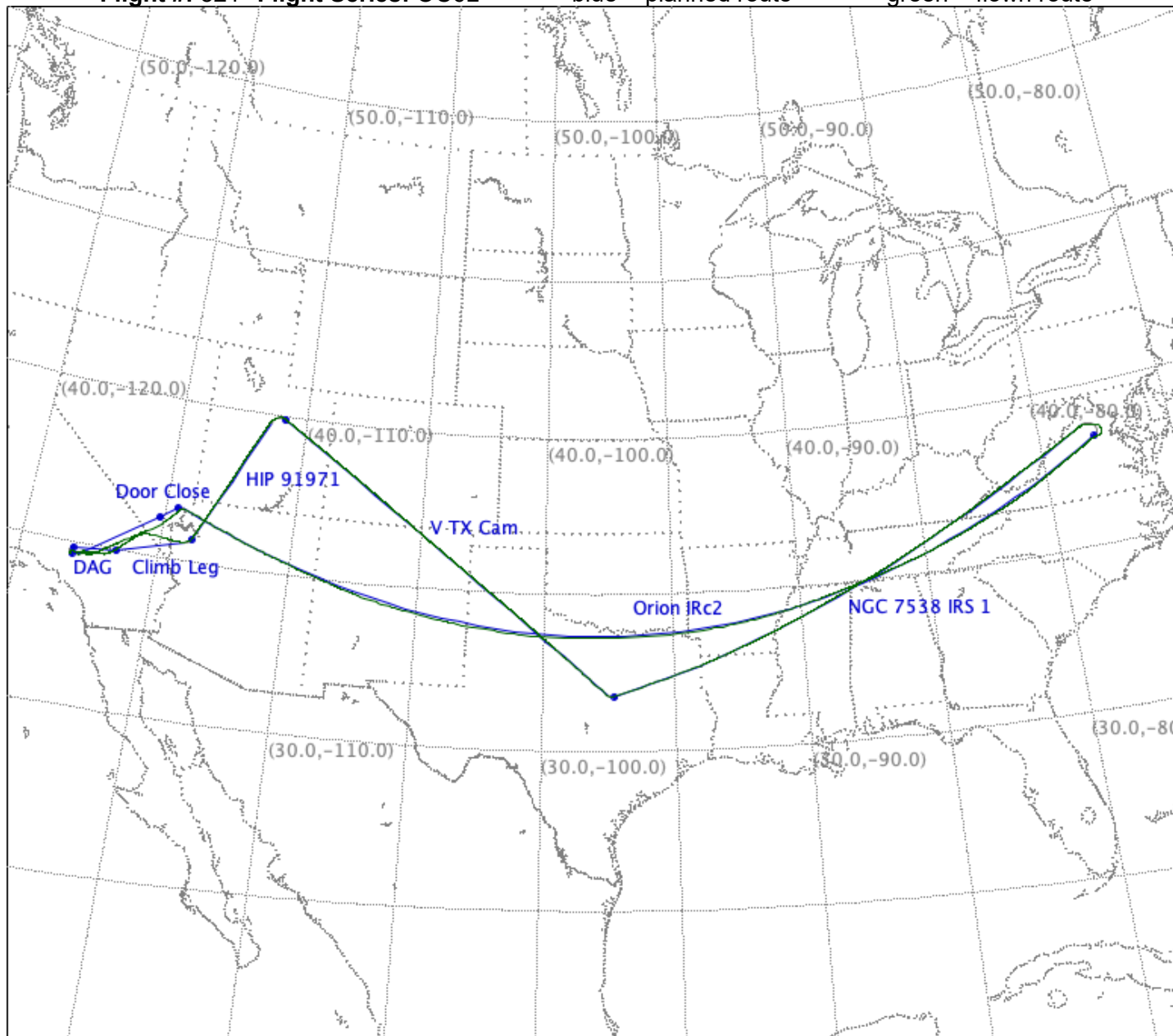
MISSION ID: 2018-10-30_EX_F521

Date: 2018-10-30 UT Instrument: EXES

Flight #: 521 Flight Series: OC6L

blue = planned route

green = flown route

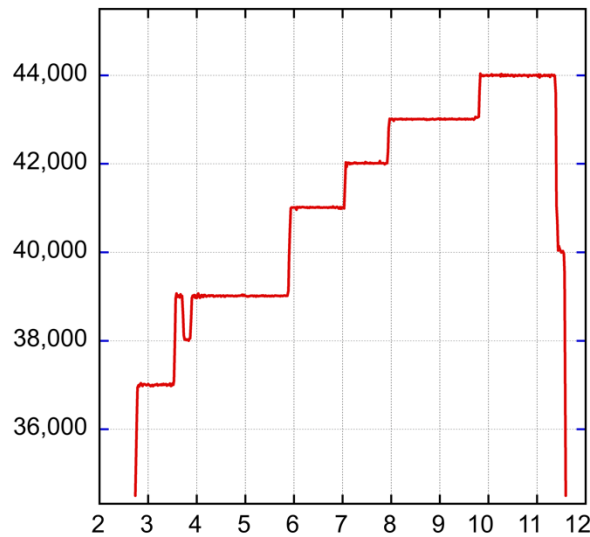


**Flight notes:
No irregularities.**

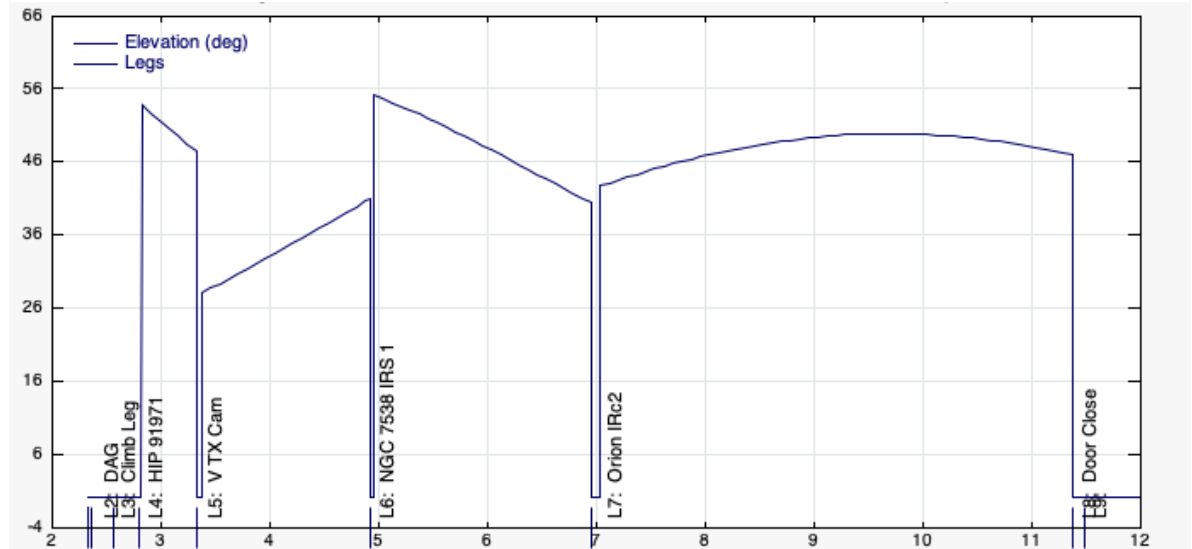
Flight 521 Mission ID 2018-10-30_EX_F521
 Palmdale to Palmdale Take off date UTC: 30-OCT-2018
 Departure UTC: 02:17 Arrival UTC: 12:02

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 91971	18h44m46.35s	37d36m18.4s	2:49	30	
5	75_0029	Discretionary	V* TX Cam	05h00m51.22s	56d10m54.1s	3:22	93	Air traffic control forced a brief descend to 38k ft; clouds throughout leg will affect data quality
6	76_0004	Yorke	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	4:57	120	
7	06_0061	Rangwala	Orion IRc2	05h35m14.49s	-05d22m29.3s	7:02	260	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



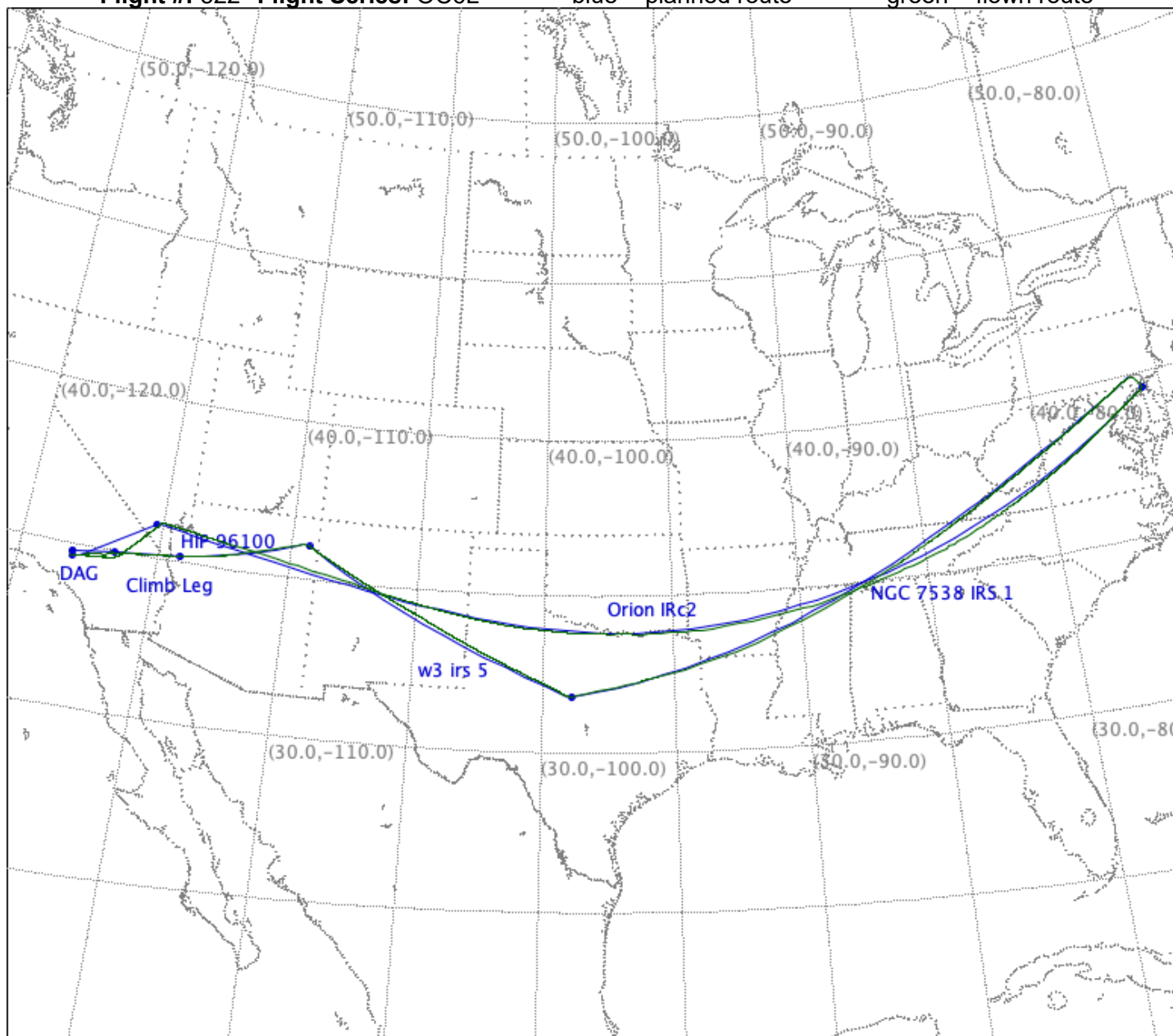
MISSION ID: 2018-10-31_EX_F522

Date: 2018-10-31 UT Instrument: EXES

Flight #: 522 Flight Series: OC6L

blue = planned route

green = flown route

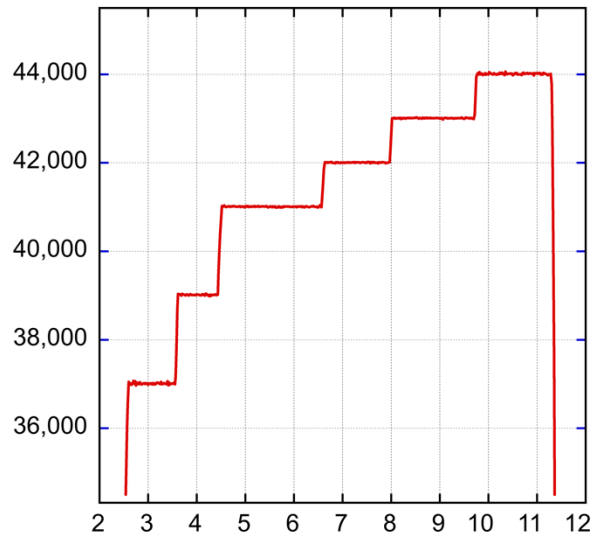


Flight notes: No irregularities.

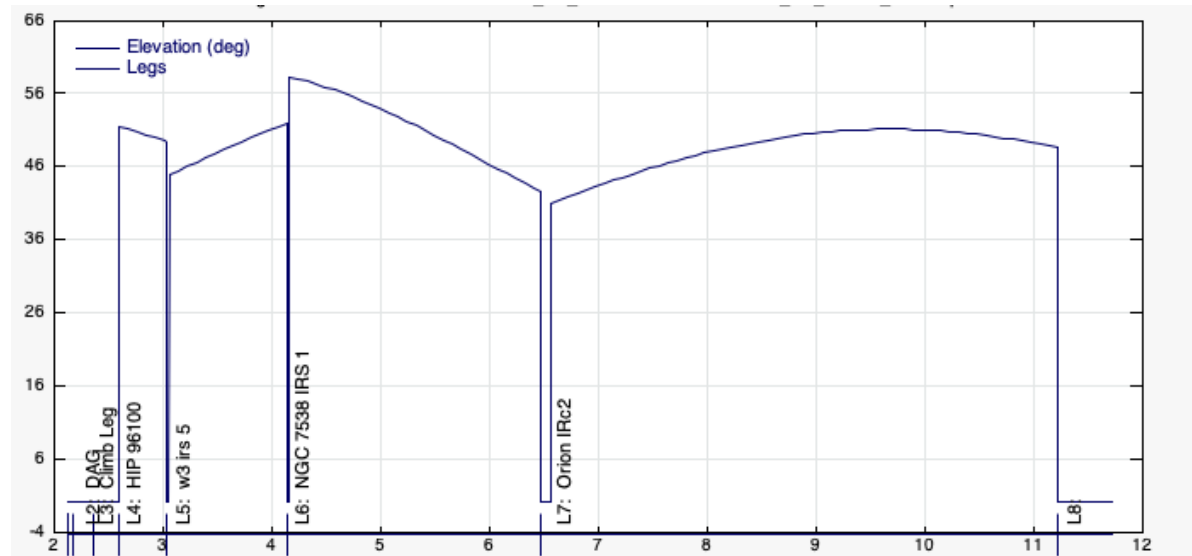
Flight 522 Mission ID 2018-10-31_EX_F522
 Palmdale to Palmdale Take off date UTC: 31-OCT-2018
 Departure UTC: 02:09 Arrival UTC: 11:43

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 96100	19h32m21.59s	69d39m40.2s	2:36	26	
5	76_0005	Yorke	w3 irs 5	02h25m40.54s	62d05m51.4s	3:04	65	
6	76_0004	Yorke	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	4:10	139	Possible haze. Source seemed to drift in slit slightly.
7	06_0061	Rangwala	Orion IRc2	05h35m14.49s	-05d22m29.3s	6:34	280	Some turbulence and some data with poor background subtraction

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



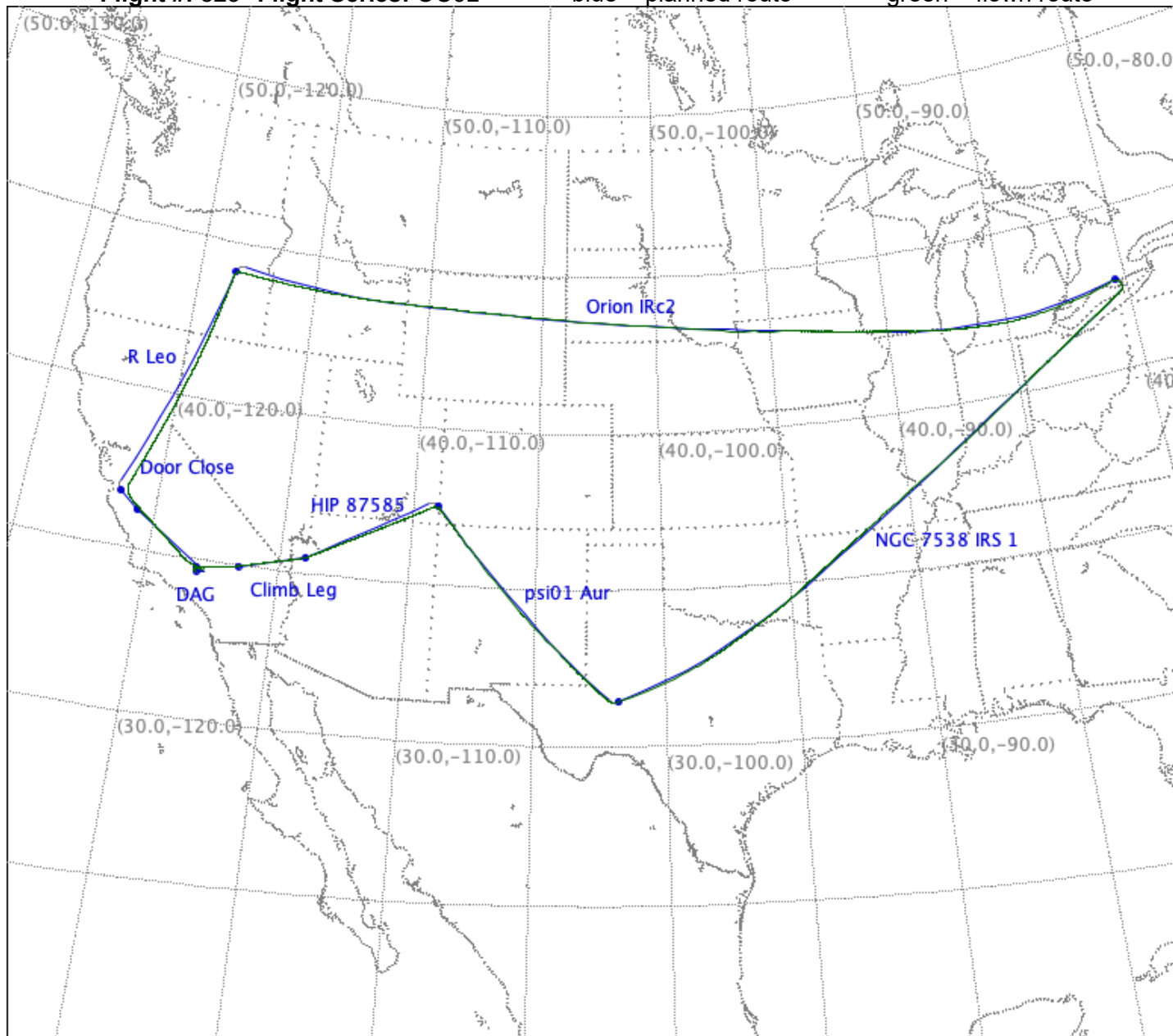
MISSION ID: 2018-11-01_EX_F523

Date: 2018-11-01 UT Instrument: EXES

Flight #: 523 Flight Series: OC6L

blue = planned route

green = flown route

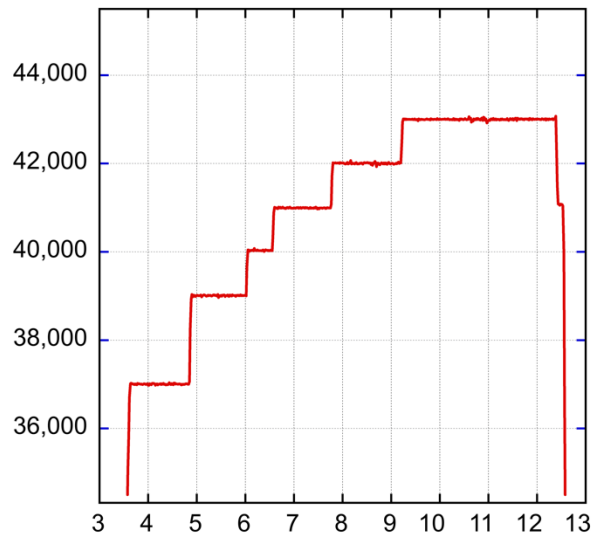


Flight notes: Significant turbulence.

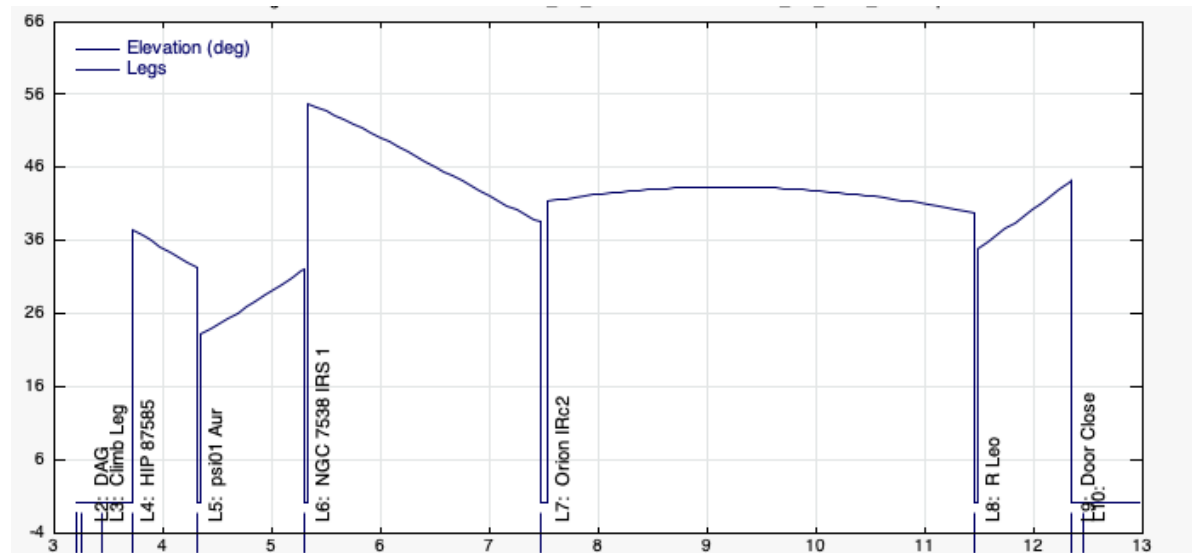
Flight 523 Mission ID 2018-11-01_EX_F523
 Palmdale to Palmdale Take off date UTC: 01-NOV-2018
 Departure UTC: 03:13 Arrival UTC: 12:59

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 87585	17h53m31.73s	56d52m21.5s	3:45	35	
5	75_0028	Discretionary	* psi01 Aur	06h24m53.90s	49d17m16.4s	4:22	57	Mistake in instrument setup and trouble setting up proper telescope pointing; about 35min lost
6	75_0024	Discretionary	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	5:21	128	Clouds and Turbulence; leg mostly lost
7	05_0043	Rangwala	Orion IRc2	05h35m14.40s	-05d22m29.0s	7:33	235	Turbulence knocked telescope into standby multiple times, the last time causing a telescope hardware error that took 2hr to fix.
8	06_0144	Montiel	R Leo	09h47m33.49s	11d25m43.7s	11:30	51	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



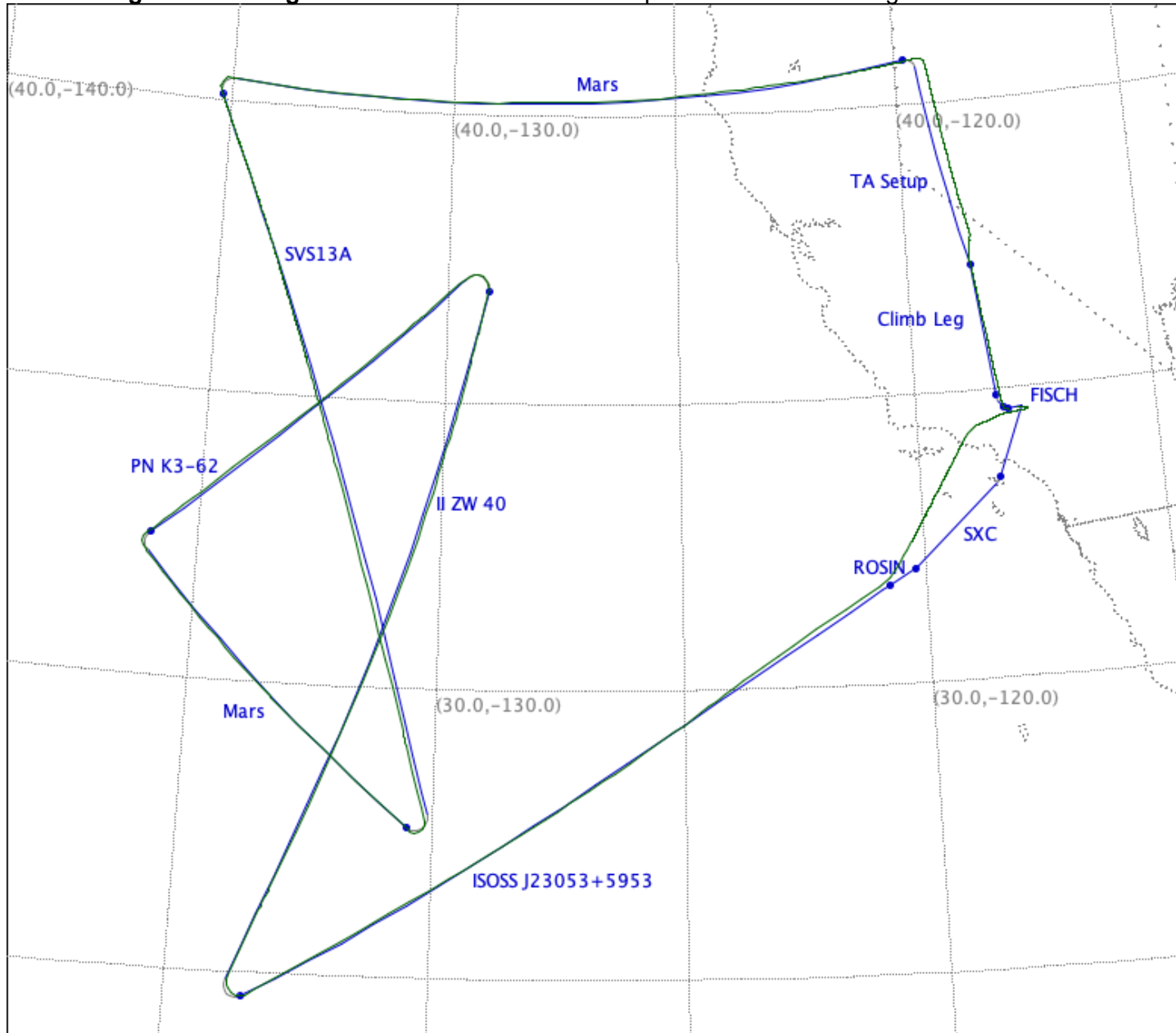
MISSION ID: 2018-11-06_FI_F524

Date: 2018-11-06 UT Instrument: FIFI-LS

Flight #: 524 Flight Series: OC6M

blue = planned route

green = flown route

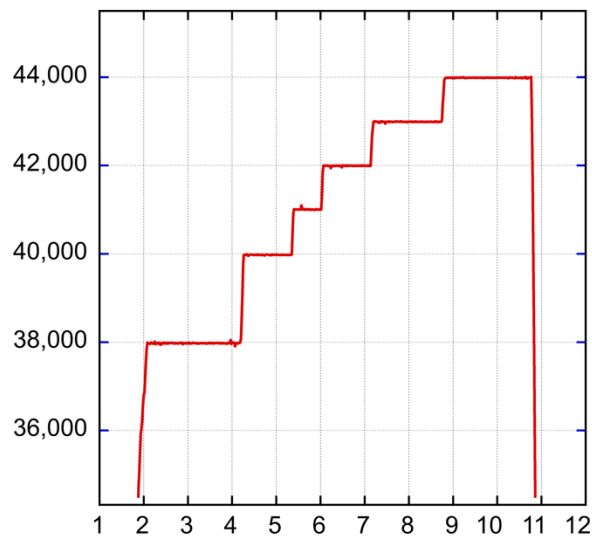


Flight notes: No irregularities.

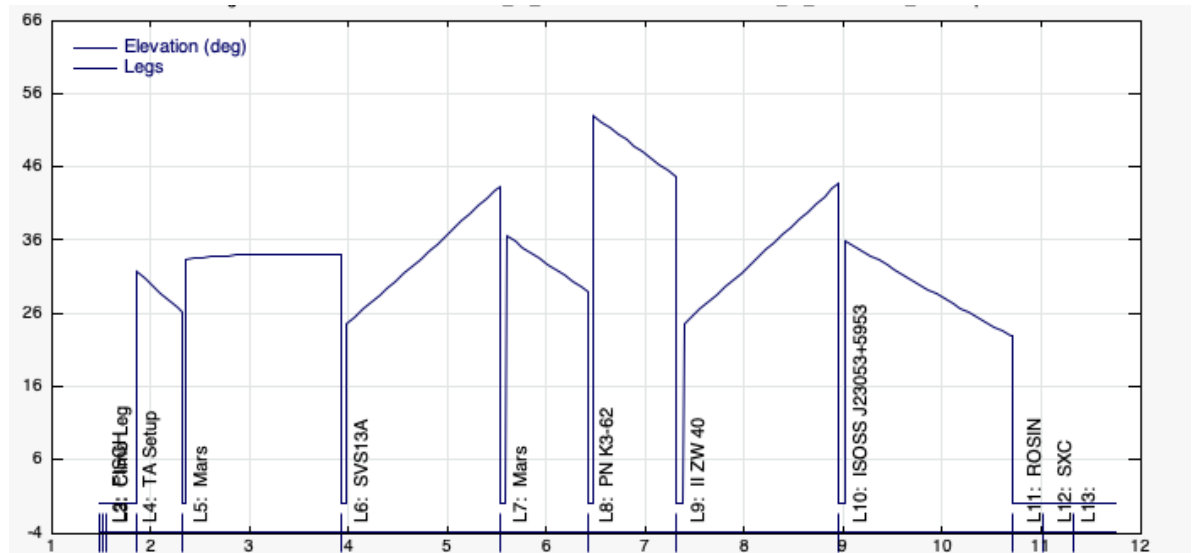
Flight 524 Mission ID 2018-11-06_FI_F524
 Palmdale to Palmdale Take off date UTC: 06-NOV-2018
 Departure UTC: 01:29 Arrival UTC: ~11:13

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 85355	17h26m30.88s	04d08m25.3s	1:51	28	
5	90_0032	Calibration	Mars	21h47m33.27s	-15d31m38.7s	2:21	94	
6	06_0121	Tobin	SVS13A	03h29m04.73s	31d15m43.8s	3:58	93	
7	90_0033	Calibration	Mars	21h47m50.00s	-15d29m53.0s	5:35	50	
8	06_0237	Cami	PN K3-62	21h31m50.18s	52d33m51.6s	6:28	50.7	
9	06_0225	Stacey	II ZW 40	05h55m42.63s	03d23m32.1s	7:23	94	Lost guiding temporarily.
10	70_0608	GTO	ISOSS J23053+5953	23h05m23.11s	59d53m52.4s	9:01	101	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



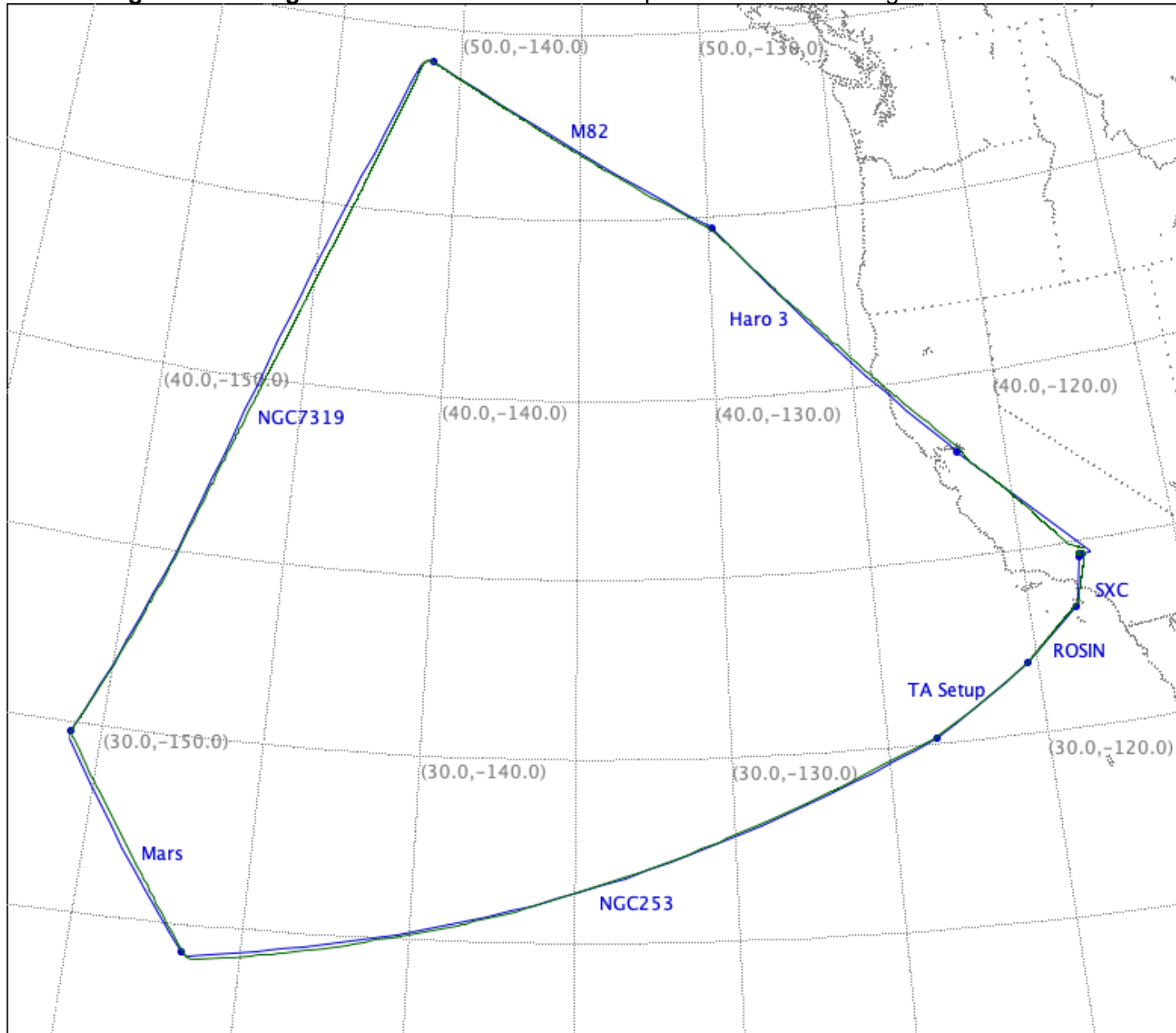
MISSION ID: 2018-11-07_FI_F525

Date: 2018-11-07 UT Instrument: FIFI-LS

Flight #: 525 Flight Series: OC6M

blue = planned route

green = flown route

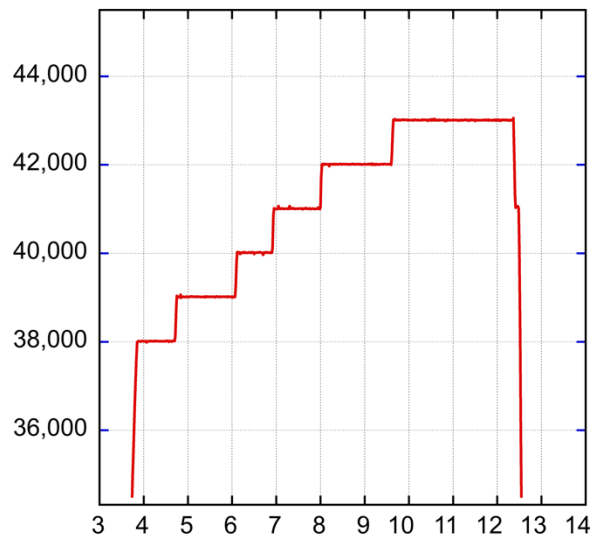


Flight notes: No irregularities.

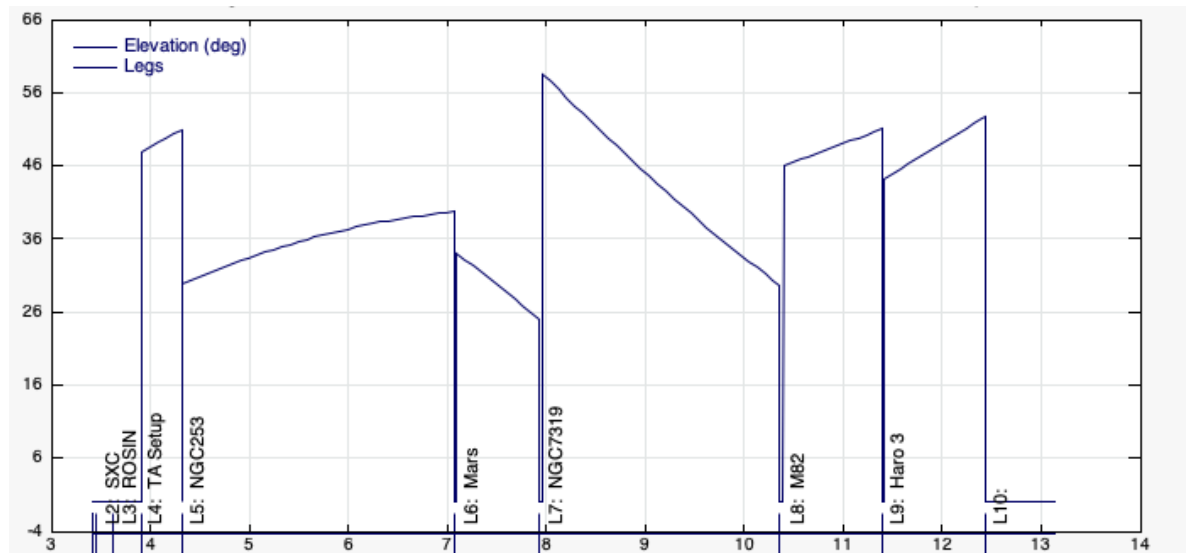
Flight 525 Mission ID 2018-11-07_FI_F525
 Palmdale to Palmdale Take off date UTC: 07-NOV-2018
 Departure UTC: 03:20 Arrival UTC: 13:06

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 2353	00h30m02.36s	-03d57m26.4s	3:54	25	
5	70_0608	GTO	NGC253	00h47m33.12s	-25d17m17.6s	4:19	164.7	
6	90_0033	Calibration	Mars	21h50m15.28s	-15d14m32.7s	7:05	50	
7	06_0124	Appleton	NGC7319	22h36m03.55s	33d58m32.6s	7:57	143.7	Data at beginning of leg were vignettted by the top of the telescope door.
8	70_0608	GTO	M82	09h55m52.20s	69d40m46.6s	10:23	60	
9	06_0225	Stacey	Haro 3	10h45m22.41s	55d57m37.4s	11:24	62	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



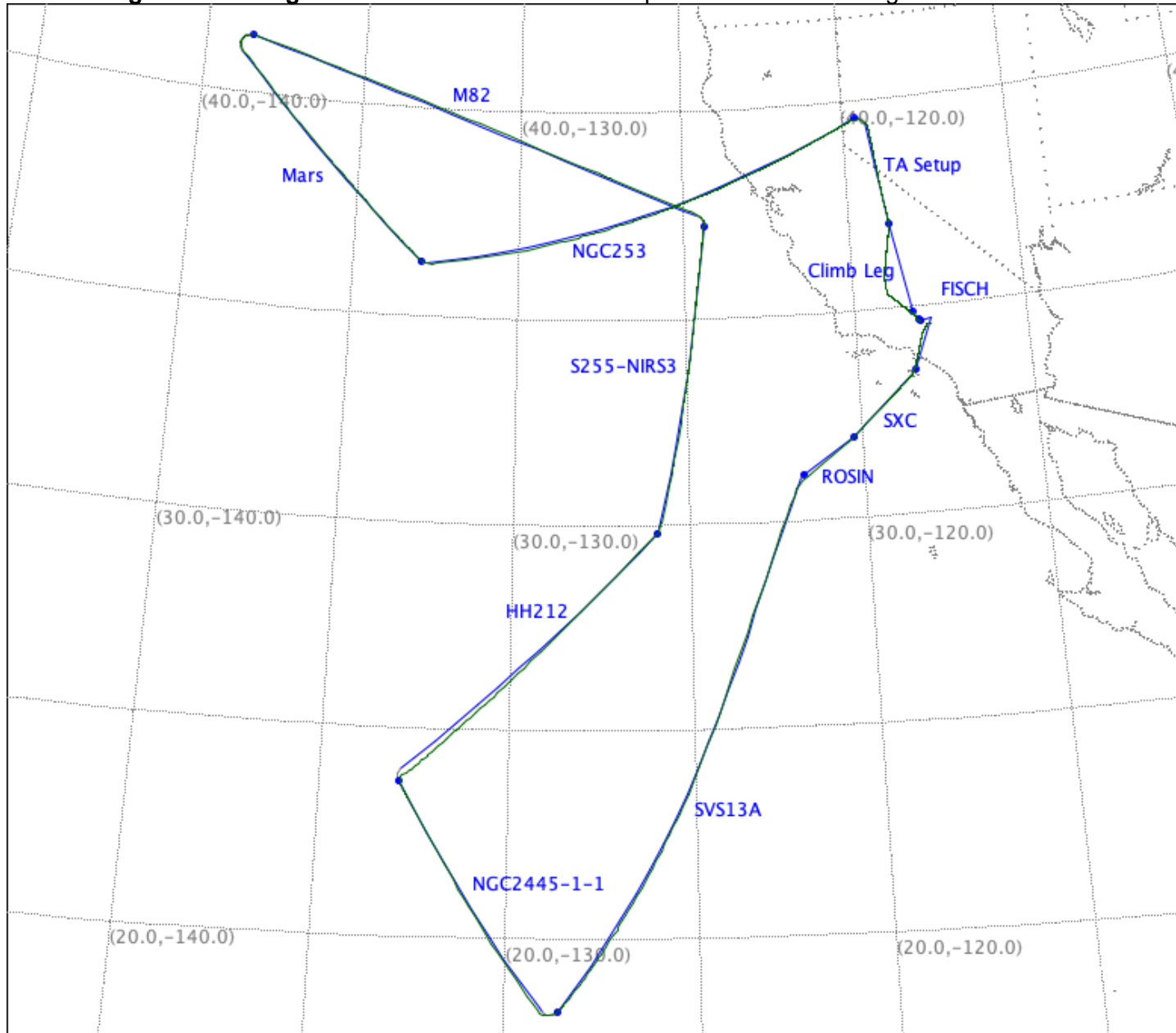
MISSION ID: 2018-11-08_FI_F526

Date: 2018-11-08 UT Instrument: FIFI-LS

Flight #: 526 Flight Series: OC6M

blue = planned route

green = flown route

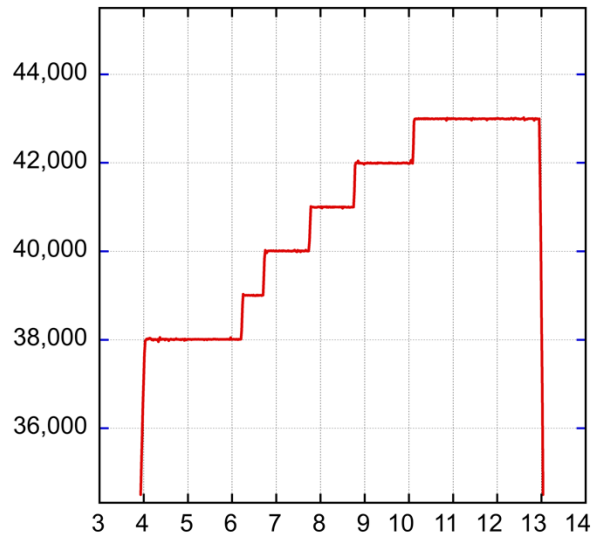


Flight notes: No irregularities.

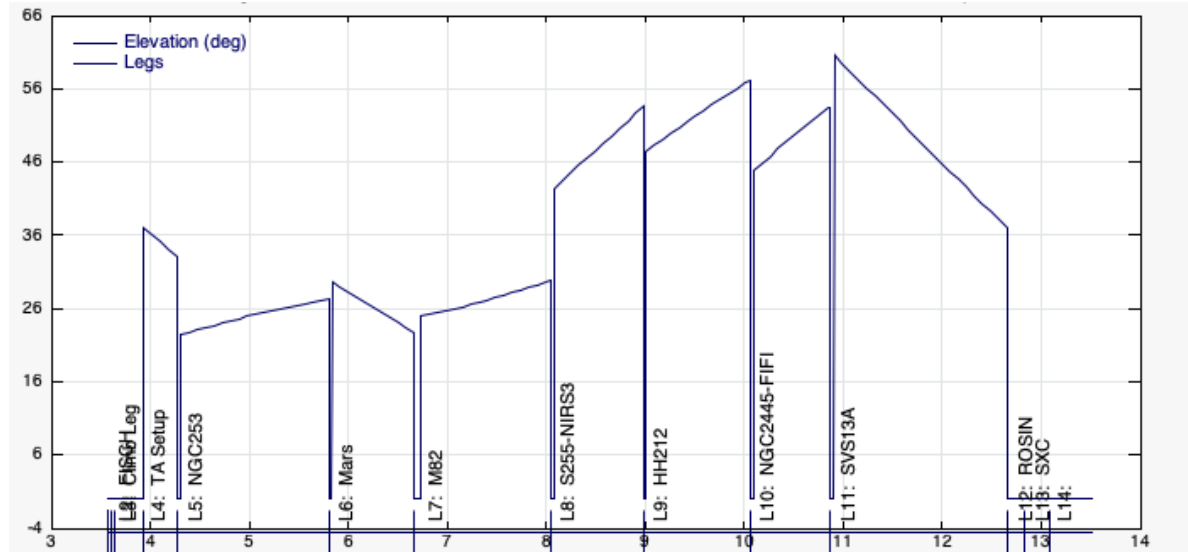
Flight 526 Mission ID 2018-11-08_FI_F526
 Palmdale to Palmdale Take off date UTC: 08-NOV-2018
 Departure UTC: 03:32 Arrival UTC: 13:27

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 97649	19h50m47.00s	08d52m06.0s	3:56	20	
5	70_0608	GTO	NGC253	00h47m33.12s	-25d17m17.6s	4:18	90	Low altitude (38k ft) and guiding problems.
6	90_0033	Calibration	Mars	21h52m18.68s	-15d01m27.8s	5:50	50	
7	70_0608	GTO	M82	09h55m52.20s	69d40m46.6s	6:44	78	
8	06_0182	Stecklum	S255-NIRS3	06h12m54.01s	17d59m23.1s	8:04	55	
9	06_0045	Eisloeffel	HH212	05h43m51.41s	-01d02m53.1s	9:00	63	
10	06_0032	Fadda	NGC2445-1-1	07h46m54.00s	39d00m53.7s	10:05	46	
11	06_0121	Tobin	SVS13A	03h29m04.73s	31d15m43.8s	10:54	105	Data suffered from some vignetting by upper telescope door at beginning of leg

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



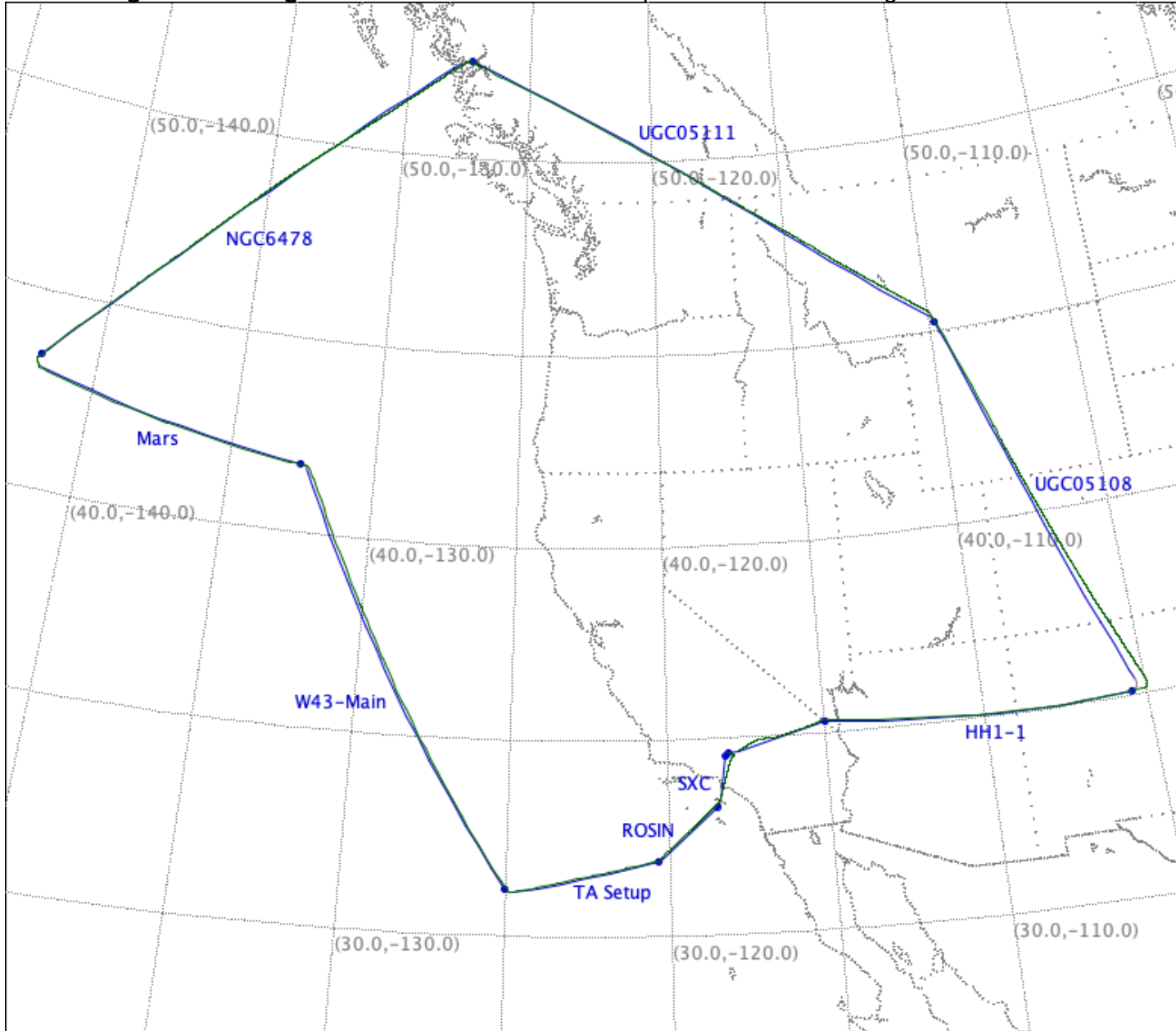
MISSION ID: 2018-11-09_FI_F527

Date: 2018-11-09 UT Instrument: FIFI-LS

Flight #: 527 Flight Series: OC6M

blue = planned route

green = flown route

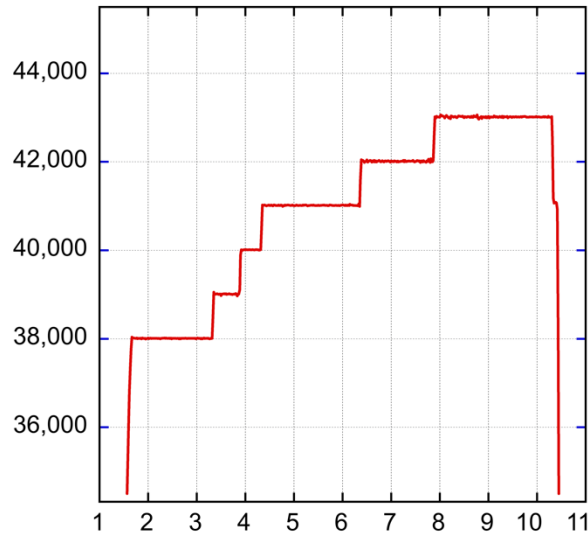


**Flight notes:
No irregularities.**

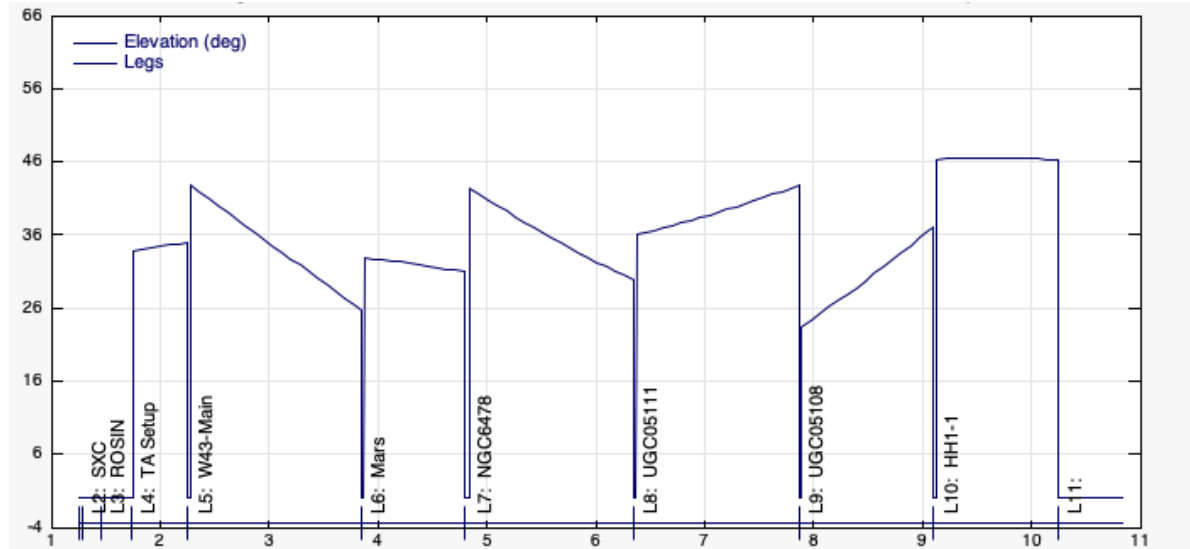
Flight 527 Mission ID 2018-11-09_FI_F527
 Palmdale to Palmdale Take off date UTC: 09-NOV-2018
 Departure UTC: 01:13 Arrival UTC: 10:50

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 107128	21h42m00.70s	-23d15m46.3s	1:44	30	
5	06_0097	Looney	W43-Main	18h47m42.40s	-01d55m03.3s	2:16	94	
6	90_0033	Calibration	Mars	21h54m22.49s	-14d48m17.4s	3:51	55	
7	06_0033	Bolatto	NGC6478	17h48m38.35s	51d09m26.1s	4:50	90	
8	06_0033	Bolatto	UGC05111	09h36m52.38s	66d47m18.2s	6:21	90	
9	06_0033	Bolatto	UGC05108	09h35m26.29s	29d48m45.4s	7:52	72	
10	06_0045	Eisloeffel	HH1	05h36m22.84s	-06d46m06.2s	9:07	67	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



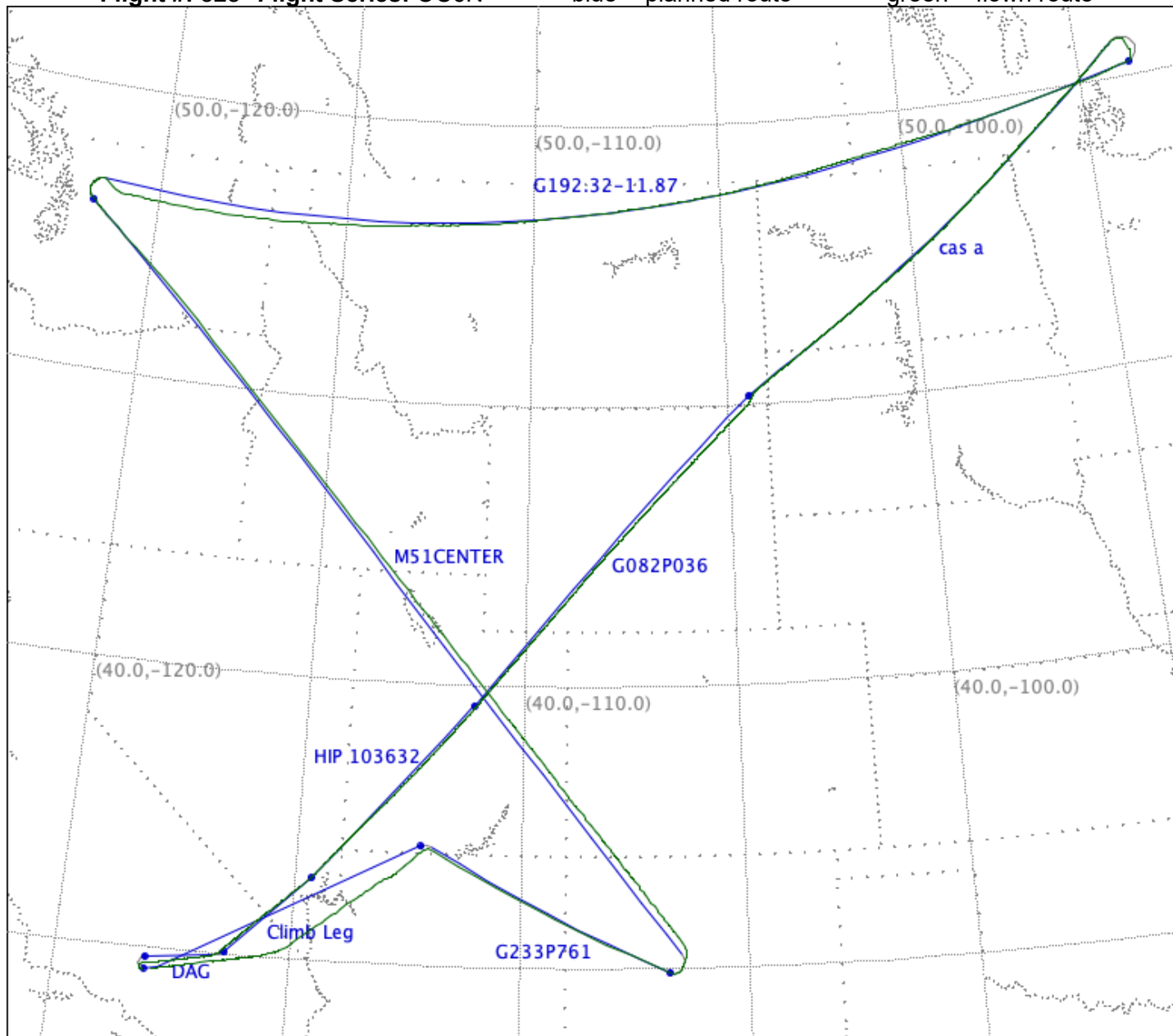
MISSION ID: 2018-11-16_GR_F528

Date: 2018-11-16 UT Instrument: GREAT

Flight #: 528 Flight Series: OC6N

blue = planned route

green = flown route



Flight notes: No irregularities.

Flight 528 Mission ID
Palmdale to Palmdale

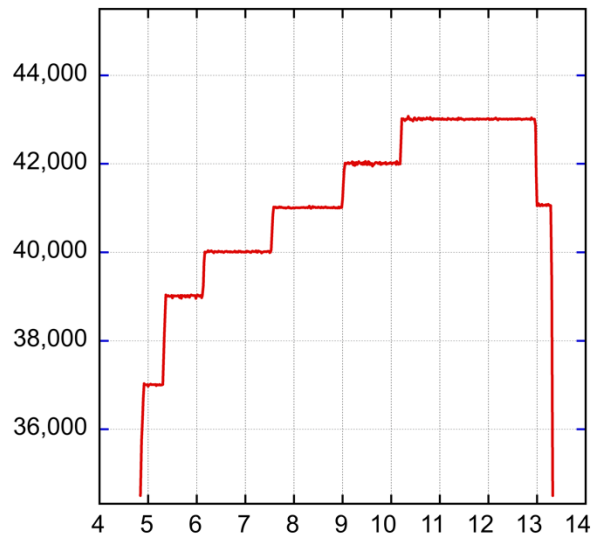
2018-11-16_GR_F528
Take off date UTC:
16-NOV-2018

Departure UTC: 04:27
Arrival UTC: 13:46

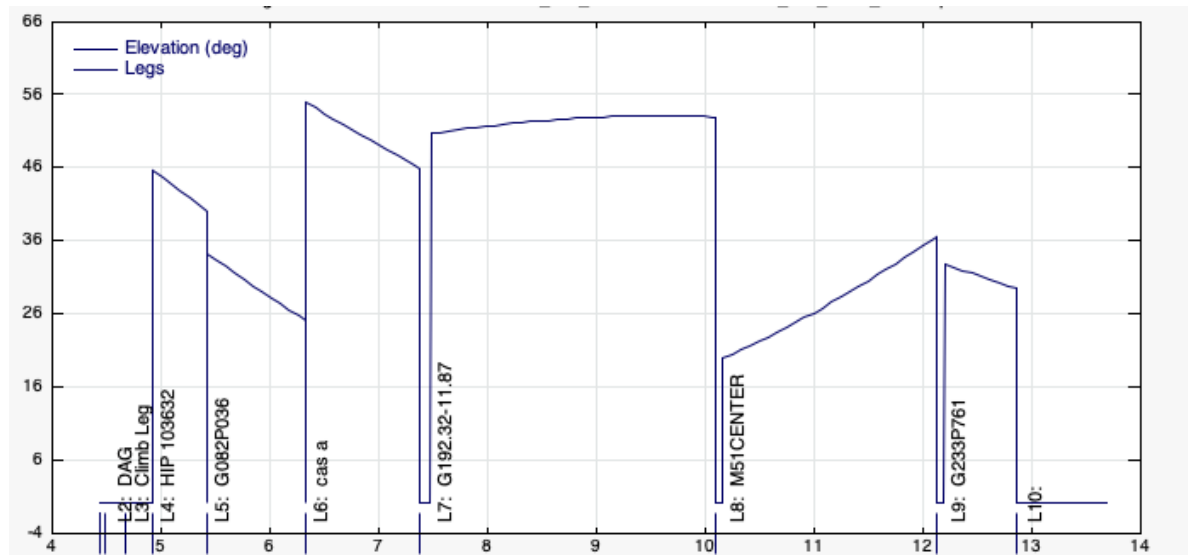
HFA-LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 103632	20h59m49.55s	47d31m15.4s	4:56	30	
5	06_0226	Anderson	G082P036	20h32m21.05s	43d41m14.6s	5:26	54	
6	06_0148	Salas	cas a	23h23m24.00s	58d48m54.0s	6:20	63	
7	06_0235	Parikka	G192.32-11.87	05h29m53.50s	12d16m26.0s	7:29	157	
8	04_0116	Pineda	M51CENTER	13h29m52.70s	47d11m42.9s	10:10	118	
9	06_0226	Anderson	G233P761	07h30m05.80s	-18d32m27.0s	12:12	40	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



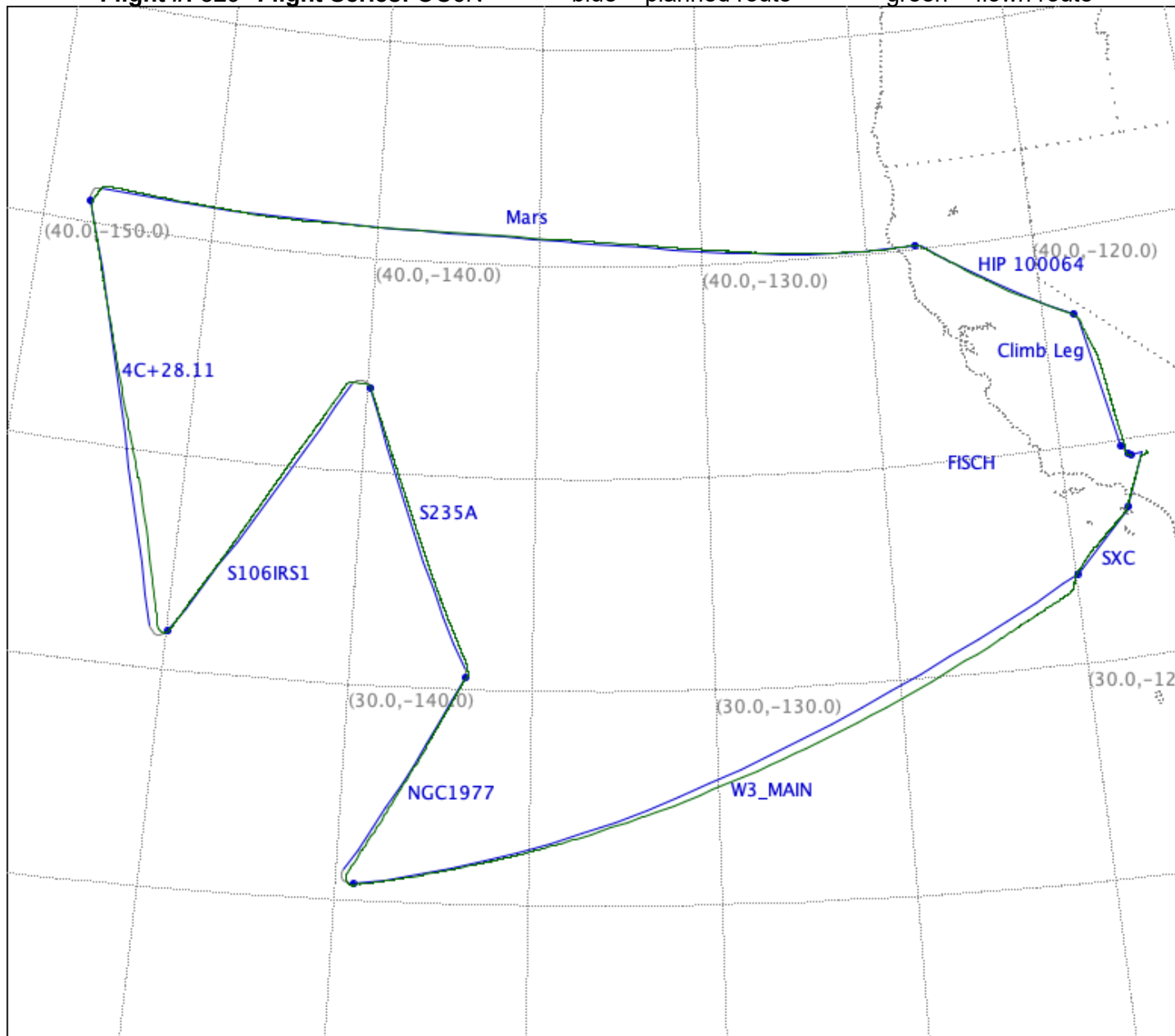
MISSION ID: 2018-11-21_GR_F529

Date: 2018-11-21 UT Instrument: GREAT

Flight #: 529 Flight Series: OC6N

blue = planned route

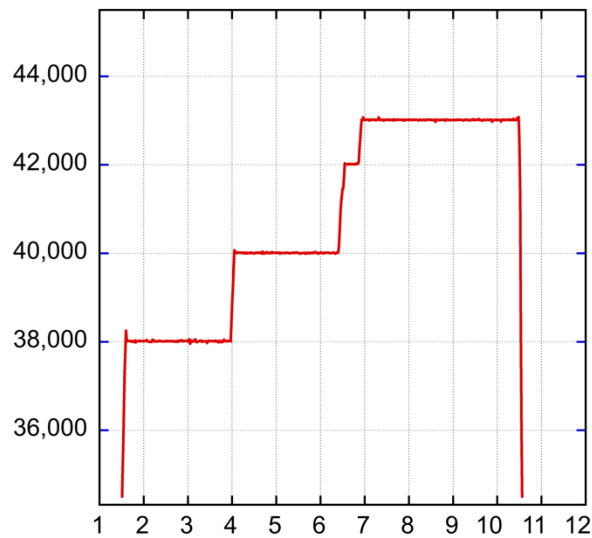
green = flown route



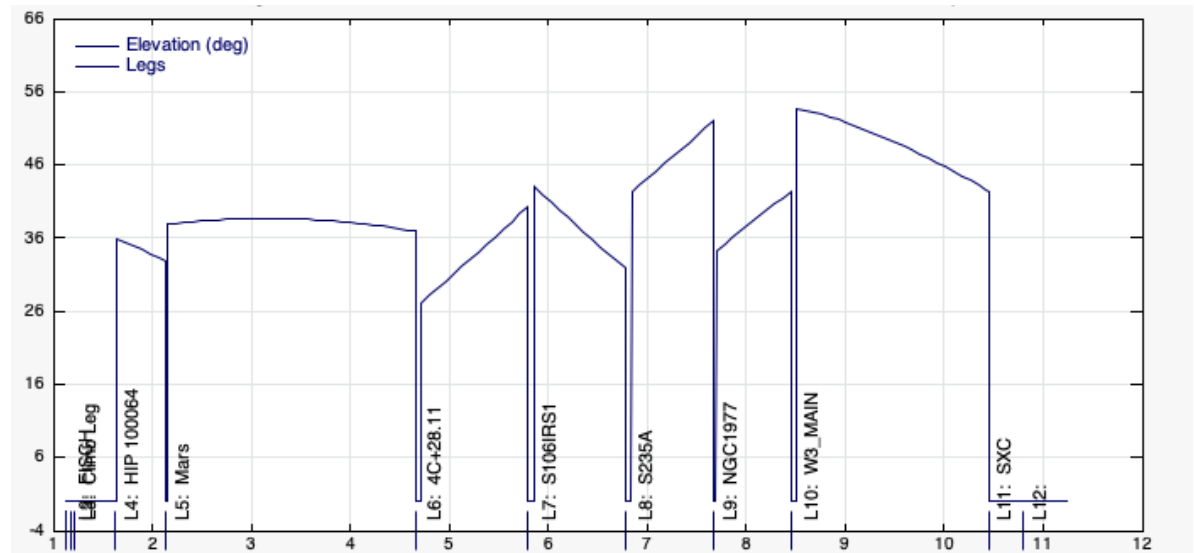
Flight notes: No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 100064	20h18m03.26s	-12d32m41.5s	1:38	30	
5	90 0008	Calibration	Mars	22h21m48.27s	-11d48m33.6s	2:09	150	
6	83 0619	GREAT Consortium	4C+28.11	04h04m42.76s	29d02m16.8s	4:42	65	
7	83 0620	GREAT Consortium	S106IRS1	20h27m26.74s	37d22m47.9s	5:51	55	
8	83 0624	GREAT Consortium	S235A	05h40m53.17s	35d42m11.3s	6:50	50	
9	83 0622	GREAT Consortium	NGC1977	05h35m16.41s	-04d55m19.7s	7:41	45	
10	83 0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	8:30	117	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



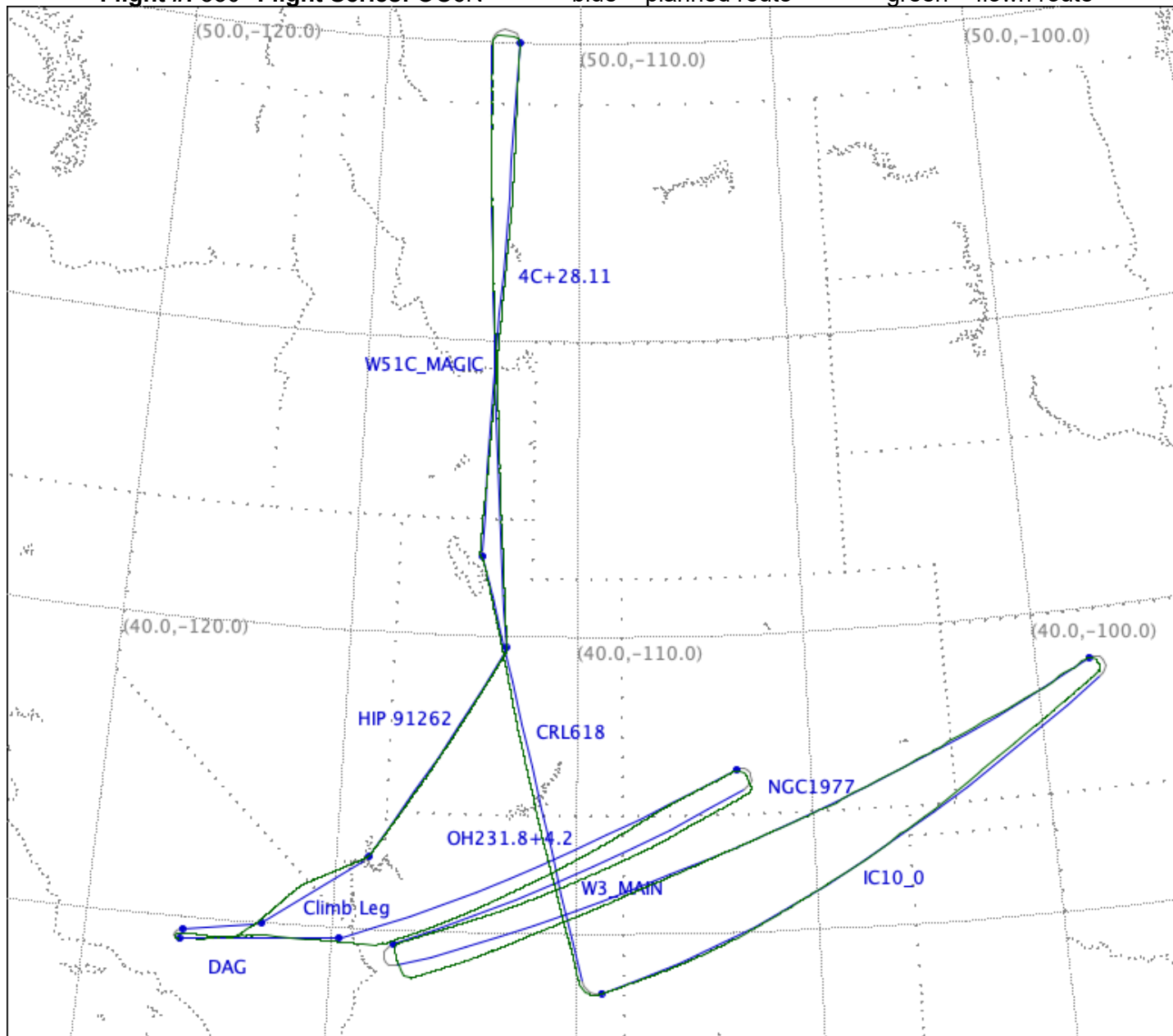
MISSION ID: 2018-11-28_GR_F530

Date: 2018-11-28 UT Instrument: GREAT

Flight #: 530 Flight Series: OC6N

blue = planned route

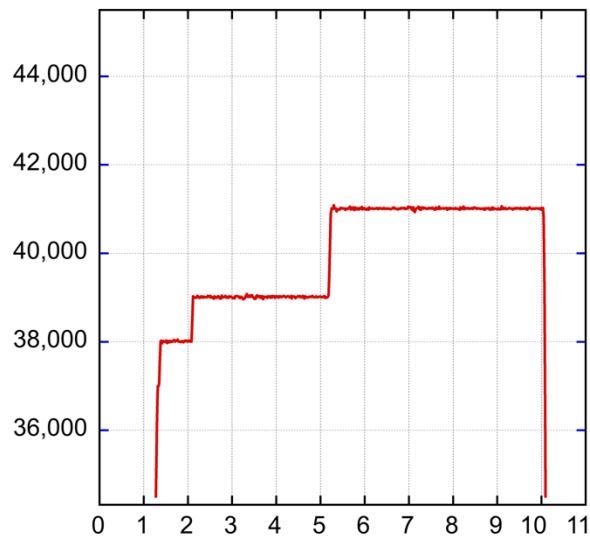
green = flown route



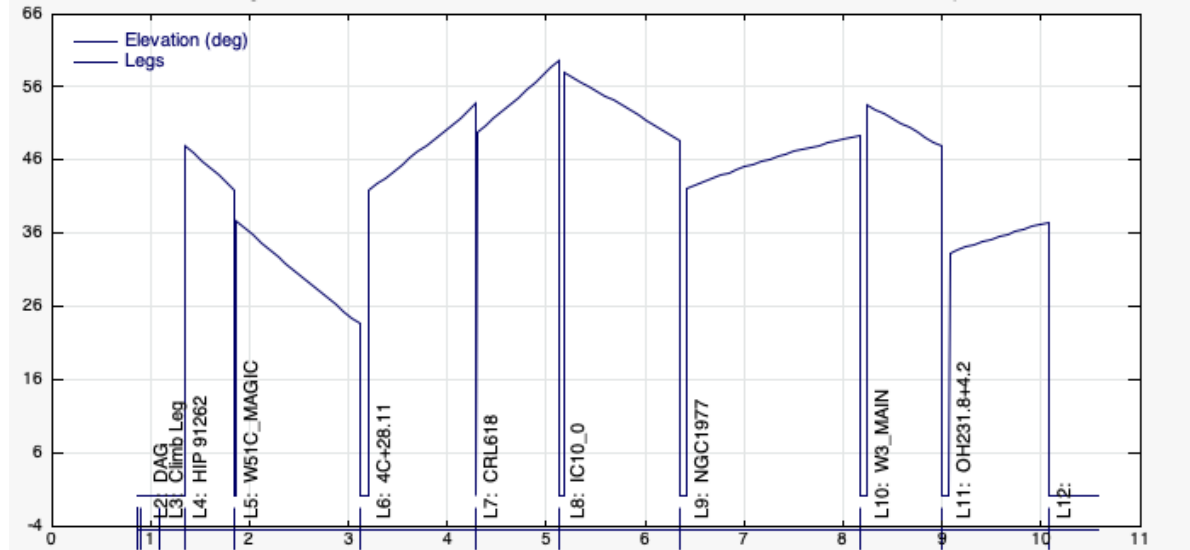
**Flight notes:
No irregularities.**

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 91262	18h36m56.34s	38d47m01.3s	1:21	30	
5	83 0508	GREAT Consortium	W51C MAGIC	19h22m54.36s	14d12m40.0s	1:52	75	Telescope oil temperature issue; most of leg lost
6	83 0619	GREAT Consortium	4C+28.11	04h04m42.76s	29d02m16.8s	3:12	65	
7	83 0621	GREAT Consortium	CRL618	04h42m53.62s	36d06m53.4s	4:17	50	
8	83 0608	GREAT Consortium	IC10_0	00h20m18.45s	59d18m31.5s	5:10	70	
9	83 0622	GREAT Consortium	NGC1977	05h35m16.41s	-04d55m19.7s	6:25	105	
10	83 0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	8:14	45	
11	83 0621	GREAT Consortium	OH231.8+4.2	07h42m16.95s	-14d42m50.2s	9:04	60	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



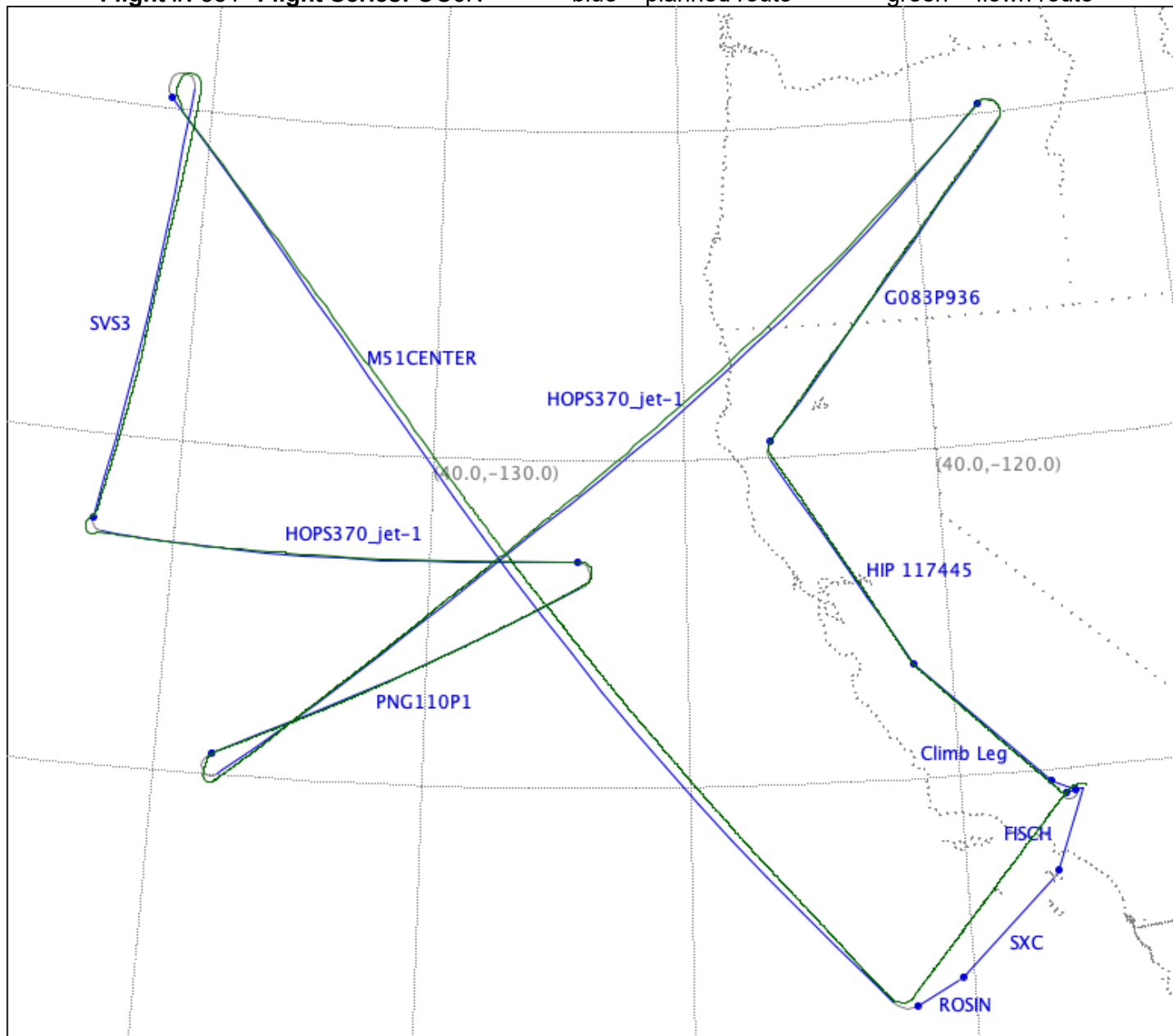
MISSION ID: 2018-11-29_GR_F531

Date: 2018-11-29 UT Instrument: GREAT

Flight #: 531 Flight Series: OC6N

blue = planned route

green = flown route



Flight notes: No irregularities.

Flight 531 Mission ID
Palmdale to Palmdale

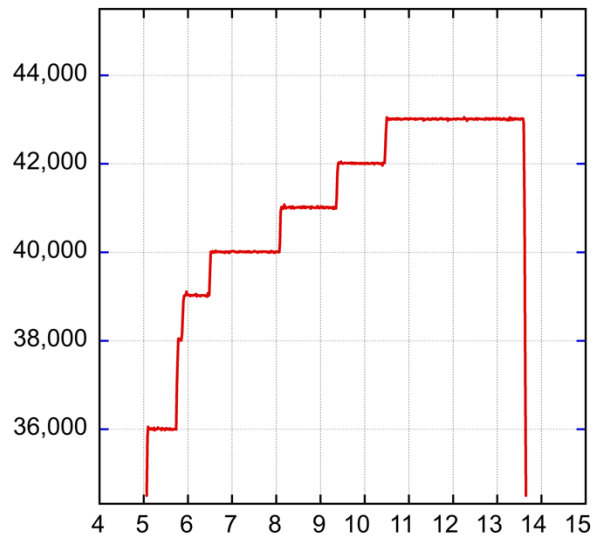
2018-11-29_GR_F531
Take off date UTC:
29-NOV-2018

Departure UTC: 04:42
Arrival UTC: 14:02

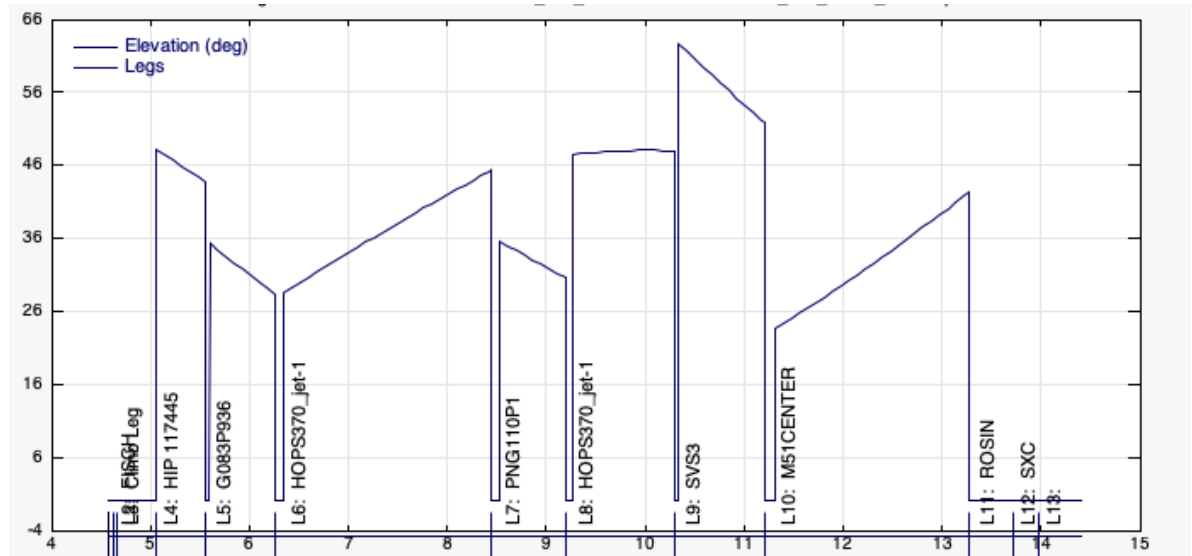
HFA-LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 117445	23h48m49.37s	02d12m51.9s	5:10	30	
5	06_0226	Anderson	G083P936	20h45m38.88s	44d14m52.8s	5:42	40	
6	06_0142	Megeath	HOPS370_jet	05h35m27.51s	-05d09m23.9s	6:27	126	
7	06_0049	Sahai	PNG110P1	22h58m51.62s	61d57m43.5s	8:38	40	
8	06_0142	Megeath	HOPS370_jet	05h35m27.51s	-05d09m23.9s	9:22	62	
9	06_0198	Arce	NGC1333	03h29m21.78s	31d23m50.1s	10:26	52	
10	04_0116	Pineda	M51CENTER	13h29m52.70s	47d11m42.9s	11:24	118	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



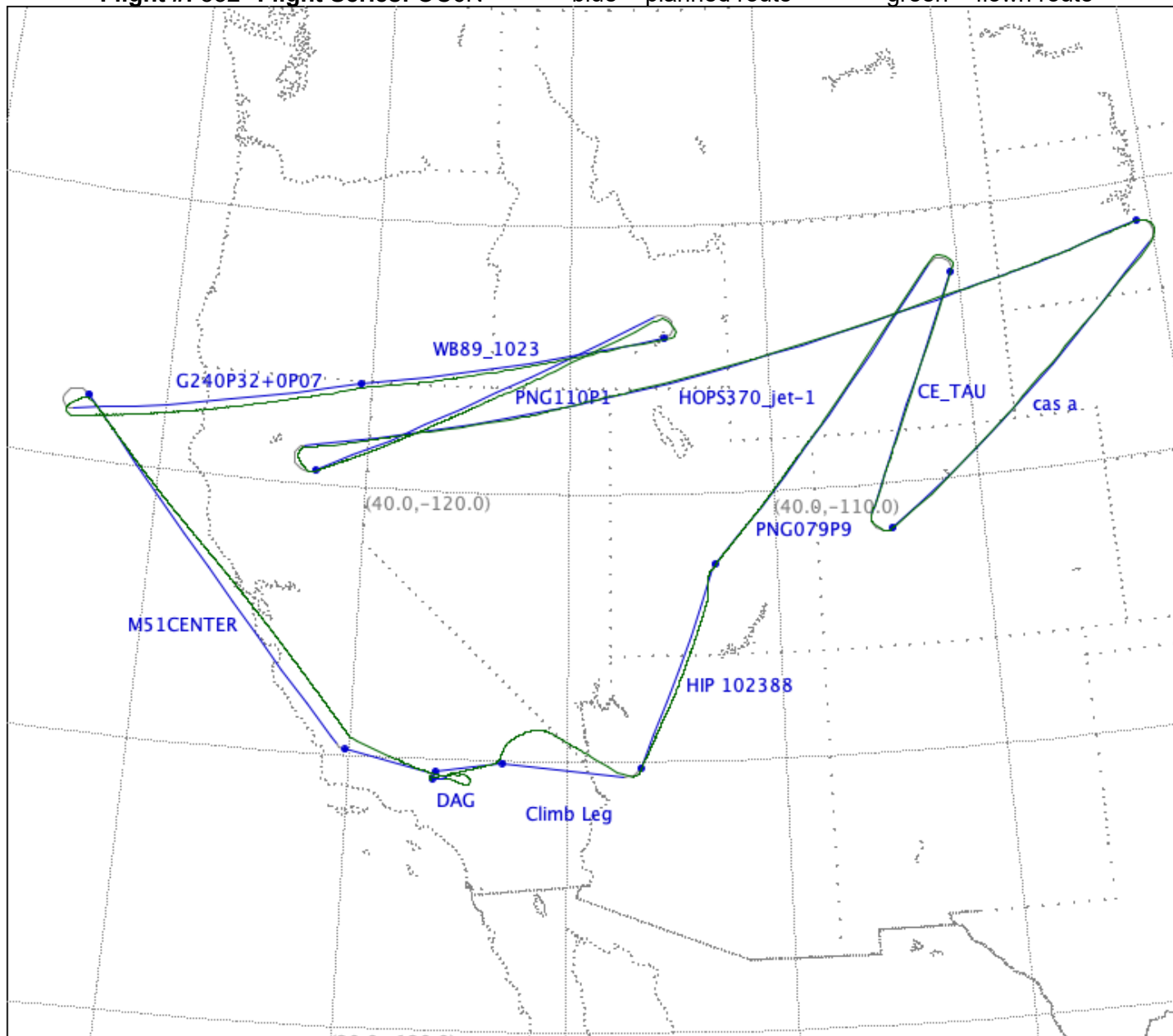
MISSION ID: 2018-12-01_GR_F532

Date: 2018-12-01 UT Instrument: GREAT

Flight #: 532 Flight Series: OC6N

blue = planned route

green = flown route



Flight notes: Turbulence on most legs.

Flight 532 Mission ID
Palmdale to Palmdale

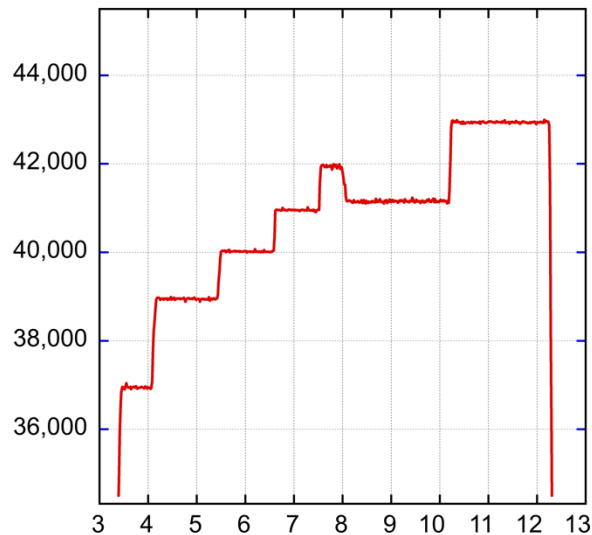
2018-12-01_GR_F532
Take off date UTC:
01-DEC-2018

Departure UTC: 02:59
Arrival UTC: 12:40

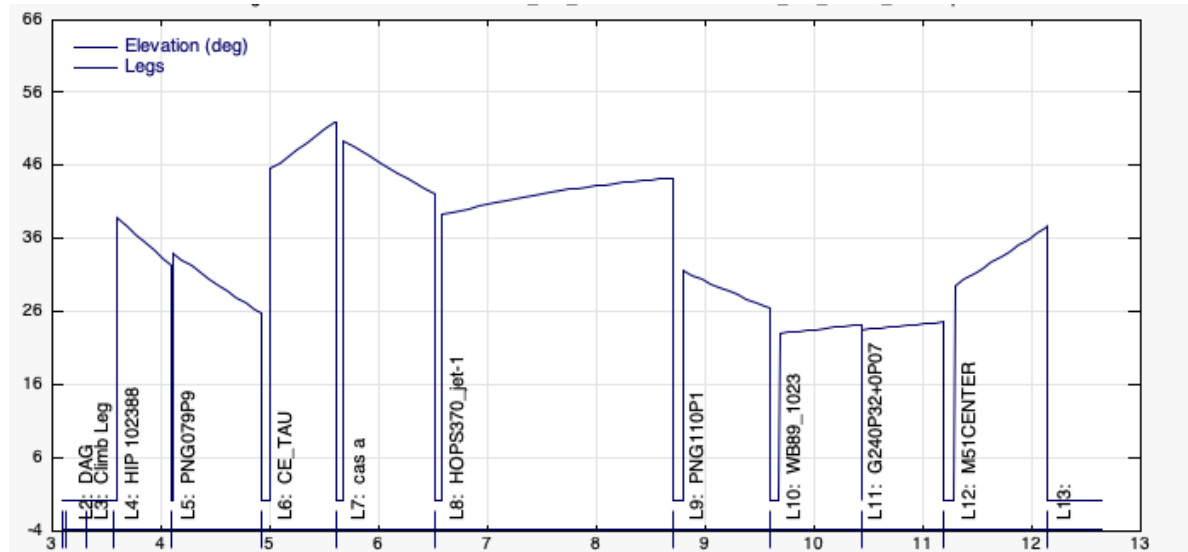
HFA-LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 102388	20h44m52.50s	25d16m14.3s	3:35	30	
5	06_0049	Sahai	PNG079P9	20h06m55.39s	44d14m18.7s	4:06	49	
6	06_0091	Harper	CE_TAU	05h32m12.75s	18d35m39.2s	4:59	36	Instrument software issue; 50% of leg lost
7	06_0148	Salas	cas a	23h23m24.00s	58d48m54.0s	5:40	50	
8	06_0142	Megeath	HOPS370_jet	05h35m27.51s	-05d09m23.9s	6:34	127	Turbulence
9	06_0049	Sahai	PNG110P1	22h58m51.62s	61d57m43.5s	8:47	48	
10	06_0151	König	WB89_1023	07h34m22.28s	-23d42m32.4s	9:40	45	Turbulence.
11	06_0151	König	G240P32+0P07	07h44m52.23s	-24d07m57.5s	10:25	45	Turbulence.
12	04_0116	Pineda	M51CENTER	13h29m52.70s	47d11m42.9s	11:17	51	Turbulence.

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



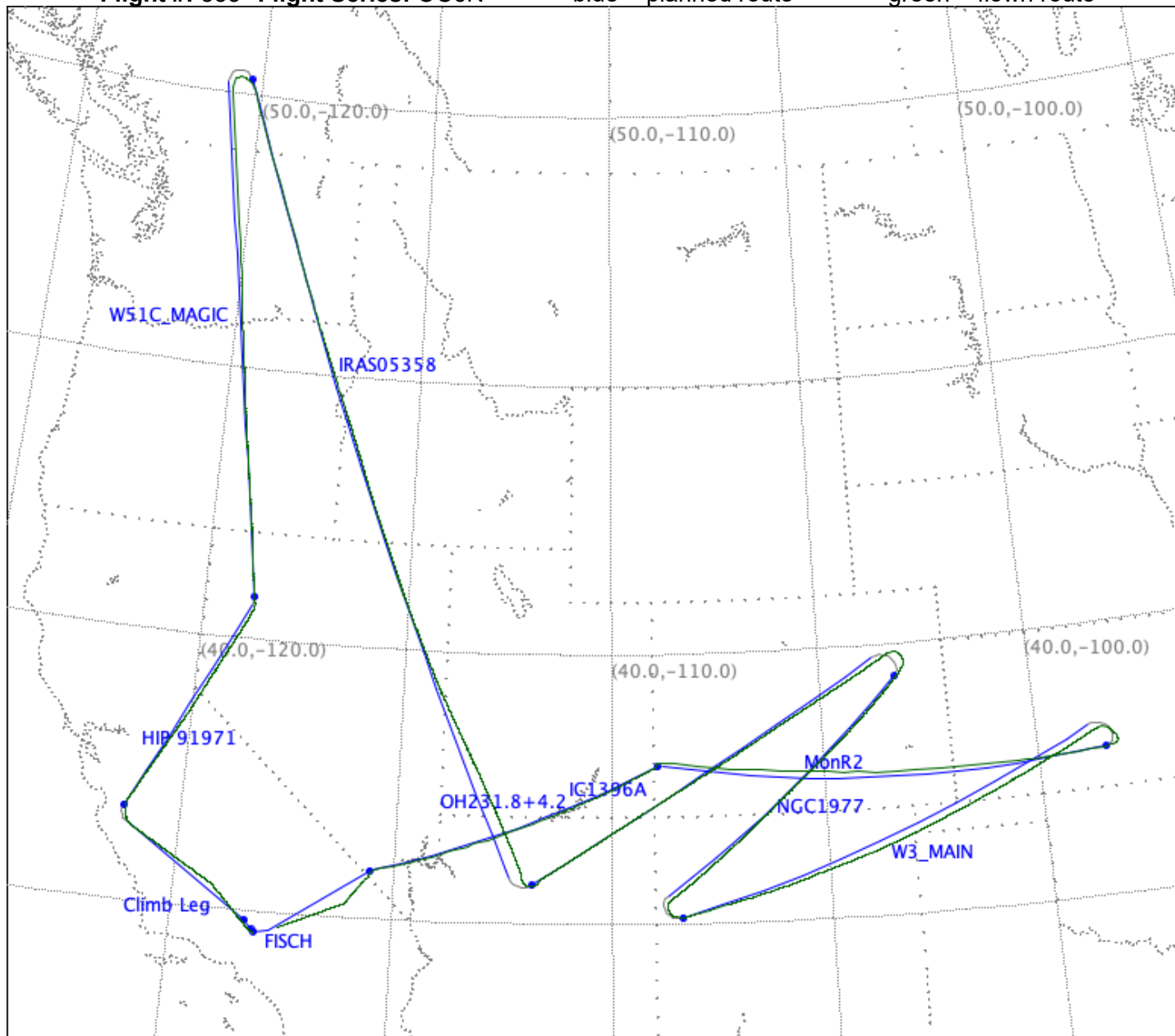
MISSION ID: 2018-12-04_GR_F533

Date: 2018-12-04 UT Instrument: GREAT

Flight #: 533 Flight Series: OC6N

blue = planned route

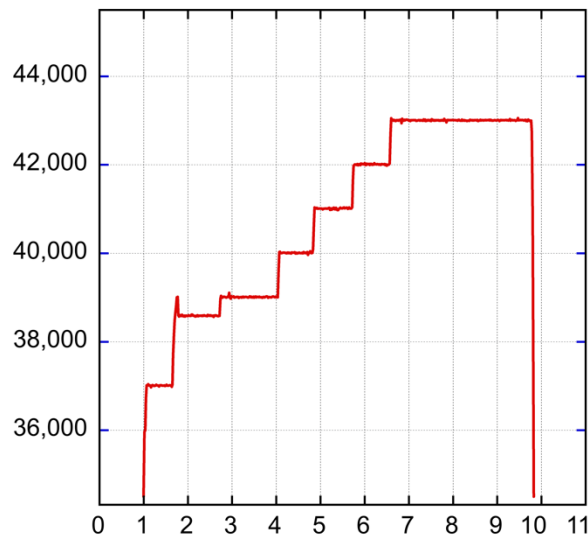
green = flown route



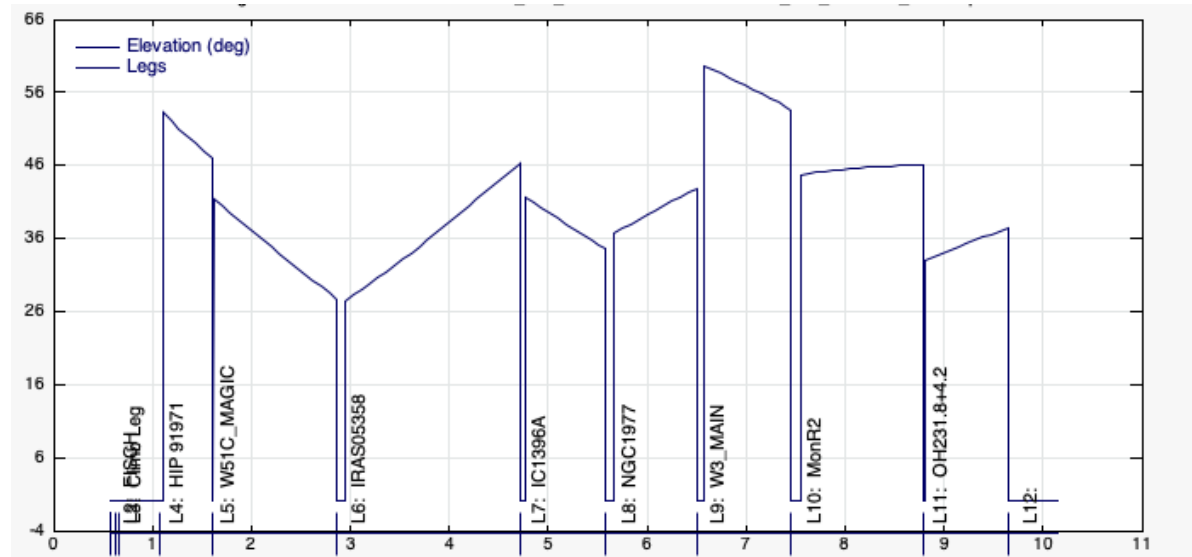
Flight notes: No irregularities.

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
Flight 533 Mission ID Palmdale to Palmdale			2018-12-04_GR_F533	Take off date UTC: 04-DEC-2018	Departure UTC: 00:36	Arrival UTC: 10:10	Consortium flight HFA-LFA	
4			HIP 91971	18h44m46.36s	37d36m18.4s	1:06	30	
5	83_0508	GREAT Consortium	W51C_MAGIC	19h22m54.36s	14d12m40.0s	1:37	75	
6	83_0623	GREAT Consortium	IRAS05358	05h39m13.10s	35d45m50.0s	2:56	106	
7	83_0427	GREAT Consortium	IC1396A	21h36m50.70s	57d31m10.0s	4:46	49	66% of leg useful; trouble with guide star selection.
8	83_0622	GREAT Consortium	NGC1977	05h35m16.41s	-04d55m19.7s	5:40	50	
9	83_0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	6:34	53	
10	83_0628	GREAT Consortium	MonR2	06h07m46.20s	-06d23m08.0s	7:33	75	
11	83_0621	GREAT Consortium	OH231.8+4.2	07h42m16.95s	-14d42m50.2s	8:49	50	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



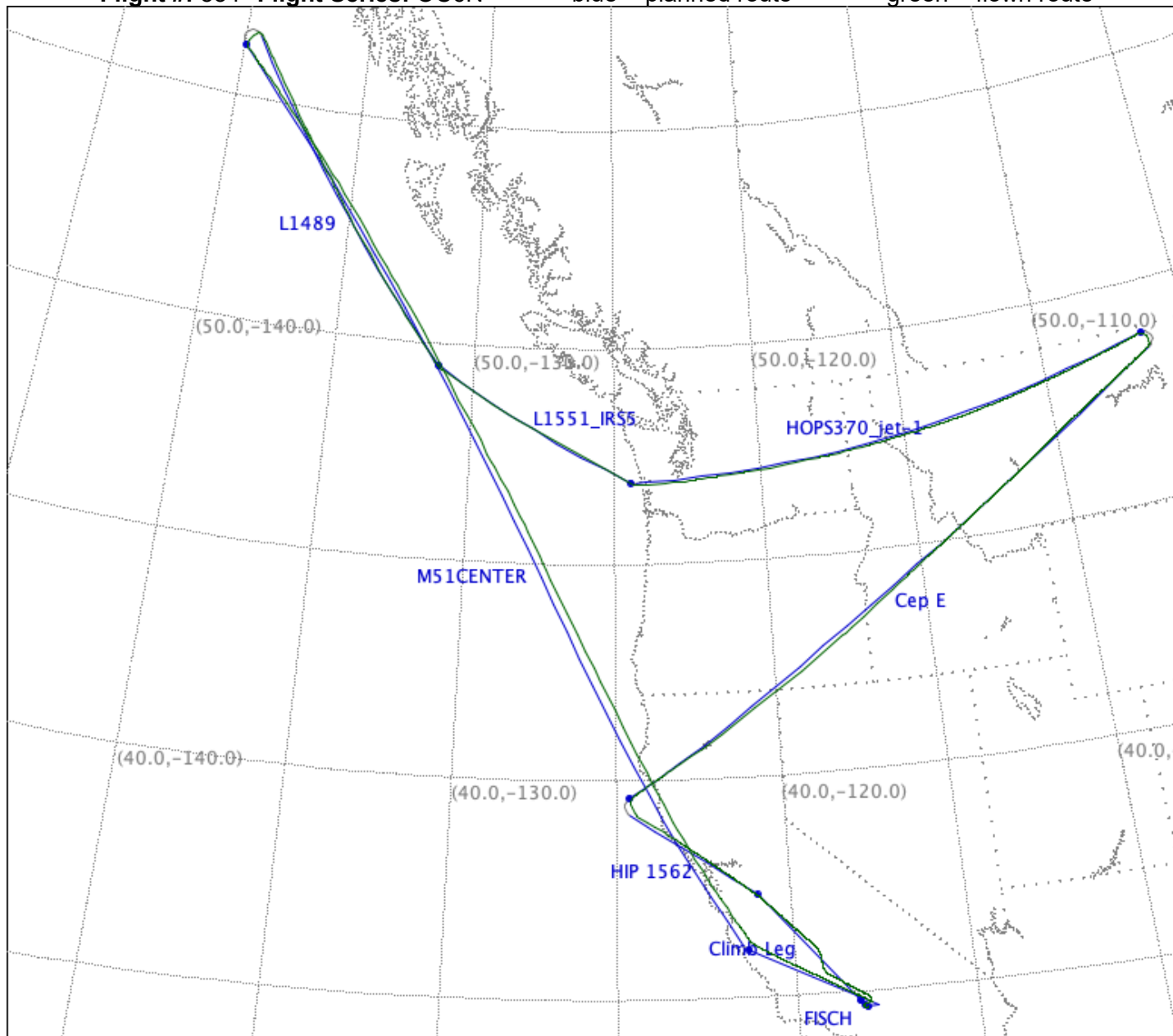
MISSION ID: 2018-12-05_GR_F534

Date: 2018-12-05 UT Instrument: GREAT

Flight #: 534 Flight Series: OC6N

blue = planned route

green = flown route



Flight notes: No irregularities.

Flight 534 Mission ID
Palmdale to Palmdale

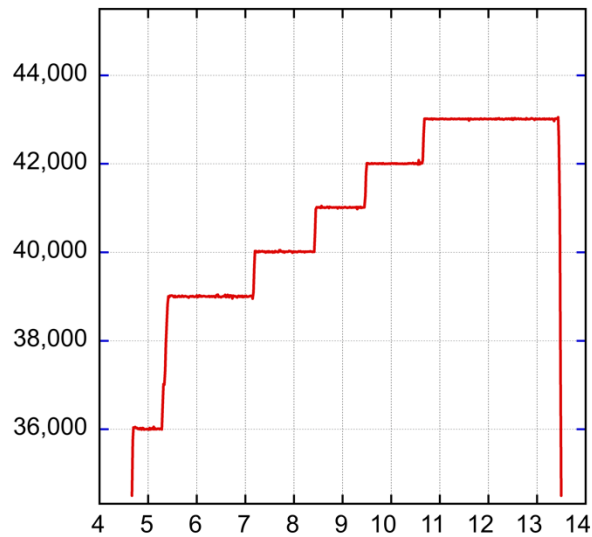
2018-12-05_GR_F534
Take off date UTC:
05-DEC-2018

Departure UTC: 04:16
Arrival UTC: 13:55

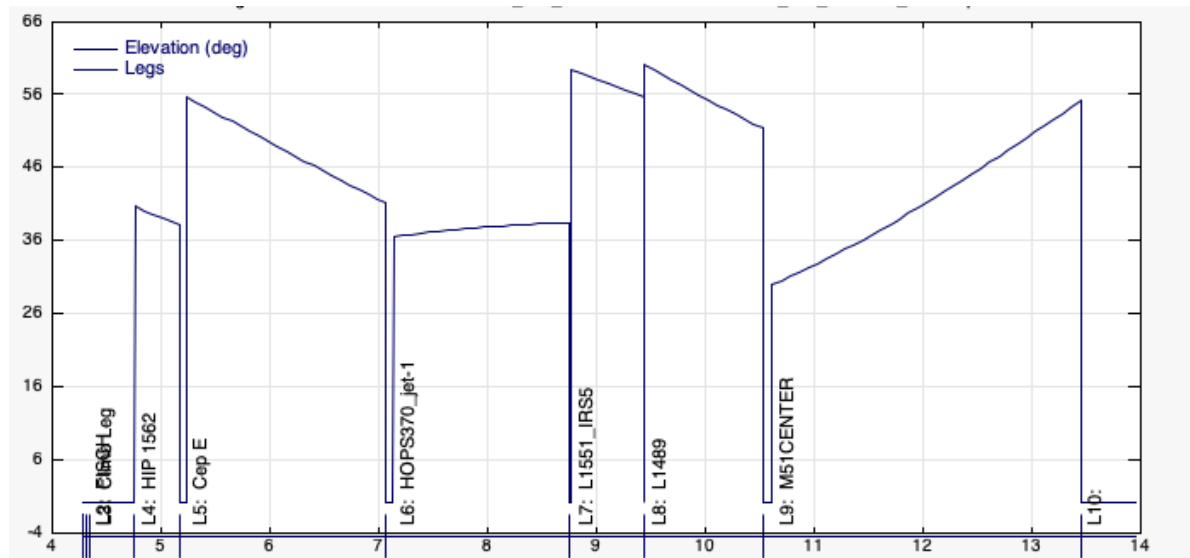
HFA-LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 1562	00h19m25.67s	-08d49m26.1s	4:45	25	
5	06_0145	Gusdorf	Cep E	23h03m12.78s	61d42m25.8s	5:14	110	Light turbulence.
6	06_0142	Megeath	HOPS370_jet	05h35m27.51s	-05d09m23.9s	7:08	97	Light turbulence.
7	06_0104	Yang	L1551_IRS5	04h31m34.08s	18d08m04.9s	8:46	40	
8	06_0109	Yildiz	L1489	04h04m43.00s	26d18m57.0s	9:26	65	
9	04_0116	Pineda	M51CENTER	13h29m52.70s	47d11m42.9s	10:37	170	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



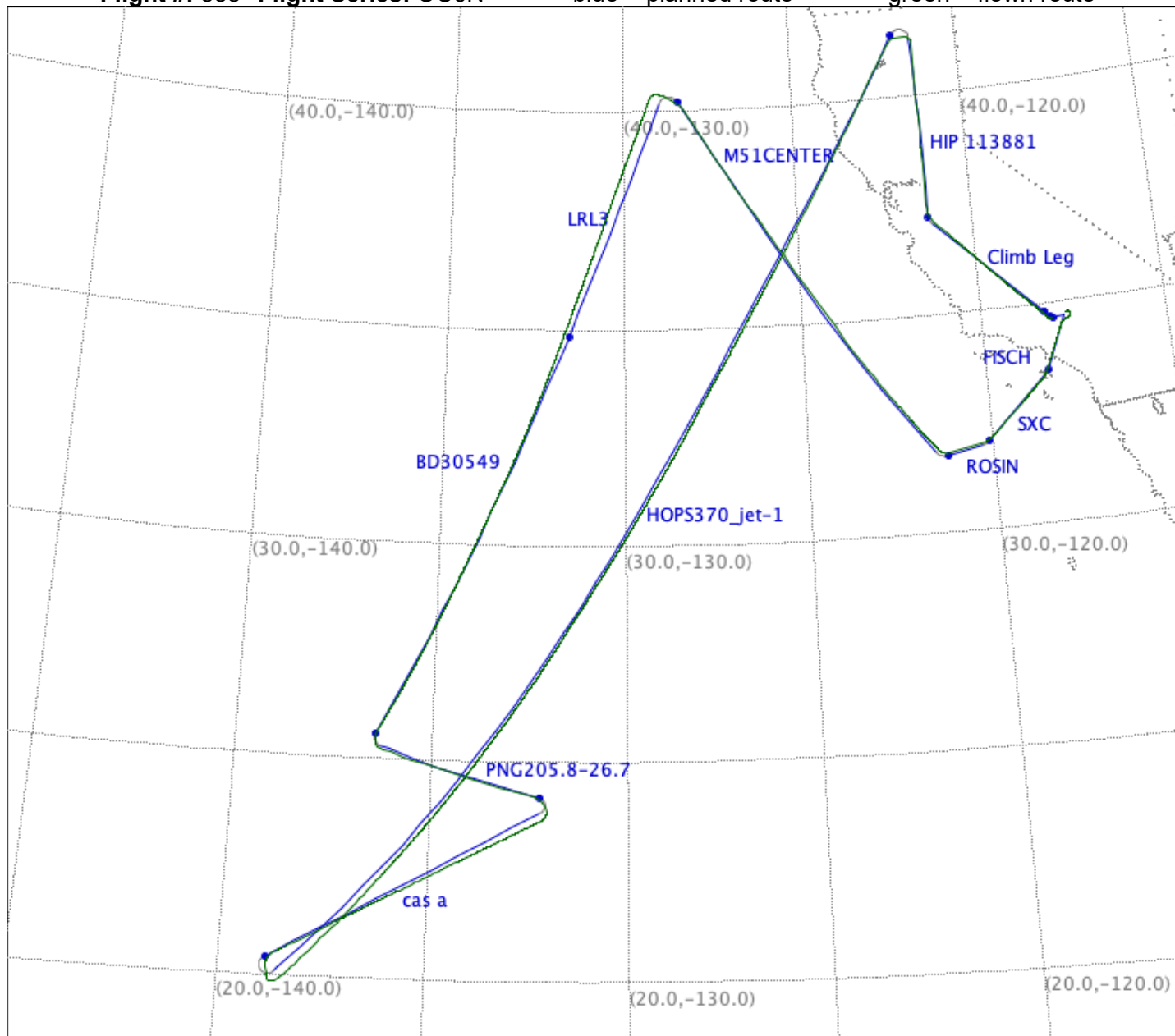
MISSION ID: 2018-12-06_GR_F535

Date: 2018-12-06 UT Instrument: GREAT

Flight #: 535 Flight Series: OC6N

blue = planned route

green = flown route



Flight notes: No irregularities.

Flight 535 Mission ID
Palmdale to Palmdale

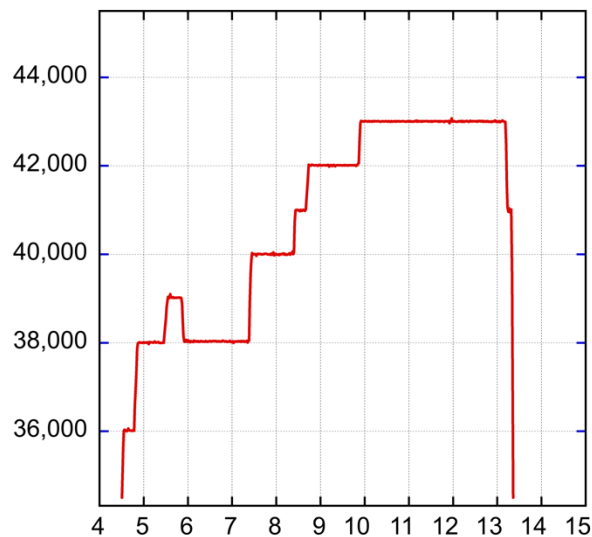
2018-12-06_GR_F535
Take off date UTC:
06-DEC-2018

Departure UTC: 04:07
Arrival UTC: 13:46

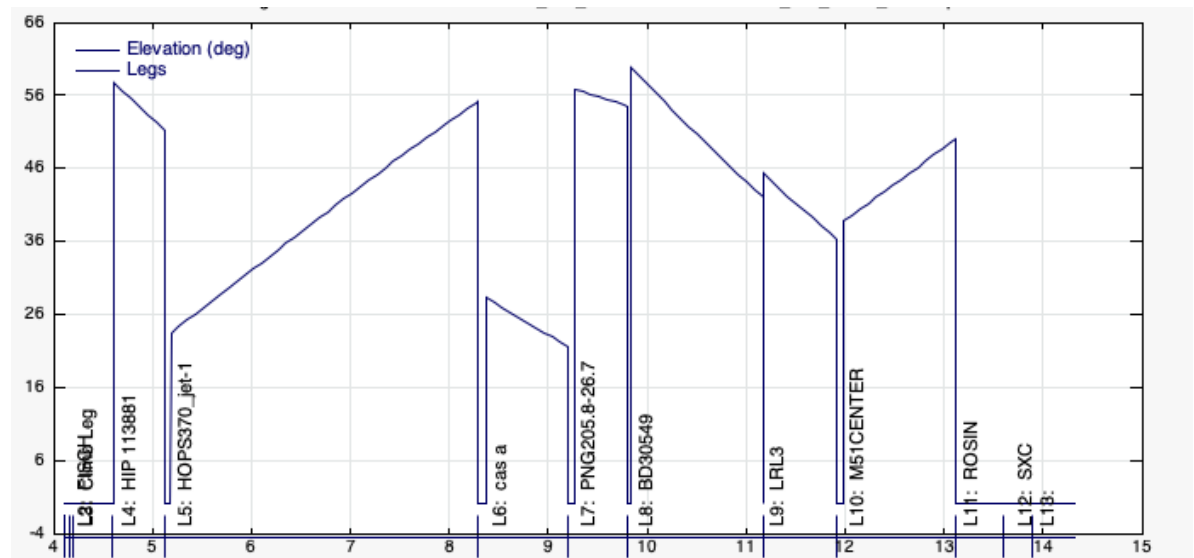
HFA-LFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 113881	23h03m46.46s	28d04m58.0s	4:36	30	
5	06_0142	Megeath	HOPS370_jet	05h35m27.51s	-05d09m23.9s	5:10	186	
6	06_0148	Salas	cas a	23h23m24.00s	58d48m54.0s	8:22	50	
7	06_0049	Sahai	PNG205.8-26.7	05h03m41.85s	-06d10m03.0s	9:15	32	
8	06_0198	Arce	NGC1333	03h29m21.78s	31d23m50.1s	9:50	80	
9	06_0198	Arce	HD281159	03h44m39.92s	32d13m52.0s	11:10	45	GREAT software having issues staying connected to network; 75% of leg lost
10	04_0116	Pineda	M51CENTER	13h29m52.70s	47d11m42.9s	11:59	68	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



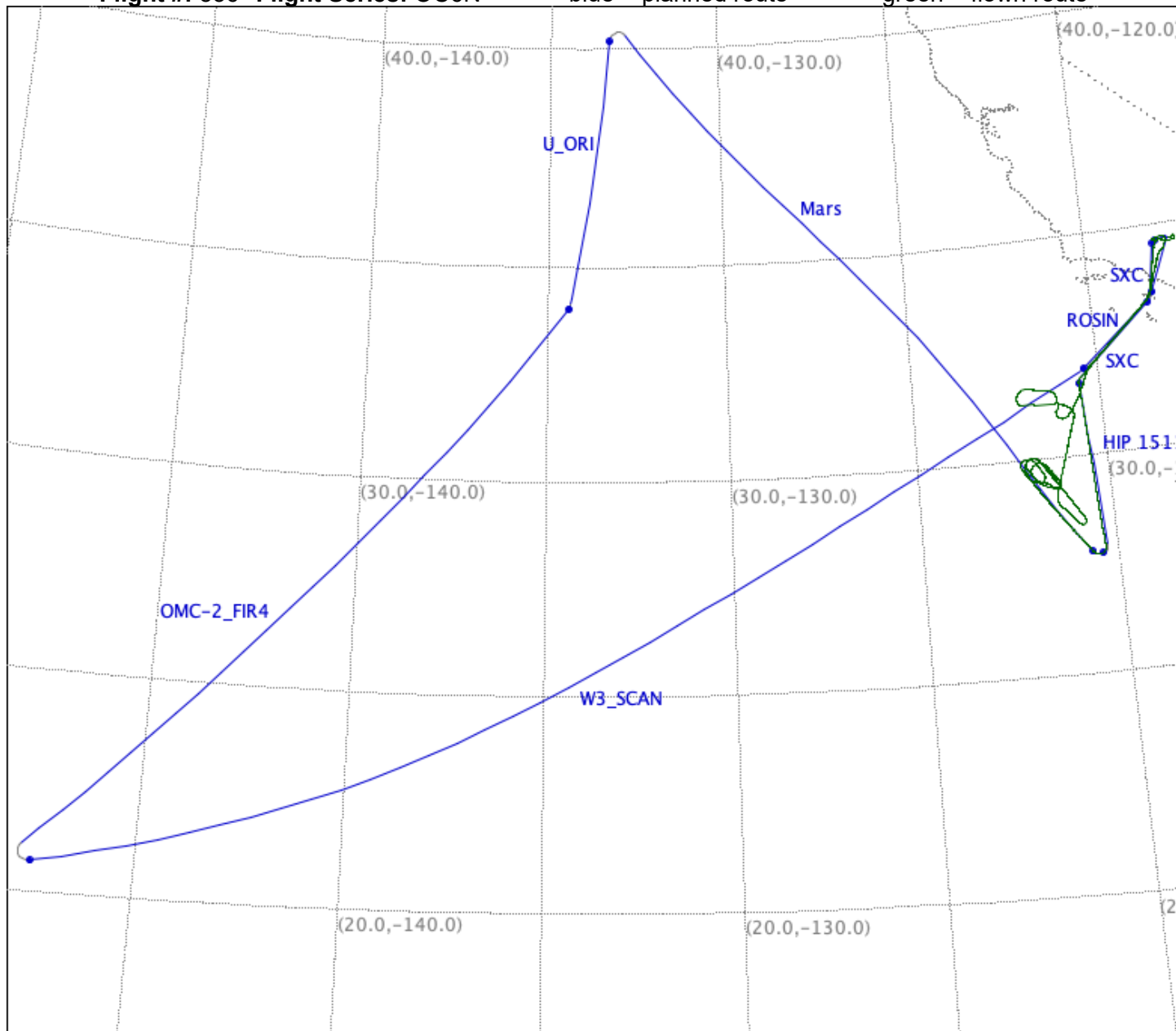
MISSION ID: 2018-12-11_GR_F536

Date: 2018-12-11 UT Instrument: GREAT

Flight #: 536 Flight Series: OC6N

blue = planned route

green = flown route



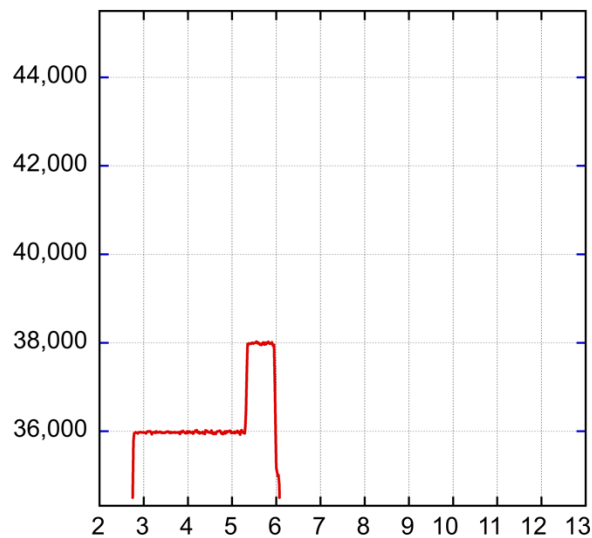
Flight notes:

Return to Palmdale base shortly after take-off. Air Traffic Control (ATC) would not allow us to fly our initial legs, including the one required to properly set up GREAT pointing for the rest of the 4G-HFA series.

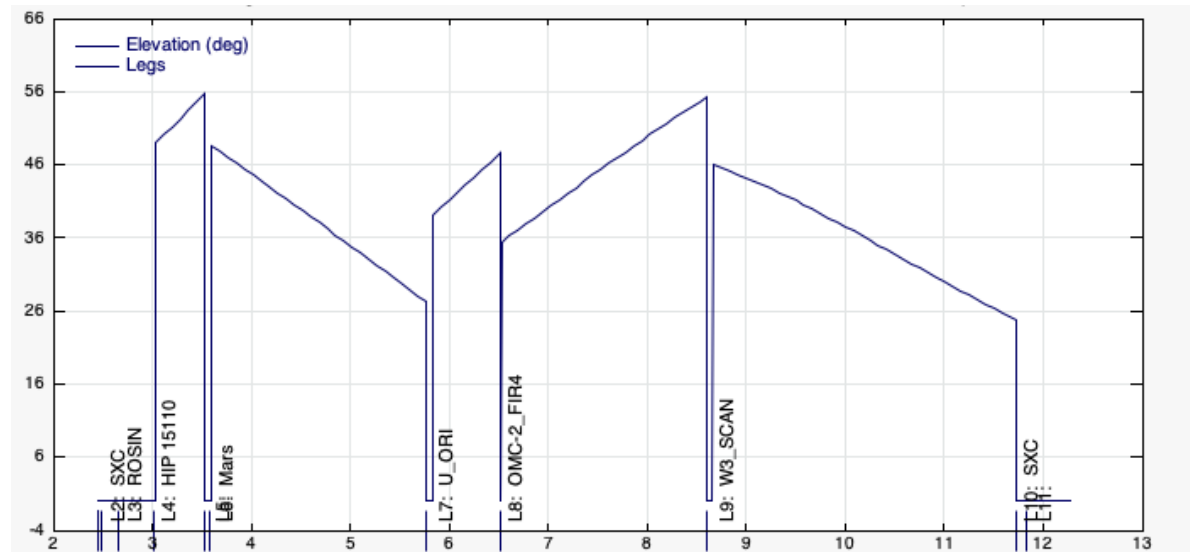
Flight 536 Mission ID 2018-12-11_GR_F536
 Palmdale to Palmdale Take off date UTC: 11-DEC-2018 Departure UTC: 02:23 Arrival UTC: 06:27 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 15110	03h14m54.09s	21d02m40.0s	3:02	30	
6	90_0008	Calibration	Mars	23h09m05.42s	-06d21m52.8s	3:02	130	Return to base – ATC would not allow us to fly this leg as planned.
7	06_0015	Neufeld	U_ORI	05h55m49.17s	20d10m30.7s	3:36	41	Leg not flown; returned early to base
8	06_0179	Caselli	OMC-2_FIR4	05h35m27.00s	-05d09m57.0s	5:50	124	Leg not flown; returned early to base
9	06_0020	Goldsmith	W3_SCAN	02h25m44.48s	62d06m11.7s	6:32	184	Leg not flown; returned early to base

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



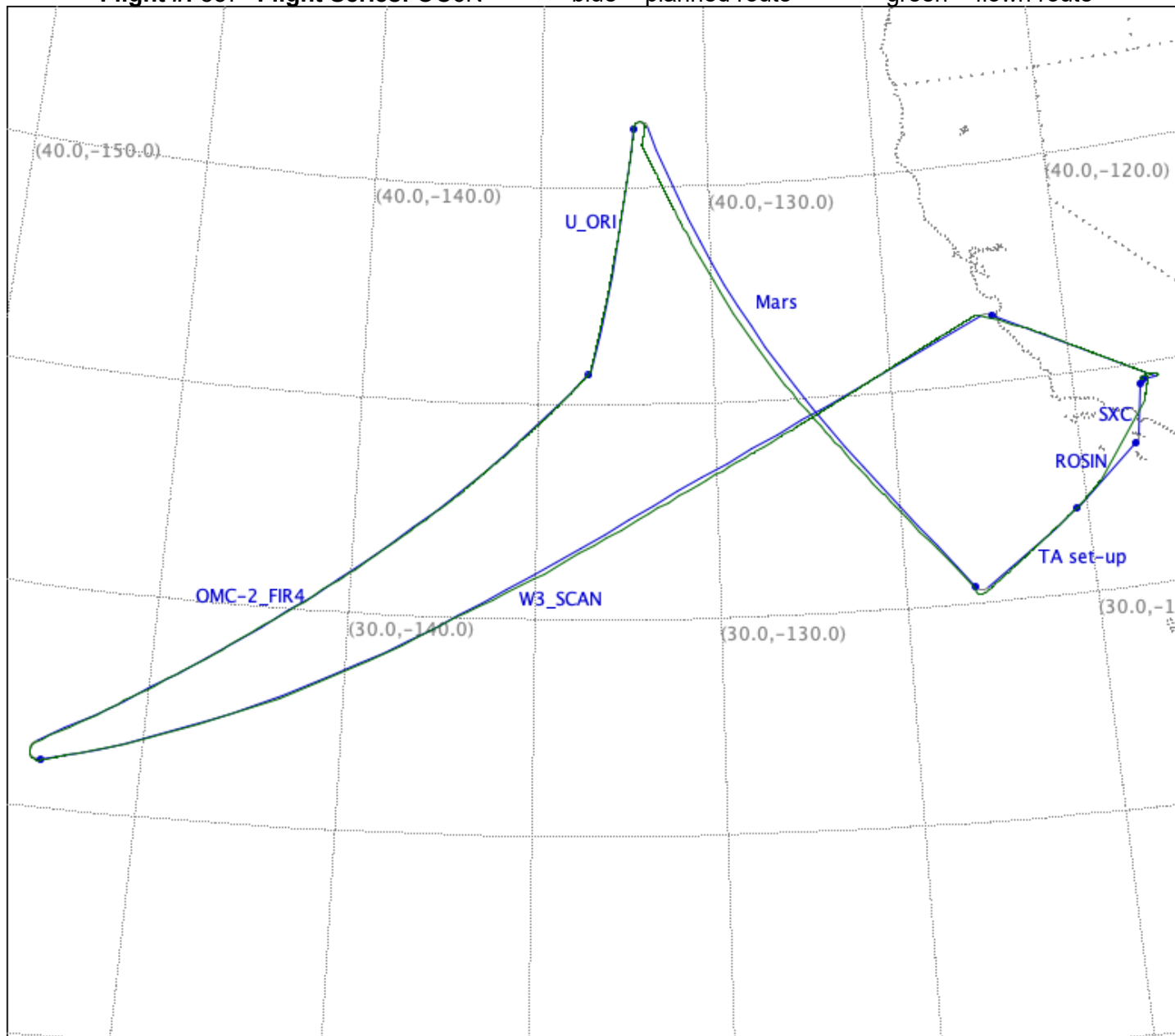
MISSION ID: 2018-12-12_GR_F537

Date: 2018-12-12 UT Instrument: GREAT

Flight #: 537 Flight Series: OC6N

blue = planned route

green = flown route

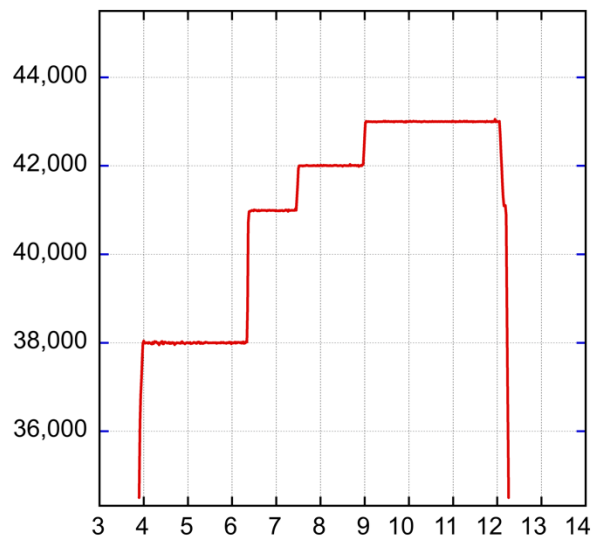


Flight notes: Significant turbulence early in flight.

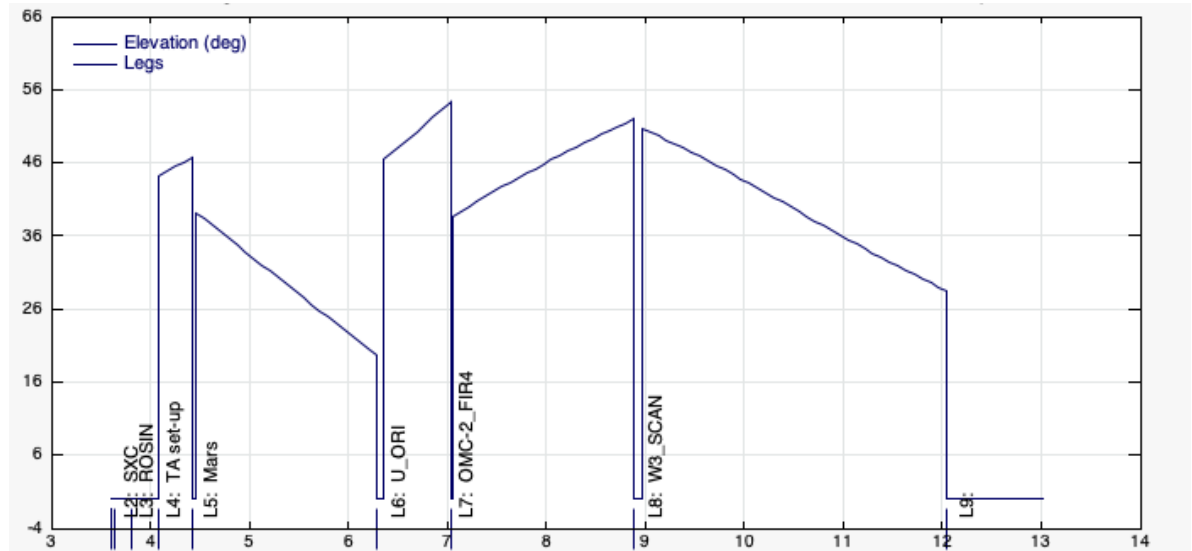
Flight 537 Mission ID 2018-12-12_GR_F537
 Palmdale to Palmdale Take off date UTC: 12-DEC-2018
 Departure UTC: 03:31 Arrival UTC: 12:37
 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 14168	03h02m42.34s	-07d41m07.8s	4:02	20	Heavy turbulence.
5	90_0008	Calibration	Mars	23h11m34.79s	-06d04m16.2s	4:25	110	Turbulence – partial data.
6	06_0015	Neufeld	U_ORI	05h55m49.17s	20d10m30.7s	6:18	42	Light turbulence.
7	06_0179	Caselli	OMC-2_FIR4	05h35m27.00s	-05d09m57.0s	7:00	127	
8	06_0020	Goldsmith	W3_SCAN	02h25m44.48s	62d06m11.7s	8:55	190	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



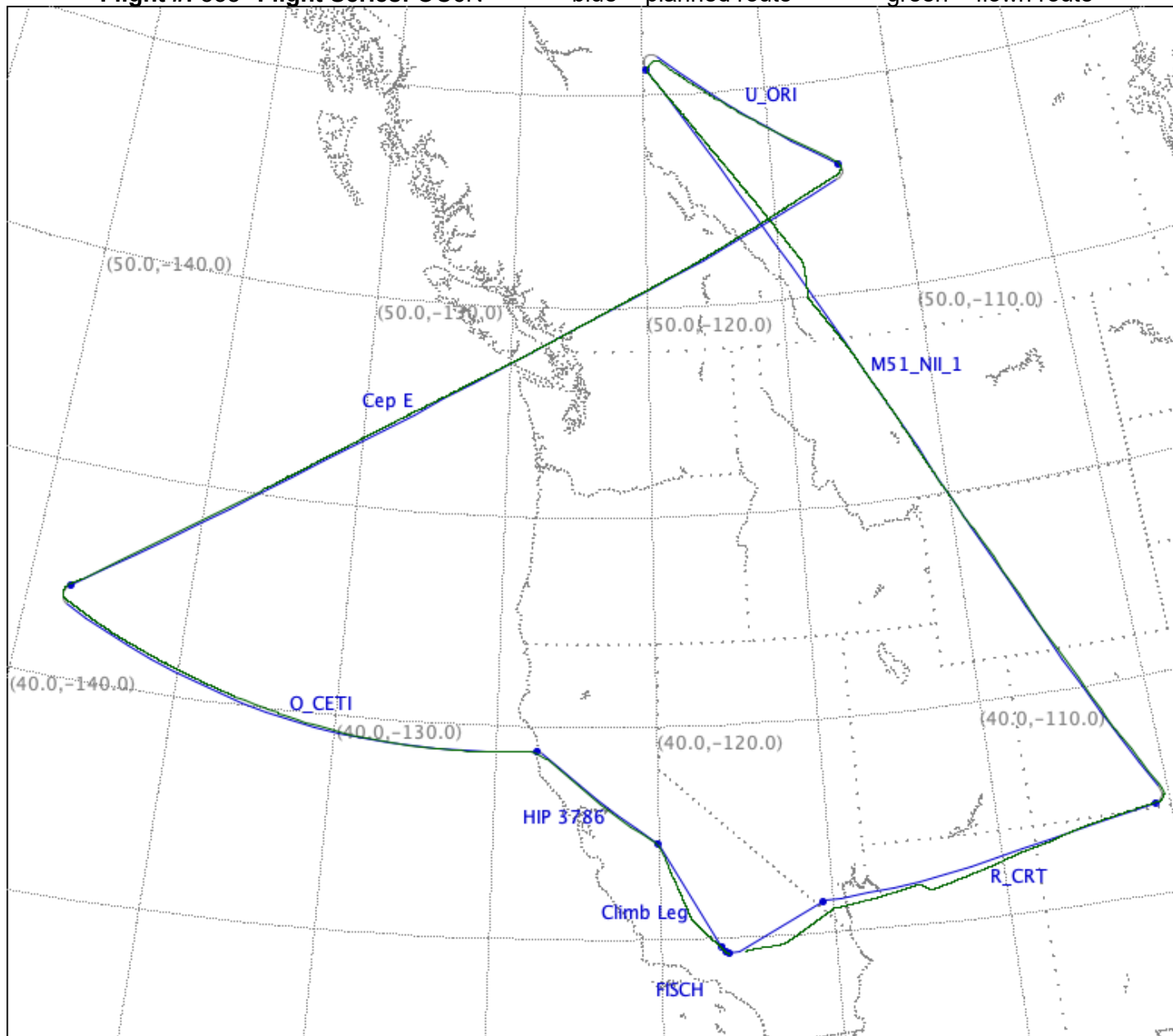
MISSION ID: 2018-12-13_GR_F538

Date: 2018-12-13 UT Instrument: GREAT

Flight #: 538 Flight Series: OC6N

blue = planned route

green = flown route

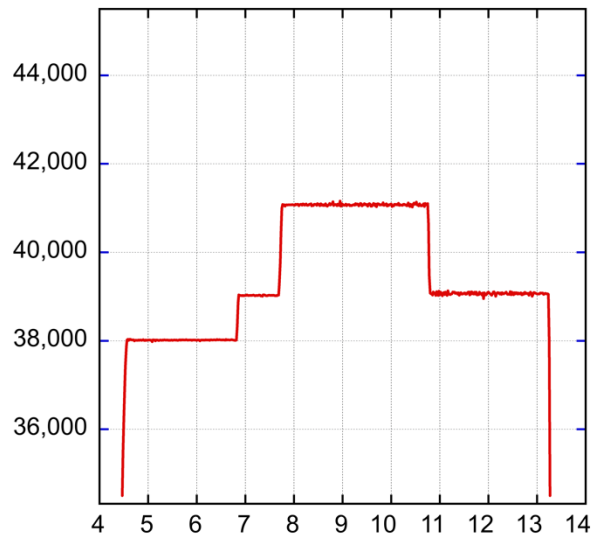


Flight notes:
Minor losses due to turbulence.

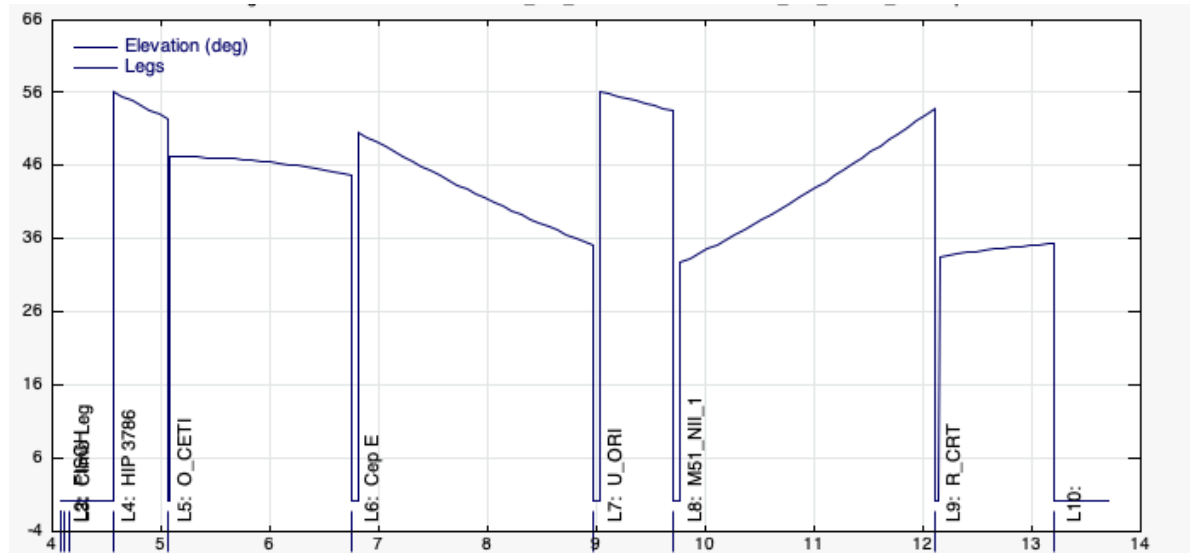
Flight 538 Mission ID 2018-12-13_GR_F538
 Palmdale to Palmdale Take off date UTC: 13-DEC-2018
 Departure UTC: 04:07 Arrival UTC: 13:41
 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 3786	00h48m40.94s	07d35m06.3s	4:34	30	
5	06_0015	Neufeld	O CETI	02h19m20.79s	-02d58m39.5s	5:05	100	
6	06_0145	Gusdorf	Cep E	23h03m12.78s	61d42m25.8s	6:48	130	Turbulence.
7	06_0015	Neufeld	U_ORI	05h55m49.17s	20d10m30.7s	9:02	40	Turbulence.
8	06_0028	Pineda	M51_NII	13h29m59.39s	47d11m19.4s	9:46	140	Turbulence.
9	06_0015	Neufeld	R_CRT	11h00m33.85s	-18d19m29.6s	12:09	63	Turbulence.

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



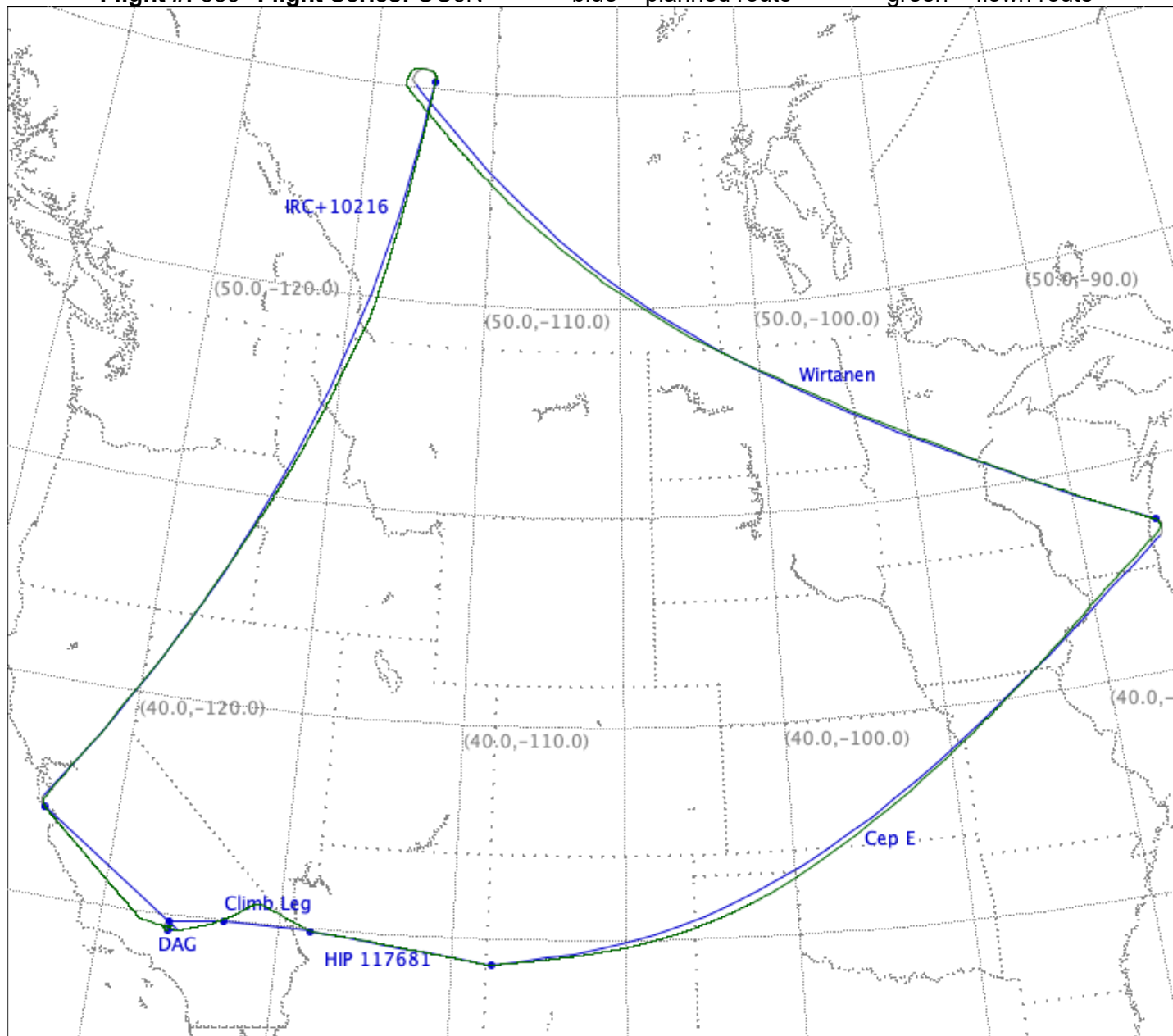
MISSION ID: 2018-12-14_GR_F539

Date: 2018-12-14 UT Instrument: GREAT

Flight #: 539 Flight Series: OC6N

blue = planned route

green = flown route

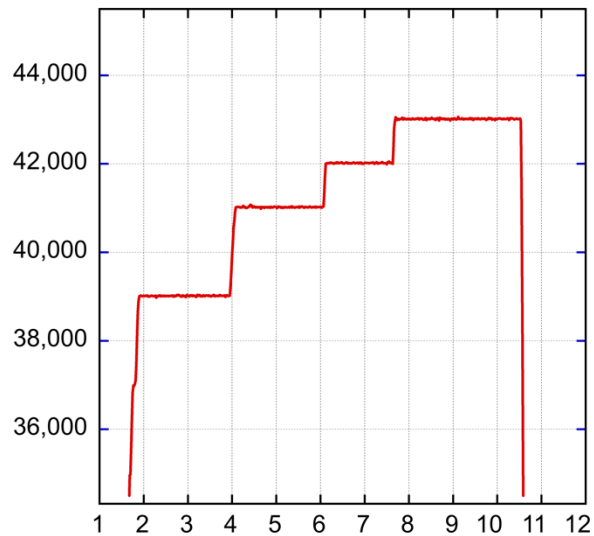


Flight notes:
No irregularities.

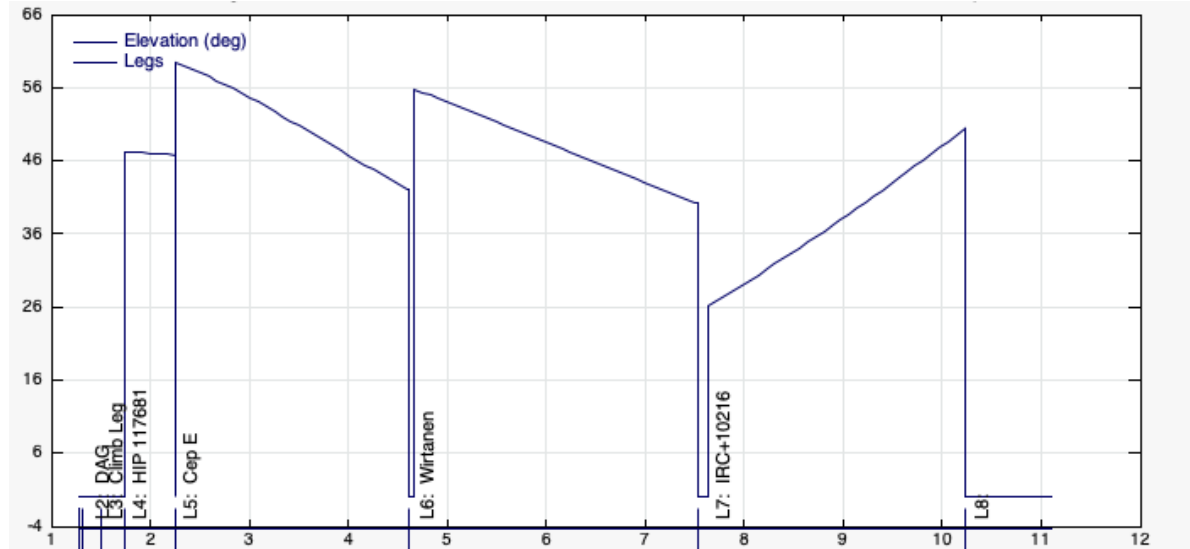
Flight 539 Mission ID 2018-12-14_GR_F539
 Palmdale to Palmdale Take off date UTC: 14-DEC-2018
 Departure UTC: 01:16 Arrival UTC: 11:00
 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 117681	23h51m57.64s	77d35m57.7s	1:45	30	
5	06_0145	Gusdorf	Cep E	23h03m12.78s	61d42m25.8s	2:15	141	
6	75_0035	Discretionary	Wirtanen	03h41m02.41s	13d34m08.1s	4:40	172	
7	06_0090	McGuire	IRC+10216	09h47m57.41s	13d16m43.6s	7:39	155	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

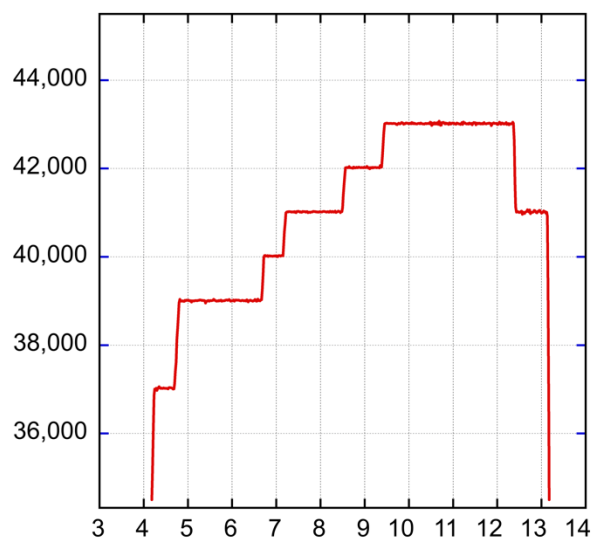


Flight notes: No irregularities.

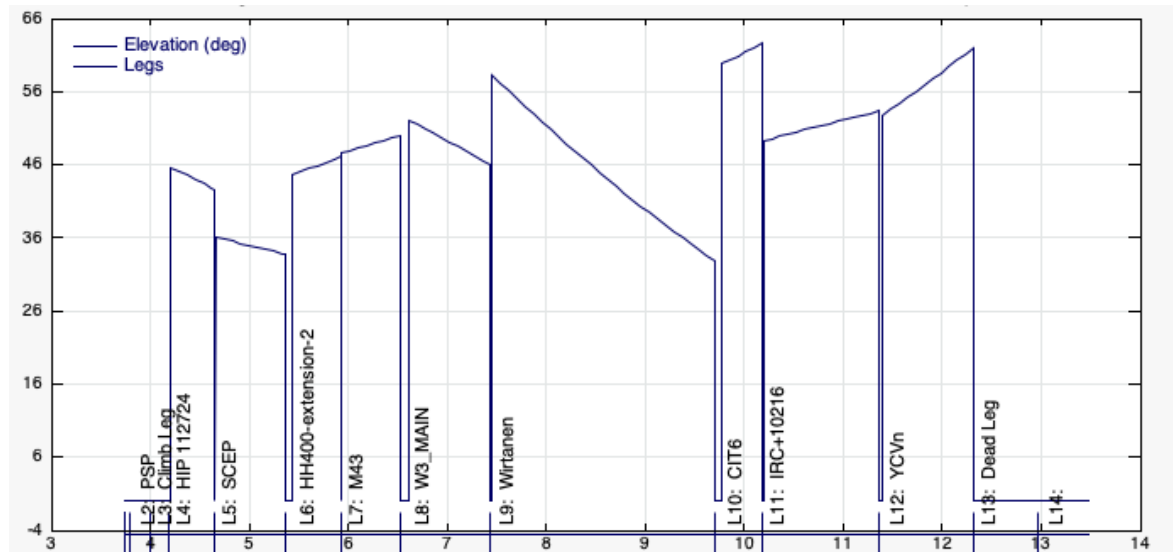
Flight 540 Mission ID 2018-12-17_GR_F540
 Palmdale to Palmdale Take off date UTC: 17-DEC-2018
 Departure UTC: 03:46 Arrival UTC: 13:33 Consortium flight 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 112724	22h49m40.35s	66d12m01.9s	4:12	27	
5	83_0625	GREAT Consortium	SCEP	21h35m12.82s	78d37m28.2s	4:40	42	
6	83_0632	GREAT Consortium	HH400-extension	05h35m55.95s	-05d40m55.5s	5:26	30	
7	83_0629	GREAT Consortium	M43	05h35m31.36s	-05d16m02.6s	5:56	35	
8	83_0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	6:36	49	
9	83_0627	GREAT Consortium	Wirtanen	04h08m24.01s	25d12m21.5s	7:27	135	
10	83_0625	GREAT Consortium	CIT6	10h16m02.28s	30d34m19.0s	9:46	25	
11	83_0625	GREAT Consortium	IRC+10216	09h47m57.41s	13d16m43.6s	10:12	70	
12	83_0625	GREAT Consortium	YCVn	12h45m07.83s	45d26m24.9s	11:24	55	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



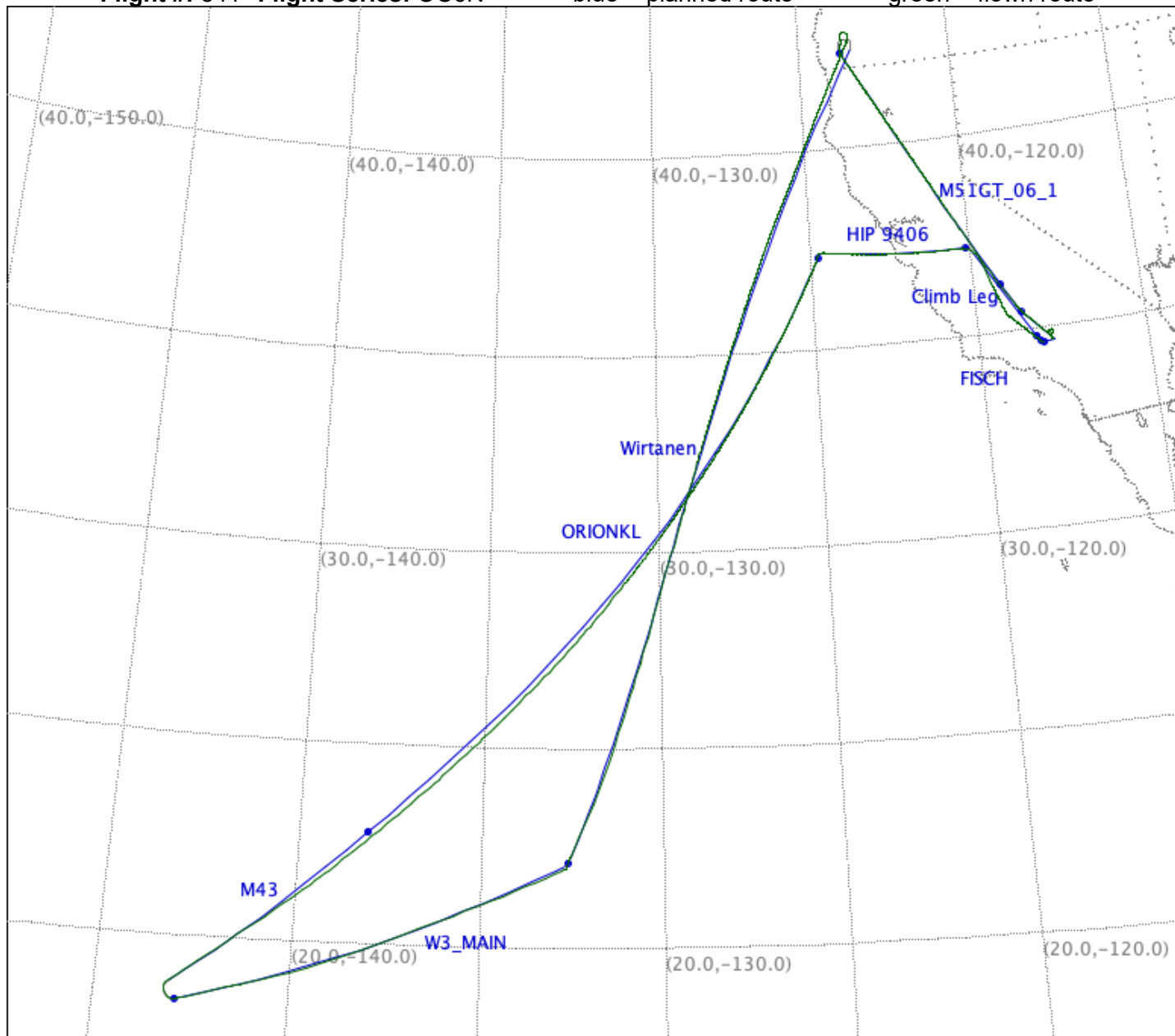
MISSION ID: 2018-12-18_GR_F541

Date: 2018-12-18 UT Instrument: GREAT

Flight #: 541 Flight Series: OC6N

blue = planned route

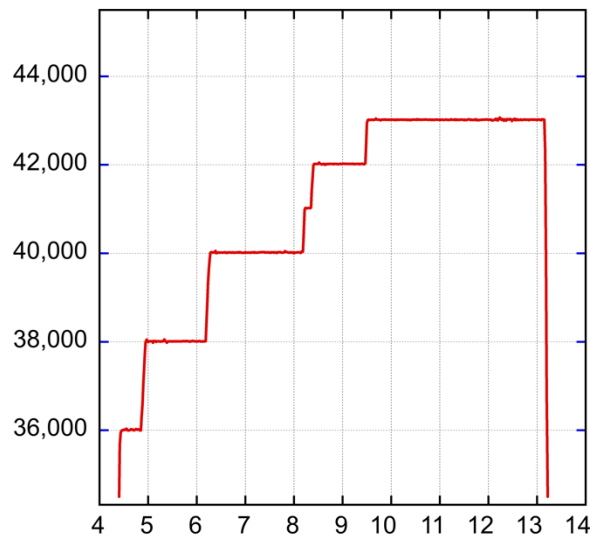
green = flown route



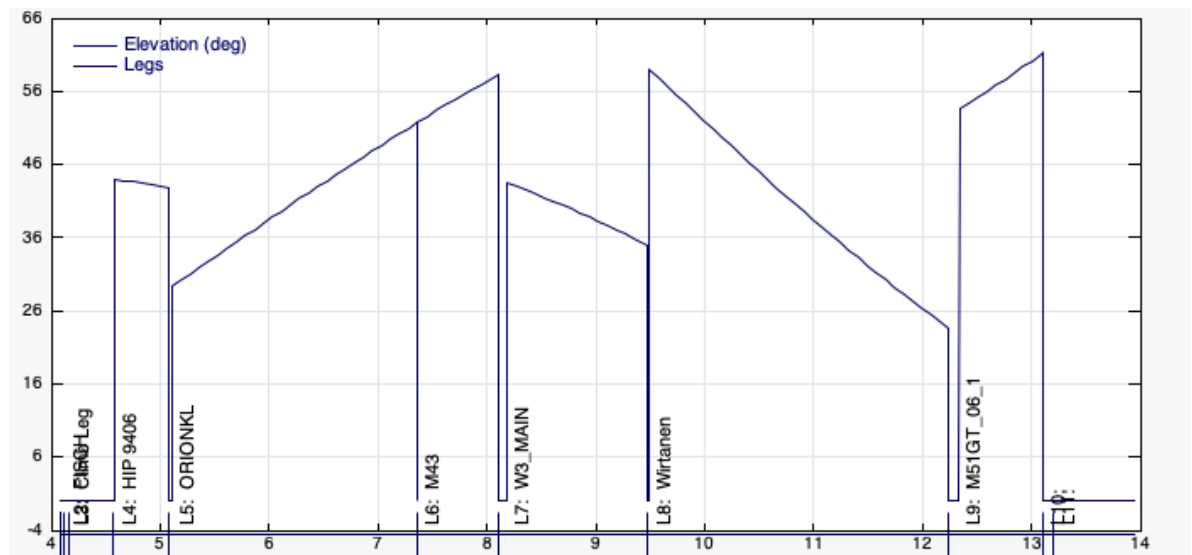
Flight notes:
No irregularities.

Flight 541		Mission ID	2018-12-18_GR_F541		Departure UTC:		Arrival UTC:		Consortium flight	
Palmdale to Palmdale			Take off date UTC: 18-DEC-2018		04:04		13:30		4G-HFA	
Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes		
4			HIP 9406	02h00m49.46s	-08d28m18.2s	4:35	30			
5	83_0630	GREAT Consortium	ORIONKL	05h35m14.30s	-05d22m33.7s	5:07	135			
6	83_0629	GREAT Consortium	M43	05h35m31.36s	-05d16m02.6s	7:22	45			
7	83_0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	8:11	77			
8	83_0627	GREAT Consortium	Wirtanen	04h19m09.76s	29d09m27.8s	9:29	165			
9	83_0631	GREAT Consortium	M51GT_06_1	13h29m51.43s	47d12m04.0s	12:20	46			

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



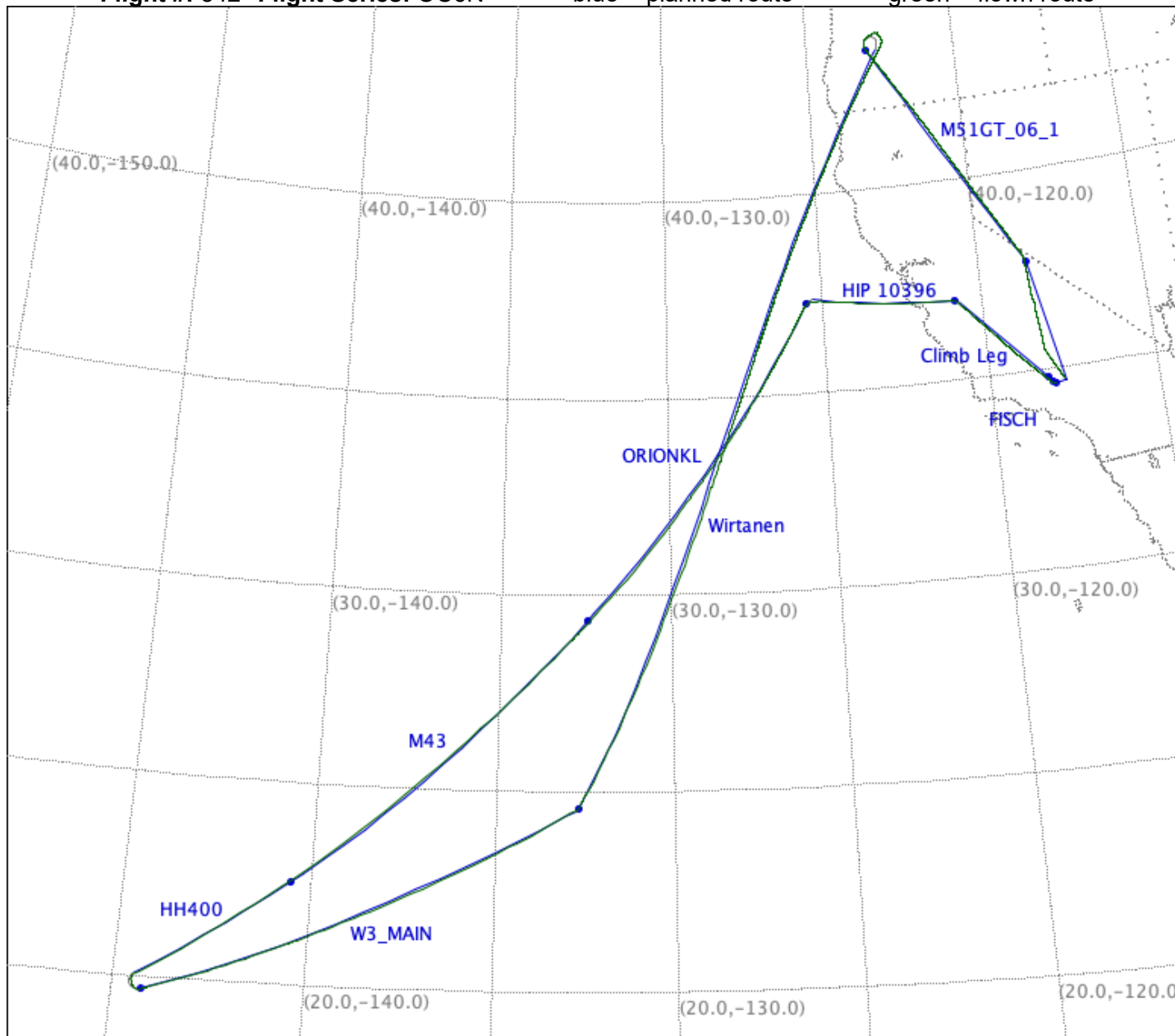
MISSION ID: 2018-12-19_GR_F542

Date: 2018-12-19 UT Instrument: GREAT

Flight #: 542 Flight Series: OC6N

blue = planned route

green = flown route

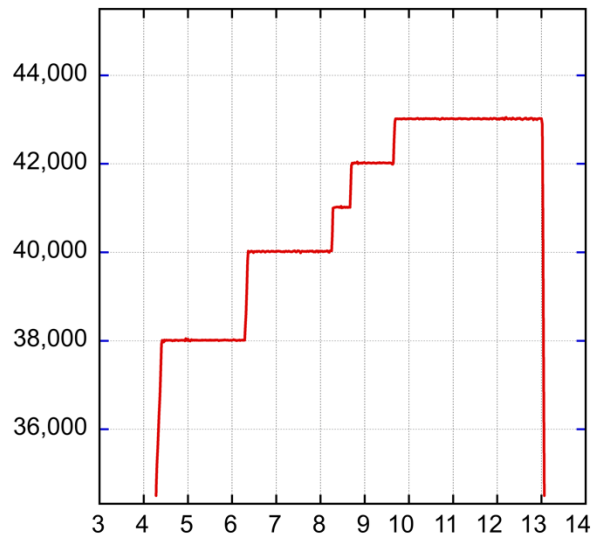


Flight notes: No irregularities.

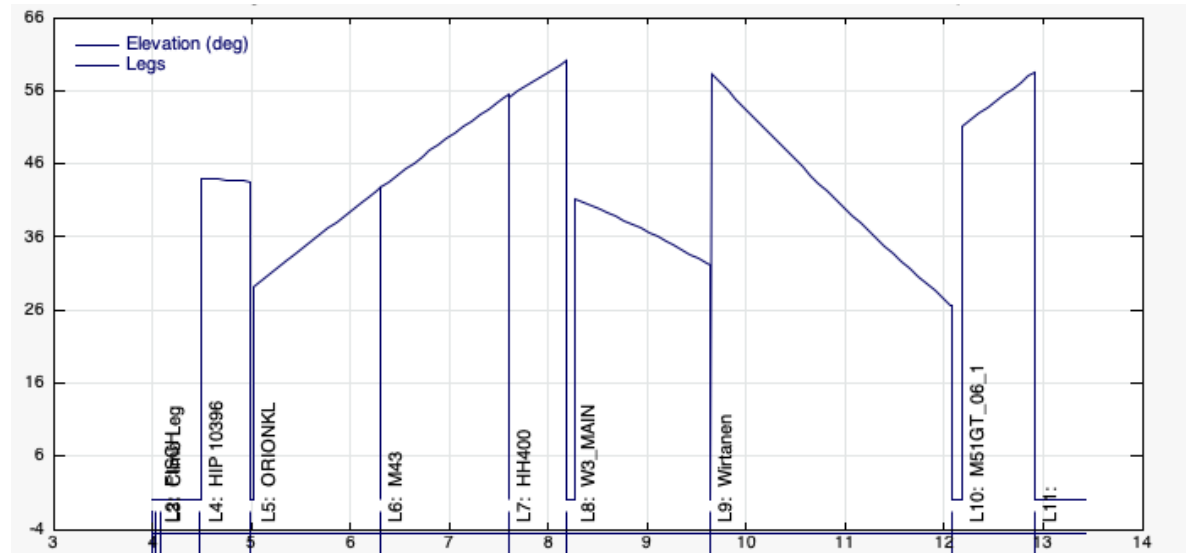
Flight 542 Mission ID 2018-12-19_GR_F542
 Palmdale to Palmdale Take off date UTC: 19-DEC-2018
 Departure UTC: 03:55 Arrival UTC: 13:27 Consortium flight 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 10396	02h13m53.55s	-09d03m52.7s	4:29	30	
5	83_0630	GREAT Consortium	ORIONKL	05h35m14.30s	-05d22m33.7s	5:01	77	
6	83_0629	GREAT Consortium	M43	05h35m31.36s	-05d16m02.6s	6:18	78	
7	83_0632	GREAT Consortium	HH400-extension	05h35m55.95s	-05d40m55.5s	7:36	35	
8	83_0618	GREAT Consortium	W3_MAIN	02h25m28.10s	62d05m40.0s	8:16	82	
9	83_0627	GREAT Consortium	Wirtanen	04h29m40.46s	32d40m13.3s	9:39	146	
10	83_0631	GREAT Consortium	M51GT_06_1	13h29m51.43s	47d12m04.0s	12:11	44	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



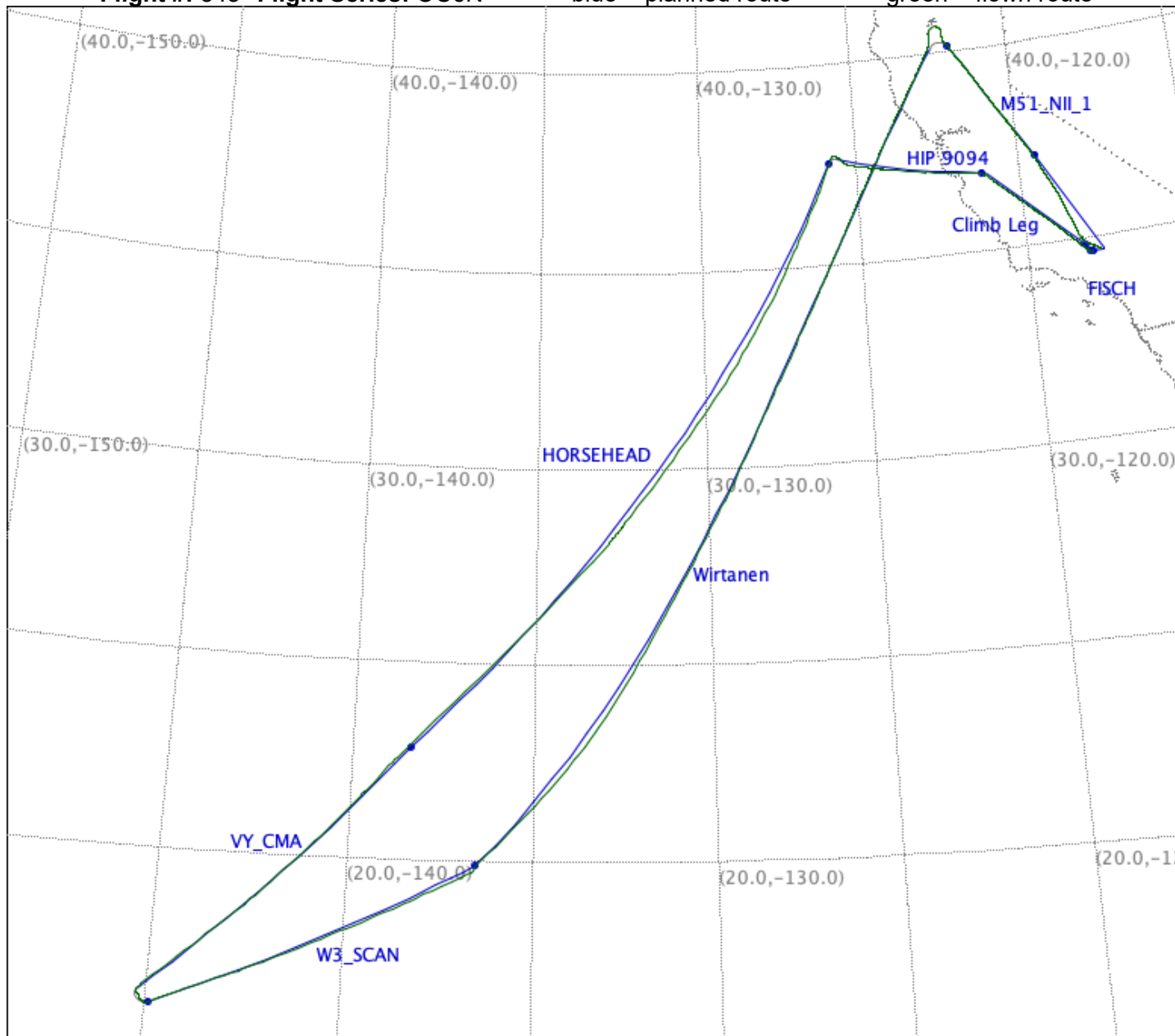
MISSION ID: 2018-12-20_GR_F543

Date: 2018-12-20 UT Instrument: GREAT

Flight #: 543 Flight Series: OC6N

blue = planned route

green = flown route

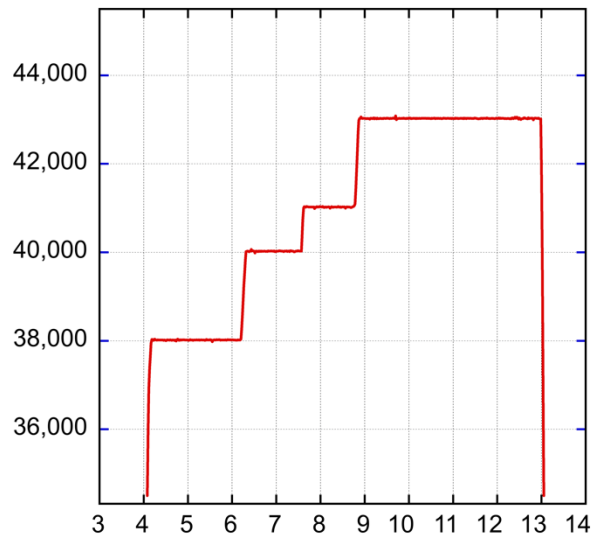


Flight notes:
No irregularities.

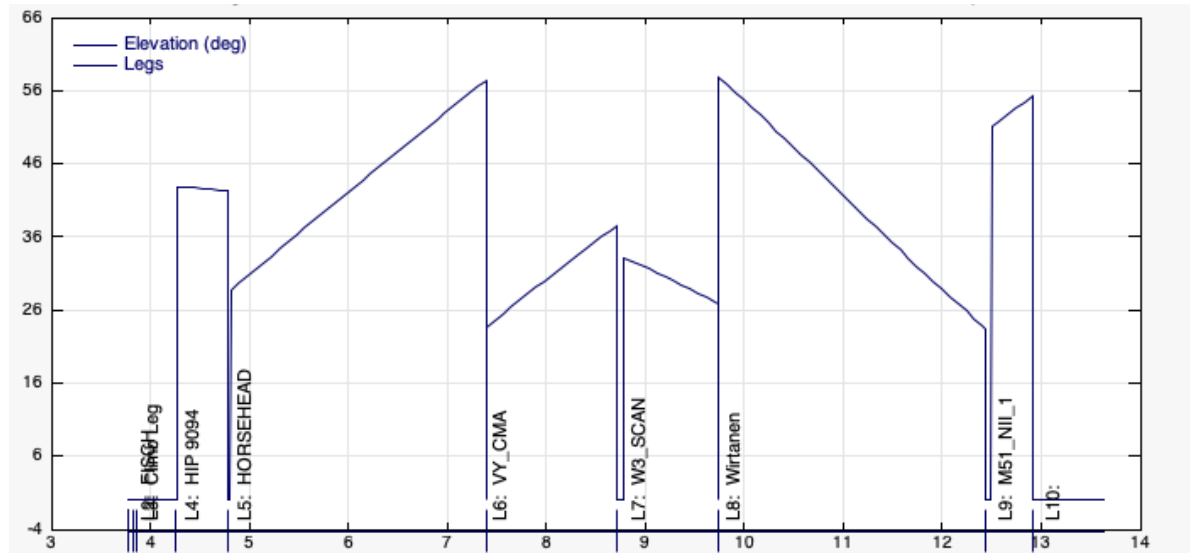
Flight 543 Mission ID 2018-12-20_GR_F543
 Palmdale to Palmdale Take off date UTC: 20-DEC-2018
 Departure UTC: 03:42 Arrival UTC: 13:30
 4G-HFA

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 9094	01h57m09.61s	-10d14m32.7s	4:16	30	
5	76_0006	Yorke	HORSEHEAD	05h40m54.27s	-02d28m00.0s	4:48	155	High water vapor.
6	06_0090	McGuire	VY_CMA	07h22m58.33s	-25d46m03.2s	7:23	79	
7	06_0020	Goldsmith	W3_SCAN	02h25m44.48s	62d06m11.7s	8:47	57	
8	75_0035	Discretionary	Wirtanen	04h40m43.06s	36d00m20.8s	9:44	162	
9	06_0028	Pineda	M51_NII_1	13h29m59.39s	47d11m19.4s	12:30	25	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



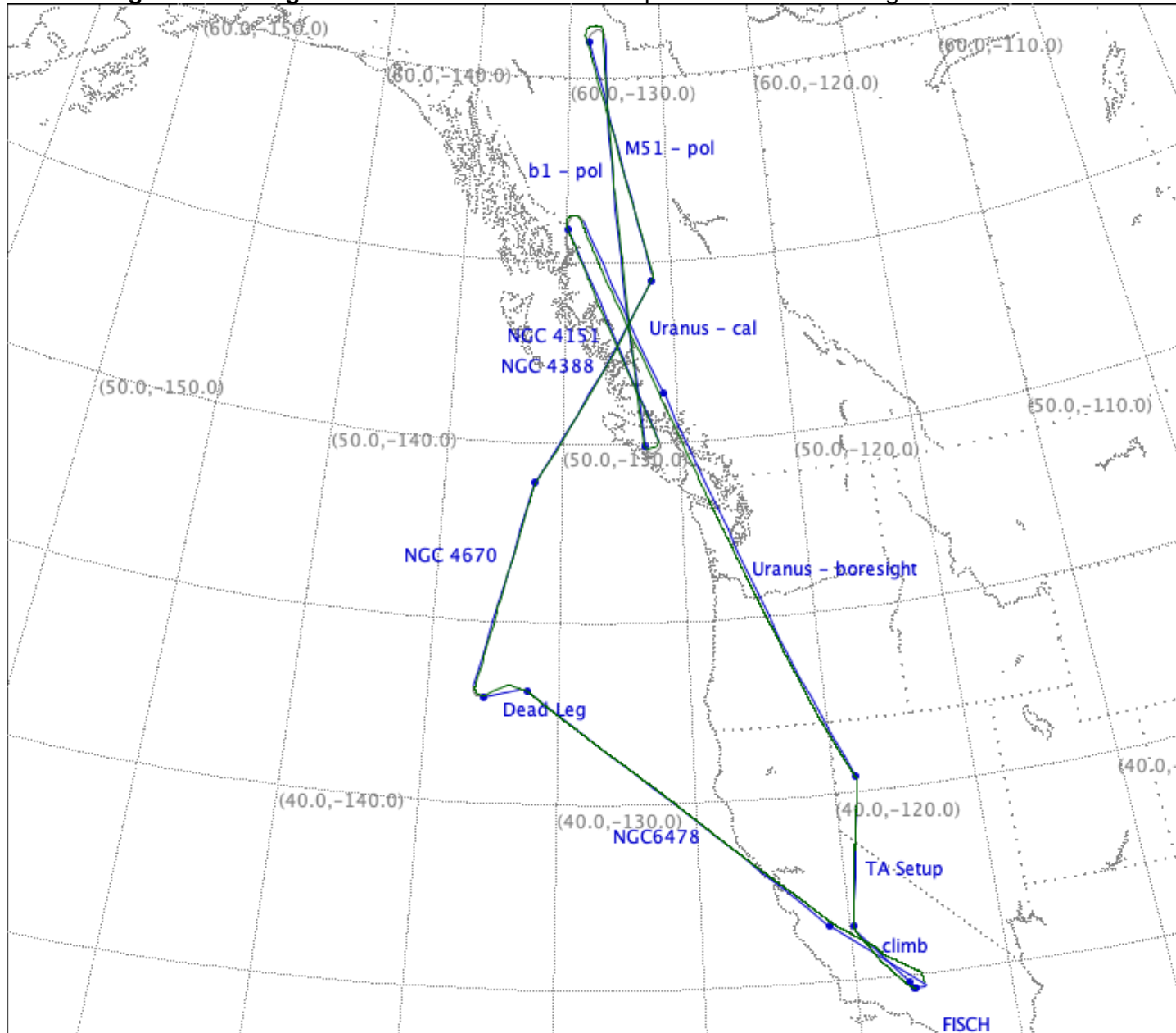
MISSION ID: 2019-02-12_HA_F545

Date: 2019-02-12 UT Instrument: HAWC+

Flight #: 545 Flight Series: OC6T

blue = planned route

green = flown route

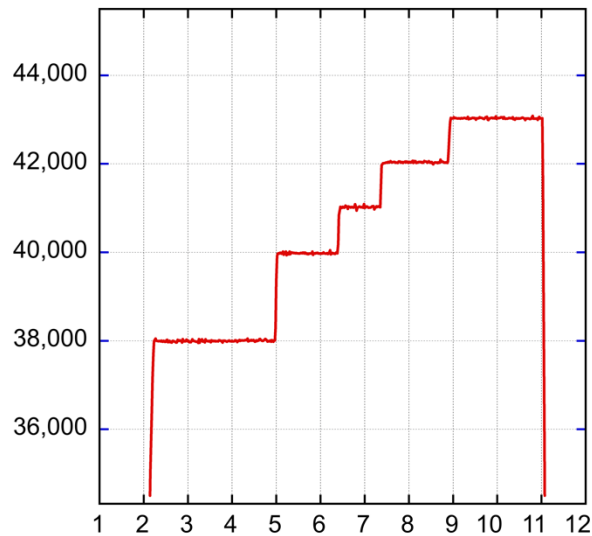


Flight notes: No irregularities.

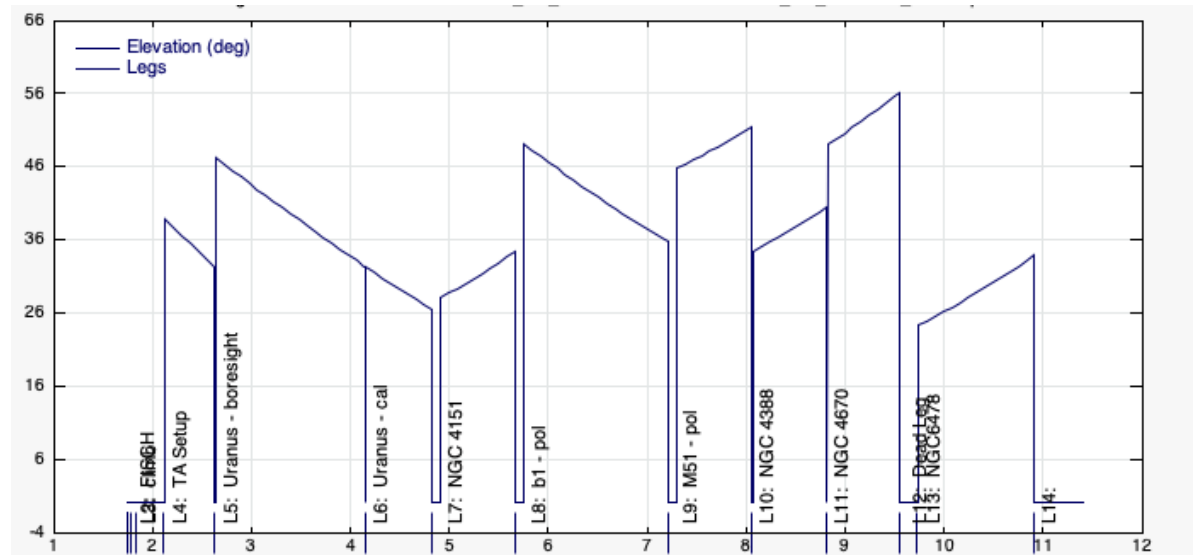
Flight 545 Mission ID 2019-02-12_HA_F545
 Palmdale to Palmdale Take off date UTC: 12-FEB-2019
 Departure UTC: 01:48 Arrival UTC: 11:25

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 117718	23h52m29.28s	19d07m12.4s	2:07	30	
5	90_0086	Calibration	Uranus Barycenter	01h48m11.30s	10d36m20.3s	2:38	91	
6	90_0086	Calibration	Uranus Barycenter	01h48m11.87s	10d36m23.6s	4:09	40	
7	06_0066	Lopez-Rodriguez	NGC 4151	12h10m32.57s	39d24m20.9s	4:55	45	
8	06_0184	Sadavoy	b1_pol1	03h33m14.30s	31d07m07.5s	5:45	87	
9	76_0003	Yorke	M51	13h29m52.70s	47d11m42.9s	7:18	45	
10	06_0066	Lopez-Rodriguez	NGC 4388	12h25m46.82s	12d39m43.4s	8:04	45	
11	06_0222	Wiklind	NGC 4670	12h45m17.07s	27d07m31.5s	8:49	43	
13	76_0007	Yorke	NGC6478	17h48m38.35s	51d09m26.1s	9:44	70	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



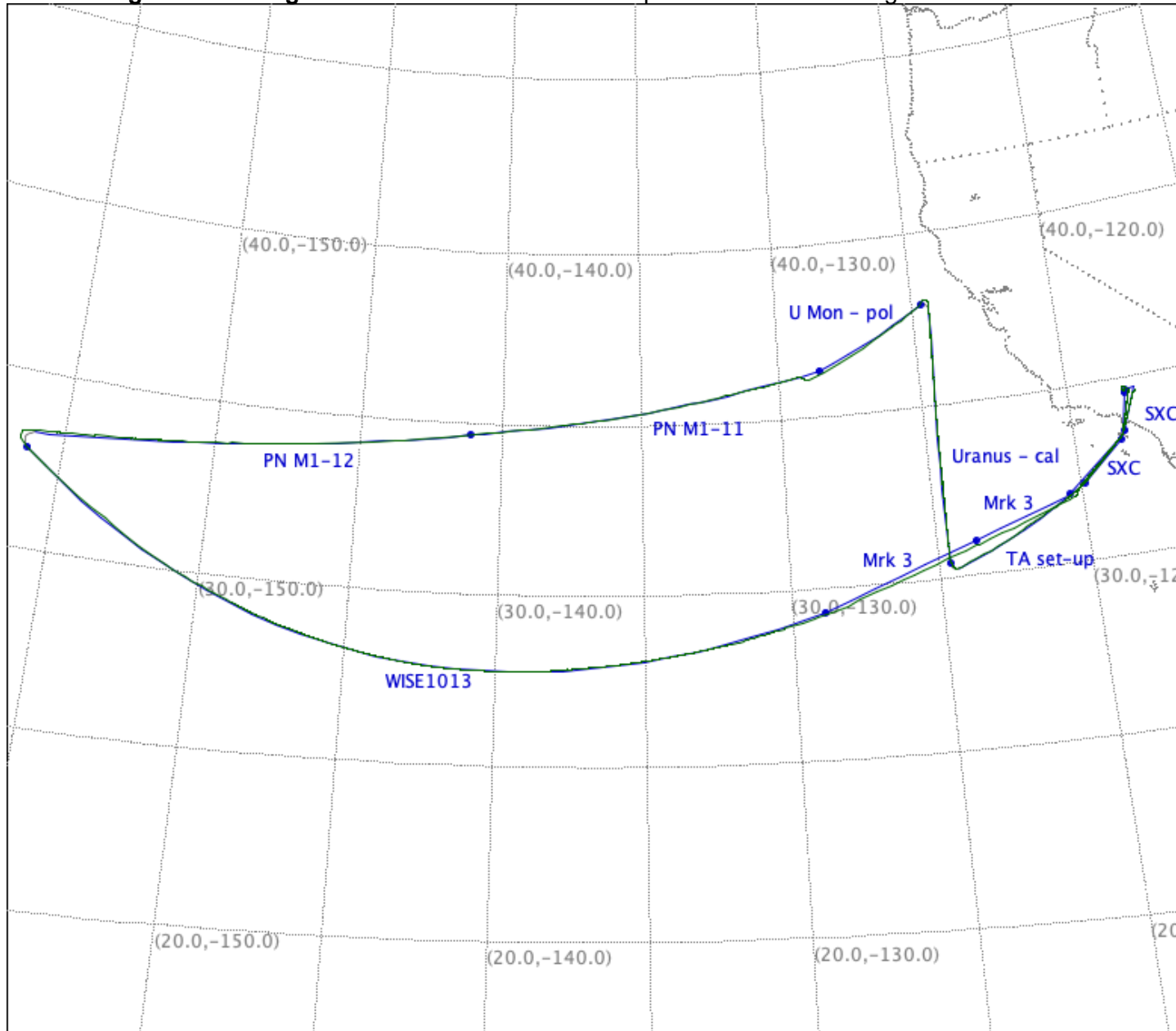
MISSION ID: 2019-02-13_HA_F546

Date: 2019-02-13 UT Instrument: HAWC+

Flight #: 546 Flight Series: OC6T

blue = planned route

green = flown route

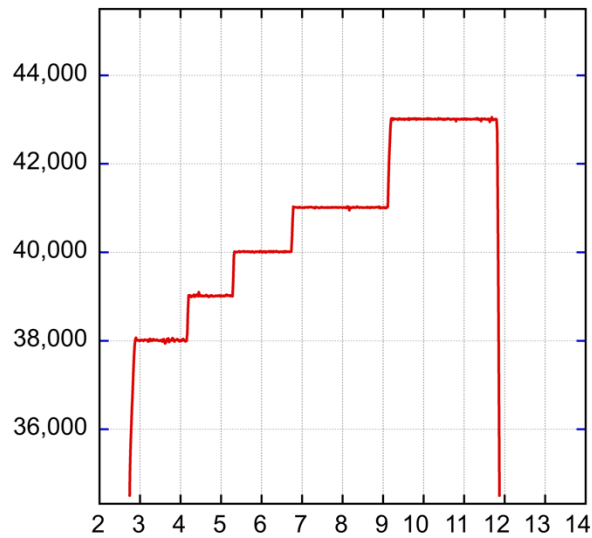


Flight notes: Clouds on first two legs.

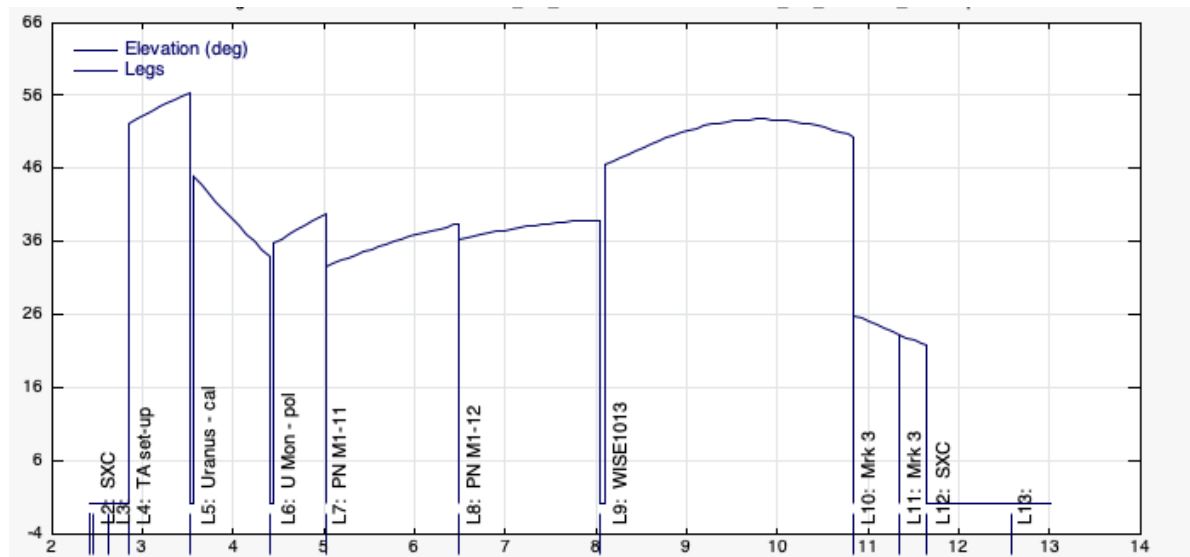
Flight 546 Mission ID 2019-02-13_HA_F546
 Palmdale to Palmdale Take off date UTC: 13-FEB-2019
 Departure UTC: 02:19 Arrival UTC: 12:13

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 26311	05h36m12.81s	-01d12m06.9s	2:53	40	
5	90_0082	Calibration	Uranus	01h48m18.54s	10d37m02.7s	3:35	50	Not observed; clouds
6	06_0031	Jones	U Mon	07h30m47.47s	-09d46m36.8s	4:28	34	Clouds led to loss of first 25% of leg.
7	06_0237	Cami	PN M1-11	07h11m16.69s	-19d51m02.5s	5:03	88	
8	06_0237	Cami	PN M1-12	07h19m21.47s	-21d43m55.4s	6:31	93	
9	06_0029	Toba	WISE1013	10h13m26.24s	61d12m19.8s	8:08	164	
10	06_0066	Lopez-Rodriguez	Mrk 3	06h15m36.46s	71d02m15.2s	10:52	30	
11	06_0066	Lopez-Rodriguez	Mrk 3	06h15m36.46s	71d02m15.2s	11:22	18	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



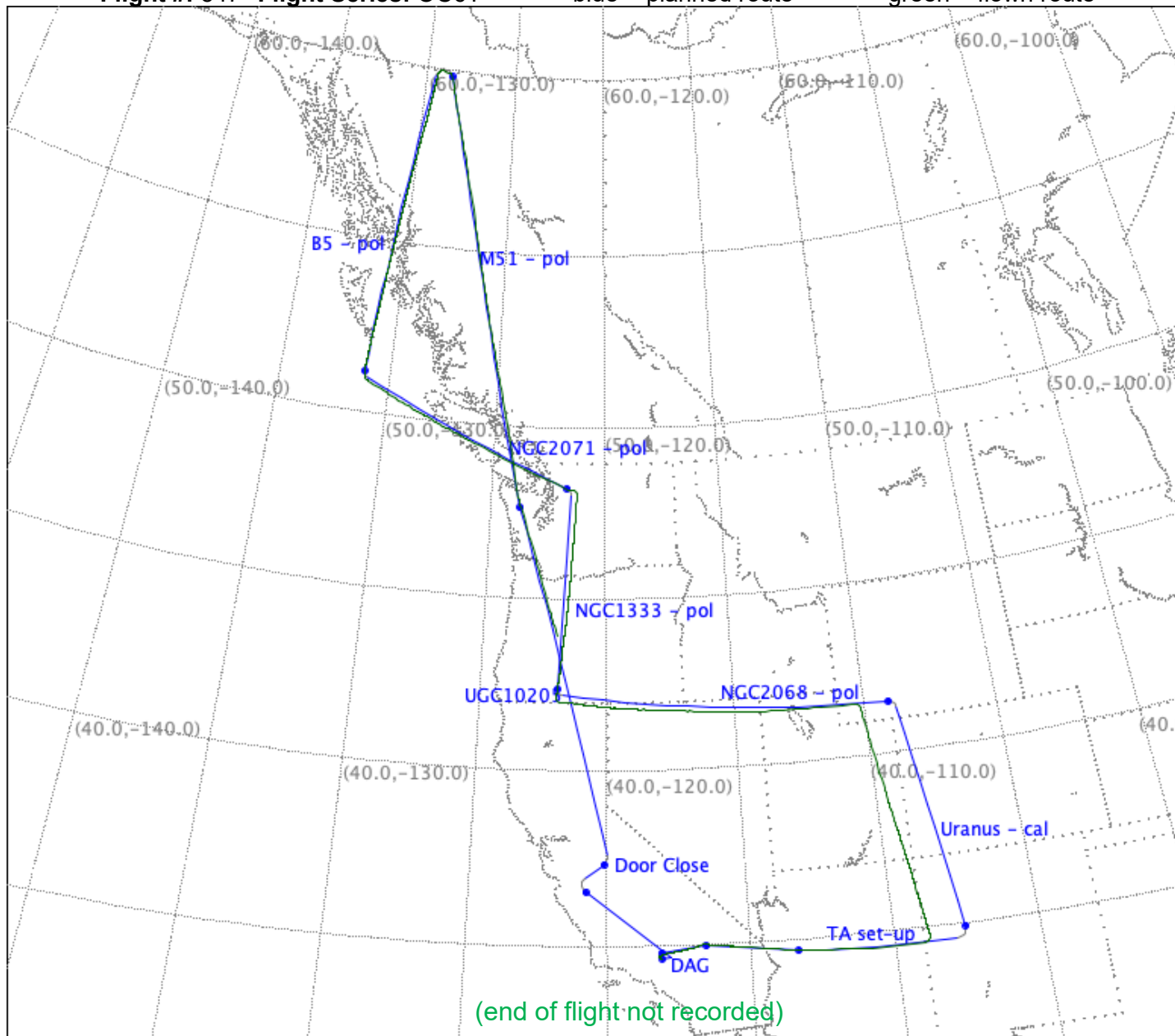
MISSION ID: 2019-02-20_HA_F547

Date: 2019-02-20 UT Instrument: HAWC+

Flight #: 547 Flight Series: OC6T

blue = planned route

green = flown route

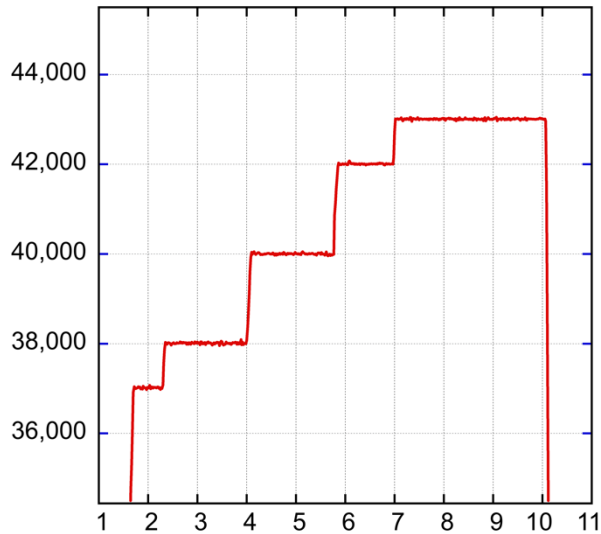


Flight notes: Late departure but no loss of science data.

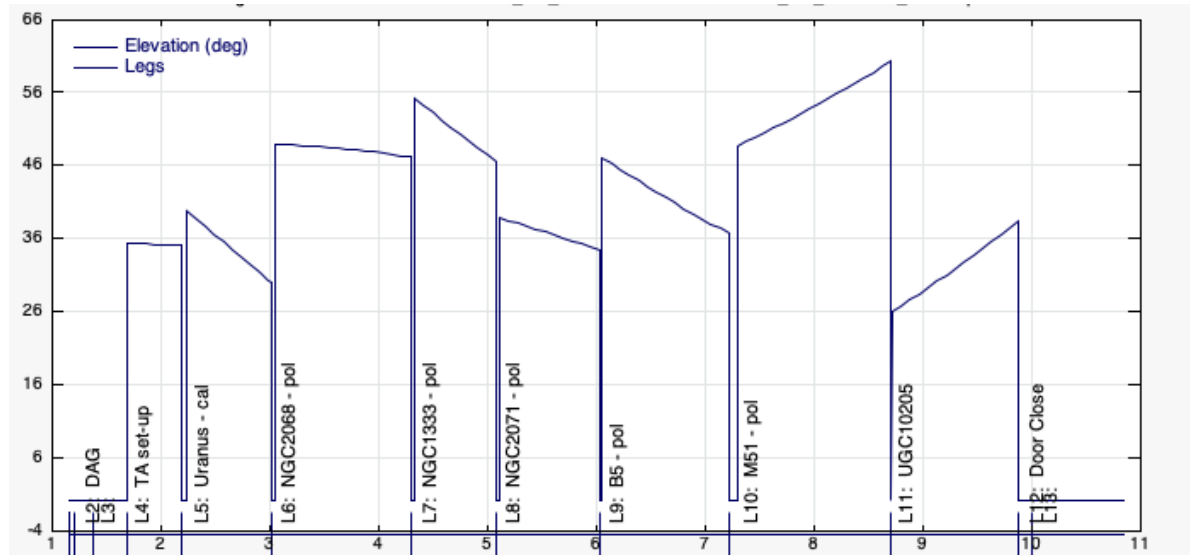
Flight 547 Mission ID 2019-02-20_HA_F547
 Palmdale to Palmdale Take off date UTC: 20-FEB-2019
 Departure UTC: 01:18 Arrival UTC: 10:29

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 11767	02h31m50.79s	89d15m50.8s	1:42	30	
5	90_0082	Calibration	Uranus	01h49m11.46s	10d42m10.9s	2:15	46	
6	06_0119	Stephens	NGC2068_F1	05h46m28.76s	-00d00m39.4s	3:04	75	
7	06_0099	Santos	NGC1333	03h29m09.70s	31d22m10.0s	4:21	45	
8	06_0119	Stephens	NGC2071_F1	05h47m09.29s	00d20m48.5s	5:07	55	
9	06_0013	Clemens	B5 E	03h47m42.99s	32d52m34.3s	6:04	70	
10	76_0003	Yorke	M51	13h29m52.70s	47d11m42.9s	7:19	85	Vignetting due to upper telescope door near end.
11	76_0007	Yorke	UGC10205	16h06m40.18s	30d05m56.7s	8:44	70	Telescope control software crash in middle of leg led to loss of data collection time

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



MISSION ID: 2019-02-27_FI_F548

Date: 2019-02-27 UT Instrument: FIFI-LS

Flight #: 548 Flight Series: OC6U

blue = planned route

green = flown route

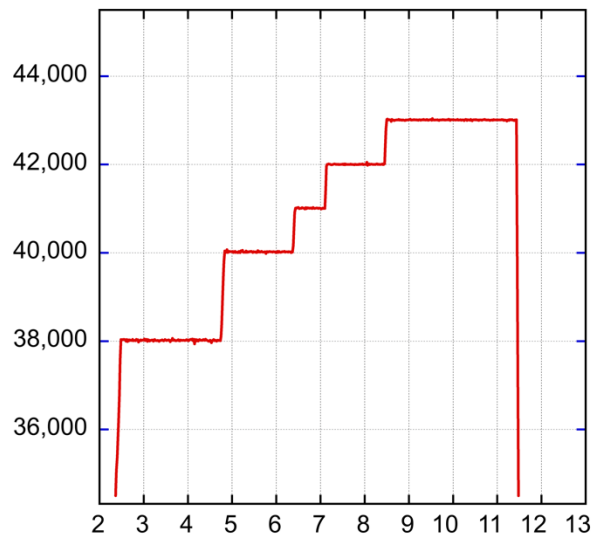


Flight notes: No irregularities.

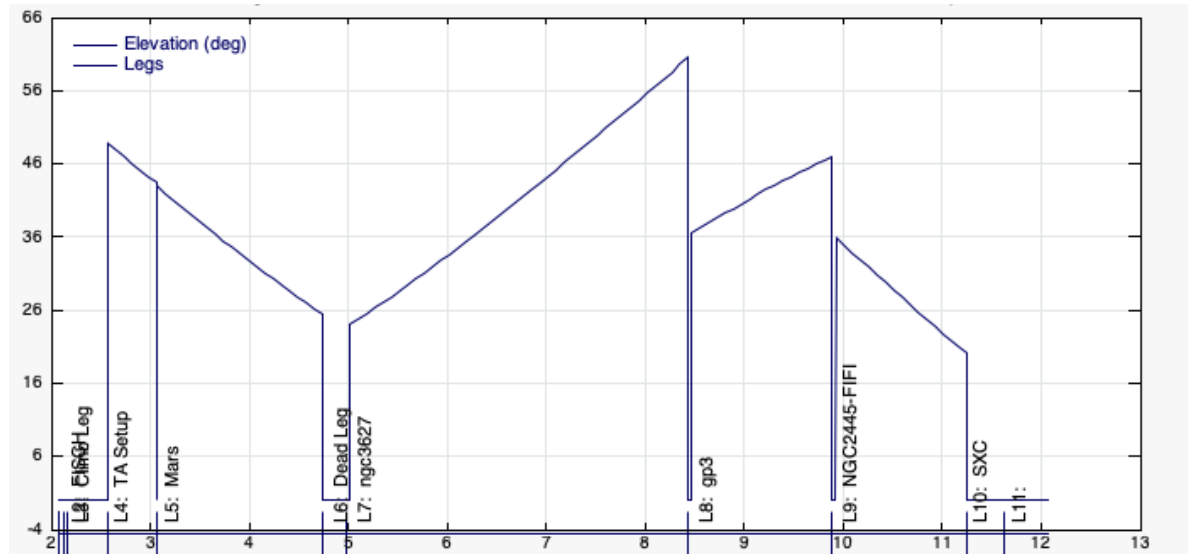
Flight 548 Mission ID 2019-02-27_FI_F548
 Palmdale to Palmdale Take off date UTC: 27-FEB-2019
 Departure UTC: 01:57 Arrival UTC: 11:48

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 12828	02h44m56.54s	10d06m50.9s	2:34	30	
5	90_0032	Calibration	Mars	02h22m54.55s	14d52m32.0s	3:04	100.3	Los altitude (38k ft) but low water vapor.
7	70_0608	GTO	ngc3627	11h20m15.03s	12d59m28.6s	5:00	205	
8	06_0239	Malhotra	gp3	13h59m50.91s	57d26m22.9s	8:28	85	
9	06_0032	Fadda	NGC2445	07h46m54.00s	39d00m53.7s	9:55	79	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



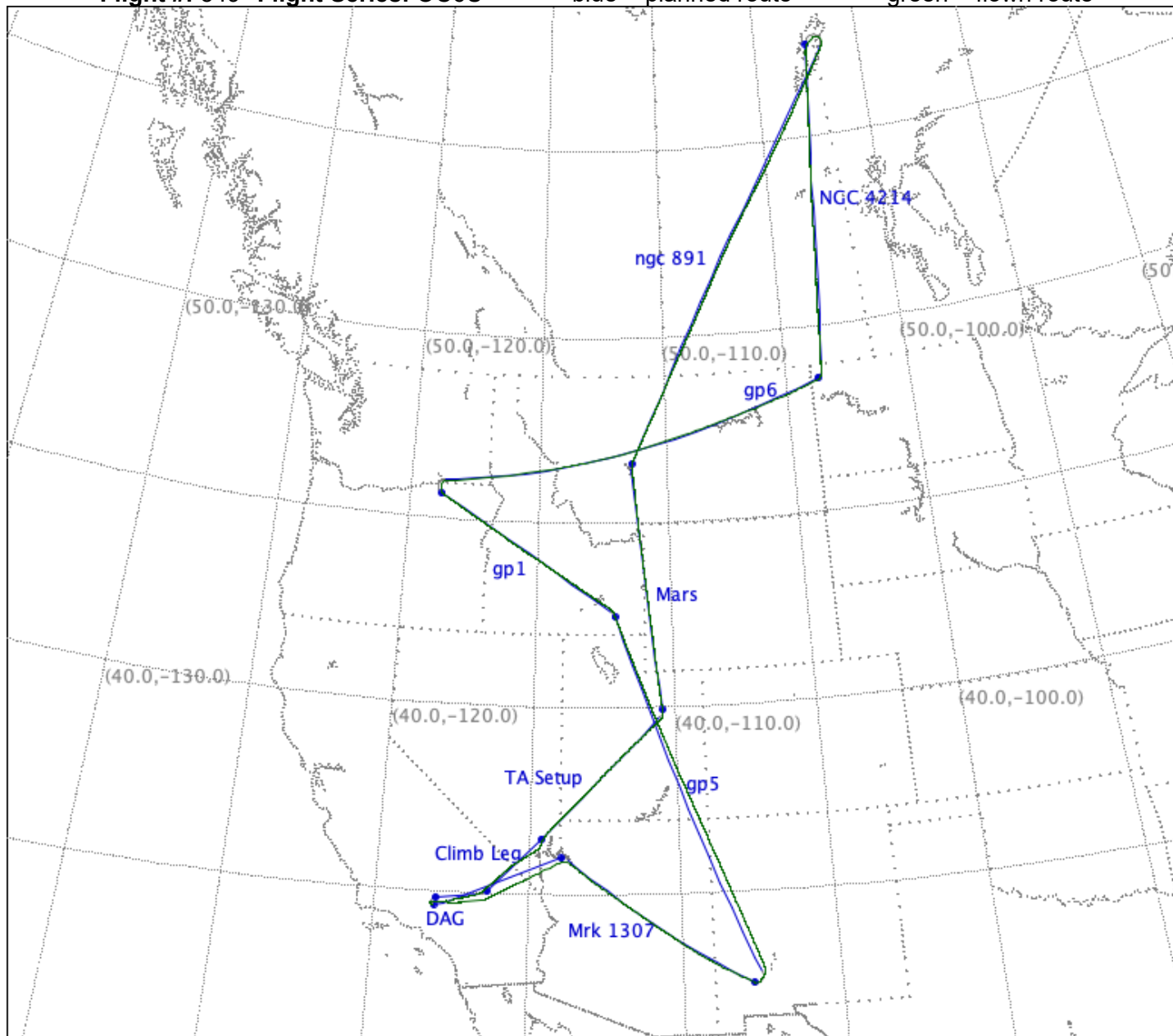
MISSION ID: 2019-02-28_FI_F549

Date: 2019-02-28 UT Instrument: FIFI-LS

Flight #: 549 Flight Series: OC6U

blue = planned route

green = flown route

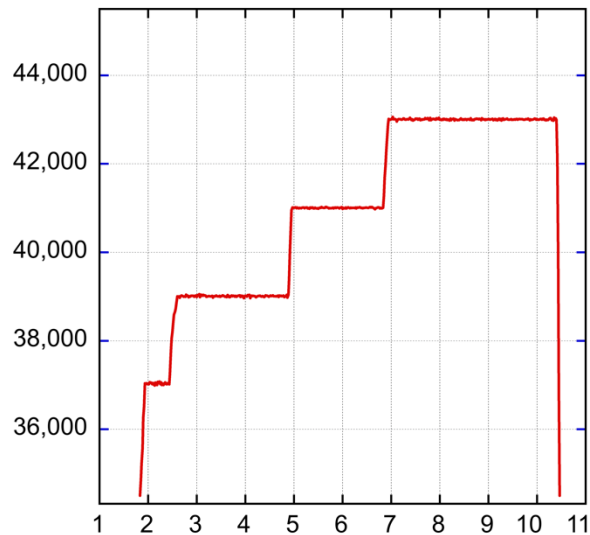


Flight notes: No irregularities.

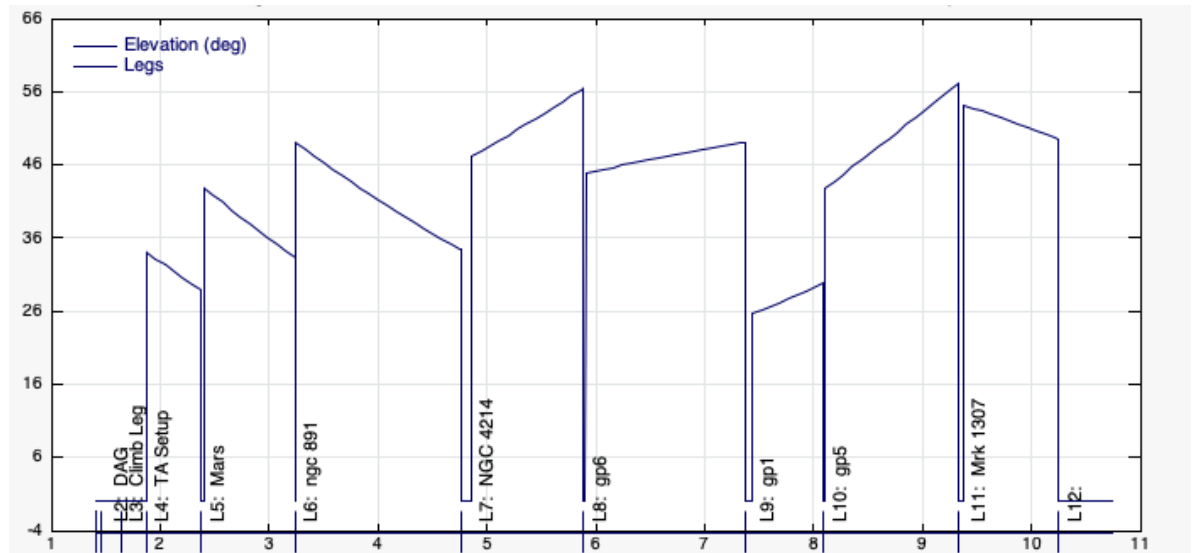
Flight 549 Mission ID 2019-02-28_FI_F549
 Palmdale to Palmdale Take off date UTC: 28-FEB-2019
 Departure UTC: 01:23 Arrival UTC: 10:56

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 116584	23h37m33.84s	46d27m29.3s	1:52	30	
5	90_0033	Calibration	Mars	02h25m25.32s	15d05m33.5s	2:23	50	Minor focus problems.
6	06_0010	Reach	ngc 891	02h22m32.86s	42d20m50.1s	3:14	91	
7	06_0225	Stacey	NGC 4214	12h15m39.17s	36d19m36.8s	4:51	61.1	
8	06_0239	Malhotra	gp6	10h24m29.24s	05d24m51.0s	5:54	88	
9	06_0239	Malhotra	gp1	17h35m01.25s	57d03m08.6s	7:26	39	
10	06_0239	Malhotra	gp5	15h09m34.17s	37d31m46.1s	8:06	73	
11	06_0222	Wiklind	Mrk 1307	11h52m37.19s	-02d28m09.9s	9:22	52	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



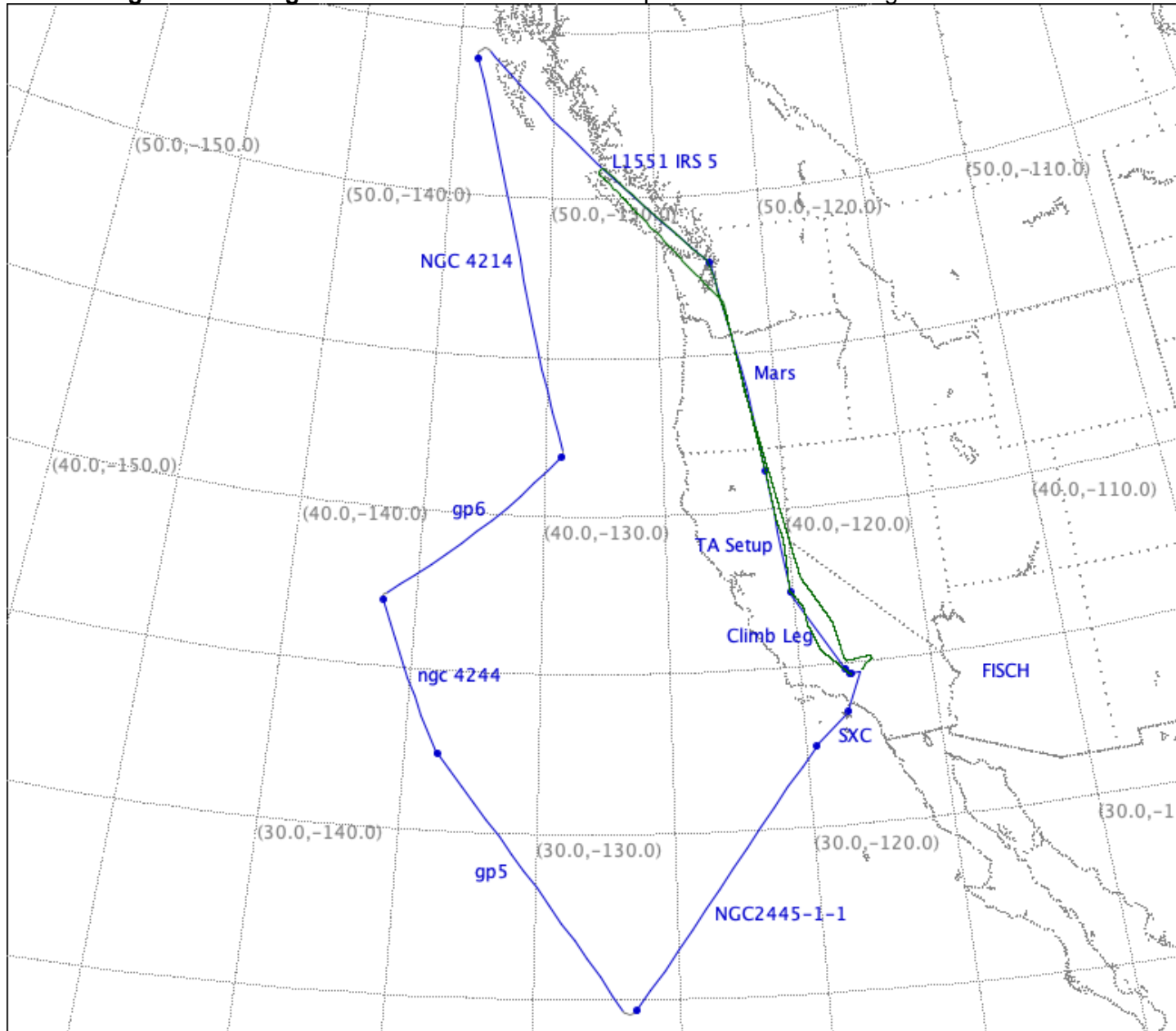
MISSION ID: 2019-03-01_FI_F550

Date: 2019-03-01 UT Instrument: FIFI-LS

Flight #: 550 Flight Series: OC6U

blue = planned route

green = flown route



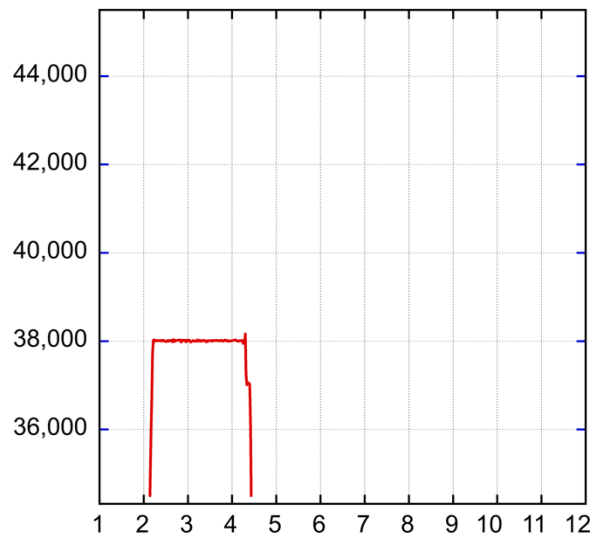
Flight notes:

Return to Palmdale base shortly after take-off due to irrecoverable telescope control issue.

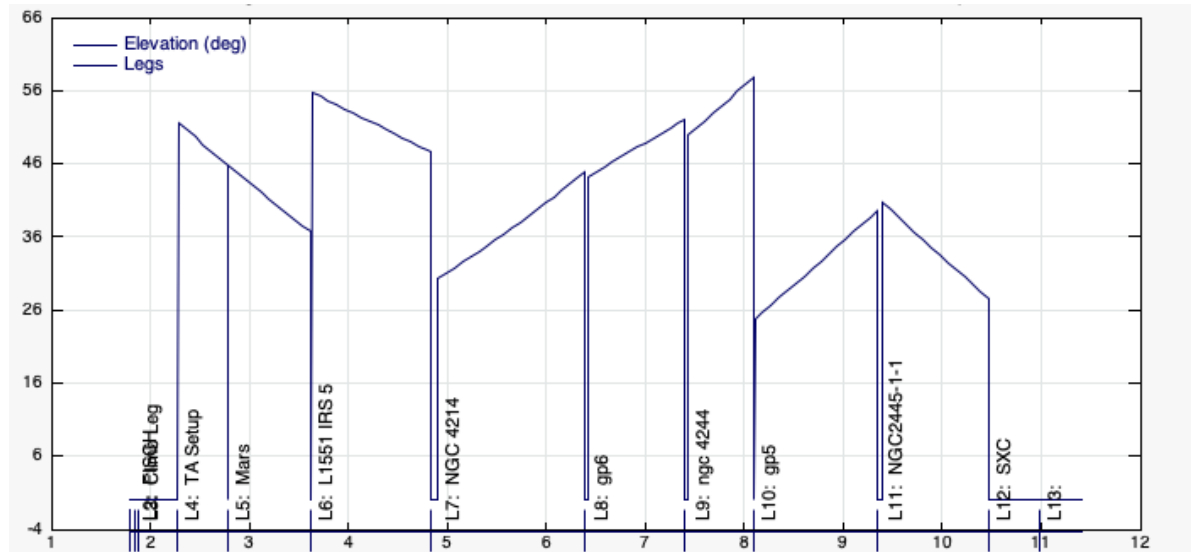
Flight 550 Mission ID 2019-03-01_FI_F550
 Palmdale to Palmdale Take off date UTC: 01-MAR-2019 Departure UTC: 01:49 Arrival UTC: 06:49

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4	90_0033	Calibration	Mars	02h28m02.92s	15d19m01.8s	2:17	30	A few minutes after take-off there was a failure of one of the telescope power supplies; early return to base.
5	90_0033	Calibration	Mars	02h28m02.92s	15d19m01.8s	2:47	50	Leg not flown; early return to base
6	06_0045	Eisloeffel	L1551 IRS 5	04h31m34.08s	18d08m04.9s	3:38	72	Leg not flown; early return to base
7	06_0225	Stacey	NGC 4214	12h15m39.17s	36d19m36.8s	4:54	89.2	Leg not flown; early return to base
8	06_0239	Malhotra	gp6	10h24m29.24s	05d24m51.0s	6:25	59	Leg not flown; early return to base
9	06_0010	Reach	ngc 4244	12h17m29.66s	37d48m25.6s	7:26	40	Leg not flown; early return to base
10	06_0239	Malhotra	gp5	15h09m34.17s	37d31m46.1s	8:06	74	Leg not flown; early return to base
11	06_0032	Fadda	NGC2445	07h46m54.00s	39d00m53.7s	9:23	65	Leg not flown; early return to base

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



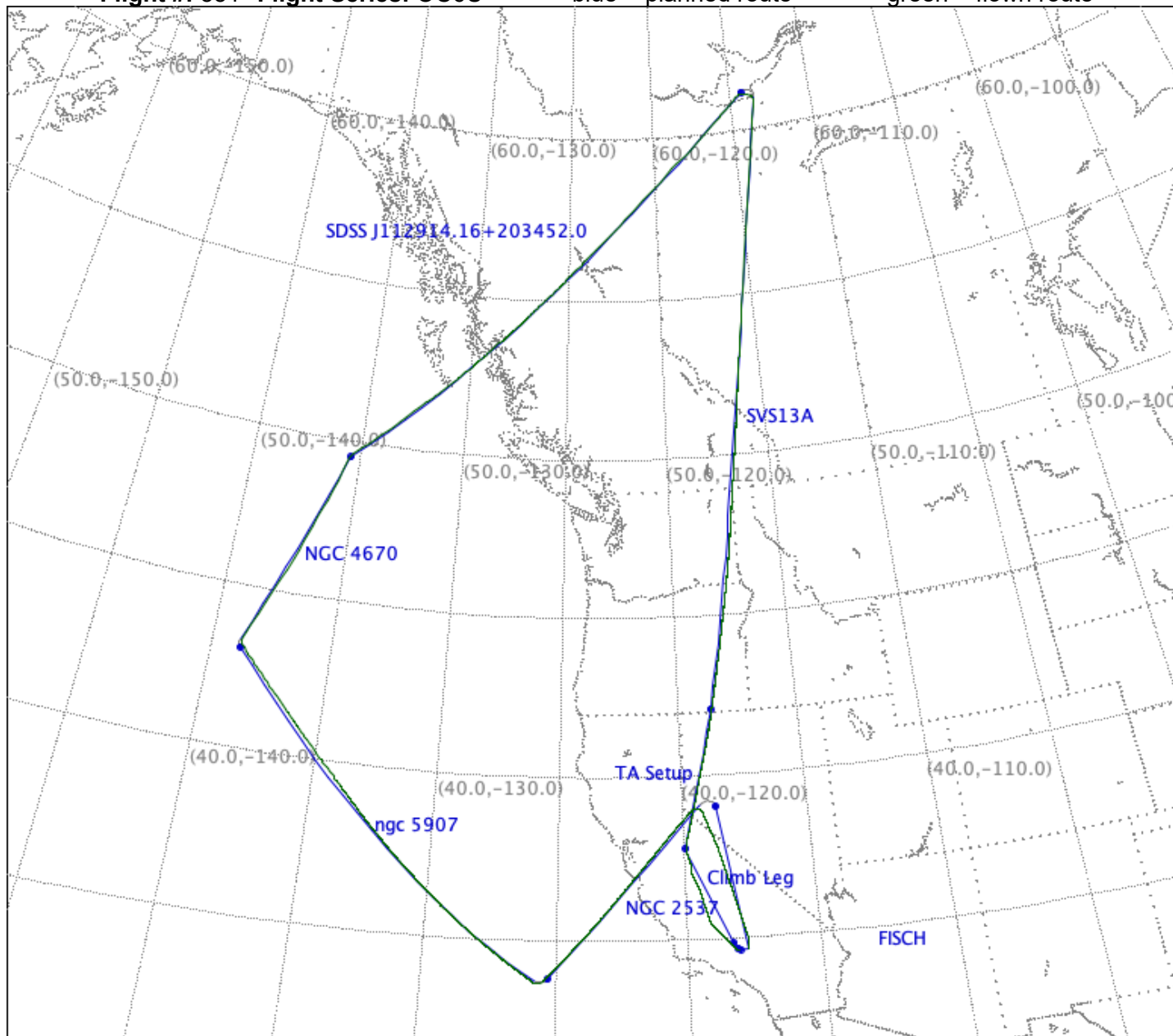
MISSION ID: 2019-03-02_FI_F551

Date: 2019-03-02 UT Instrument: FIFI-LS

Flight #: 551 Flight Series: OC6U

blue = planned route

green = flown route

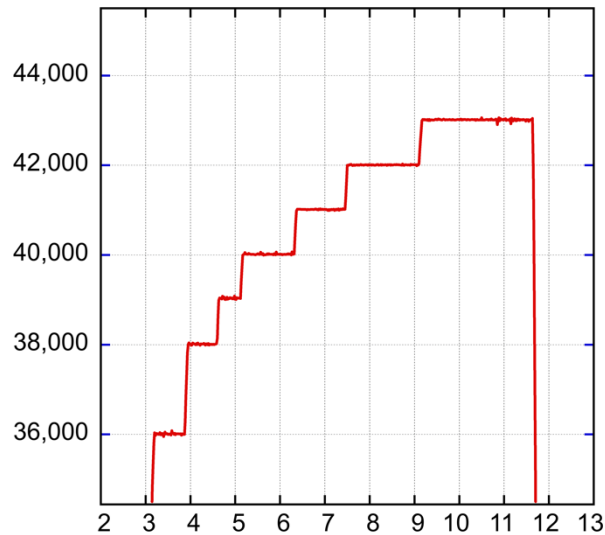


Flight notes: No irregularities.

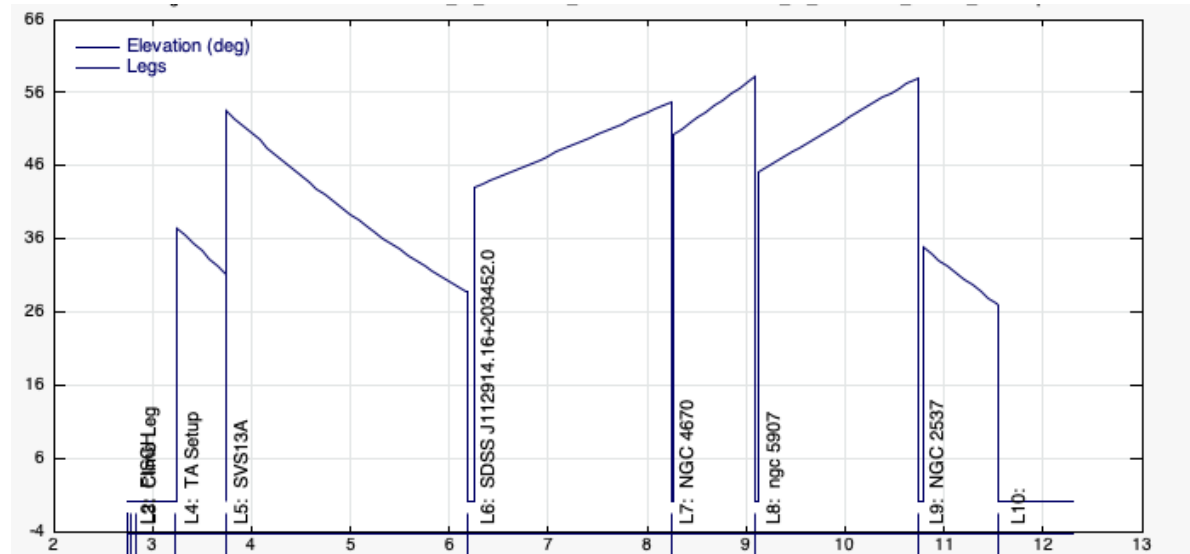
Flight 551 Mission ID 2019-03-02_FI_F551
 Palmdale to Palmdale Take off date UTC: 02-MAR-2019
 Departure UTC: 02:45 Arrival UTC: 12:17

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 9307	01h59m35.68s	21d03m30.8s	3:15	30	
5	06_0121	Tobin	SVS13A	03h29m04.73s	31d15m43.8s	3:45	146	
6	06_0204	Weiner	SDSS J112914.16+203452.0	11h29m14.15s	20d34m52.0s	6:15	120	FIFI-LS lost communications to observatory control software; 20min lost
7	06_0222	Wiklind	NGC 4670	12h45m17.07s	27d07m31.5s	8:16	50	
8	06_0010	Reach	ngc 5907	15h15m53.69s	56d19m43.9s	9:07	97	
9	06_0222	Wiklind	NGC 2537	08h13m14.64s	45d59m30.0s	10:47	46	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



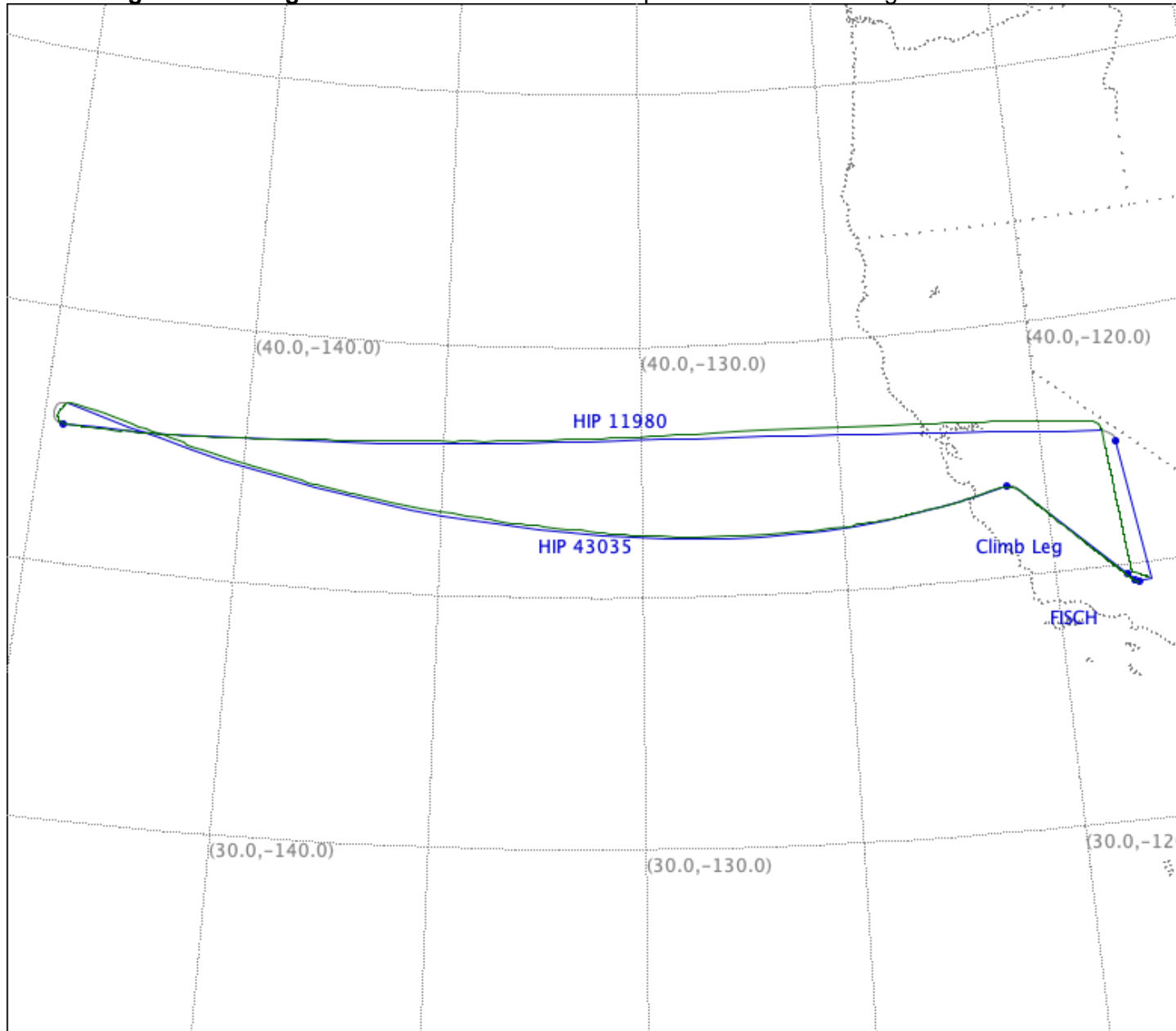
MISSION ID: 2019-04-13_FF_F552

Date: 2019-04-13 UT Instrument: FPI+

Flight #: 552 Flight Series: n/a

blue = planned route

green = flown route



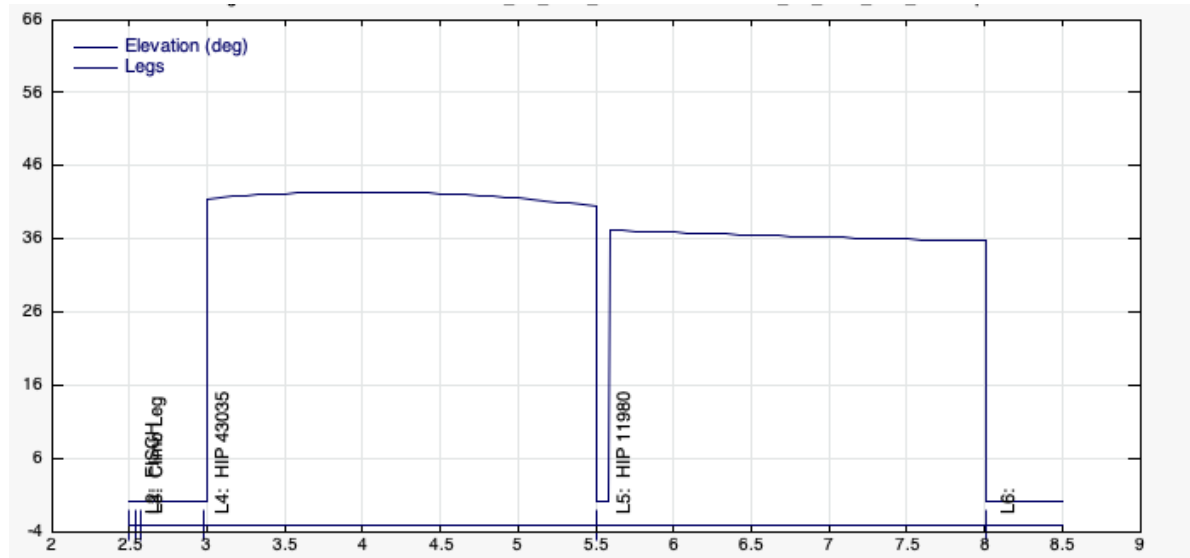
Flight notes:
Engineering flight – no Science data.

Flight 552 Mission ID 2019-04-13_FF_F552
 Palmdale to Palmdale Take off date UTC: 13-APR-2019
 Departure UTC: 02:32 Arrival UTC: 08:32

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 43035	08h46m06.87s	-11d00m24.4s	3:00	150	
5			HIP 11980	02h34m32.65s	88d28m15.7s	5:35	145	

Flown altitude (ft.) vs. time (UTC hrs.)

Planned target elevation (deg.) vs. time (UTC hrs.)



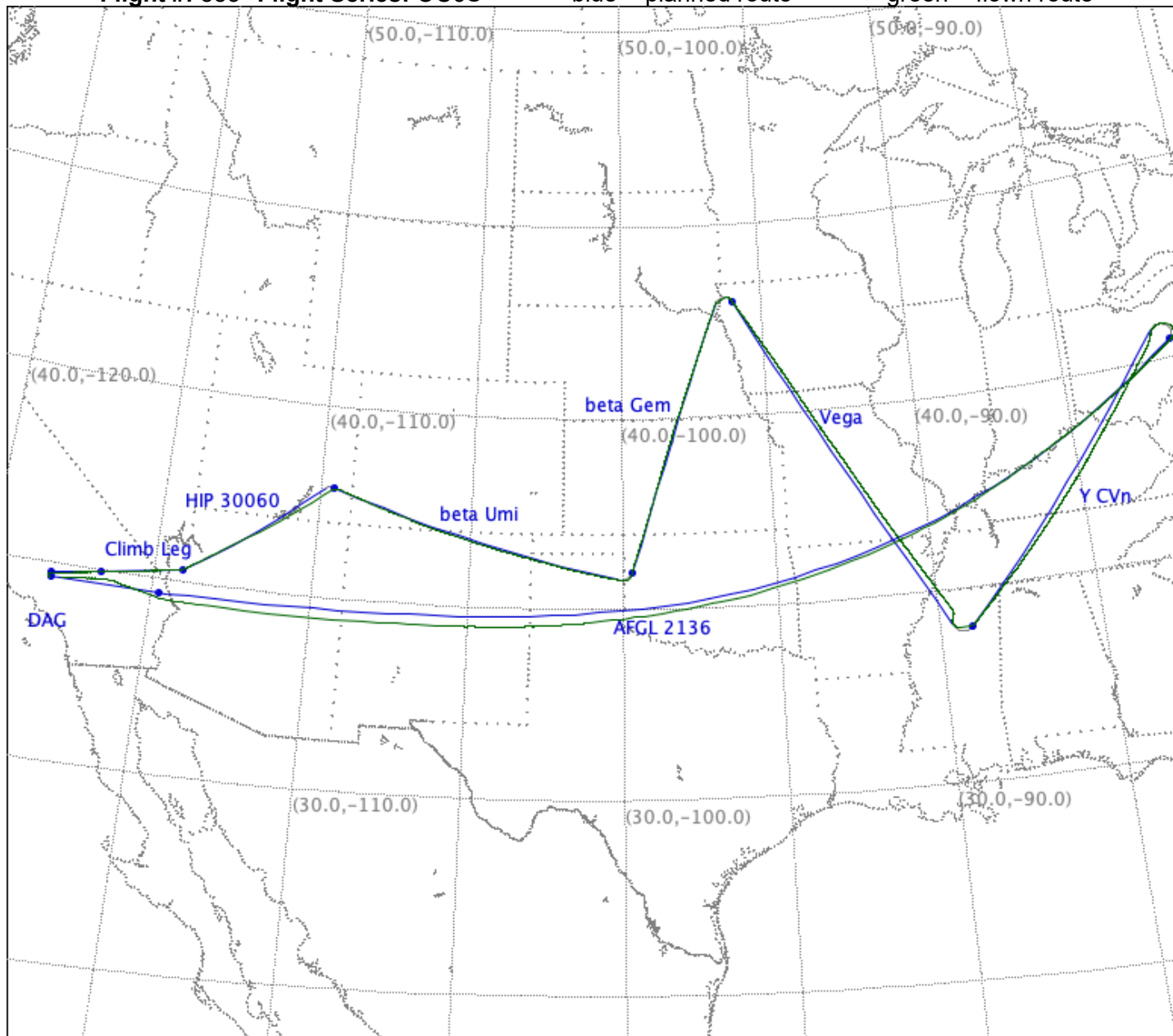
MISSION ID: 2019-04-17_EX_F553

Date: 2019-04-17 UT Instrument: EXES

Flight #: 553 Flight Series: OC6S

blue = planned route

green = flown route

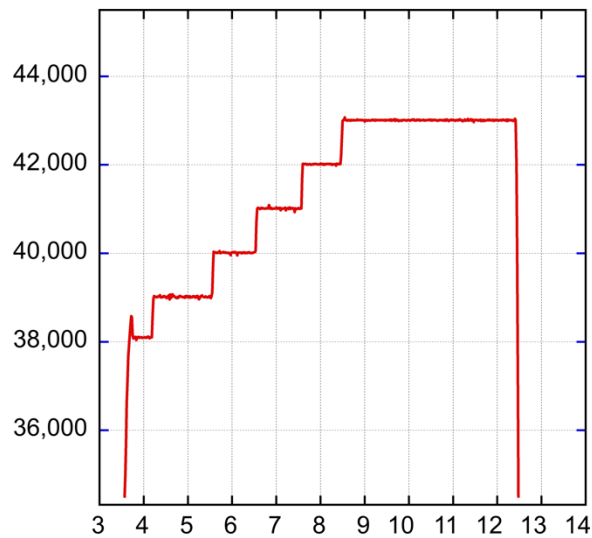


Flight notes: No irregularities.

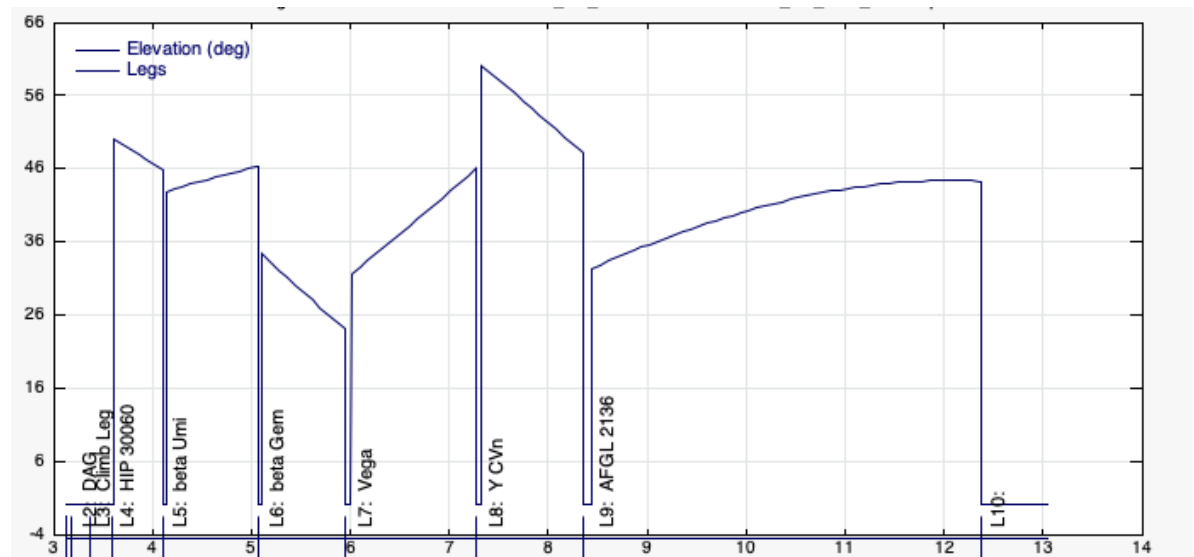
Flight 553 Mission ID 2019-04-17_EX_F553
 Palmdale to Palmdale Take off date UTC: 17-APR-2019
 Departure UTC: 03:06 Arrival UTC: 12:53

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 30060	06h19m37.39s	59d00m39.5s	3:36	30	
5	90_0089	Calibration	beta Umi	14h50m42.33s	74d09m19.8s	4:08	56	
6	90_0089	Calibration	beta Gem	07h45m18.95s	28d01m34.3s	5:07	50	
7	06_0117	Tielens	Vega	18h36m56.34s	38d47m01.3s	6:00	76	Turbulence.
8	06_0144	Montiel	Y CVn	12h45m07.83s	45d26m24.9s	7:20	61	
9	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	8:27	236	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

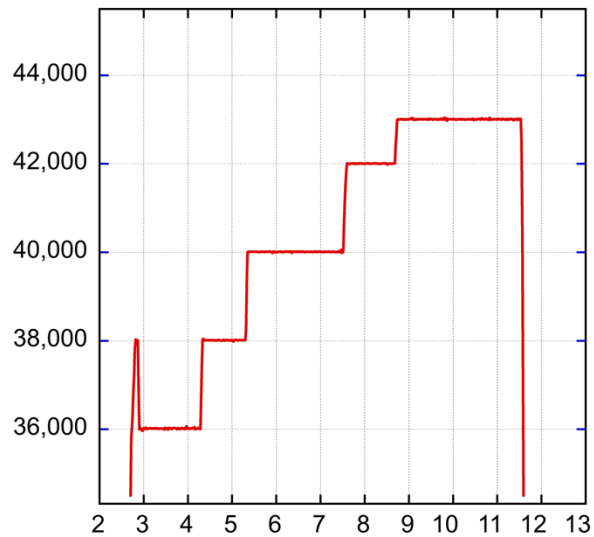


Flight notes: Multiple issues led to losses in observing time.

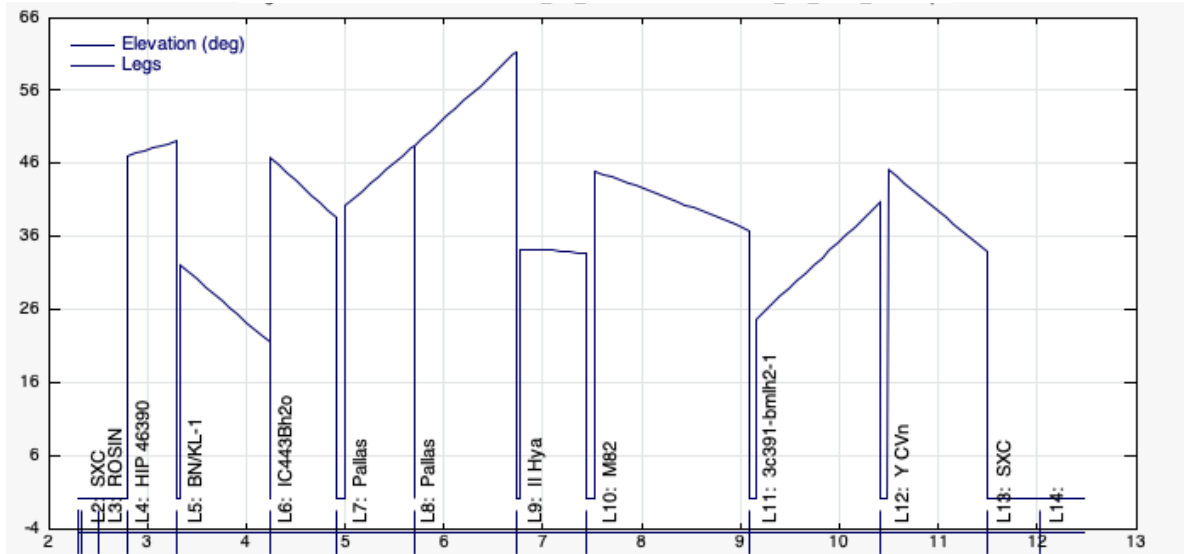
Flight 554 Mission ID 2019-04-18_EX_F554
 Palmdale to Palmdale Take off date UTC: 18-APR-2019
 Departure UTC: 02:19 Arrival UTC: 12:04

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 46390	09h27m35.24s	-08d39m31.0s	2:47	30	
5	06_0215	Richter	BN/KL	05h35m14.40s	-05d22m29.0s	3:19	54	Held at low altitude (36k ft) by air traffic control leading to clouds for most of leg; last 20% of leg was above clouds (38k ft)
6	06_0001	Reach	IC443Bh2o	06h17m16.07s	22d25m15.2s	4:14	40	Telescope pointing issues led to loss of entire leg.
7	06_0215	Richter	2 Pallas	13h49m07.62s	20d14m52.9s	4:59	42	
8	06_0144	Montiel	2 Pallas	13h49m05.67s	20d15m27.2s	5:41	62	Pointing issues led to 40% loss of leg.
9	06_0056	Kraemer	II Hya	11h48m45.08s	-26d44m59.2s	6:45	40	
10	75_0017	Discretionary	M82	09h55m52.43s	69d40m46.9s	7:31	94	
11	06_0001	Reach	3c391-bmlh2	18h49m22.40s	-00d57m15.0s	9:08	76	
12	06_0144	Montiel	Y CVn	12h45m07.83s	45d26m24.9s	10:29	60	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



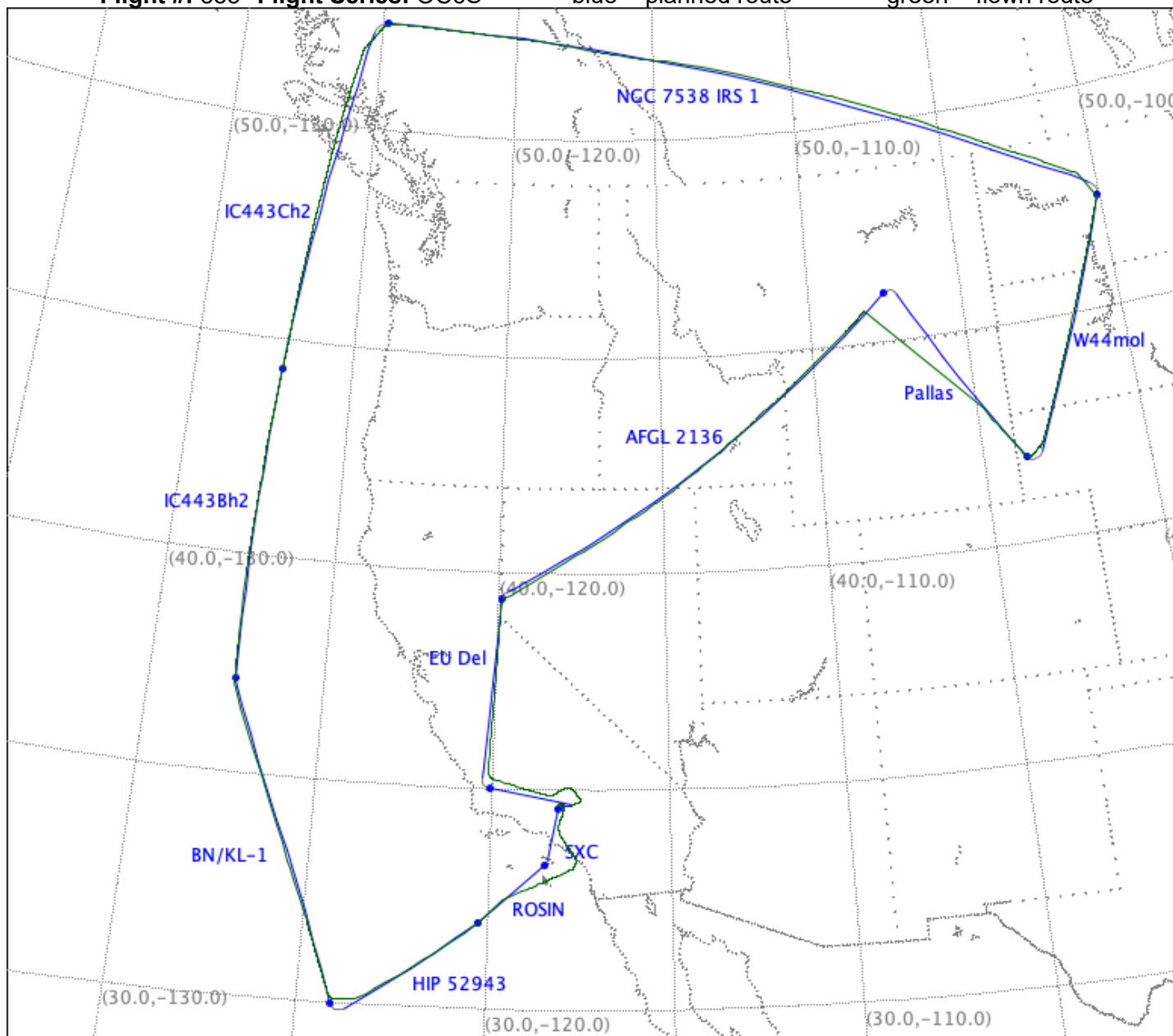
MISSION ID: 2019-04-19_EX_F555

Date: 2019-04-19 UT Instrument: EXES

Flight #: 555 Flight Series: OC6S

blue = planned route

green = flown route

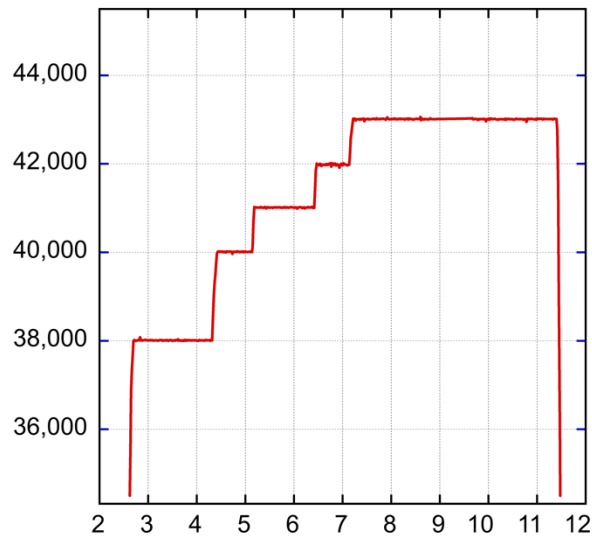


Flight notes: No irregularities.

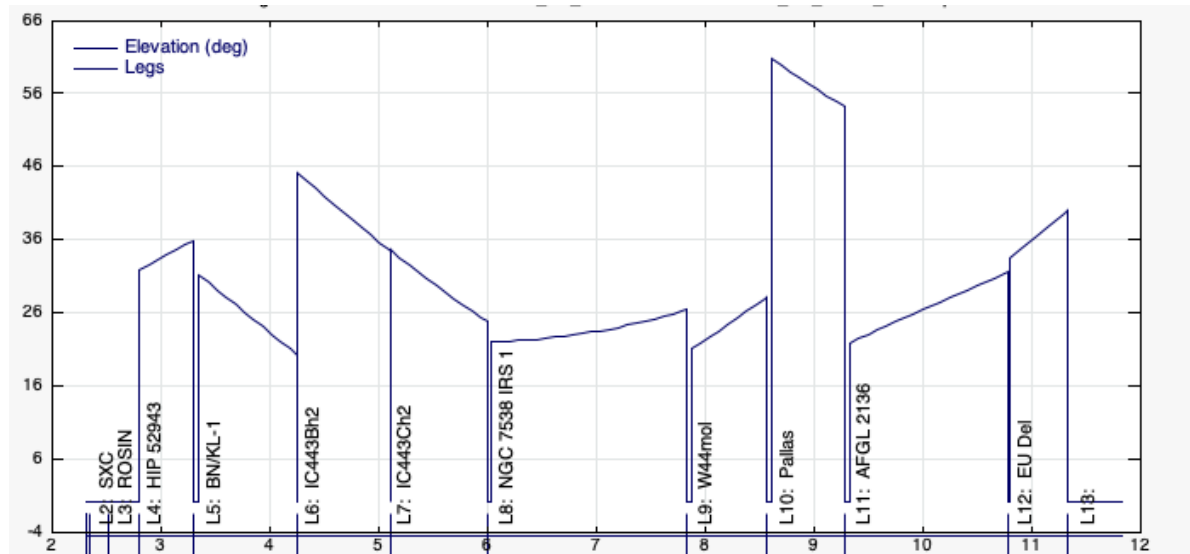
Flight 555 Mission ID 2019-04-19_EX_F555
 Palmdale to Palmdale Take off date UTC: 19-APR-2019
 Departure UTC: 02:15 Arrival UTC: 11:48

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 52943	10h49m37.49s	-16d11m37.1s	2:49	30	
5	06_0215	Richter	BN/KL	05h35m14.40s	-05d22m29.0s	3:22	54	
6	06_0001	Reach	IC443Bh2	06h17m13.97s	22d23m16.0s	4:16	51	
7	06_0001	Reach	IC443Ch2	06h17m42.44s	22d21m22.2s	5:07	53.3	
8	75_0024	Discretionary	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	6:03	108	
9	06_0001	Reach	W44mol	18h56m28.59s	01d29m44.3s	7:53	41	
10	06_0215	Richter	2 Pallas	13h48m13.18s	20d30m37.3s	8:38	40	Observatory control software crashes led to loss of last 50% of leg
11	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	9:20	87	Observatory control software crashes led to 25min loss.
12	06_0056	Kraemer	EU Del	20h37m54.73s	18d16m06.9s	10:49	32	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



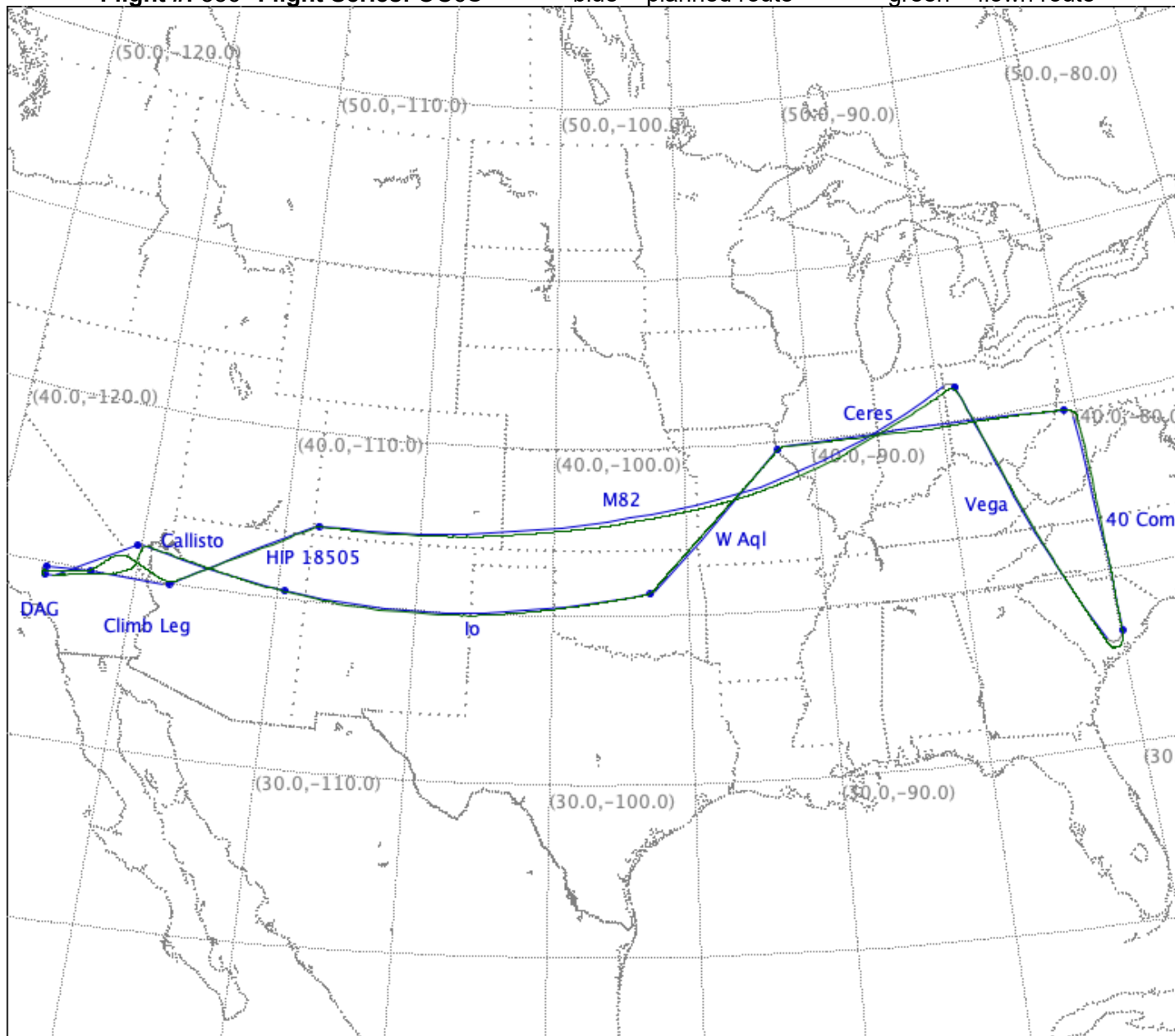
MISSION ID: 2019-04-20_EX_F556

Date: 2019-04-20 UT Instrument: EXES

Flight #: 556 Flight Series: OC6S

blue = planned route

green = flown route

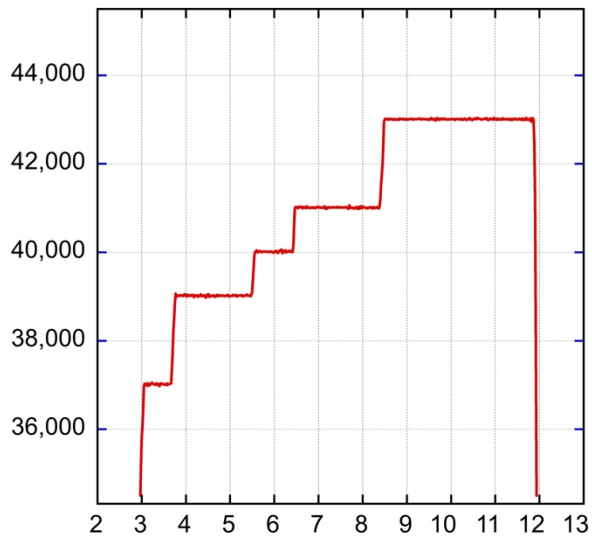


Flight notes: No irregularities.

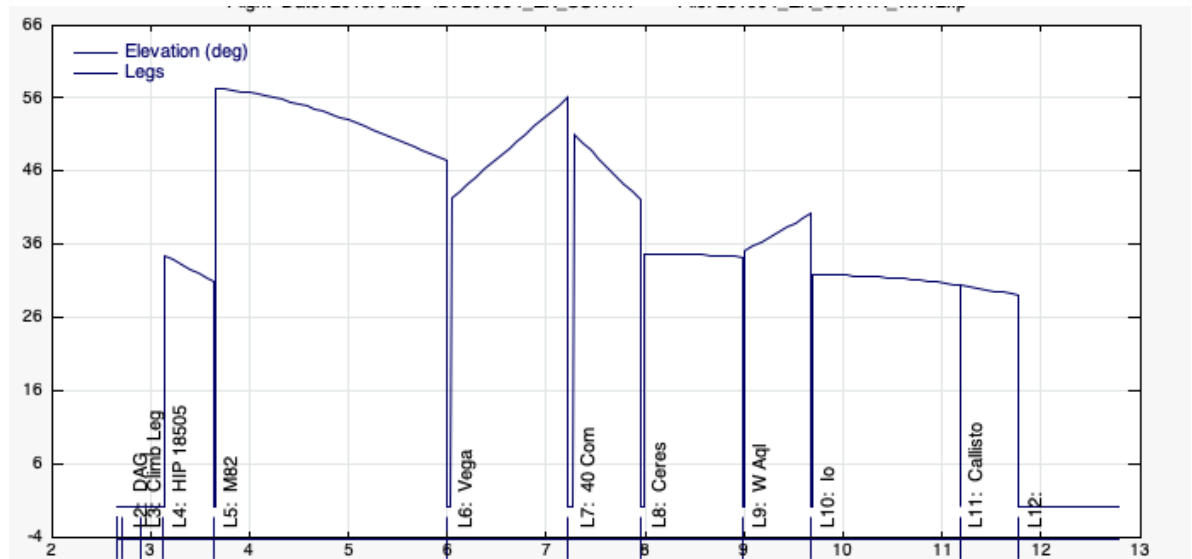
Flight 556 Mission ID 2019-04-20_EX_F556
 Palmdale to Palmdale Take off date UTC: 20-APR-2019
 Departure UTC: 02:35 Arrival UTC: 12:21

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 18505	03h57m25.45s	63d04m20.2s	3:09	30	
5	75_0017	Discretionary	M82	09h55m52.43s	69d40m46.9s	3:40	140	
6	06_0056	Kraemer	Vega	18h36m56.34s	38d47m01.3s	6:02	70	
7	06_0056	Kraemer	40 Com	13h06m22.60s	22d36m58.3s	7:17	40	
8	06_0144	Montiel	1 Ceres	16h51m40.02s	-16d53m25.6s	8:00	60	
9	06_0144	Montiel	W Aql	19h15m23.35s	-07d02m50.3s	9:01	40	
10	07_0221	Schmidt	Io	17h33m34.05s	-22d39m44.4s	9:42	90	
11	07_0221	Schmidt	Callisto	17h33m10.06s	-22d39m50.3s	11:12	35	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



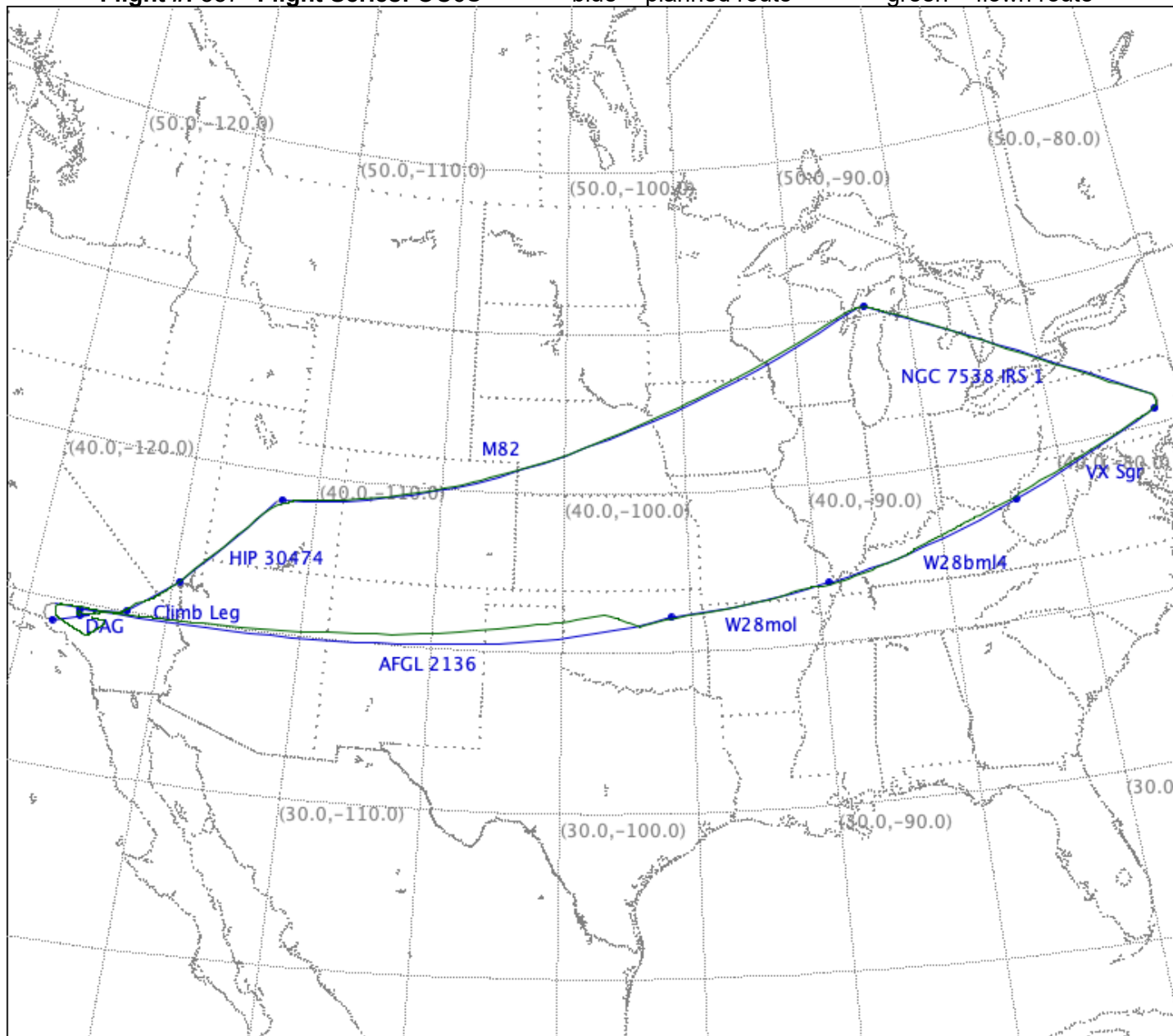
MISSION ID: 2019-04-23_EX_F557

Date: 2019-04-23 UT Instrument: EXES

Flight #: 557 Flight Series: OC6S

blue = planned route

green = flown route

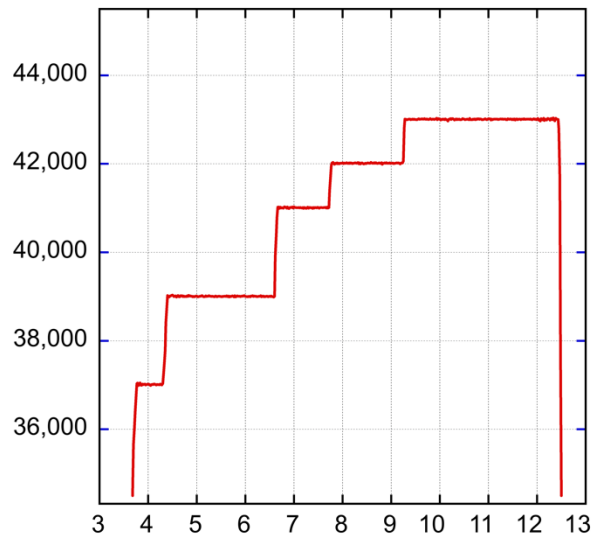


Flight notes: No irregularities.

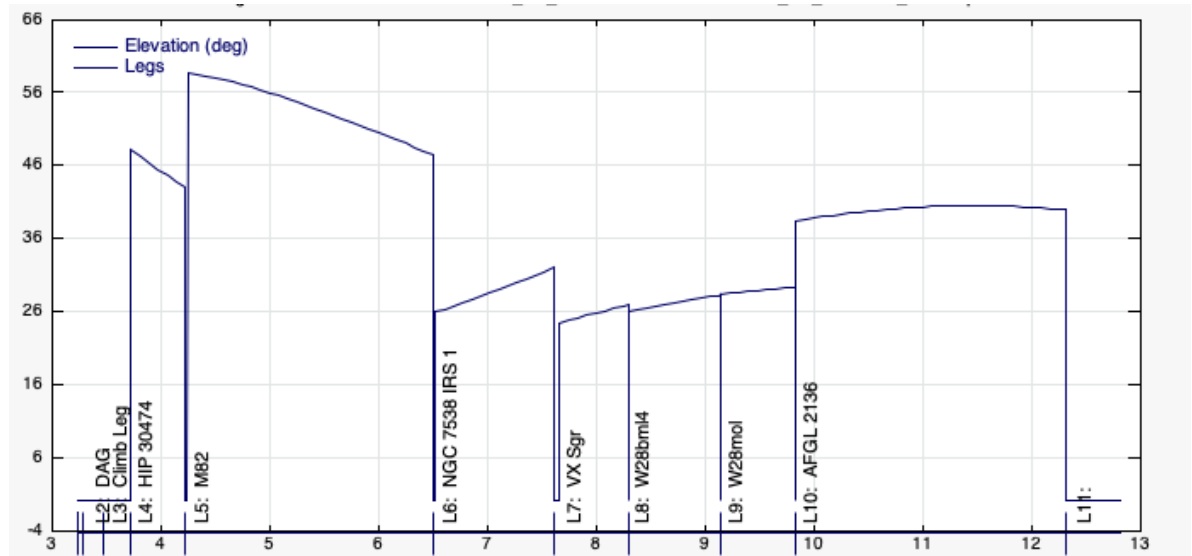
Flight 557 Mission ID 2019-04-23_EX_F557
 Palmdale to Palmdale Take off date UTC: 23-APR-2019
 Departure UTC: 03:15 Arrival UTC: 12:50

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 30474	06h24m23.72s	51d04m37.8s	3:45	30	
5	75_0017	Discretionary	M82	09h55m52.43s	69d40m46.9s	4:16	135	
6	75_0024	Discretionary	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	6:33	65	
7	06_0144	Montiel	VX Sgr	18h08m04.05s	-22d13m26.6s	7:41	38	
8	06_0001	Reach	W28bml4	18h01m40.31s	-23d25m03.3s	8:19	51	Telescope fault took 42min to recover from.
9	06_0001	Reach	W28mol	18h01m52.30s	-23d19m25.0s	9:10	41	Reroute around storms led to 15min loss
10	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	9:51	149	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



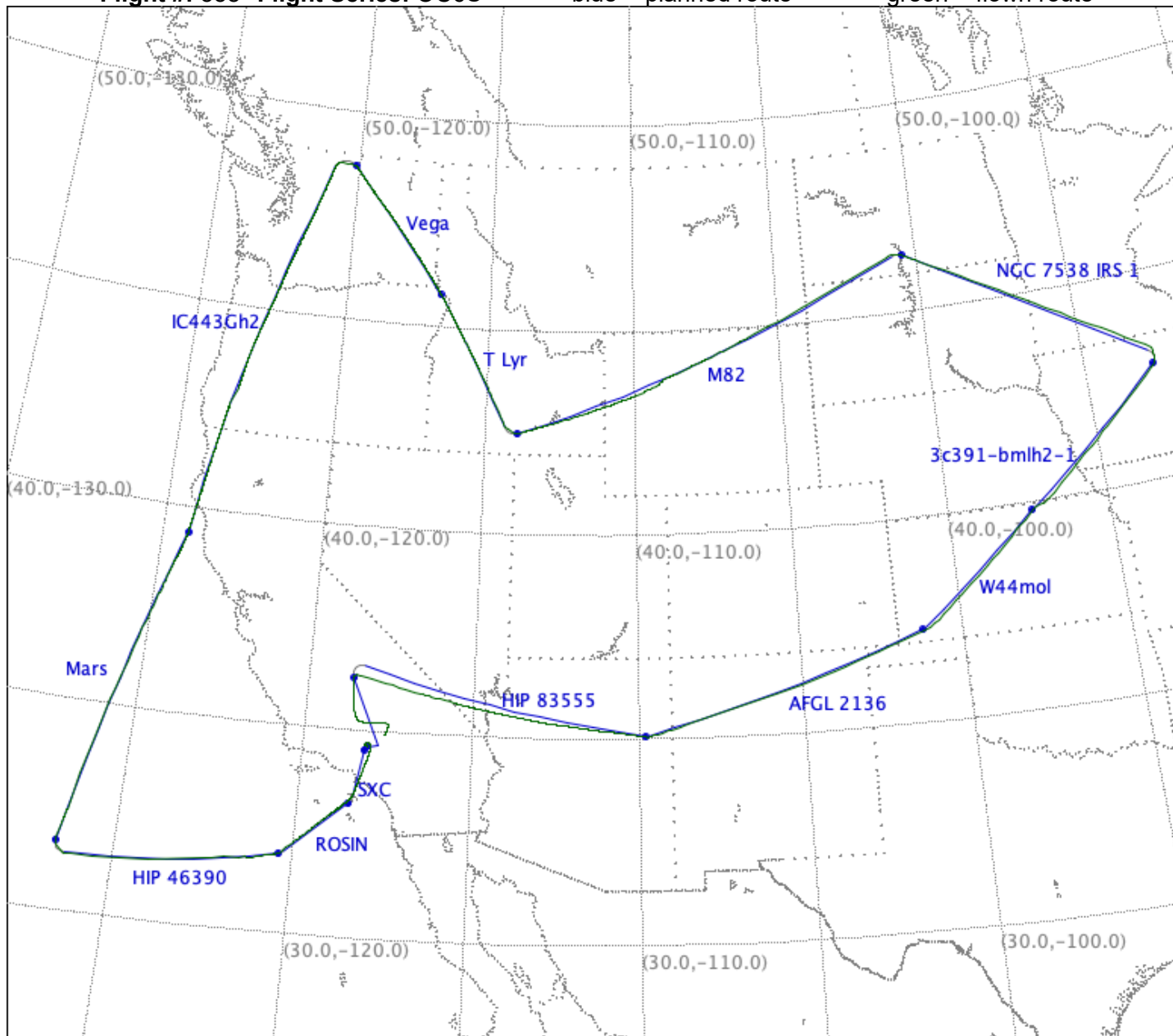
MISSION ID: 2019-04-24_EX_F558

Date: 2019-04-24 UT Instrument: EXES

Flight #: 558 Flight Series: OC6S

blue = planned route

green = flown route

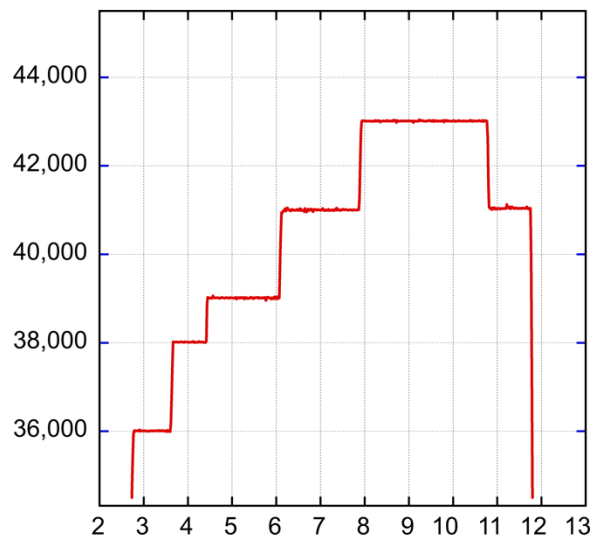


Flight notes: No irregularities.

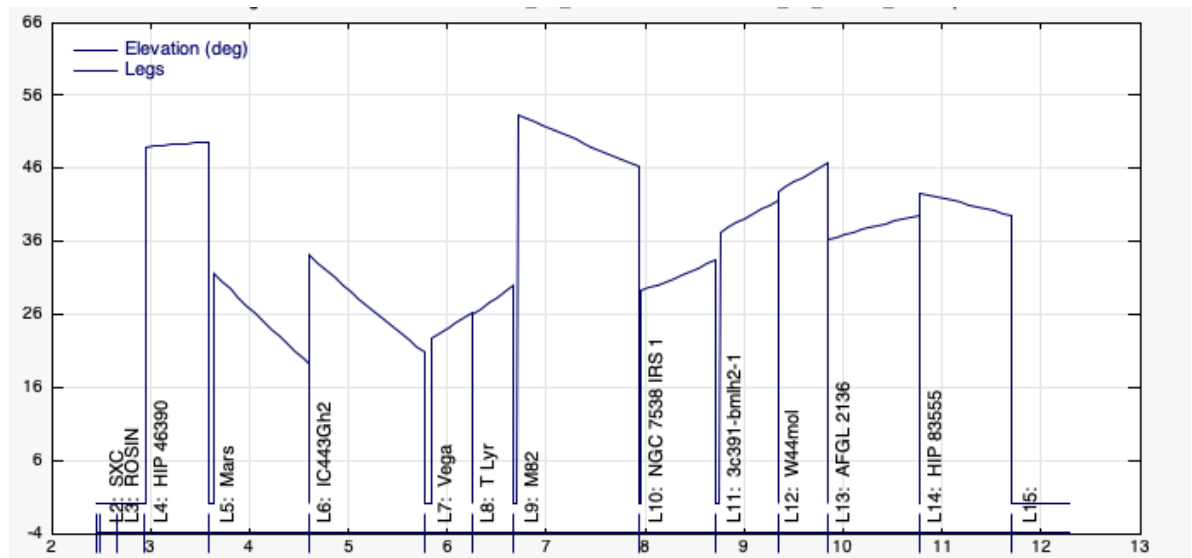
Flight 558 Mission ID 2019-04-24_EX_F558
 Palmdale to Palmdale Take off date UTC: 24-APR-2019
 Departure UTC: 02:23 Arrival UTC: 12:07

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 46390	09h27m35.24s	-08d39m31.0s	2:54	38	
5	06_0085	AOKI	Mars	04h56m23.60s	23d41m01.5s	3:35	58	
6	06_0001	Reach	IC443Gh2	06h16m43.60s	22d32m37.0s	4:33	70	Vignetting by upper telescope door; 40min lost recovering control
7	71_0020	Engineering	Vega	18h36m56.34s	38d47m01.3s	5:47	25	
8	71_0020	Engineering	T Lyr	18h32m20.08s	36d59m55.6s	6:12	25	
9	75_0017	Discretionary	M82	09h55m52.43s	69d40m46.9s	6:40	73	Some turbulence.
10	75_0024	Discretionary	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	7:54	45	
11	06_0001	Reach	3c391-bmlh2	18h49m22.40s	-00d57m15.0s	8:42	35	
12	06_0001	Reach	W44mol	18h56m28.59s	01d29m44.3s	9:17	30	
13	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	9:48	55	
14		engineering	HIP 83555	17h04m33.34s	-11d05m18.6s	10:43	55	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



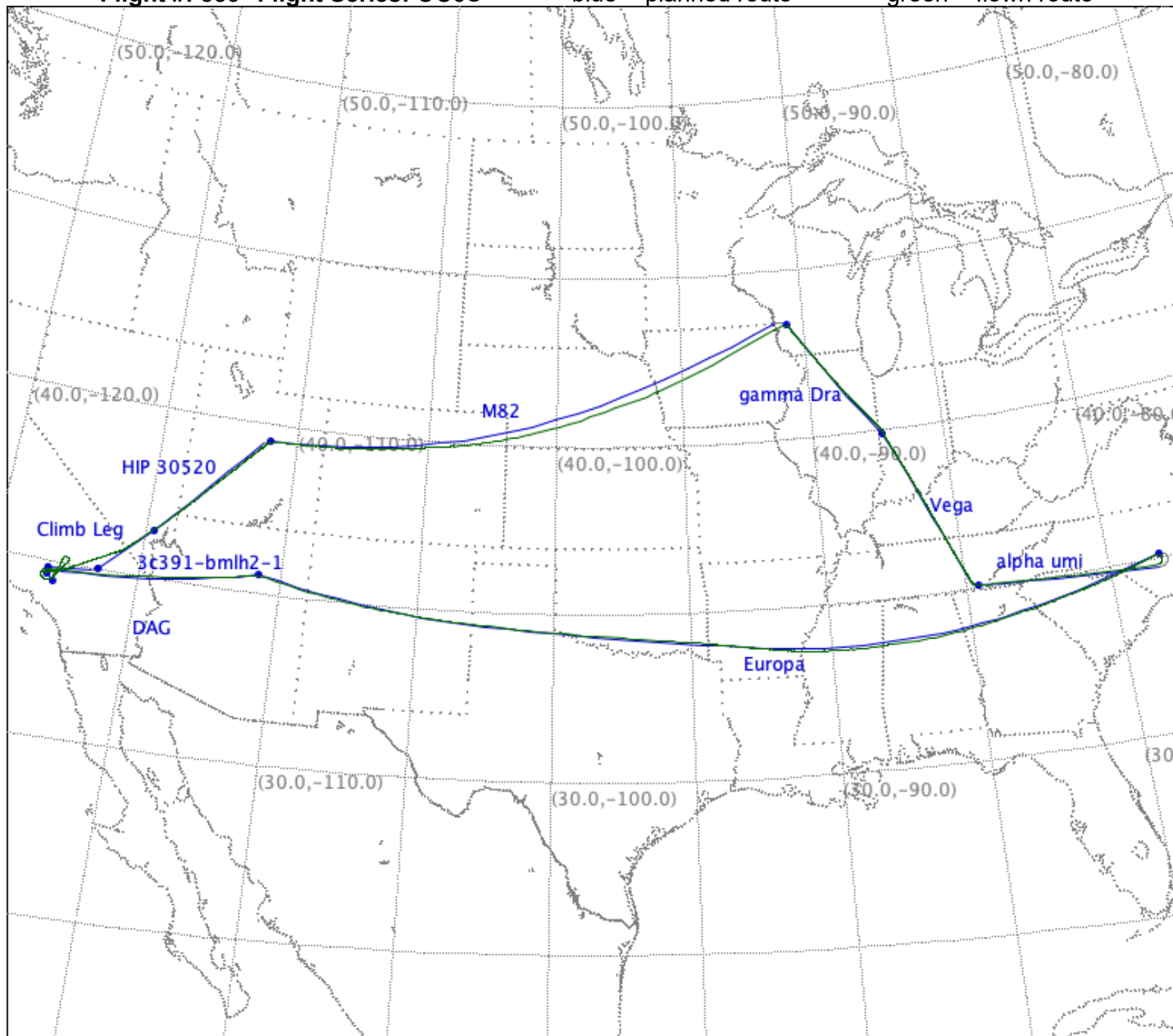
MISSION ID: 2019-04-25_EX_F559

Date: 2019-04-25 UT Instrument: EXES

Flight #: 559 Flight Series: OC6S

blue = planned route

green = flown route

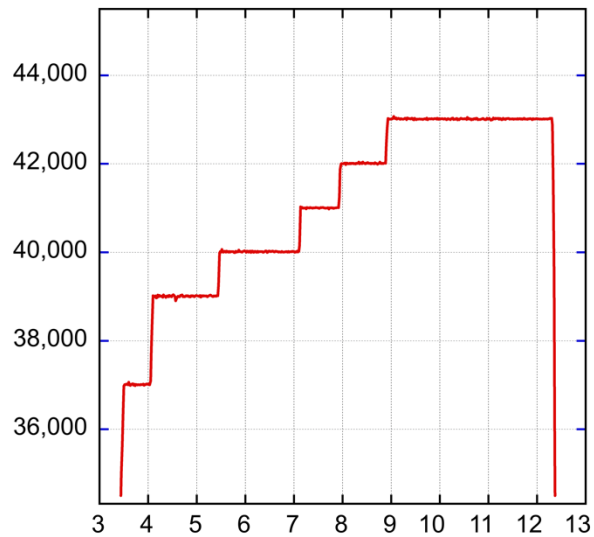


Flight notes: No irregularities.

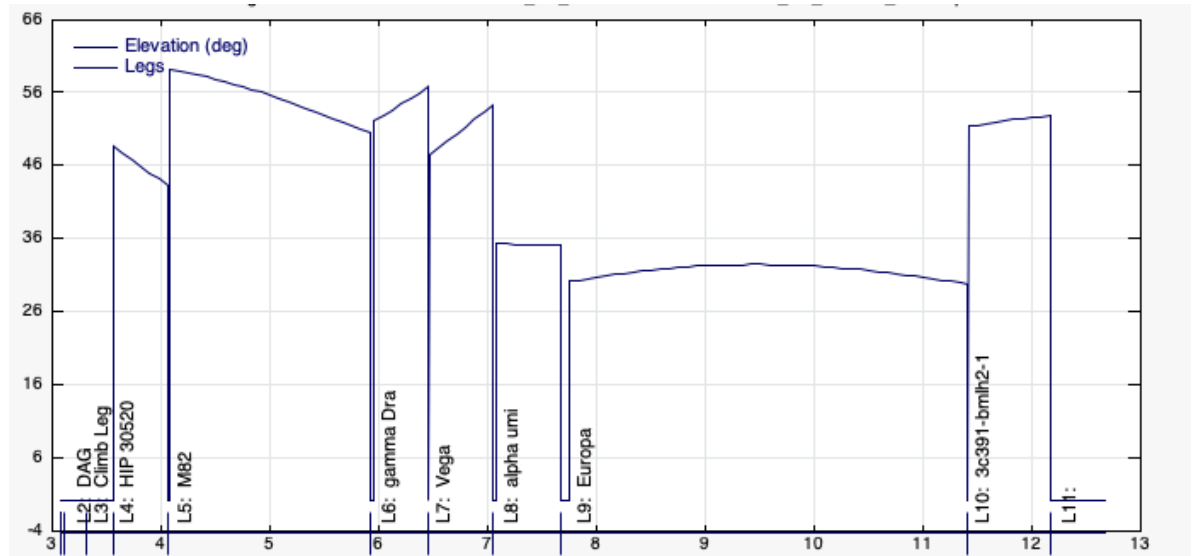
Flight 559 Mission ID 2019-04-25_EX_F559
 Palmdale to Palmdale Take off date UTC: 25-APR-2019
 Departure UTC: 03:04 Arrival UTC: 12:47

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 30520	06h24m53.90s	49d17m16.4s	3:34	30	
5	75_0017	Discretionary	M82	09h55m52.43s	69d40m46.9s	4:05	110	Turbulence.
6	71_0020	Engineering	gamma Dra	17h56m36.37s	51d29m20.0s	5:58	30	
7	71_0020	Engineering	Vega	18h36m56.34s	38d47m01.3s	6:28	35	
8	75_0026	Discretionary	alpha umi	02h31m49.09s	89d15m50.8s	7:05	35	
9	75_0026	Discretionary	Europa	17h33m07.23s	-22d39m33.3s	7:46	219	
10	06_0001	Reach	3c391-bmlh2	18h49m22.40s	-00d57m15.0s	11:25	45	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)



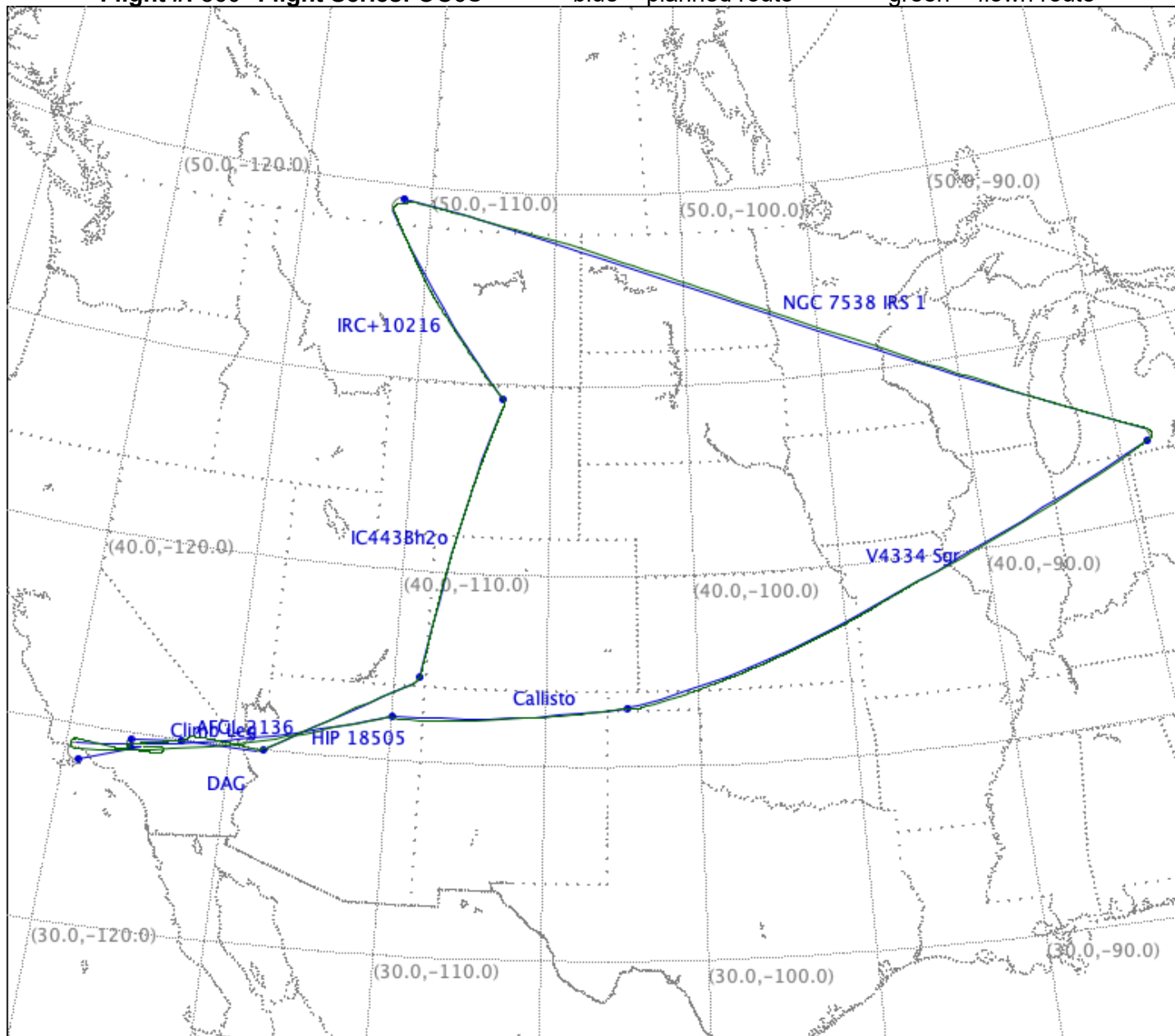
MISSION ID: 2019-04-26_EX_F560

Date: 2019-04-26 UT Instrument: EXES

Flight #: 560 Flight Series: OC6S

blue = planned route

green = flown route

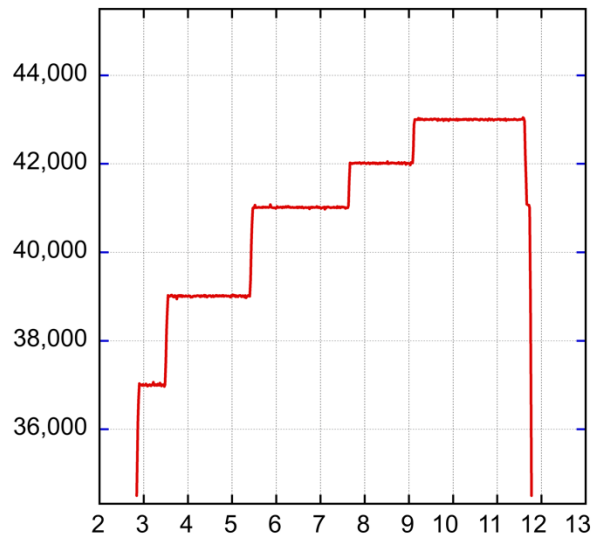


Flight notes: No irregularities.

Flight 560 Mission ID 2019-04-26_EX_F560
 Palmdale to Palmdale Take off date UTC: 26-APR-2019
 Departure UTC: 02:28 Arrival UTC: 12:11

Leg	Plan ID	PI Name	Target Name	RA (2000)	Dec (2000)	Start time	Leg time	Leg notes
4			HIP 18505	03h57m25.45s	63d04m20.2s	2:57	30	
5	06_0001	Reach	IC443Bh2o	06h17m16.07s	22d25m15.2s	3:28	57	
6	06_0172	Fonfria	IRC+10216	09h47m57.41s	13d16m43.6s	4:27	50	
7	76_0004	Yorke	NGC 7538 IRS 1	23h13m45.32s	61d28m11.7s	5:21	135	
8	06_0095	Evans	V4334 Sgr	17h52m32.69s	-17d41m08.0s	7:39	132	
9	06_0095	Evans	Callisto	17h33m20.33s	-22d39m41.3s	9:41	50	
10	06_0117	Tielens	AFGL 2136	18h22m26.50s	-13d30m15.0s	10:32	65	

Flown altitude (ft.) vs. time (UTC hrs.)



Planned target elevation (deg.) vs. time (UTC hrs.)

