Chapter 2 - Orbit Overview

Contents

Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the G1 Orbit.

The text on pages 3 and 4 summarizes the NIMS science objectives for G1. The NIMS calibrations, early data return and G1 playback are discussed on page 5.

The table on pages 6 and 7 is a time-ordered listing of the NIMS Oapels for G1.

The plots on pages 8, 9 and 10 show the geometry of the NIMS observations using a north trajectory pole view projection. The plot on page 11 shows the geometry of the NIMS G1 calibrations.

The table on pages 12, 13 and 14 lists the NIMS G1 observing parameters: target latitude/longitude, range, cone angle, incidence angle (light), emission angle (view) and phase angle.

The spreadsheets on pages 15, 16 and 17 summarize various inputs for the NIMS G1 observations.

The spreadsheets on pages 18, 19, 20 and 21 summarize the NIMS resource usage for the NIMS G1 observations.

The tapemap on pages 22, 23 and 24 shows the placement of the G1 observations on the spacecraft’s tape recorder. The NIMS observation names are written with a larger type.

The NIMS G1 mosaic designs are summarized on pages 25 - 31 in time-order.

NIMS G1 Science Overview

Io Science

NIMS has many Io observations in G1, all full-disk or partial-disk mosaics. During G1, NIMS will obtain the tour's best view of Io's nightside. NIMS will observe Io's nightside at closest approach using the full spectral capability of NIMS (NNSPEC) to look for aurora and previously undetected species such as O_2. A series of nightside observations (VOLCAN and THRMAL) is designed to map hot spots and to look for auroral features. A series of dayside observations (CHEMIS) will map the distribution of SO_2 frost on the surface and look for new species such as H_2O and H_2S. NIMS will observe Io during eclipse, in a coordinated effort with SSI and PPR (RCECLI). NIMS has two real time observations of Io (IOMON) to monitor hot spot activity in real time.

Europa Science

There is a non-targeted flyby of Europa in G1. In this orbit NIMS has two observations of Europa (NHILAT and GLOBAL). The NHILAT observation maps Europa's entire leading hemisphere at high spectral resolution in Long Map mode and will return 228 wavelengths. This observation studies the global context of compositional units that are distributed over the surface and also gives a good opportunity to study the North polar region, which will allow NIMS to search for non-water volatiles. The second GLOBAL observation is a ride along with SSI over the same part of Europa as observed in the NHILAT observation, but in Fixed Map mode, returning 17 wavelengths. This observation will help co-register the NIMS NHILAT spectral map with the SSI GLOBAL map.

Ganymede Science

Ganymede is the targeted satellite in G1. In this orbit, NIMS has ten observations of Ganymede. The GLOBAL observation maps out the entire Ganymede hemisphere at high spectral resolution to try to understand the global distribution of different compositional units. Identification of non-water materials, mineralogy of dark material, and correlation with the SSI coverage are goals of the MEMPHIS observation. Bright and dark rayed craters are observed to study the composition and age of the material, as well as differences between bright and dark material. The observations AMON and MIRRAY will also help us to understand the impactors that created the craters. Groove and furrow terrains of the Nippur Suclus region are observed in NIPPUR to study the surface modification process. These NIMS observations are in Long Map mode and are expected to return 228 wavelengths. NIMS also rides along with SSI in three observations: Uruk Sulcus, Galileo Regio, and Memphis facula (URUSUL, GREGIO and MEMPHI). The combined wavelength spectrum covered by both NIMS and SSI in these joint observations will allow a better understanding of the composition and terrain of Ganymede's surface. These ride along observations are in Short Map mode and are expected to return 102 wavelengths. NIMS also participates in a Limbscan of Ganymede with UVS (LIMBSC) to study Ganymede's tenuous atmosphere in Fixed Spectrometer mode, returning 3 wavelengths.

NIMS G1 Science Overview

Callisto Science

There is one distant observation of Callisto in this orbit. This GLOBAL observation will obtain a global composition map of Callisto at the highest spectral resolution possible in Long Map mode, returning 228 wavelengths. This first look at Callisto will be used to aid in the selection of wavelength playback in subsequent orbits when Galileo is closer to Callisto.

Jupiter Science

NIMS examines both Hot Spots (HOTMAP) (similar to the probe entry site) and the Great Red Spot (GRS) during the first orbital pass of Jupiter (G1). Hot Spots, located predominately in the North equatorial belt (NEB), are relatively cloud free regions wherein the planet's indigeneous thermal radiation, produced relatively deep in the atmosphere, is allowed to escape. As it escapes, the radiation near 5 microns is modified by gas extinction due to trace amounts of absorbers such as phosphine, germane and water. NIMS spectra measure these absorptions, allowing the determination of the abundances and spatial variability of these chemically/photochemically active species. A primary goal of NIMS is to determine phosphine abundance and spatial variability: Phosphine (PH3) is a disequilibrium species that is unstable in the Jovian high troposphere where Earth-based observations have detected it. Its presence is thus a direct indicator of vertical transfer (i.e. upwelling) from the very deep Jovian interior (from about the 1000 bar, 1000 K level). By mapping the phosphine abundance over longitude and latitude, NIMS hopes to map the major upwelling regions of Jupiter's global circulation system.

Observations of the Hot Spots:

- 1 Real-Time Jail Bar (4 point spectra located near 7 lat, 85 lon)
- 2 Recorded Jail Bars (2 20-spectra jailbars, one at 7 lat, 93 lon, the other at 7 lat, 83 lon)
- 1 HOTMAP (Large, high spatial resolution spectral map extending from lon 330 to 370 (System III))

NIMS observes the GRS, perhaps the most enigmatic feature of Jupiter, over a variety of lighting and viewing geometries to determine the vertical cloud structure and abundances of trace species (phosphine, germane and water) within the long-lived anticyclone. Observations acquired over 7 phase angles from 5 to 154 degrees will enable aerosol phase functions to be determined, useful for determining aerosol size and shape (observations in the 123, 141, and 154 phases should provide unique constraints on particle microphysical properties). Nighttime observations will allow exceptionally pristine views of PH3 absorption, enabling unprecedented accuracy in PH3 and H2O vapor abundance determinations. NIMS will also attempt to observe for the first time thermal emission in the 1.5-1.6 microns range - the shortest wavelength thermal observation yet obtained.

GRS observations include:

- 1 Recorded Jail bar located at -21 lat, 85 lon
- 11 "Feature track" oapels spread over 7 phase angles
- 3 observations of contiguous spectra, 1 in reflected sunlight and 2 thermal acquired under nighttime conditions.

Calibration

There are three NIMS calibration observations in G1: One PCT and two RCT calibrations. The PCT calibration occurs towards the end of the G1A load. An Opcal will also be performed at this time. This calibration is recorded. The first RCT calibration occurs near the start of the G1B load a few days after OTM-7 and will be returned using the new real time capability. The second RCT calibration occurs near the start of the G1C load after OTM-8 and will also be returned using real time. There aren't any explicit dark observations in G1. Dark values for all gain states used will be selected from off-limb scans. Also, an Opcal was performed during the In-Flight Load just before the start of the JOCD load and returned via real time.

Early Data Return

There are 5 realtime NIMS observations in G1: 1 Jupiter 408 wavelength jailbar observation (RTJBAR01), 2 Fixed Map Io Monitor observations (IOMON_05, IOMON_07) and 2 RCT calibrations. The Jupiter data will be returned on 6/27/96 (D178). The Io data will be returned on 6/28/96 and 6/29/96 (D180, D181). The calibration data will be returned on 7/04/96 and 8/06/96 (D186 and D219). NIMS will also participate in the SSI Ganymede closest approach early data return (GREGIO01) on 7/08/96 (D190).

G1 Playback

G1 playback will start 7/01/96 (D189) with the SSI Ganymede closest approach data in the middle of track 3. The tape will then be repositioned to the start of track 1 for the playback of the remaining J0CD data. The G1 playback will start at the beginning of track 2 and playback through the end of track 4. The start time of the G1 track 2 playback is unknown at this time, but should start about the third week of July. G1 playback is scheduled to end on 9/01/96 (D245).

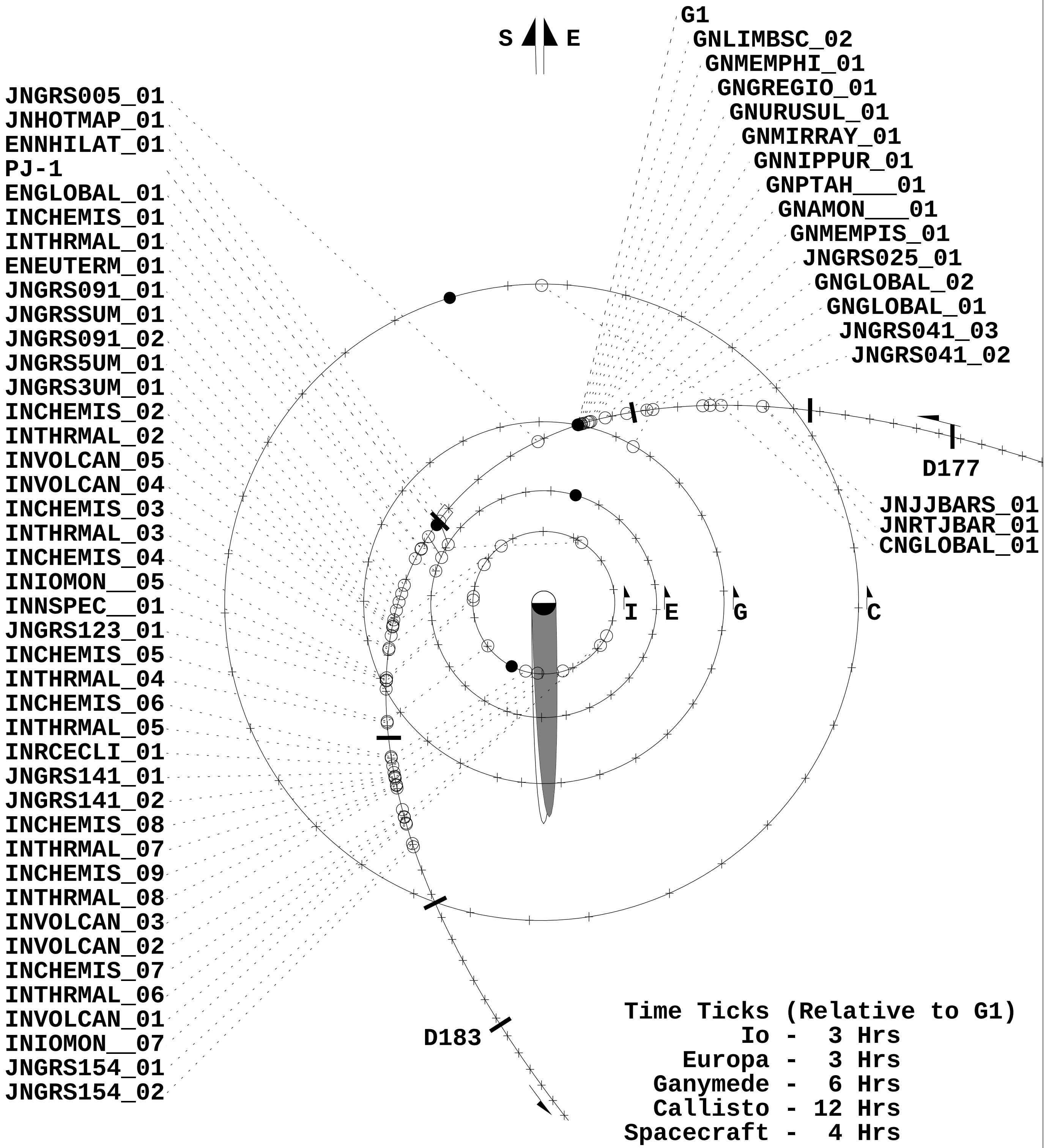
G1 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
G1NNCHOPON01-	96-176/03:10:00	96-176/03:20:00	000/00:10:00
G1JNJJBARS01-	96-178/06:59:57	96-178/07:06:01	000/00:06:04
G1JNRTJBAR01-	96-178/07:14:06	96-178/07:21:11	000/00:07:04
G1CNGLOBAL01-	96-178/12:37:40	96-178/12:43:44	000/00:06:04
G1JNGRS04102-	96-178/14:11:42	96-178/14:24:50	000/00:13:08
G1JNGRS04103-	96-178/15:13:22	96-178/15:21:24	000/00:08:02
G1GNGLOBAL01-	96-178/21:23:26	96-178/21:53:45	000/00:30:18
G1GNGLOBAL02-	96-178/22:12:59	96-178/22:28:46	000/00:15:47
G1JNGRS02501-	96-179/00:37:34	96-179/00:49:42	000/00:12:08
G1GNMEMPIS01-	96-179/03:10:15	96-179/03:24:24	000/00:14:09
G1GNAMON__01-	96-179/04:59:27	96-179/05:08:33	000/00:09:06
G1GNPTAH__01-	96-179/05:08:33	96-179/05:16:38	000/00:08:05
G1GNNIPPUR01-	96-179/05:16:38	96-179/05:31:48	000/00:15:10
G1GNMIRRAY01-	96-179/05:52:02	96-179/06:04:10	000/00:12:08
G1GNURUSUL01*	96-179/06:04:10	96-179/06:09:13	000/00:05:03
G1GNGREGIO01*	96-179/06:09:13	96-179/06:10:14	000/00:01:00
G1GNMEMPHI01*	96-179/06:19:20	96-179/06:22:22	000/00:03:02
G1GNLIMBSC02*	96-179/06:22:22	96-179/06:27:25	000/00:05:03
G1JNGRS00501-	96-179/11:16:36	96-179/11:32:36	000/00:16:00
G1JNHOTMAP01-	96-179/22:26:58	96-179/23:48:52	000/01:21:54
G1ENNHILAT01-	96-179/23:56:57	96-180/00:32:05	000/00:35:08
G1ENGLOBAL01*	96-180/01:42:06	96-180/01:55:15	000/00:13:08
G1INCHEMIS01-	96-180/03:09:04	96-180/03:13:08	000/00:04:04
G1INTHRMAL01-	96-180/03:14:07	96-180/03:16:32	000/00:02:25
G1ENEUTERM01-	96-180/03:42:26	96-180/03:48:30	000/00:16:04
G1JNGRS09101-	96-180/06:59:36	96-180/07:10:42	000/00:11:06
G1JNGRSSUB01-	96-180/07:36:00	96-180/08:31:00	000/00:55:00
G1JNGRS09102-	96-180/08:43:44	96-180/08:59:45	000/00:16:00
G1JNGRS5UM01-	96-180/09:31:16	96-180/10:09:16	000/00:38:00
G1JNGRS3UM01-	96-180/10:17:46	96-180/10:51:08	000/00:33:22
G1INCHEMIS02-	96-180/11:16:25	96-180/11:20:46	000/00:04:21
G1INTHRMAL02-	96-180/11:21:28	96-180/11:26:06	000/00:04:38
G1INVOLCAN05-	96-180/11:26:32	96-180/11:30:49	000/00:04:17
G1INVOLCAN04-	96-180/12:23:09	96-180/12:27:26	000/00:04:17

G1 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
G1INCHEMIS03-	96-180/13:45:03	96-180/13:50:35	000/00:05:32
G1INTHRMAL03-	96-180/13:52:08	96-180/13:58:36	000/00:06:28
G1INCHEMIS04-	96-180/17:00:12	96-180/17:11:41	000/00:11:29
G1INIOMON_05-	96-180/17:12:20	96-180/17:16:30	000/00:04:10
G1INNSPEC_01-	96-180/17:17:23	96-180/17:22:00	000/00:04:36
G1JNGRS12301-	96-180/18:13:00	96-180/18:21:02	000/00:08:02
G1INCHEMIS05-	96-180/22:00:30	96-180/22:05:46	000/00:05:16
G1INTHRMAL04-	96-180/22:06:34	96-180/22:11:40	000/00:05:06
G1INCHEMIS06-	96-181/02:24:24	96-181/02:28:45	000/00:04:21
G1INTHRMAL05-	96-181/02:29:27	96-181/02:35:18	000/00:05:51
G1INRCECLI01-	96-181/03:31:08	96-181/03:36:11	000/00:05:03
G1JNGRS14101-	96-181/04:18:39	96-181/04:28:40	000/00:10:00
G1JNGRS14102-	96-181/04:42:55	96-181/04:52:56	000/00:10:00
G1INCHEMIS08-	96-181/05:00:06	96-181/05:04:11	000/00:04:04
G1INTHRMAL07-	96-181/05:05:10	96-181/05:07:35	000/00:02:25
G1INCHEMIS09-	96-181/05:59:46	96-181/06:03:50	000/00:04:04
G1INTHRMAL08-	96-181/06:04:49	96-181/06:07:14	000/00:02:25
G1INVOLCAN03-	96-181/06:23:01	96-181/06:26:36	000/00:03:34
G1INVOLCAN02-	96-181/09:23:00	96-181/09:27:34	000/00:04:34
G1INCHEMIS07-	96-181/10:25:41	96-181/10:29:39	000/00:03:58
G1INTHRMAL06-	96-181/10:30:44	96-181/10:34:54	000/00:04:10
G1INVOLCAN01-	96-181/11:22:18	96-181/11:25:20	000/00:03:02
G1INIOMON_07-	96-181/11:28:22	96-181/11:32:33	000/00:04:10
G1JNGRS15401-	96-181/14:23:18	96-181/14:31:18	000/00:08:00
G1JNGRS15402-	96-181/14:43:31	96-181/14:48:32	000/00:05:00
G1NNPCTCAL01-	96-181/15:14:52	96-181/16:54:59	000/01:40:07
G1NNCHOPOF01-	96-181/19:17:32	96-181/19:27:38	000/00:10:06
G1NNSHDOFF01-	96-184/11:21:46	96-186/00:16:06	001/12:54:20
G1NNRCTRLT01-	96-186/00:16:06	96-186/13:14:39	000/12:58:33
G1NNOPCAL_01-	96-201/05:12:00	96-201/05:22:00	000/00:10:00
G1NNOPCAL_02-	96-208/03:47:00	96-208/03:54:00	000/00:07:00
G1NNCHOP0F02-	96-208/04:37:00	96-208/05:10:00	000/00:33:00
G1NNSHDOFF02-	96-217/04:55:42	96-218/17:50:02	001/12:54:20
G1NNRCTRLT02-	96-218/17:50:02	96-219/06:48:35	000/12:58:33
G1NNPCTRLT01-	96-222/07:59:00	96-224/15:52:00	002/07:53:00

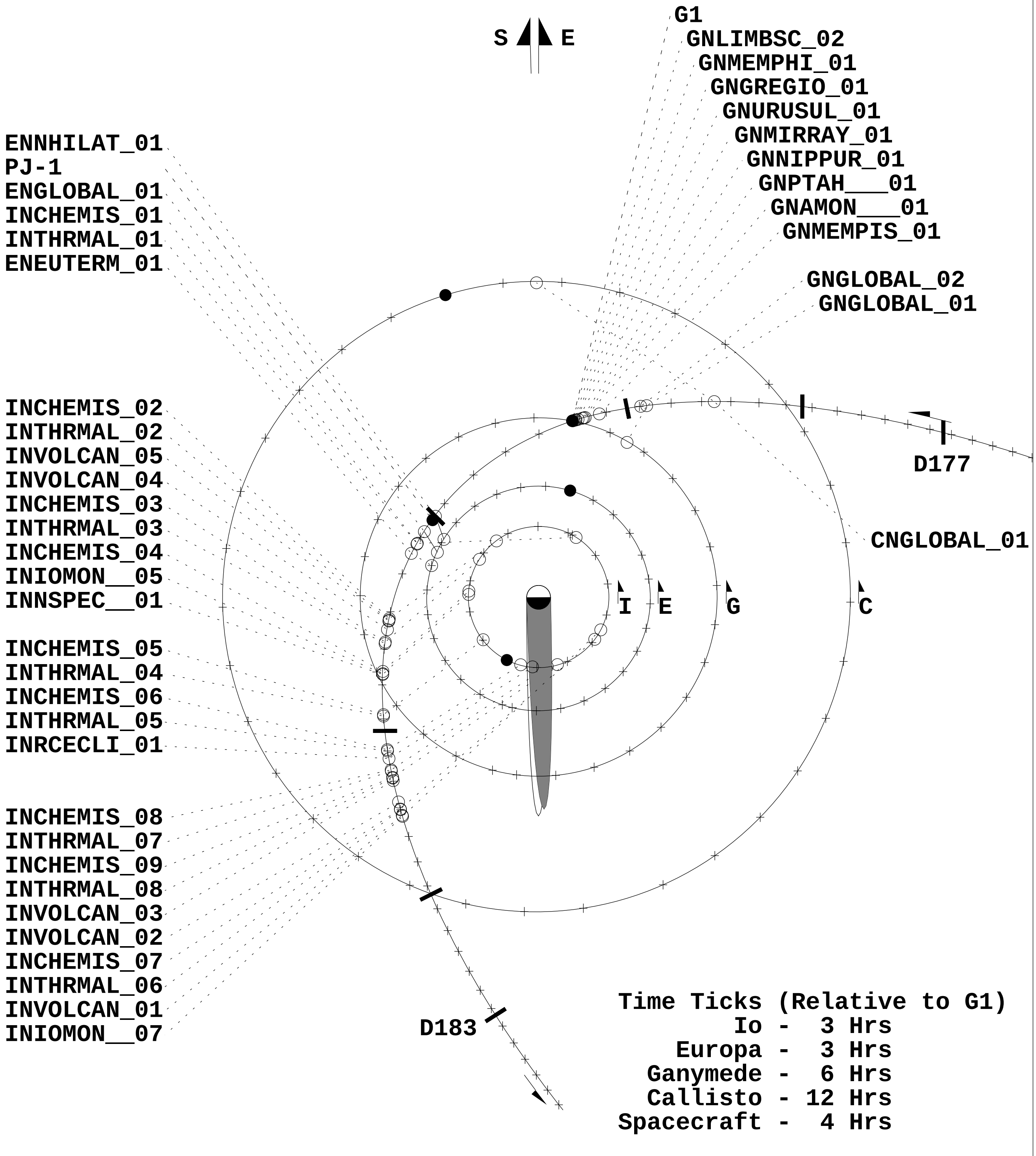
NIMS G1 OBSERVATIONS



Ganymede Flyby (G1): 27-JUN-1996 (D179) 06:29:05 UTC
Perijove (PJ1): 28-JUN-1996 (D180) 00:31:24 UTC

G1 North Trajectory Pole View

NIMS G1 SATELLITE OBSERVATIONS



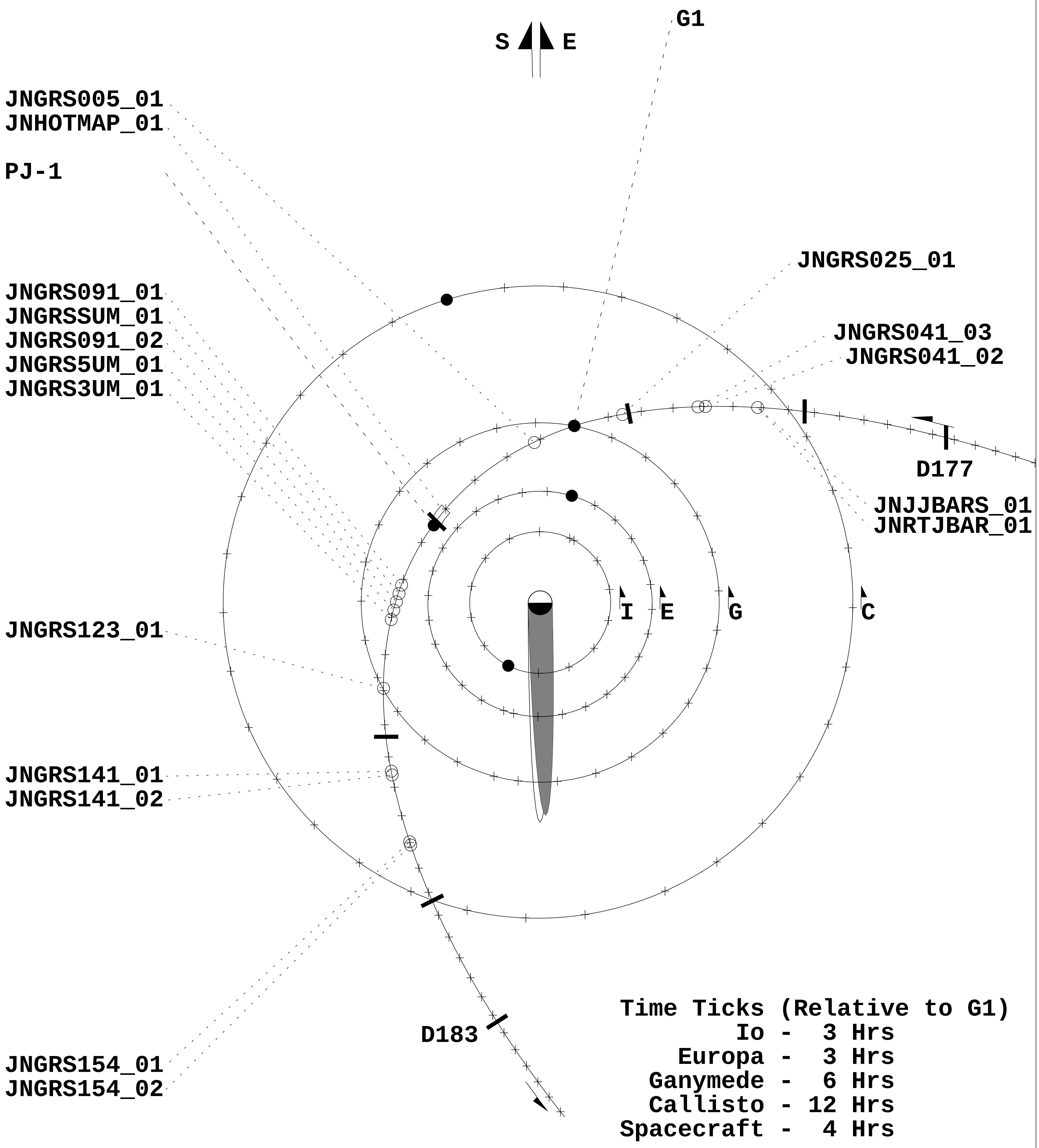
Time Ticks (Relative to G1)
Io - 3 Hrs
Europa - 3 Hrs
Ganymede - 6 Hrs
Callisto - 12 Hrs
Spacecraft - 4 Hrs

Ganymede Flyby (G1): 27-JUN-1996 (D179) 06:29:05 UTC
Perijove (PJ1): 28-JUN-1996 (D180) 00:31:24 UTC

G1 North Trajectory Pole View

NIMS - FEL - 02/12/98

NIMS G1 JUPITER OBSERVATIONS

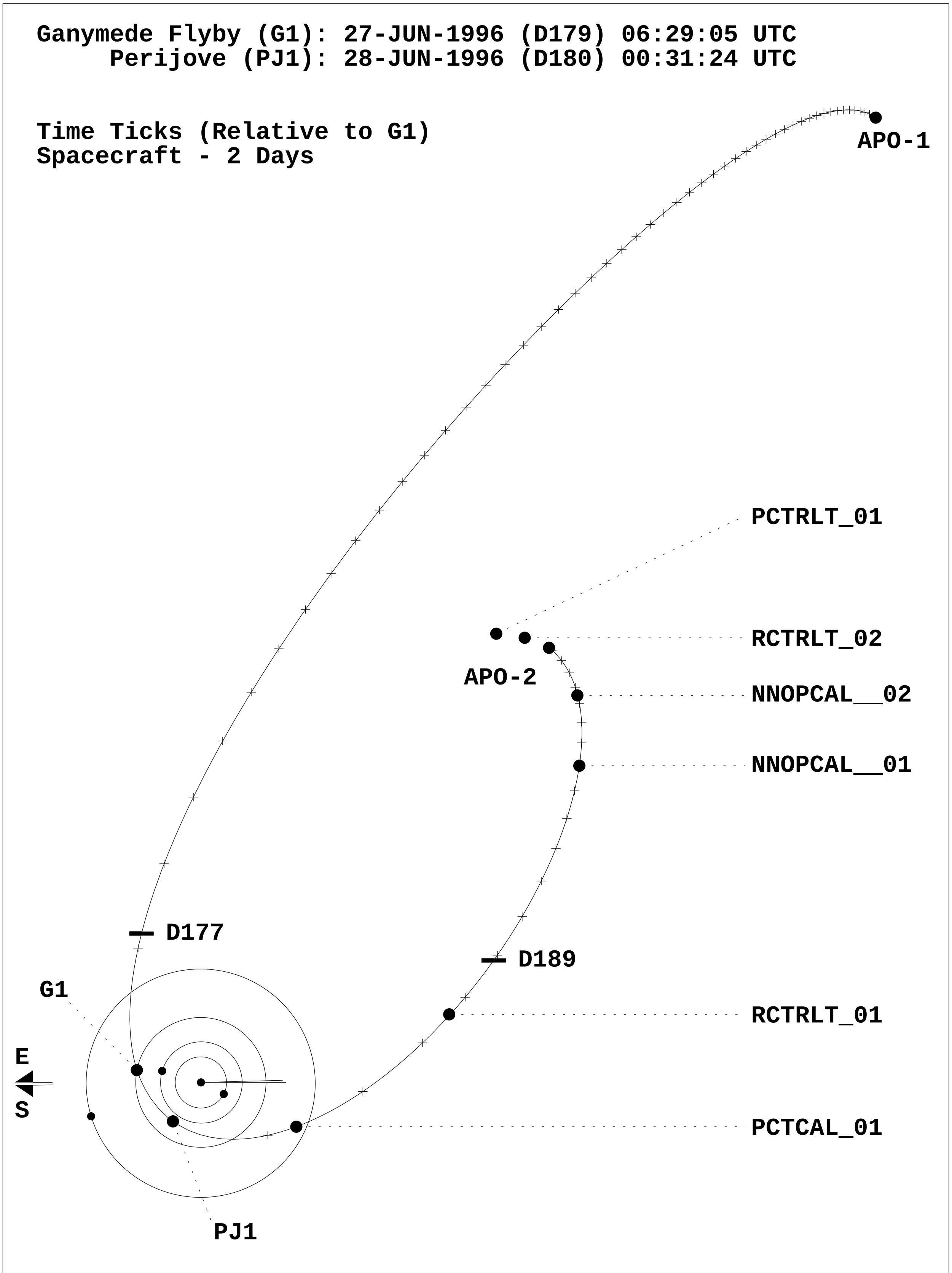


Ganymede Flyby (G1): 27-JUN-1996 (D179) 06:29:05 UTC
Perijove (PJ1): 28-JUN-1996 (D180) 00:31:24 UTC

G1 North Trajectory Pole View

NIMS - FEL - 02/12/98

NIMS G1 CALIBRATIONS



G1 North Trajectory Pole View, Apoapsis to Apoapsis

NIMS G1 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
G1JNJJBARS01	0 to +14	93	1,670K	132	59	15	48
	0 to +14	83	1,670K	132	49	11	48
	-28 to -14	84	1,670K	132	51	18	48
G1JNRTJBAR01	0 to +14	85	1,660K	132	42	13	48
G1CNGLOBAL01	-90 to +90	212 to 309	1,310K	56	33 to 130	7 to 90	123
G1JNGRS04102	-9 to -37	280 to 342	1,460K	139	14 to 49	16 to 58	40
G1JNGRS04103	-10 to -35	290 to 338	1,460K	139	16 to 53	38 to 90	41
G1GNGLOBAL01	-30 to +90	90 to 270	244K	150	0 to 114	0 to 90	29
G1GNGLOBAL02	-90 to -15	90 to 270	244K	150	0 to 114	0 to 90	29
G1JNGRS02501	-33 to -12	295 to 340	1,160K	156	16 to 34	18 to 52	25
G1GNMEMPIS01	0 to +30	105 to 165	85K	150	9 to 53	33 to 81	29
G1GNAMON__01	+27 to +40	215 to 230	36K	155	59 to 64	51 to 53	24
G1GNPTAH__01	-80 to -60	170 to 220	33K	155	67 to 70	64 to 66	24
G1GNNIPPUR01	+22 to +33	173 to 186	26K	154	30 to 31	35 to 43	25
G1GNMIRRAY01	-6 to -3	228 to 235	11K	173	57 to 65	53 to 54	7
G1GNURUSUL01	+10	168	7.5K	196	13	23	16
G1GNGREGIO01	+18	148	7.6K	201	29	47	20
G1GNMEMPHI01	+16	135	3.1K	196	39	15	17
G1GNLIMBSC02	-12 to +14	146 to 186	2K	90	0 to 30	61 to 108	90
G1JNGRS00501	-32 to -15	308 to 330	890K	177	24 to 36	26 to 40	5
G1JNHOTMAP01	+5 to +15	330 to 370	720K	132	38 to 76	6 to 31	44 to 50

NIMS G1 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
G1ENNHILAT01	-60 to +90	135 to 300	156K	150	0 to 90	9 to 90	31
G1ENGLOBAL01	-15 to +90	165 to 300	156K	150	0 to 90	9 to 90	31
G1INCHEMIS01	-90 to +90	49 to 146	946K	87	3 to 99	7 to 90	92
G1INTHRMAL01	-90 to +90	326 to 64	792K	87	85 to 176	7 to 90	92
G1JNGRS09101	-32 to -15	302 to 350	800K	93	20 to 40	57 to 92	87
G1JNGRSSUB01	-32 to -15	300 to 340	800K	91	25 to 84	27 to 76	89
G1JNGRS09102	-32 to -16	308 to 342	800K	89	61 to 96	26 to 44	91
G1JNGRS5UM01	-32 to -14	304 to 328	814K	89	107 to 125	30 to 52	90
G1JNGRS3UM01	-32 to -15	290 to 335	840K	88	118 to 152	37 to 91	92
G1INCHEMIS02	-90 to +90	88 to 181	793K	53	36 to 129	4 to 90	126
G1INTHRMAL02	-90 to +90	2 to 123	792K	53	94 to 176	2 to 90	126
G1INVOLCAN05	-90 to +90	3 to 122	791K	53	96 to 172	3 to 90	126
G1INVOLCAN04	-90 to +90	8 to 127	773K	51	99 to 172	3 to 90	128
G1INCHEMIS03	-90 to +90	109 to 197	745K	48	41 to 129	2 to 90	131
G1INTHRMAL03	-90 to +90	18 to 152	743K	48	88 to 178	2 to 90	131
G1INCHEMIS04	-90 to +90	133 to 223	700K	47	43 to 133	0 to 90	133
G1INIOMON_05	-90 to +90	43 to 143	701K	47	116 to 145	35 to 90	132
G1INNSPEC_01	-90 to +90	46 to 183	700K	47	85 to 175	0 to 90	132
G1JNGRS12301	-34 to -14	306 to 340	1,020K	58	54 to 75	51 to 77	122

NIMS G1 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
G1INCHEMIS05	-90 to +90	184 to 272	745K	53	36 to 124	5 to 90	126
G1INTHRMAL04	-90 to +90	93 to 229	747K	53	79 to 176	0 to 90	126
G1INCHEMIS06	-90 to +90	229 to 313	947K	90	32 to 116	6 to 90	122
G1INTHRMAL05	-90 to +90	134 to 252	952K	90	94 to 167	4 to 90	122
G1INRCECLI01	-90 to +90	143 to 268	1,020K	90	86 to 167	7 to 90	122
G1JNGRS14101	-37 to -12	287 to 330	1,300K	72	52 to 100	43 to 91	141
G1JNGRS14102	-38 to -10	293 to 350	1,310K	72	54 to 109	34 to 90	141
G1INCHEMIS08	-90 to +90	270 to 315	1,124K	89	52 to 97	25 to 70	123
G1INTHRMAL07	-90 to +90	180 to 314	1,113K	89	53 to 171	7 to 69	123
G1INCHEMIS09	-90 to +90	273 to 325	1,200K	88	51 to 103	20 to 72	124
G1INTHRMAL08	-90 to +90	185 to 319	1,204K	88	57 to 176	8 to 73	124
G1INVOLCAN03	-90 to +90	165 to 344	1,227K	88	34 to 178	8 to 90	124
G1INVOLCAN02	-90 to +90	186 to 365	1,466K	55	39 to 177	1 to 90	128
G1INCHEMIS07	-90 to +90	288 to 354	1,550K	53	59 to 125	5 to 71	131
G1INTHRMAL06	-90 to +90	193 to 373	1,556K	53	41 to 169	10 to 90	131
G1INVOLCAN01	-90 to +90	19 to 199	1,624K	52	42 to 174	6 to 90	132
G1INIOMON_07	-90 to +90	22 to 197	1,635K	51	74 to 108	90	133
G1JNGRS15401	-37 to -10	292 to 330	1,590K	32	63 to 96	57 to 91	154
G1JNGRS15402	-37 to -10	305 to 335	1,600K	32	63 to 96	57 to 91	154

NIMS G1 Resource Usage

Observation Name Act ID (Title)	NIMS mode SAFE	Record mode	Obs. Cost Tracks	Obs. Cost Ticks	Number λ return	Observation record time (sec)	Bits of Tape BOT (Mbit)	Mode cycle time (sec)	Total MbitTG (2 compress) (w/ 4% overhead)	Data Reduction Factor (BOT/BTG)	Real Time Mub level
G1NNCHOPON01-	SAFE										
G1JNJJBARS01-	LM	MPW	0.0122	85	408	94	**1.08**	8.667	0.460	**2.4**	
G1JNRTJBAR01-	LM	R/T	**Time in RIMS**		408	1	0	8.667	0.016	**1.0**	**3.27%**
G1CNGLOBAL01-	LM	LPU	0.0030	21	228	82	**0.51**	8.667	0.224	**2.3**	
G1JNGRS04102-	SM	LPU	0.0221	154	19	650	**4.01**	2.33	0.551	**7.3**	
G1JNGRS04103-	SM	LPU	0.0122	85	19	354	**2.18**	2.33	0.300	**7.3**	
G1GNGLOBAL01-	LM	LPU	0.0771	538	228	2287	**14.11**	8.667	6.257	**2.3**	
G1JNGRS02501-	SM	LPU	0.0225	157	4	660	**4.07**	2.33	0.118	**34.5**	
G1GNMEMPIS01-	LM	LPU	0.0166	116	228	485	**2.99**	8.667	1.327	**2.3**	
G1GNAMON__01-	LM	LPU	0.0102	71	228	296	**1.83**	8.667	0.810	**2.3**	
G1GNPTAH__01-	LM	LPU	0.0082	57	228	235	**1.45**	8.667	0.643	**2.3**	
G1GNNIPPUR01-	LM	LPU	0.0227	158	228	667	**4.11**	8.667	1.825	**2.3**	
G1GNMIRRAY01-	LM	LPU	0.0183	127	228	535	**3.30**	8.667	1.464	**2.3**	
			0.2251	**1570**							
G1GNURUSUL01*	SM	IM4			102	33	**0.38**	2.33	0.150	**2.5**	
G1GNGREGIO01*	SM	IM4			102	36	**0.41**	2.33	0.164	**2.5**	
G1GNMEMPHI01*	SM	HIS			102	45	**0.52**	2.33	0.205	**2.5**	
G1GNLIMBSC02*	XS	MPW			3	181	**2.09**	0.1667	0.339	**6.2**	
G1JNGRS00501-	SM	LPU	0.0238	166	4	700	**4.32**	2.33	0.125	**34.5**	
G1JNHOTMAP01-	LM	LPU	0.1103	770	238	3276	**20.21**	8.667	9.356	**2.2**	
			0.1342	**936**							
G1ENNHILAT01-	LM	LPU	0.0610	426	228	1808	**11.15**	8.667	4.946	**2.3**	
G1ENGLOBAL01*	XM	HCA			17	26	**0.30**	0.333	0.138	**2.2**	
G1INCHEMIS01-	LM	LPU	0.0023	16	228	60	**0.37**	8.667	0.164	**2.3**	
G1INTHRMAL01-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1JNGRS09101-	SM	LPU	0.0110	77	4	318	**1.96**	2.33	0.057	**34.5**	
G1JNGRSSUB01-	LM	LPU	0.1067	745	80	3168	**19.54**	8.667	3.041	**6.4**	
G1JNGRS09102-	SM	LPU	0.0243	170	4	716	**4.42**	2.33	0.128	**34.5**	
G1JNGRS5UM01-	LM	LPU	0.0725	505	80	2148	**13.25**	8.667	2.062	**6.4**	
G1JNGRS3UM01-	LM	LPU	0.0655	457	160	1942	**11.98**	8.667	3.728	**3.2**	
G1INCHEMIS02-	LM	LPU	0.0026	18	102	68	**0.42**	8.667	0.083	**5.0**	
G1INTHRMAL02-	LM	LPU	0.0035	25	102	96	**0.59**	8.667	0.117	**5.0**	
G1INVOLCAN05-	XM	LPU	0.0006	4	10	9	**0.06**	0.333	0.028	**2.0**	

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NIMS G1 Resource Usage

Observation Name Act ID (Title)	NIMS mode SAFE	Record mode	Obs. Cost Tracks	Obs. Cost Ticks	Number λ return	Observation record time (sec)	Bits of Tape BOT (Mbit)	Mode cycle time (sec)	Total MbitTG (2 compress) (w/ 4% overhead)	Data Reduction Factor (BOT/BTG)	Real Time Mub level
G1INVOLCAN04-	XM	LPU	0.0006	4	10	9	**0.06**	0.333	0.028	**2.0**	
G1INCHEMIS03-	LM	LPU	0.0033	23	102	89	**0.55**	8.667	0.109	**5.0**	
G1INTHRMAL03-	LM	LPU	0.0072	50	102	205	**1.26**	8.667	0.251	**5.0**	
G1INCHEMIS04-	LM	LPU	0.0045	31	228	125	**0.77**	8.667	0.342	**2.3**	
G1INIOMON_05-	XM	R/T	**Time in RIMS**		8	1	**0.00**	0.333	0.016	**1.0**	**3.27%**
G1INNSPEC_01-	LM	MPW	0.0204	142	408	159	**1.83**	8.667	0.778	**2.4**	
G1JNGRS12301-	SM	LPU	0.0081	56	15	232	**1.43**	2.33	0.155	**9.2**	
G1INCHEMIS05-	LM	LPU	0.0045	31	102	125	**0.77**	8.667	0.153	**5.0**	
G1INTHRMAL04-	XM	LPU	0.0006	4	10	9	**0.06**	0.333	0.028	**2.0**	
G1INCHEMIS06-	LM	LPU	0.0027	19	102	72	**0.44**	8.667	0.088	**5.0**	
G1INTHRMAL05-	XM	LPU	0.0006	4	10	8	**0.05**	0.333	0.025	**2.0**	
G1INRTECLI01-	XM	LPU	0.0006	4	10	8	**0.05**	0.333	0.025	**2.0**	
G1JNGRS14101-	SM	LPU	0.0151	106	15	442	**2.73**	2.33	0.296	**9.2**	
G1JNGRS14102-	SM	LPU	0.0161	113	15	472	**2.91**	2.33	0.316	**9.2**	
G1INCHEMIS08-	LM	LPU	0.0014	10	228	33	**0.20**	8.667	0.090	**2.3**	
G1INTHRMAL07-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1INCHEMIS09-	LM	LPU	0.0014	10	228	33	**0.20**	8.667	0.090	**2.3**	
G1INTHRMAL08-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1INVOLCAN03-	XM	LPU	0.0006	4	10	8	**0.05**	0.333	0.025	**2.0**	
G1INVOLCAN02-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1INCHEMIS07-	LM	LPU	0.0014	10	102	33	**0.20**	8.667	0.040	**5.0**	
G1INTHRMAL06-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1INVOLCAN01-	XM	LPU	0.0005	4	10	7	**0.04**	0.333	0.022	**2.0**	
G1INIOMON_07-	XM	R/T	**Time in RIMS**		8	1	**0.00**	0.333	0.016	**1.0**	**3.27%**
G1JNGRS15401-	SM	LPU	0.0078	55	15	224	**1.38**	2.33	0.150	**9.2**	
G1JNGRS15402-	SM	LPU	0.0062	43	15	176	**1.09**	2.33	0.118	**9.2**	
G1NNPCTCAL01-	LM	LPU	0.0186	130	252	546	**3.37**	8.667	1.651	**2.0**	
G1NNRCTRLT01-	LM	R/T	**Time in RIMS**		252	4	**0.00**	8.667	0.040	**1.0**	**8.07%**
G1NNRCTRLT02-	LM	R/T	**Time in RIMS**		252	4	**0.00**	8.667	0.040	**1.0**	**8.07%**
			0.4747	**3312**			**149.67**		**43.832**		**0.13**
			0.8339	**5818**							

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NIMS G1 Resource Usage

Observation Name Act ID (Title)	Calibration	Atmosphere	Ganymede	Io	Europa	Callisto
	G1 Bits to Ground (MBITS)					
G1NNCHOPON01-						
G1JNJJBARS01-		0.46				
G1JNRTJBAR01-		0.02				
G1CNGLOBAL01-						0.22
G1JNGRS04102-		0.55				
G1JNGRS04103-		0.30				
G1GNGLOBAL01-			6.26			
G1JNGRS02501-		0.12				
G1GNMEMPIS01-			1.33			
G1GNAMON__01-			0.81			
G1GNPTAH__01-			0.64			
G1GNNIPPUR01-			1.82			
G1GNMIRRAY01-			1.46			
G1GNURUSUL01*			0.15			
G1GNGREGIO01*			0.16			
G1GNMEMPHI01*			0.20			
G1GNLIMBSC02*			0.34			
G1JNGRS00501-		0.12				
G1JNHOTMAP01-		9.36	It use to have 11.393 MBTG.			
G1ENNHILAT01-					4.95	
G1ENGLOBAL01*					0.14	
G1INCHEMIS01-				0.16		
G1INTHRMAL01-				0.02		
G1JNGRS09101-		0.06				
G1JNGRSSUB01-		3.04				
G1JNGRS09102-		0.13				
G1JNGRS5UM01-		2.06				
G1JNGRS3UM01-		3.73				
G1INCHEMIS02-				0.08		
G1INTHRMAL02-				0.12		
G1INVOLCAN05-				0.03		

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NIMS G1 Resource Usage

Observation Name Act ID (Title)	Calibration	Atmosphere	Ganymede	Io	Europa	Callisto	
	G1 Bits to Ground (MBITS)						
G1INVOLCAN04-				0.03			
G1INCHEMIS03-				0.11			
G1INTHRMAL03-				0.25			
G1INCHEMIS04-				0.34			
G1INIOMON_05-				0.02			
G1INNSPEC_01-				0.78			
G1JNGRS12301-		0.16					
G1INCHEMIS05-				0.15			
G1INTHRMAL04-				0.03			
G1INCHEMIS06-				0.09			
G1INTHRMAL05-				0.02			
G1INRTECLI01-				0.02			
G1JNGRS14101-		0.30					
G1JNGRS14102-		0.32					
G1INCHEMIS08-				0.09			
G1INTHRMAL07-				0.02			
G1INCHEMIS09-				0.09			
G1INTHRMAL08-				0.02			
G1INVOLCAN03-				0.02			
G1INVOLCAN02-				0.02			
G1INCHEMIS07-				0.04			
G1INTHRMAL06-				0.02			
G1INVOLCAN01-				0.02			
G1INIOMON_07-				0.02			
G1JNGRS15401-		0.15					
G1JNGRS15402-		0.12					
G1NNPCTCAL01-	1.65						
G1NNRCTRLT01-	0.04						
G1NNRCTRLT02-	0.04						**TOTAL MBGT**
	1.73	**20.98**	**13.18**	**2.63**	**5.08**	**0.22**	**43.83**
	3.28	**17.29**	**21.13**	**3.13**	**3.77**	**0.95**	**49.55**
	These are original G1 3.1 Track case MBTG.						

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NIMS G1 Input

Activity ID	Observation Title	Mode	Gain	Record Format	NIMS Edit Table	NIMS Playback Table	Extra Detectors	Grating Start Position	Grating Offset
G1JNJJBARS01-	JJBARS	LM	2	MPW	G1JFE442A	G1JFE408A		0	4
G1JNRTJBAR01-	Real Time Jupiter Jailbars #1	LM	2	Real Time	G1JFE442A	Real Time		0	4
G1CNGLOBAL01-	Callisto Global Composition Map	LM	4	LPU	G1CLM245	G1CLM228	11,12	0	4
G1JNGRS04102-	GRS 41 Phase #2	SM	2	LPU	G1JFT68C	G1JFT19A		1	4
G1JNGRS04103-	GRS 41 Phase #3	SM	2	LPU	G1JFT68C	G1JFT19A		1	4
G1GNGLOBAL01-	GANYMEDE GLOBAL SURFACE MAP	LM	2	LPU	G1GLM245D	G1GLM228	5,6	0	4
G1JNGRS02501-	GRS 25 Phase #1	SM	2	LPU	G1JFT68A	G1JFT04A		1	4
G1GNMEMPIS01-	Memphis Facula Furrows/Palimpsest	LM	3	LPU	G1GLM245F	G1GLM228	13,14	0	4
G1GNAMON__01-	AMON Bright rayed crater/groove terrain	LM	2	LPU	G1GLM245E	G1GLM228	3,4	0	4
G1GNPTAH 01-	RAYED CRATER PTAH	LM	2	LPU	G1GLM245C	G1GLM228	6,7	0	4
G1GNNIPPUR01-	NIPPUR SULCUS (furrows/dark/groove)	LM	3	LPU	G1GLM245B	G1GLM228	7,8	0	4
G1GNMIRRAY01-	Mir a dark rayed crater	LM	3	LPU	G1GLM245A	G1GLM228	11,12	0	4
G1GNURUSUL01*	NIMS ride with SSI on Urus sulcus	SM	3	IM4	G1GSM119	G1GSM102		0	4
G1GNGREGIO01*	NIMS ride with SSI on Galileo Regio	SM	3	IM4	G1GSM119	G1GSM102		0	4
G1GNMEMPHI01*	NIMS ride with SSI on Memphis	SM	3	HIS	G1GSM119	G1GSM102		0	4
G1GNLIMBSC02*	Limb Scan for atmosphere	XS	4	MPW	G1GXS17	G1GXS003		1	4
G1JNGRS00501-	GRS 5 Phase #1	SM	2	LPU	G1JFT68A	G1JFT04A		1	4
G1JNHOTMAP01-	HOTMAP	LM	2	LPU	G1JHT238A	G1JHT238A		0	4
G1ENNHILAT01-	EUROPA NORTH HIGH LATITUDE COVERAGE	LM	2,3	LPU	G1ELM228	G1ELM228	6,7	0	4
G1ENGLOBAL01*	Europa coordinated science NIMS/SSI	XM	2	HCA	G1EXM17	G1EXM17		0	4

NIMS G1 Input

Activity ID	Observation Title	Mode	Gain	Record Format	NIMS Edit Table	NIMS Playback Table	Extra Detectors	Grating Start Position	Grating Offset
G1INCHEMIS01-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM228	9,10	0	4
G1INTHRMAL01-	MONITORING OF IO'S NIGHTSIDE	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1JNGRS09101-	GRS 91 Phase #1	SM	2	LPU	G1JFT68A	G1JFT04A		1	4
G1JNGRSSUB01-	GRS CFSUB	LM	2	LPU	G1JSB253A	G1JSB80A		0	4
G1JNGRS09102-	GRS 91 Phase #2	SM	2	LPU	G1JFT68A	G1JFT04A		1	4
G1JNGRS5UM01-	GRS 5-micron map #1	LM	4	LPU	G1J5M253B	G1J5M80B		0	4
G1JNGRS3UM01-	GRS 3-micron map	LM	4	LPU	G1J35160	G1J35160		0	4
G1INCHEMIS02-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM102		0	4
G1INTHRMAL02-	MONITORING OF IO'S NIGHTSIDE	LM	4	LPU	G1ILMDK245	G1ILMDK102		0	4
G1INVOLCAN05-	MONITORING OF SELECTED VOLCANIC REGIONS	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INVOLCAN04-	MONITORING OF SELECTED VOLCANIC REGIONS	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INCHEMIS03-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM102		0	4
G1INTHRMAL03-	MONITORING OF IO'S NIGHTSIDE	LM	4	LPU	G1ILMDK245	G1ILMDK102		0	4
G1INCHEMIS04-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM228	9,10	0	4
G1INIOMON 05-	Io Monitoring in Real Time	XM	2	Real Time	G1IXM8RT	Real Time		21	4
G1INNSPEC 01-	NIGHTSIDE SPECTRA AT HIGH RESOLUTION	LM	4	MPW	G1ILM442	G1ILM408		0	4
G1JNGRS12301-	GRS 123 Phase #1	SM	2	LPU	G1JFT68B	G1JFT15A		1	4
G1INCHEMIS05-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM102		0	4
G1INTHRMAL04-	MONITORING OF IO'S NIGHTSIDE	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INCHEMIS06-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM102		0	4

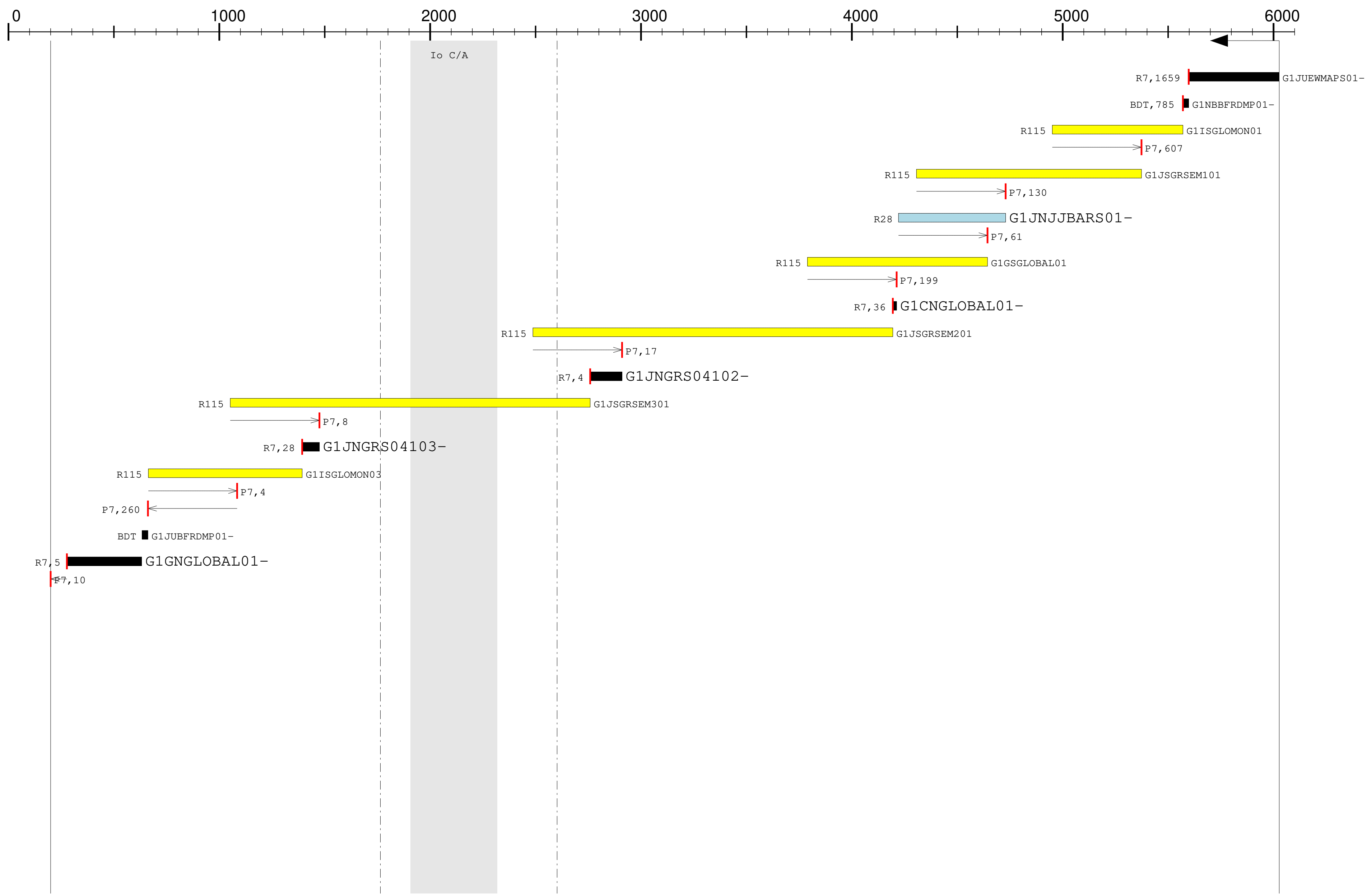
NIMS G1 Input

Activity ID	Observation Title	Mode	Gain	Record Format	NIMS Edit Table	NIMS Playback Table	Extra Detectors	Grating Start Position	Grating Offset
G1INTHRMAL05-	MONITORING OF IO'S NIGHTSIDE	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INRCECLI01-	Io Eclipse Recorded observation	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1JNGRS14101-	GRS 141 Phase #1	SM	2	LPU	G1JFT68B	G1JFT15A		1	4
G1JNGRS14102-	GRS 141 Phase #2	SM	2	LPU	G1JFT68B	G1JFT15A		1	4
G1INCHEMIS08-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM228	9,10	0	4
G1INTHRMAL07-	MONITORING OF IO'S NIGHTSIDE	XM	4	LPU	G1IXM10	G1IXM10		21	4
G1INCHEMIS09-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM228	9,10	0	4
G1INTHRMAL08-	MONITORING OF IO'S NIGHTSIDE	XM	4	LPU	G1IXM10	G1IXM10		21	4
G1INVOLCAN03-	MONITORING OF SELECTED VOLCANIC REGIONS	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INVOLCAN02-	MONITORING OF SELECTED VOLCANIC REGIONS	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INCHEMIS07-	MONITORING OF IO'S DAYSIDE	LM	2	LPU	G1ILM245	G1ILM102		0	4
G1INTHRMAL06-	MONITORING OF IO'S NIGHTSIDE	XM	4	LPU	G1IXM10	G1IXM10		21	4
G1INVOLCAN01-	MONITORING OF SELECTED VOLCANIC REGIONS	XM	2	LPU	G1IXM10	G1IXM10		21	4
G1INIOMON 07-	Io Monitoring in Real Time	XM	2	Real Time	G1IXM8RT	Real Time		21	4
G1JNGRS15401-	GRS 154 Phase #1	SM	2	LPU	G1JFT68B	G1JFT15A		1	4
G1JNGRS15402-	GRS 154 Phase #2	SM	2	LPU	G1JFT68B	G1JFT15A		1	4
G1NNPCTCAL01-	PCT Calibration	LM	4	LPU	G1PCT252	G1PCT252		0	4
G1NNRCTRLT01-	NIMS Real Time Calibration #1	LM	1	Real Time	G1RCT252	Real Time		0	4
G1NNRCTRLT02-	NIMS Real Time Calibration #2	LM	1	Real Time	G1RCT252	Real Time		0	4

Phase 2A Tapemap of orpro.g01ajf
Date: Mon May 13 12:53:53 1996 Page: 1

Track 2

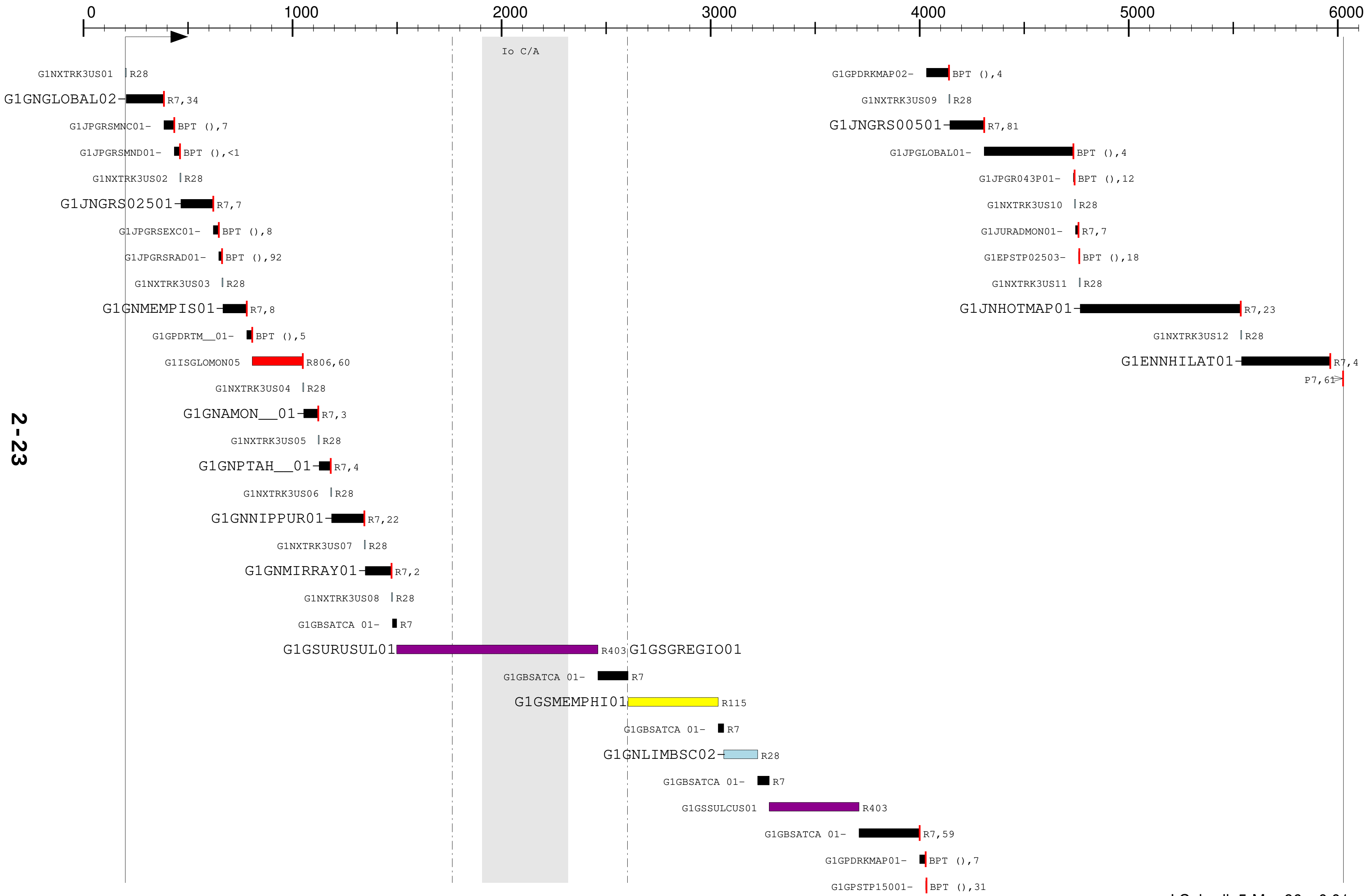
G1



J.Culwell, 5-Mar-96, v0.01
FEL-NIMS, modified 15-Mar-96

Phase 2A Tapemap of orpro.g01ajf
Date: Mon May 13 12:53:53 1996 Page: 2

Track 3

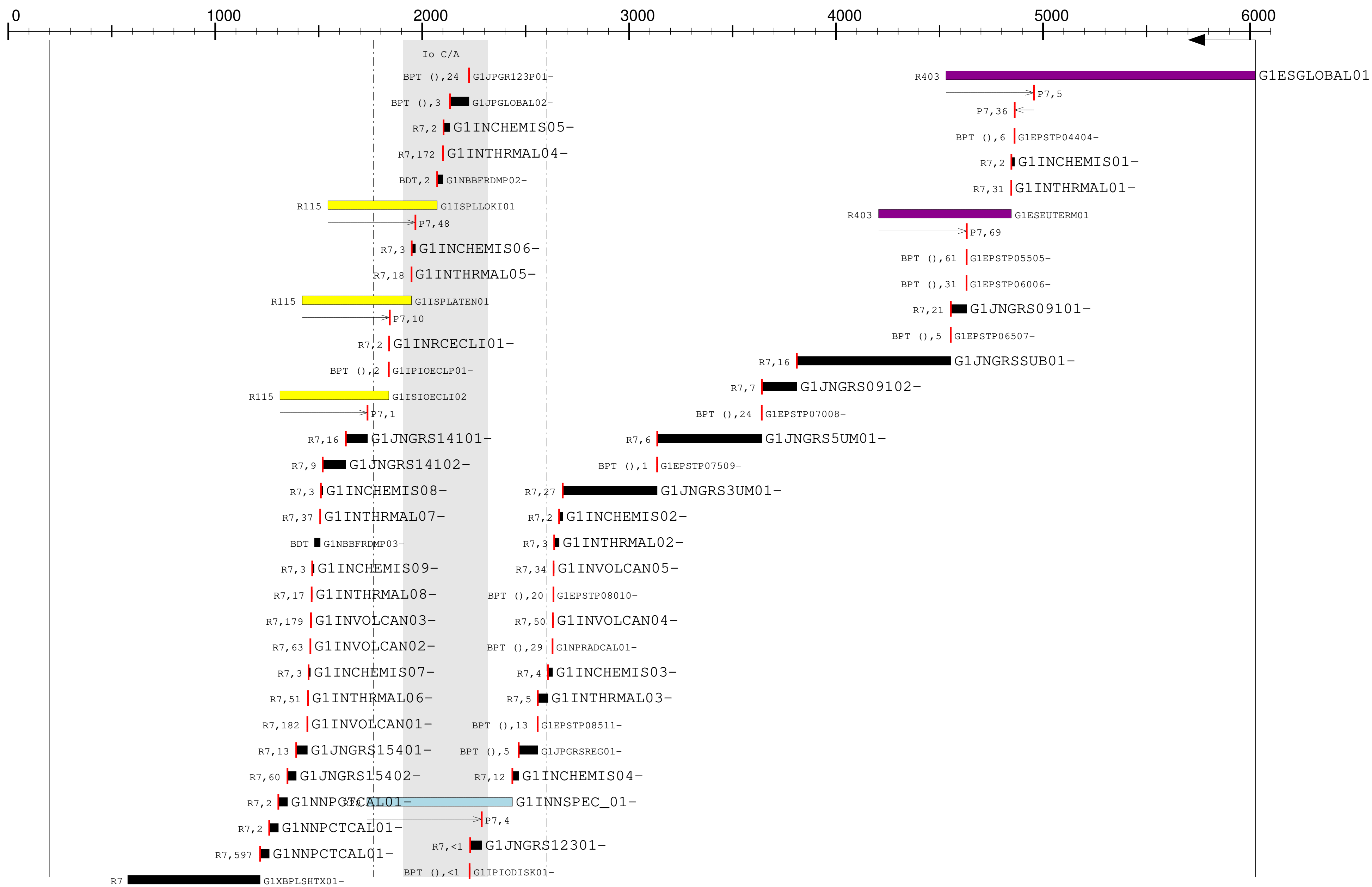


2-23

J.Culwell, 5-Mar-96, v0.01
FEL-NIMS, modified 15-Mar-96

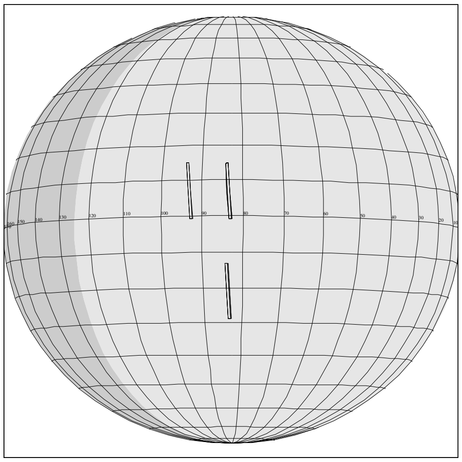
Phase 2A Tapemap of orpro.g01ajf
Date: Mon May 13 12:53:53 1996 Page: 3

Track 4



J.Culwell, 5-Mar-96, v0.01
FEL-NIMS, modified 15-Mar-96

G1 NIMS A



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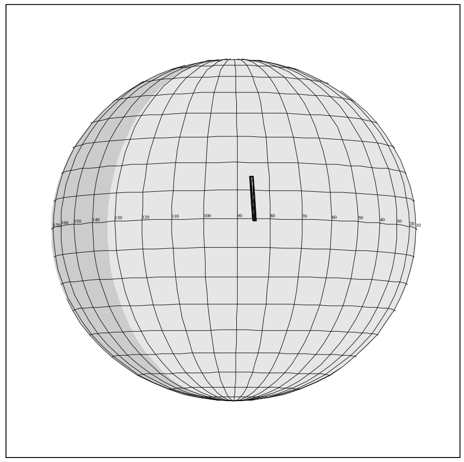

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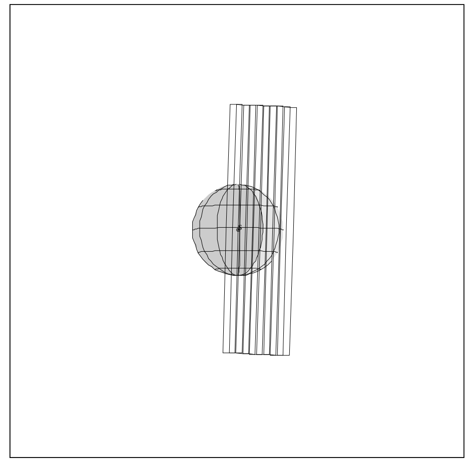
96-178/07:14:06



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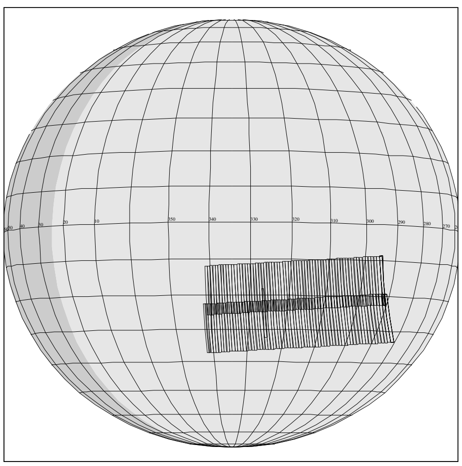
96-178/12:37:40



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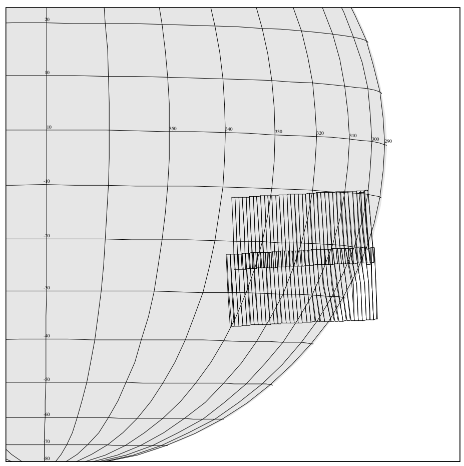
96-178/14:11:42



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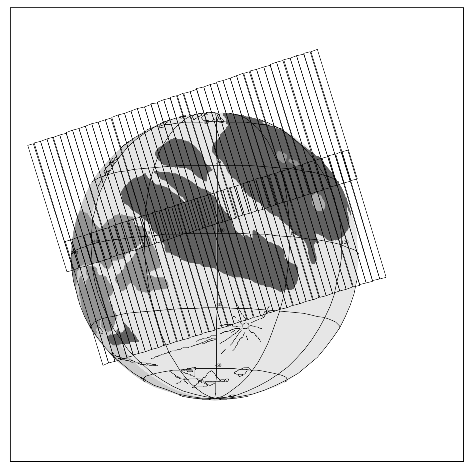
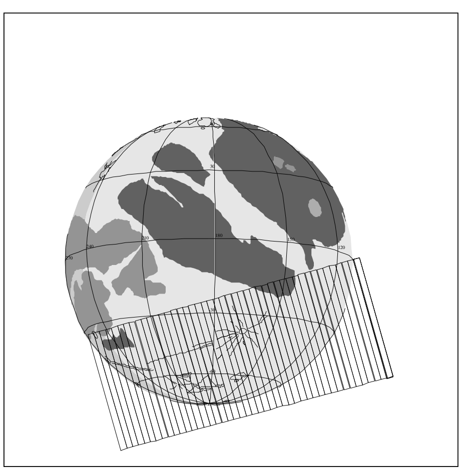
96-178/15:13:22



G1GNGLOBAL01
96-178/21:23:26



G1GNGLOBAL02
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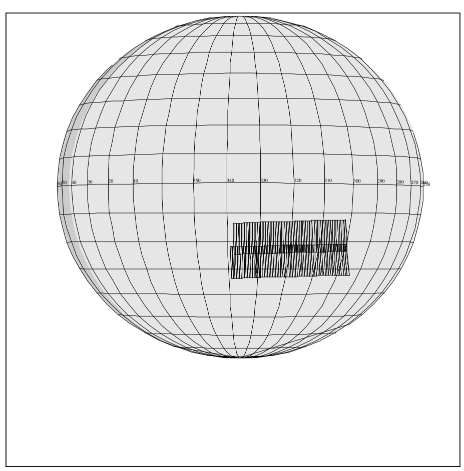

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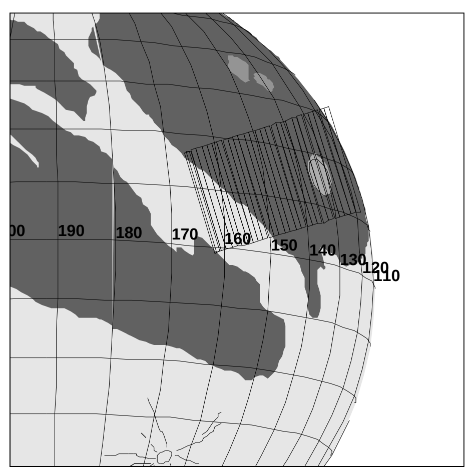
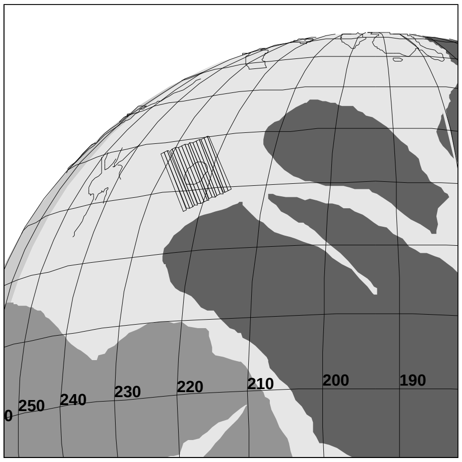
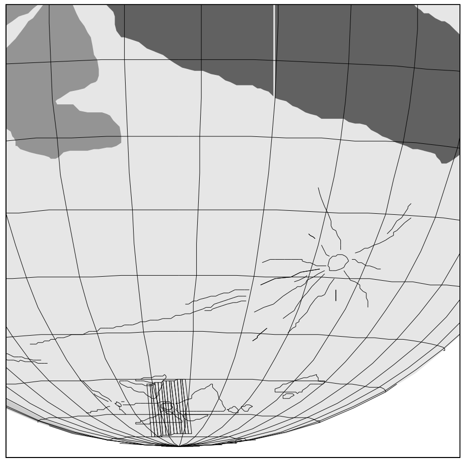


G1GNMEMPIS01
96-179/03:10:15

G1 NIMS B



G1GNAMON__01
96-179/04:59:27



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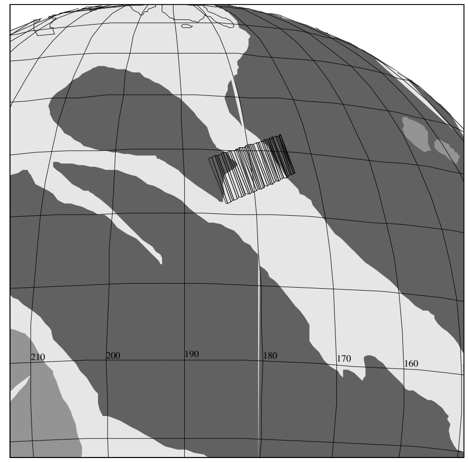
96-179/05:08:33



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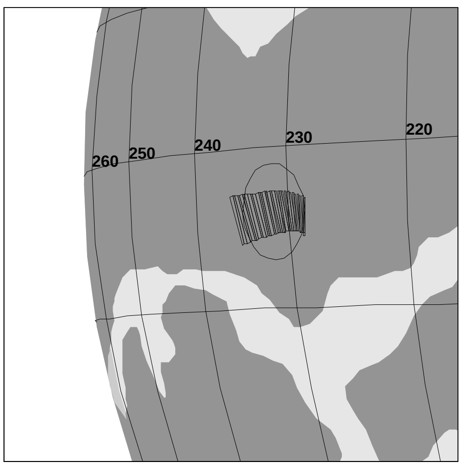

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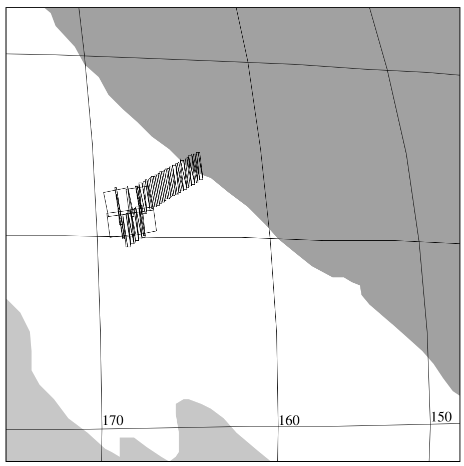
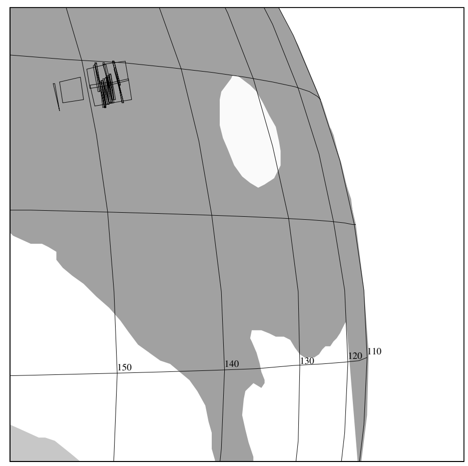


G1GNURUSUL01
96-179/06:04:10



G1GNGREGIO01
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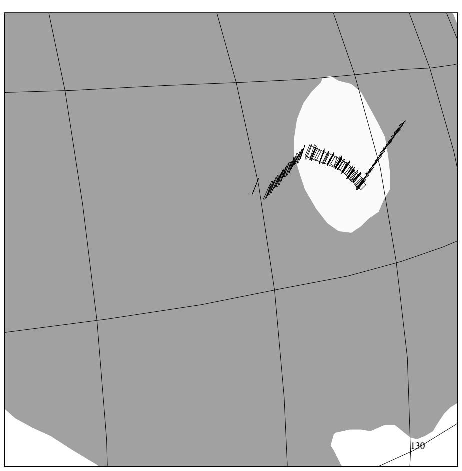

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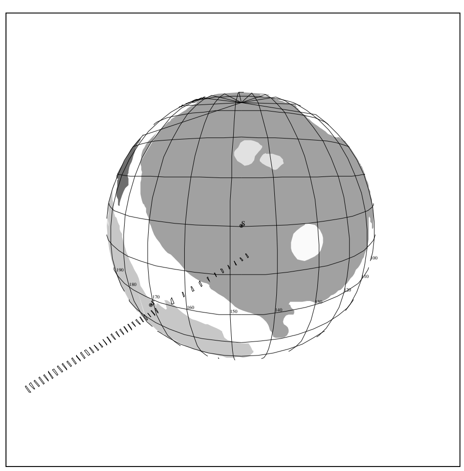
96-179/06:19:20



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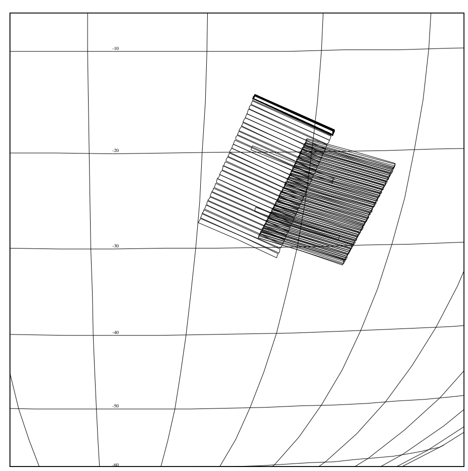
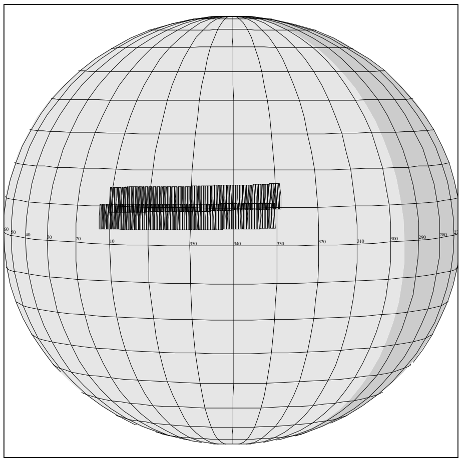
96-179/06:22:22



G1JNGRS00501
96-179/11:16:36

G1 NIMS C



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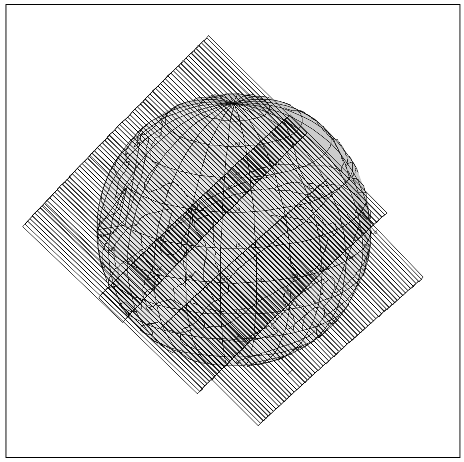
96-179/22:26:58



G1ENNHILAT01
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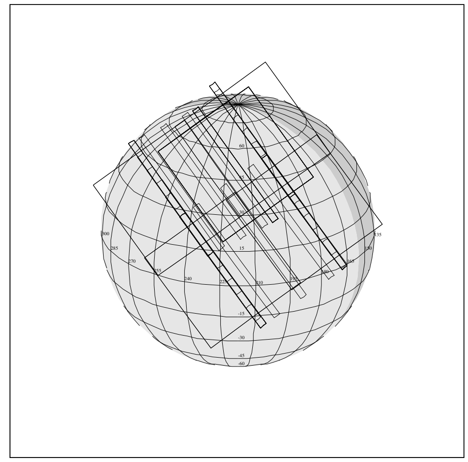

G1ENGLOBAL01
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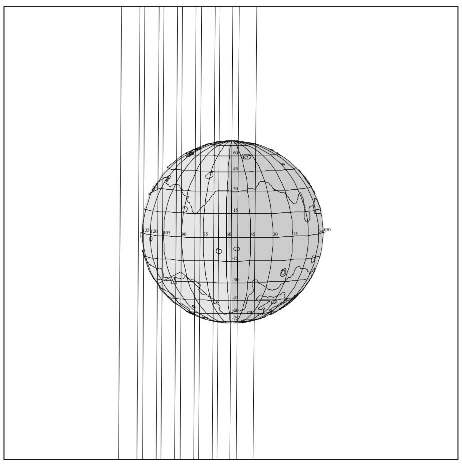
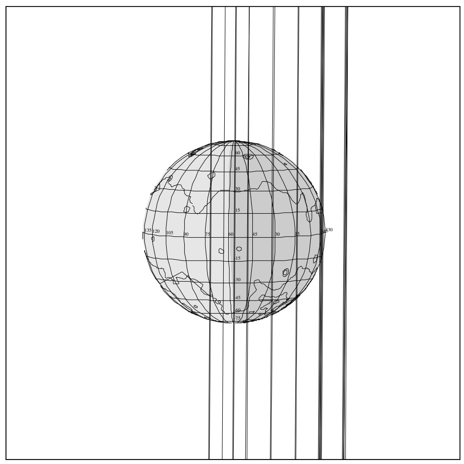


G1INCHEMIS01
96-180/03:09:04



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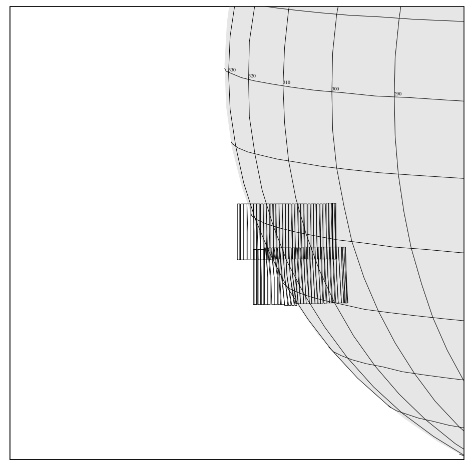
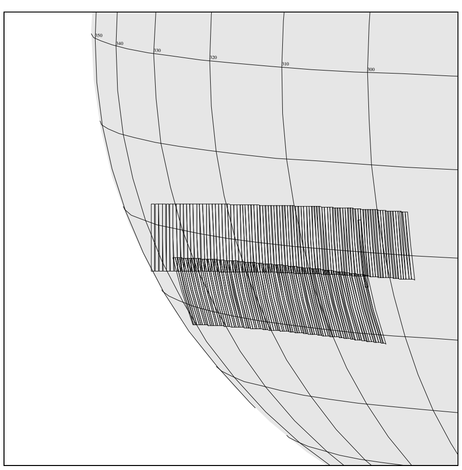
96-180/03:14:07



G1JNGRS09101
96-180/06:59:36



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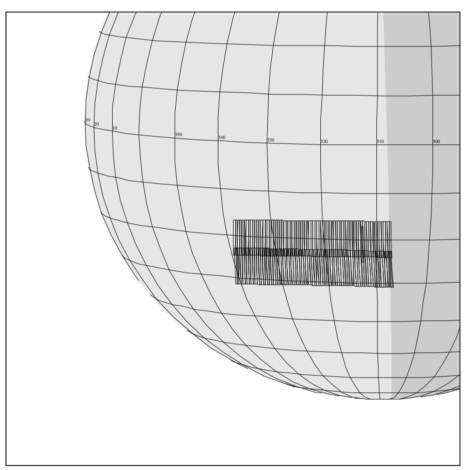

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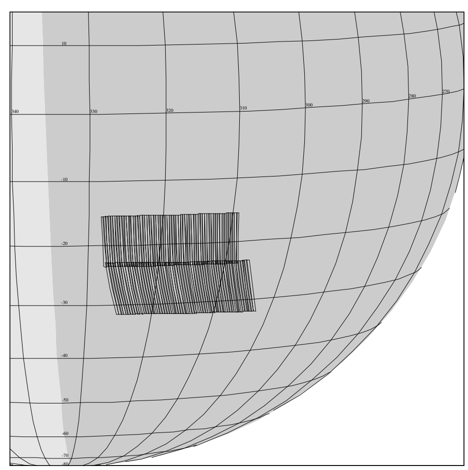

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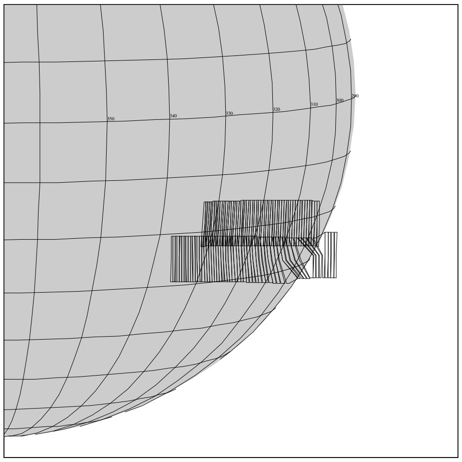
G1 NIMS D



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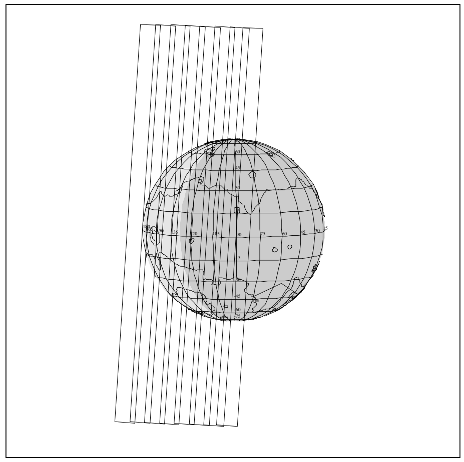
96-180/10:17:46



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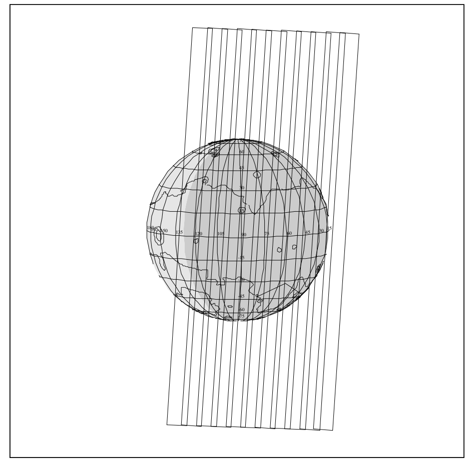
96-180/11:16:25



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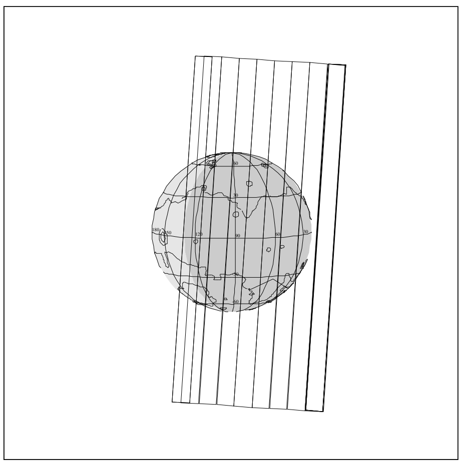
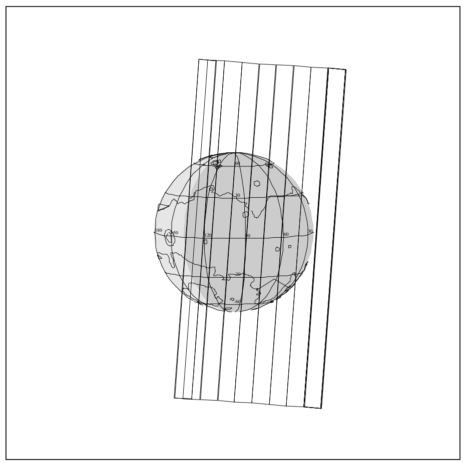
96-180/11:21:28



G1INVOLCAN05
96-180/11:26:32



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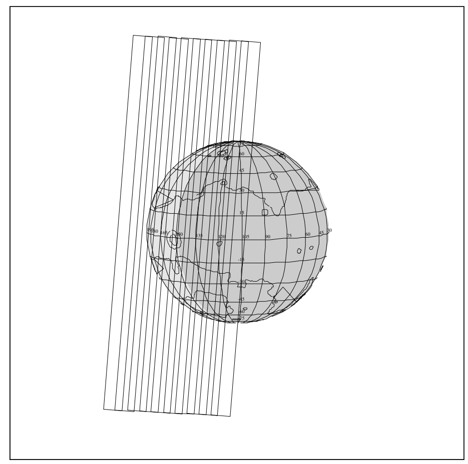
96-180/12:23:09



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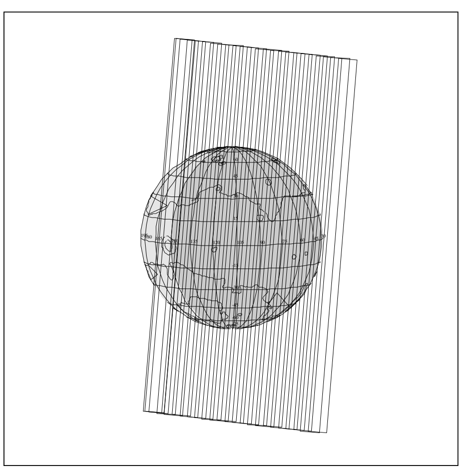
96-180/13:45:03



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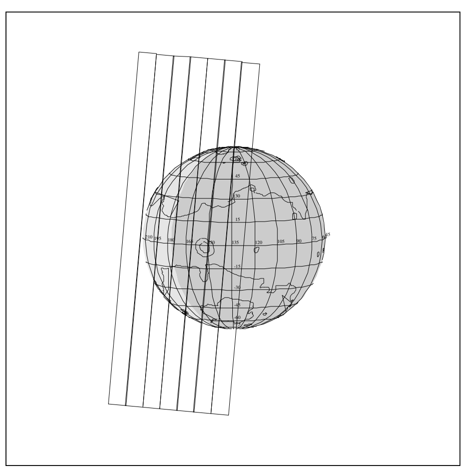

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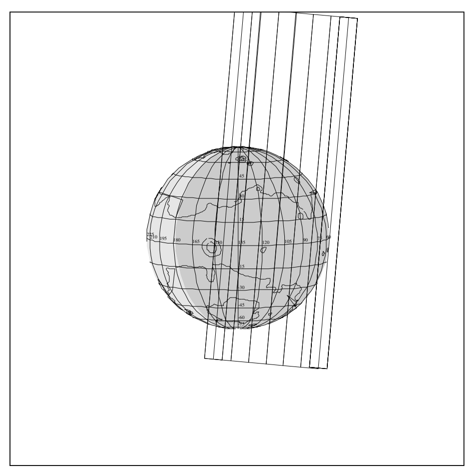
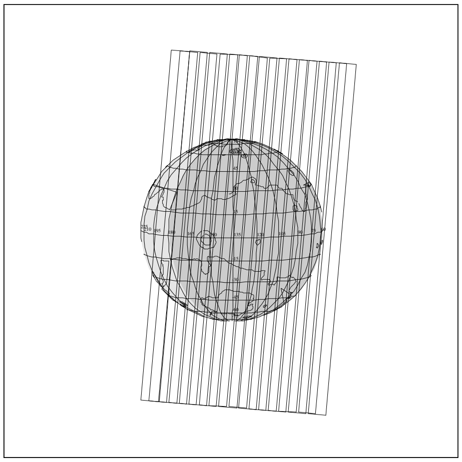
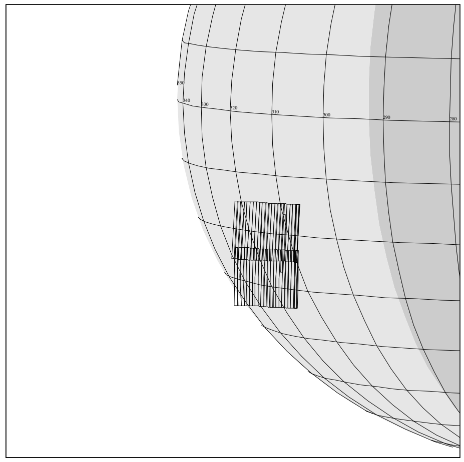


G1INIOMON_05
96-180/17:12:20

G1 NIMS E



G1INNSPEC_01
96-180/17:17:23



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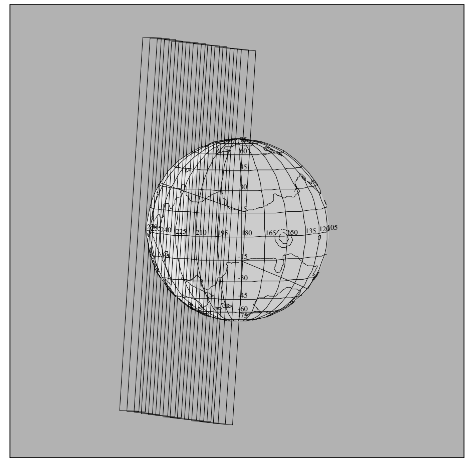
96-180/18:13:00



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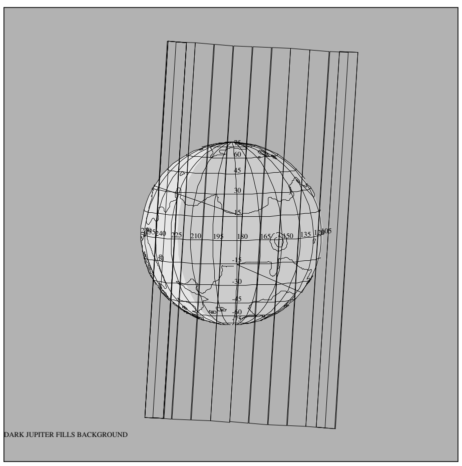

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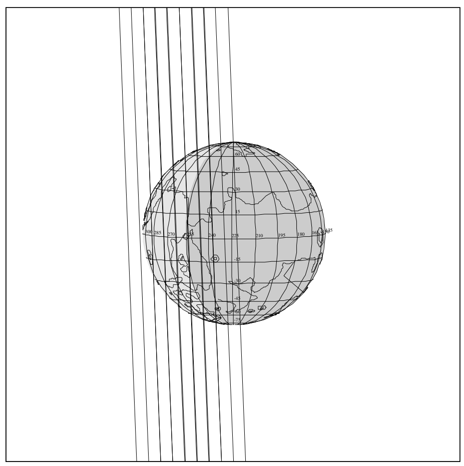

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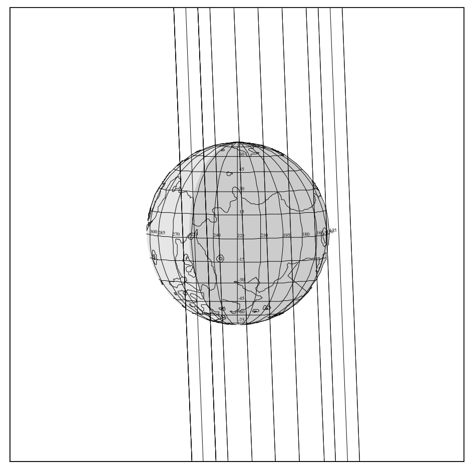

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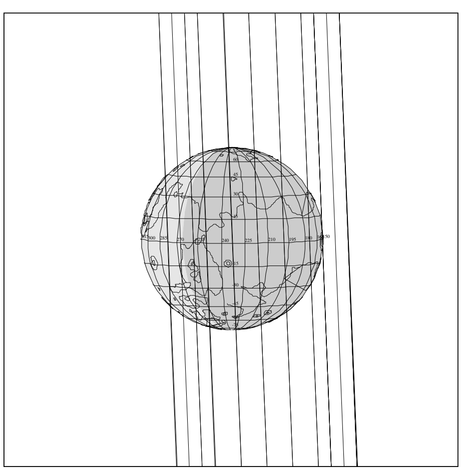
96-181/02:29:27



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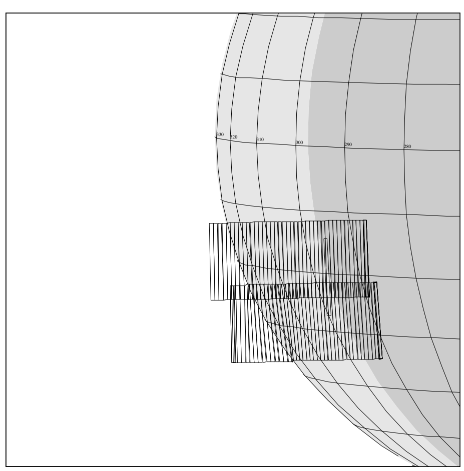

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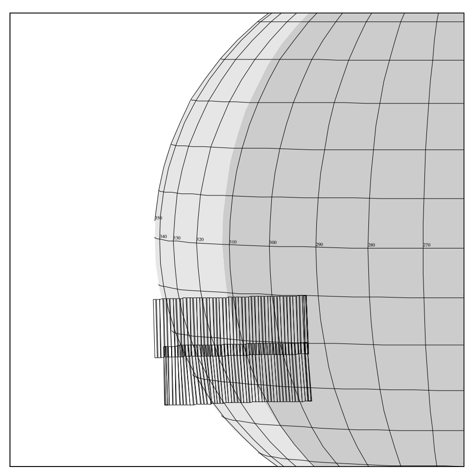
96-181/04:18:39



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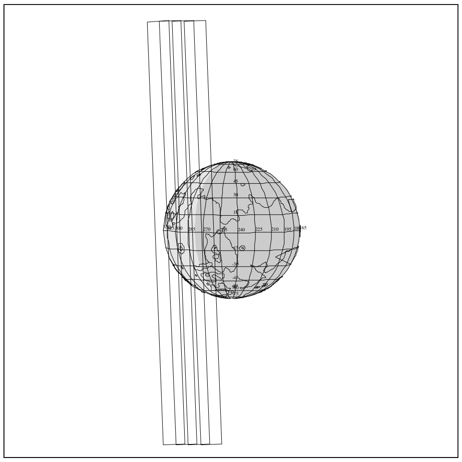
G1 NIMS F



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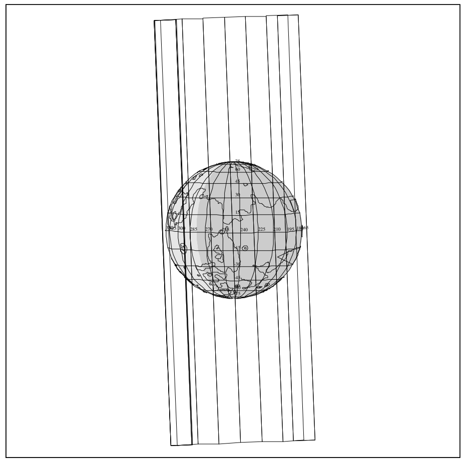
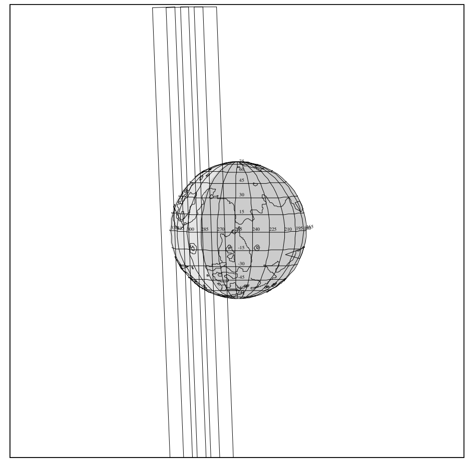


G1INTHRMAL07
96-181/05:05:10



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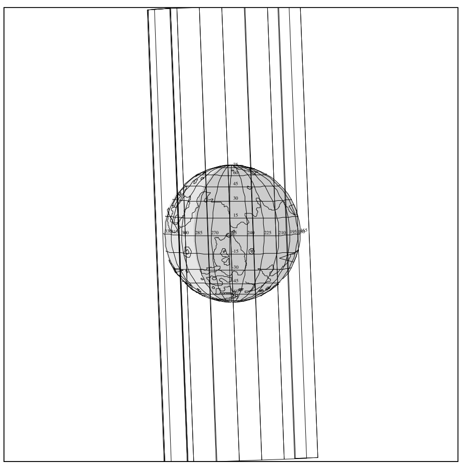

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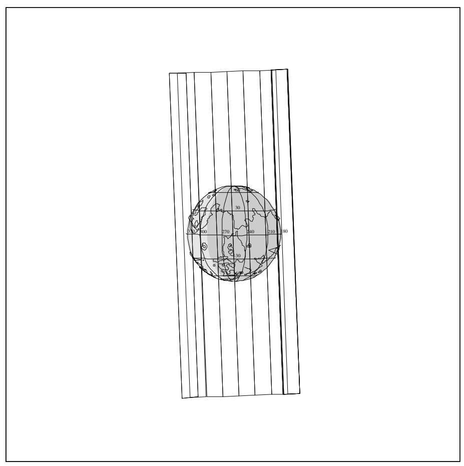

G1INVOLCAN03
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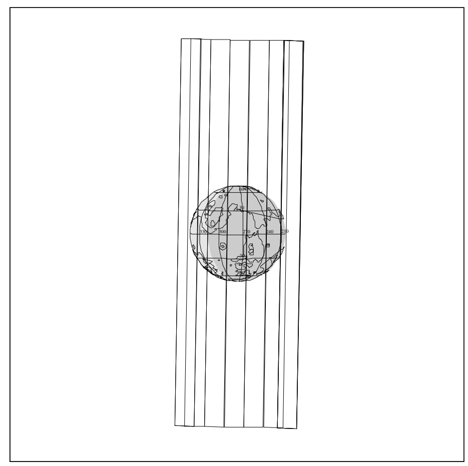

G1INVOLCAN02
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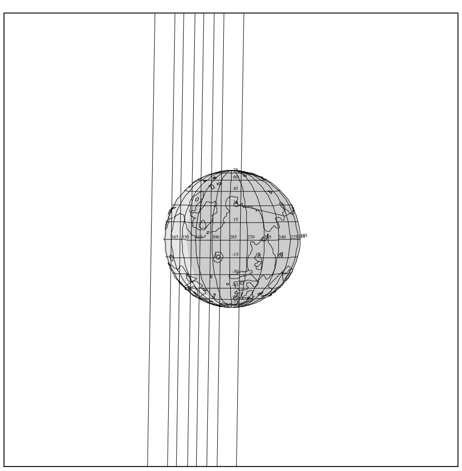

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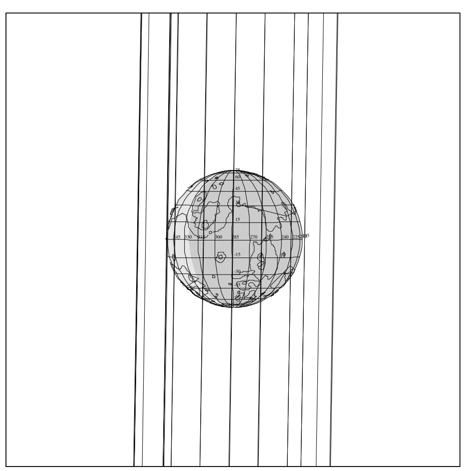

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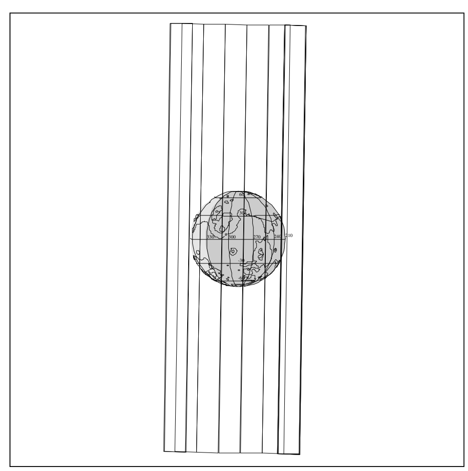

G1INVOLCAN01
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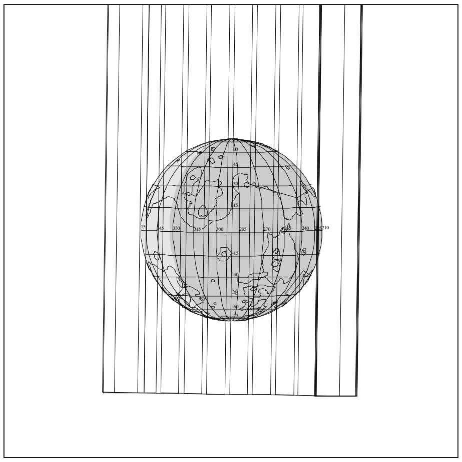
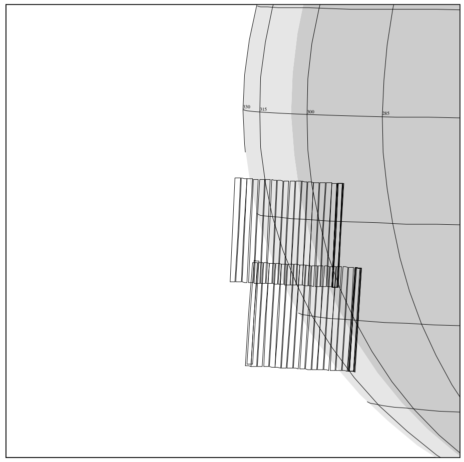
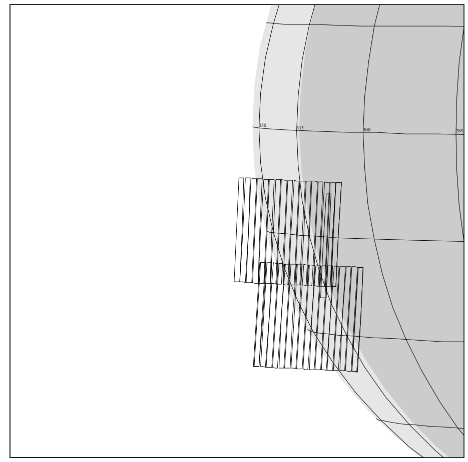
G1 NIMS G







G1INIOMON_07
96-181/11:28:22

G1JNGRS15401
96-181/14:23:18

G1JNGRS15402
96-181/14:43:31