Chapter 2 - Orbit Overview

Contents

Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the C21 Orbit.

The text on page 3 summarizes the NIMS science objectives for C21. The NIMS calibrations are discussed on page 3. Early data return and C21 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for C21.

The plot on page 5 shows the geometry of the NIMS C21 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS C21 calibrations.

The spreadsheet on page 7 summarizes the various inputs for the NIMS C21 Observations. The spreadsheet on pages 8 and 9 summarizes the resource usage for the NIMS C21 observations.

The table on page 10 lists various NIMS C21 observing parameters: target latitude/longitude, range, cone angle, incidence angle light), emission angle view) and phase angle.

The timeline on page 11 shows the placement of the C21 observations for all intruments during the C21 Encounter Period.

The tapemap on page 12 shows the placement of the C21 observations on the spacecraft’s tape recorder.

The timeline on pages 13 through 17 shows the preliminary C21 playback schedule.

The NIMS C21 mosaic designs are summarized on page 18 in time-order.

NIMS C21 SCIENCE OVERVIEW

Jupiter Science

There are two realtime Jupiter observations in C21. The first realtime observation looks at the North Equatorial Belt Region. The second looks at the same longitude at 36 degrees North latitude, the equator and 36 degrees South latitiude.

Io Science

INHRSPEC01 maps the daylit disk in four swaths. This observation is the highest resolution global mosaic of Io during Galileo and GEM to date. The objective is to obtain a high spatial and spectral map of one hemisphere of Io.

Europa Science

Europa was not observed in C21.

Ganymede Science

Ganymede was not observed in C21.

Callisto Science

There are five observations of Callisto in C21. CNDRKMAT01 is a ride-along with SSI to investigate dark terrain. CNFEATRE01, 02, 03 and 04 are high resolution spectral and spatial maps of Callisto's surface to further the on-going compositional studies started in Galileo's main mission.

Calibration

There are two NIMS calibration observations planned for C21: one RCT cal and one OPCAL.

Early Data Return

There are four realtime observations in C21: Two 408 wavelength Jupiter observations (JUPRTS), one RCT calibration and one OPCAL.

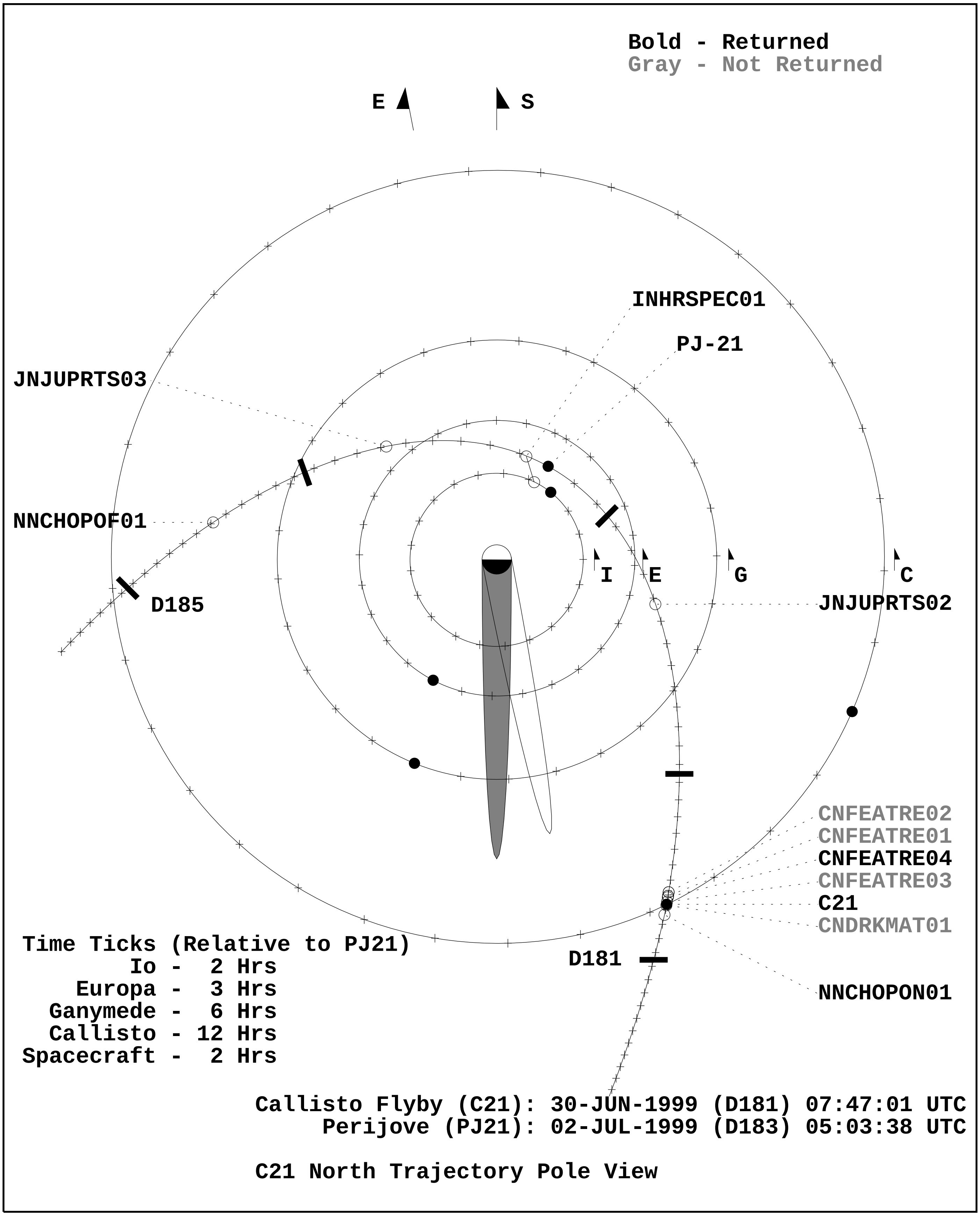
C21 Playback

C21 playback is split into two passes through the tape.

C21 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
21NNCHOPON01-	99-181/06:21:20	99-181/06:31:27	000/00:10:06
21NNRELOAD01-	99-181/06:42:33	99-181/06:45:36	000/00:03:03
21CNDRKMAT01+	99-181/07:39:11	99-181/07:44:15	000/00:05:03
21CNFEATRE03-	99-181/08:07:30	99-181/08:32:47	000/00:25:16
21CNFEATRE04-	99-181/08:44:55	99-181/08:55:01	000/00:10:06
21CNFEATRE01-	99-181/08:56:15	99-181/09:24:47	000/00:28:32
21CNFEATRE02-	99-181/09:25:21	99-181/09:48:37	000/00:23:15
21NNRELOAD02-	99-182/16:28:50	99-182/16:31:52	000/00:03:02
21JNJUPRTS02*	99-182/16:31:52	99-182/16:47:02	000/00:15:10
21NNRELOAD04-	99-183/06:30:05	99-183/06:34:07	000/00:04:02
21INHRSPEC01-	99-183/06:35:08	99-183/08:00:04	000/01:24:56
21NNRELOAD05-	99-183/16:32:42	99-183/16:36:45	000/00:04:02
21JNJUPRTS03*	99-183/16:36:45	99-183/16:51:55	000/00:15:10
21NNRELOAD06-	99-184/10:41:40	99-184/10:45:43	000/00:04:02
21NNCHOPOF01-	99-184/10:45:43	99-184/10:55:49	000/00:10:06
21NNRCTRLT01-	99-206/20:30:00	99-207/09:51:48	000/13:21:48

NIMS C21 OBSERVATIONS

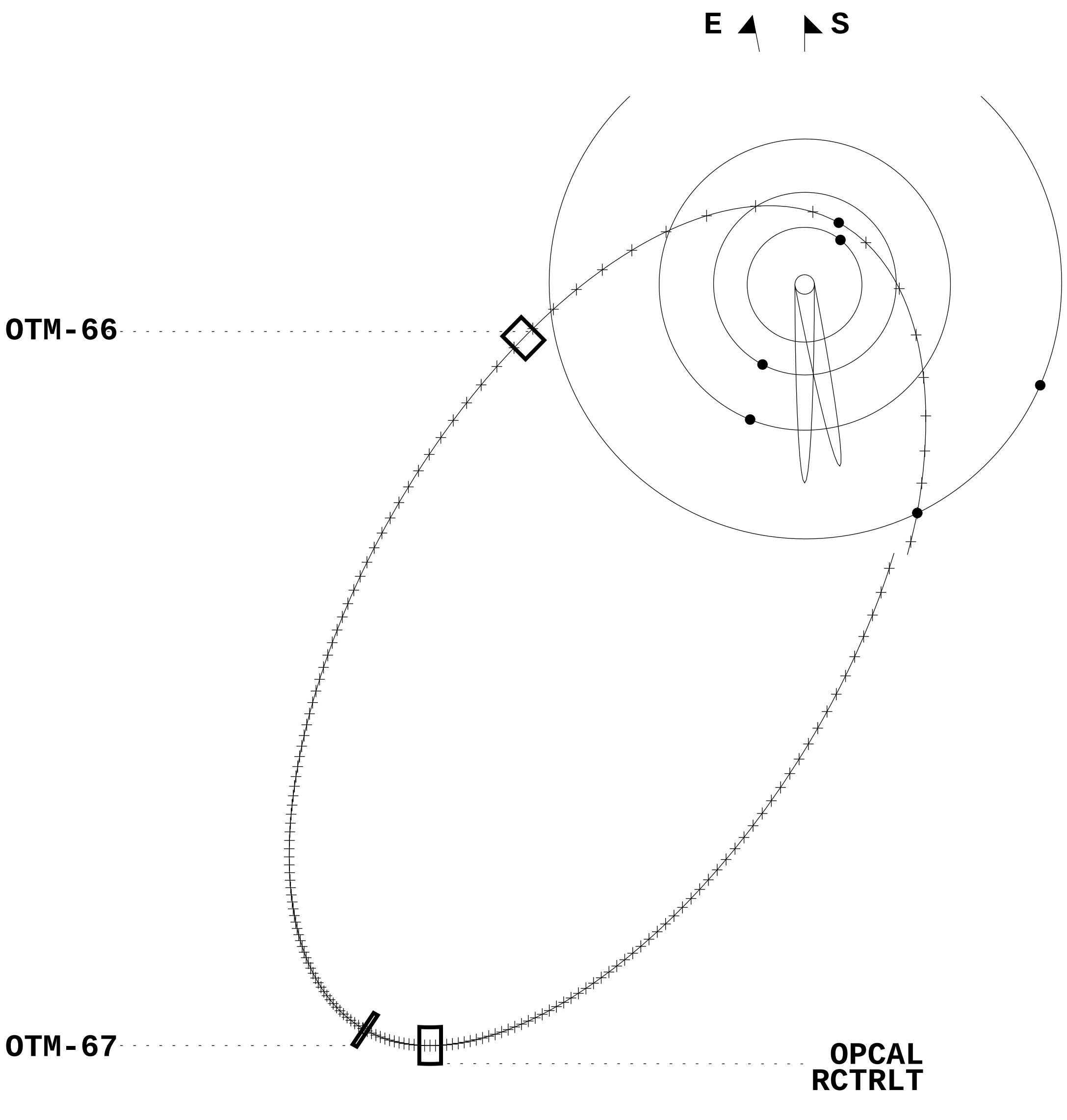


NIMS - FEL - 05/01/00

NIMS C21 CRUISE CALIBRATIONS

Callisto Flyby (C21): 30-JUN-1999 (D181) 07:47:01 UTC
Perijove (PJ21): 02-JUL-1999 (D183) 05:03:38 UTC
Apojove (AJ21): 22-JUl-1999 (D203) 16:00:00 UTC

Time Ticks (Relative to C21)
Spacecraft - 6 Hours



C21 North Trajectory Pole View, Perijove to Perijove

C21 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Ofset	Record Format	PSID
21NNCHOPON01	NIMS Chopper On								
21NNRELOAD01	NIMS Real-TIme Software Reload								
21CNDRKMAT01+	Callisto Ride-along	21CLM442	21CLM360	LM	4	0	4	IM8	EB
21CNFEATRE03	Callisto Feature Observation	21CLM442	21CLM180D_1	LM	4	0	4	MPW	DC
21CNFEATRE04	Callisto Feature Observation	21CLM243D_0	21CLM180D_0	LM	4	0	4	LPU	DD
21CNFEATRE01	Callisto Feature Observation	21CLM243D_0	21CLM180D_0	LM	4	0	4	LPU	DA
21CNFEATRE02	Callisto Feature Observation	21CLM243D_0	21CLM180D_0	LM	4	0	4	LPU	DB
21NNRELOAD02	NIMS Real-TIme Software Reload					0	4		
21JNJUPRTS02*	Jupiter Real-Time Observation	21JLM442/MB	R/T	LM	2	0	4	R/T	DF
21NNRELOAD04	NIMS Real-TIme Software Reload					0	4		
21INHRSPEC01	Mapping Io at High Resolution	21ILM442	21ILM360	LM	2	0	4	MPW	DG
21NNRELOAD05	NIMS Real-TIme Software Reload					0	4		
21JNJUPRTS03*	Jupiter Real-Time Observation	21JLM442/MB	R/T	LM	2	0	4	R/T	DH
21NNRELOAD06	NIMS Real-TIme Software Reload					0	4		
21NNCHOPOF01	NIMS Chopper Off					0	4		
21NNRCTRLT01	NIMS Real-Time RCT Calibration	21RCT252	R/T	LM	1	0	4	R/T	XE
21NNROPCAL01	NIMS OPCAL	21OPCAL48	R/T	LM	4	0	4	R/T	DE

C21 RESOURCES

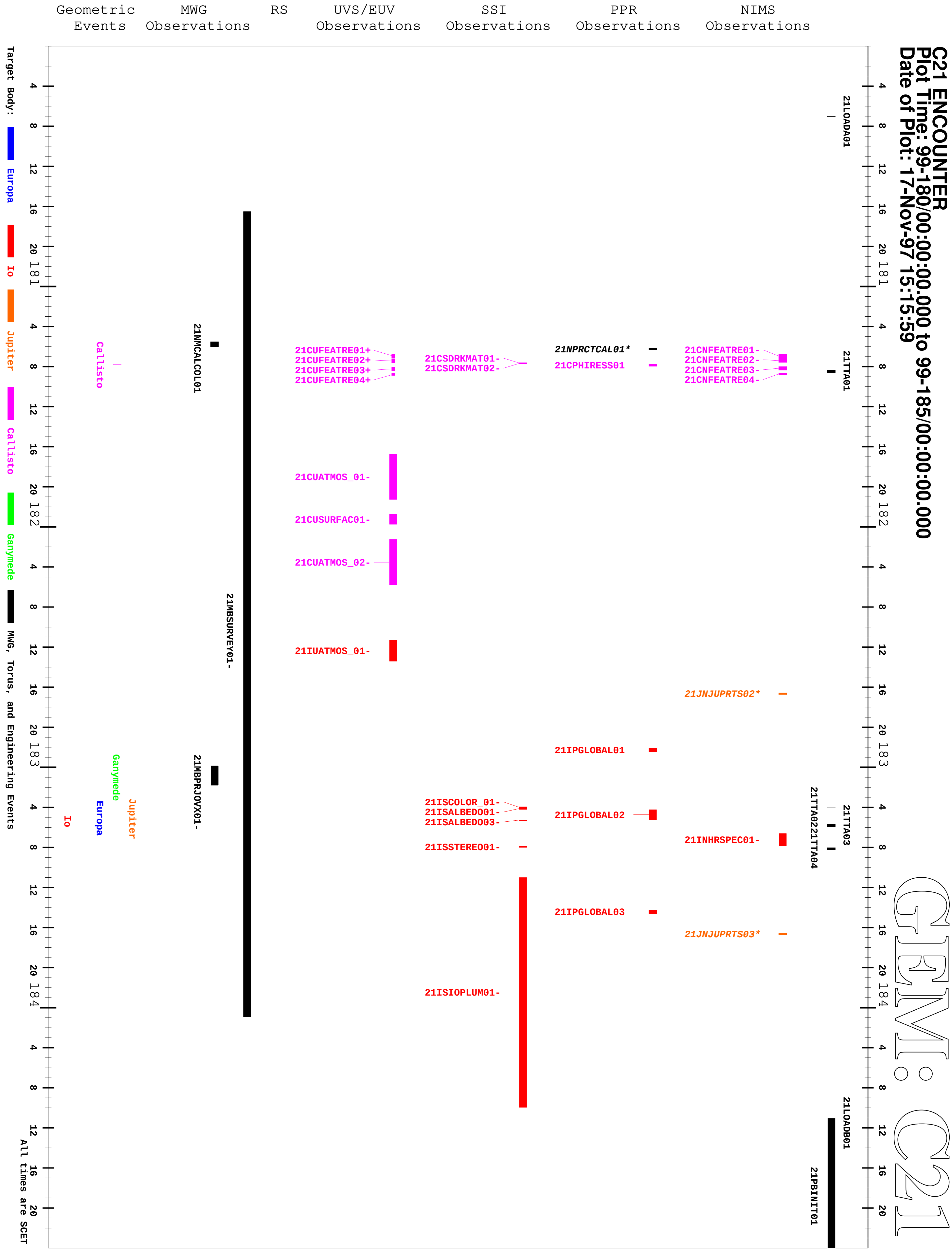
Activity ID	Mode	Record Format	Obs. Cost (tracks)	Obs. Cost (ticks)	Number Wavelengths Returned	Obs Record (sec.)	Obs PB (sec.)	Selected Bits to Tape sBOT (MBITS)	Bits to Tape BOT (Mbit)	Mode Cycle time (sec)
21CNDRKMAT01+	LM	IM8			360	41.54	41.54	0.00	0.00	8.667
21CNFEATRE03-	LM	MPW	0.1995	1163	180	1320.00	900.00	10.37	15.21	8.667
21CNFEATRE04-	LM	LPU	0.0245	143	180	600.00	600.00	3.70	3.70	8.667
21CNFEATRE01-	LM	LPU	0.0631	368	180	1560.00	1000.00	6.17	9.62	8.667
21CNFEATRE02-	LM	LPU	0.0486	283	180	1200.00	900.00	5.55	7.40	8.667
21JNJUPRTS02*	LM	R/T			408					8.667
21INHRSPEC01-	LM	MPW	0.5434	3167	360	3600.00	3600.00	41.47	41.47	8.667
21JNJUPRTS03*	LM	R/T								8.667
21NNRCTRLT01-	LM	R/T								8.667
Total										
Allocation										
Oversubscribed										

C21 RESOURCES

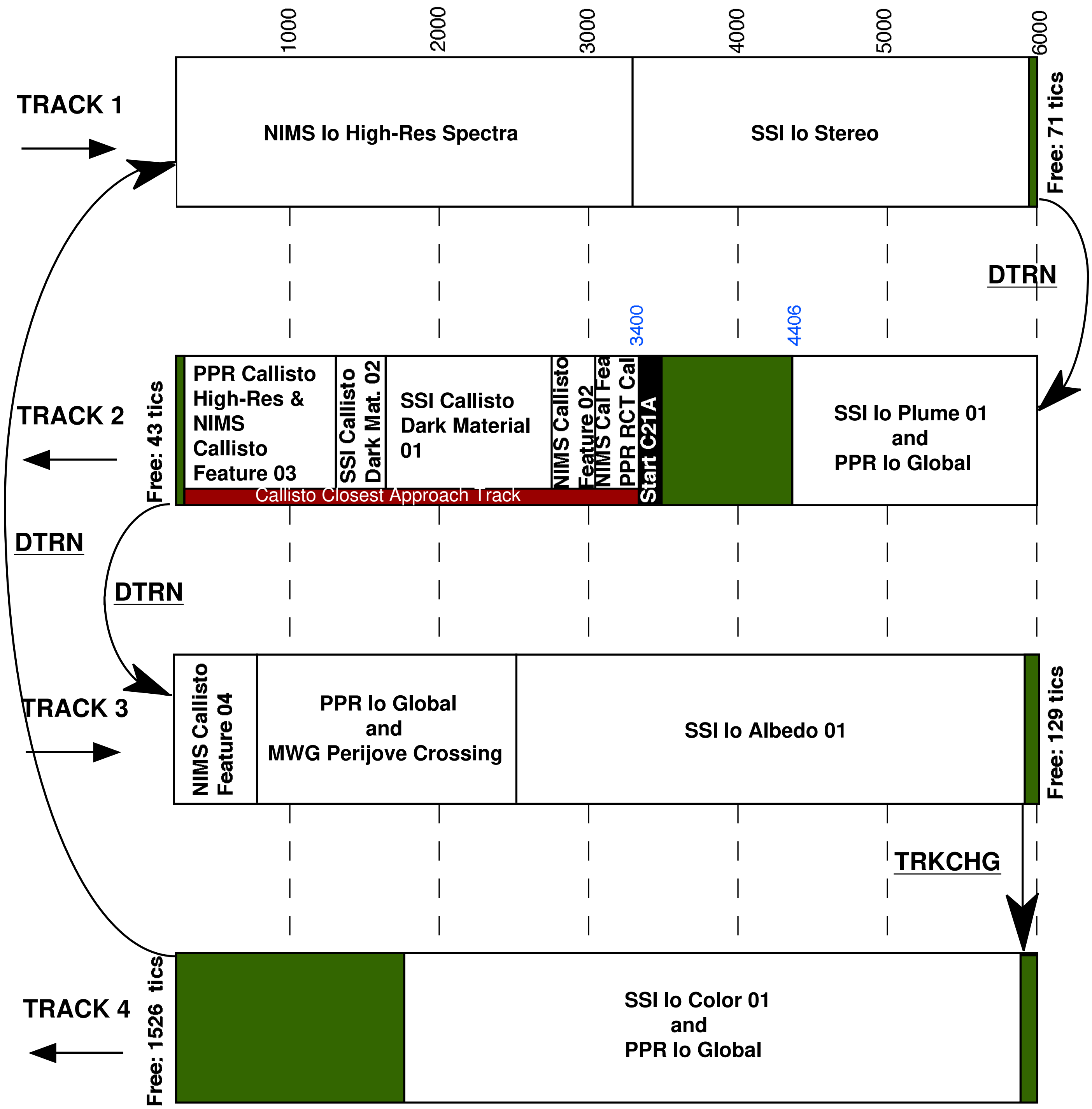
Activity ID	AACS Mbits Comp 2.5	RT BTG Mbits	Thold	Comp	Total BTG Mbits (4% ohead)	Data Reduction Factor (sBOT/BTG)	Pass
21CNDRKMAT01+	0.00		0	1.9	0.1889	0.00	2
21CNFEATRE03-	0.05		0	1.9	2.0462	5.07	1
21CNFEATRE04-	0.03		0	1.9	1.3642	2.71	2
21CNFEATRE01-	0.06		0	1.9	2.2736	2.71	1
21CNFEATRE02-	0.05		0	1.9	2.0462	2.71	2
21JNJUPRTS02*		0.160	0				
21INHRSPEC01-	0.21	0.160	0	1.8	17.2793	2.40	1,2
21JNJUPRTS03*			0				
21NNRCTRLT01-		0.080					
Total					25.1985		
Allocation							
Oversubscribed							

NIMS C21 OBSERVING GEOMETRY

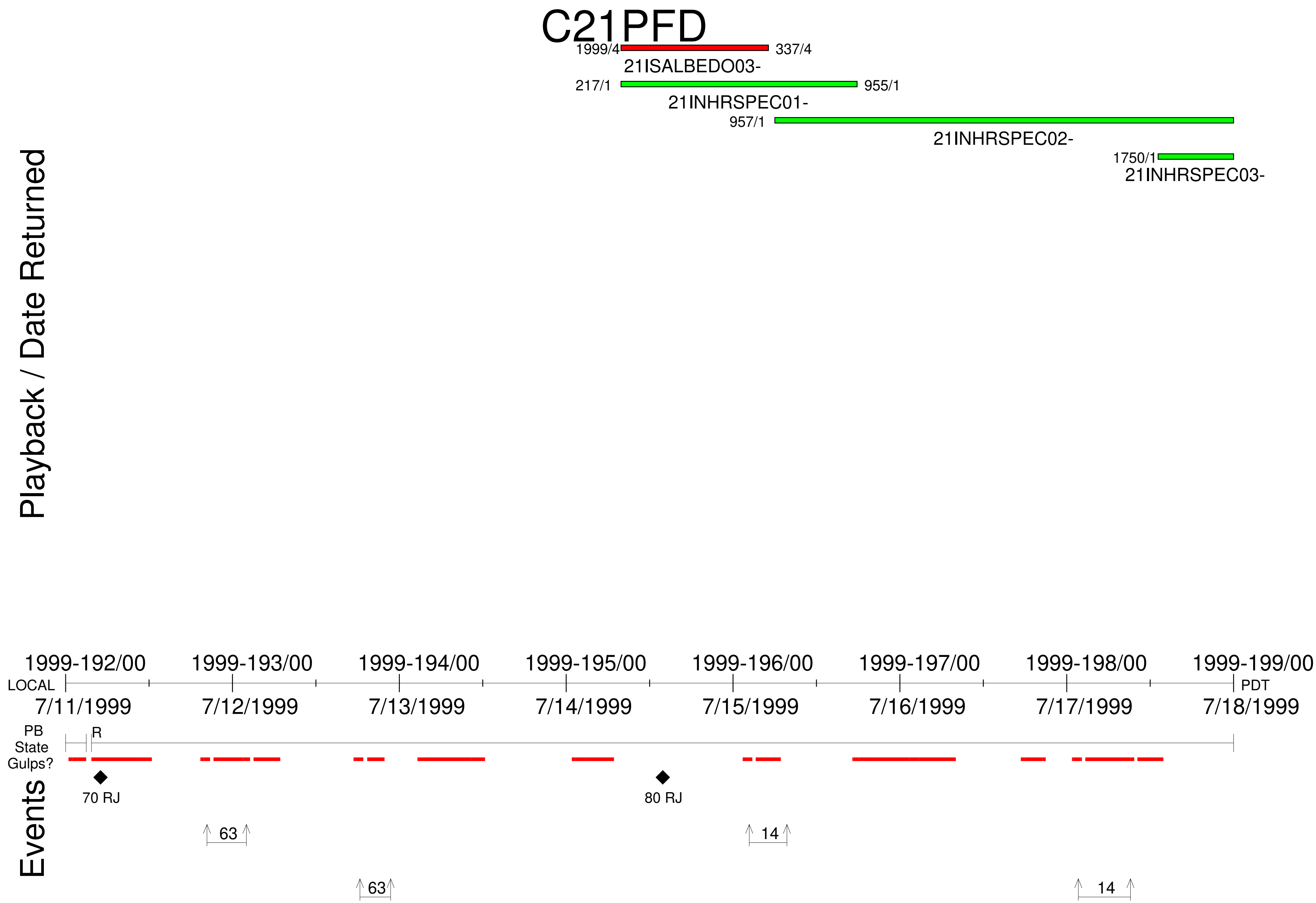
OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
21CSDRKMAT01	+1 to +2	106 to 107	1500	97	81	10	73
21CNFEATRE03	-40 to -25	345 to 357	15K	156 to 168	33 to 53	13 to 38	21 to 33
21CNFEATRE04	-5 to +10	312 to 321	29K	156	64 to 73	30 to 40	34
21CNFEATRE01	+20 to +40	340 to 10	40K	151	30 to 54	27 to 39	18
21CNFEATRE02	-10 to +20	301 to 332	58K	151	54 to 86	16 to 48	38
21JNJUPRTS02	+6 to +8	341 to 355	740K	63	62 to 82	25 to 46	108
21INHRSPEC01	-90 to +90	51 to 233	135K	167 to 173	0 to 108	5 to 90	16
21JNJUPRTS03	+36	15 to 21	700K	145	42 to 62	0 to 40	44
21JNJUPRTS03	+0	15 to 21	700K	145	42 to 62	0 to 40	44
21JNJUPRTS03	-36	15 to 21	700K	145	42 to 62	0 to 40	44


C21 ENCOUNTER
Plot Time: 99-180/00:00:00.000 to 99-185/00:00:00.000
Date of Plot: 17-Nov-97 15:15:59
Geometric Events
MWG Observations
RS
UVS/EUV Observations
SSI Observations
PPR Observations
NIMS Observations
21LOADA01
21NMCALCOL01
21MBSURVEY01-
21MBPRJOVX01-
21CUFEATRE01+
21CUFEATRE02+
21CUFEATRE03+
21CUFEATRE04+
21CUATMOS_01-
21CUSURFAC01-
21CUATMOS_02-
21IUATMOS_01-
21CSDRKMAT01-
21CSDRKMAT02-
21ISCOLOR_01-
21ISALBEDO01-
21ISALBEDO03-
21ISSTEREO01-
21ISIOPLUM01-
21NPRCTCAL01*
21CPHIRESS01
21IPGLOBAL01
21IPGLOBAL02
21IPGLOBAL03
21CNFEATRE01-
21CNFEATRE02-
21CNFEATRE03-
21CNFEATRE04-
21JNJUPRTS02*
21INHRSPEC01-
21JNJUPRTS03*
21TTA01
21TTA02
21TTA03
21TTA04
21LOADB01
21PRINIT01
Callisto
Ganymede
Jupiter
Europa
Io
181
182
183
184
Target Body: Europa Io Jupiter Callisto Ganymede MWG, Torus, and Engineering Events
All times are SCET
GEM: C21

C21 HIGH-LEVEL TAPEMAP



J. Gross, 8/13/97



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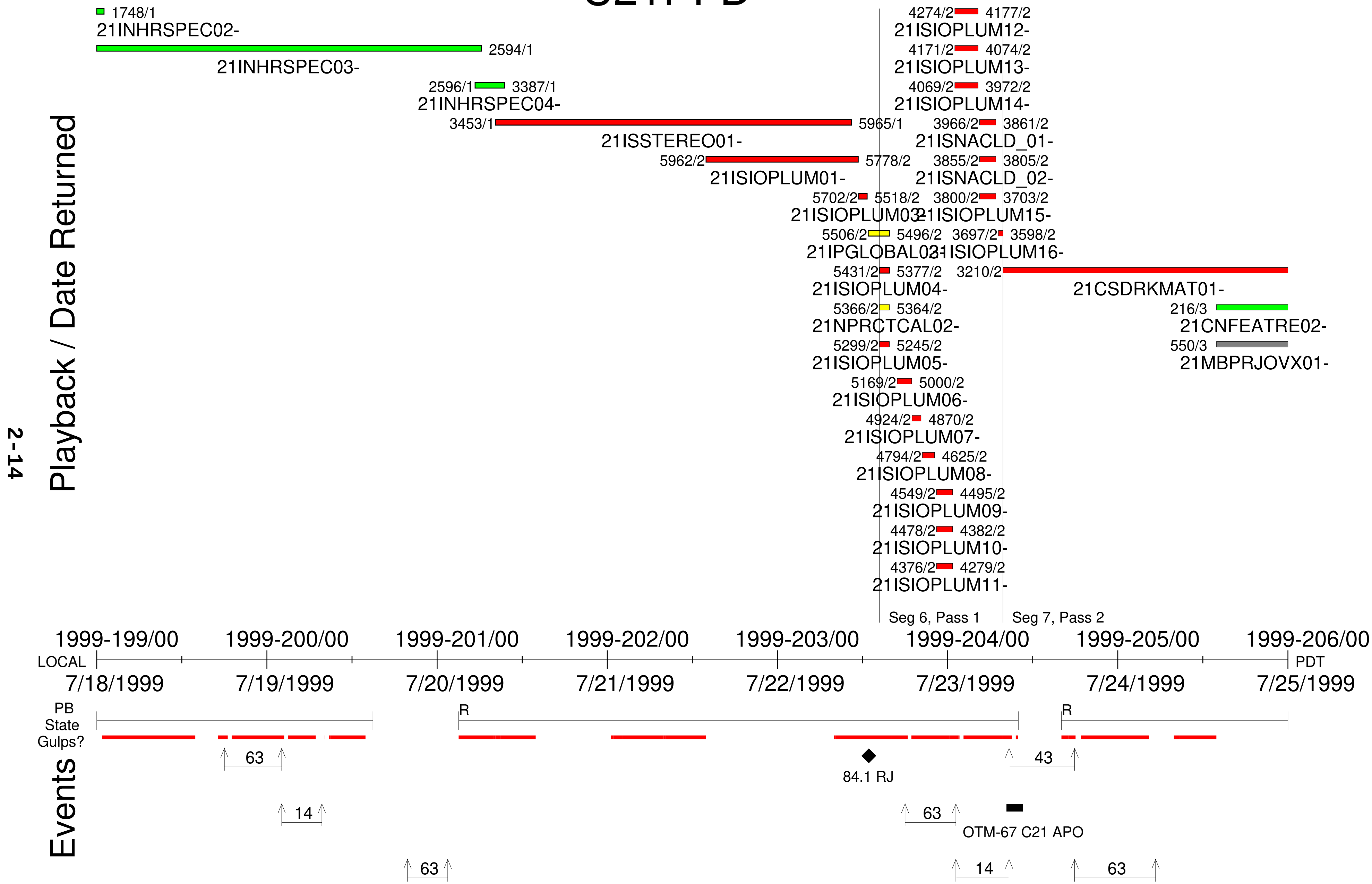
C21PFD



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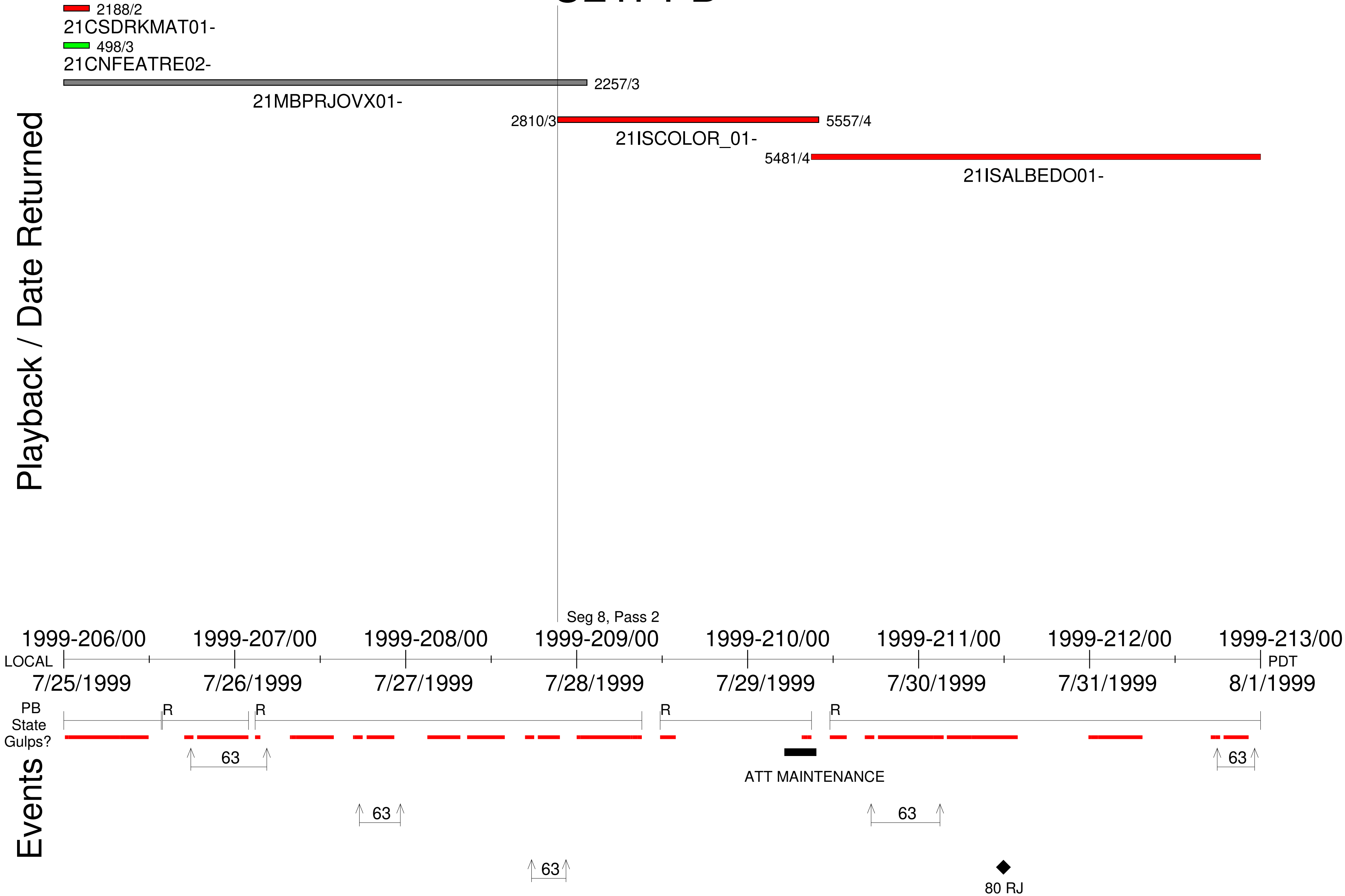

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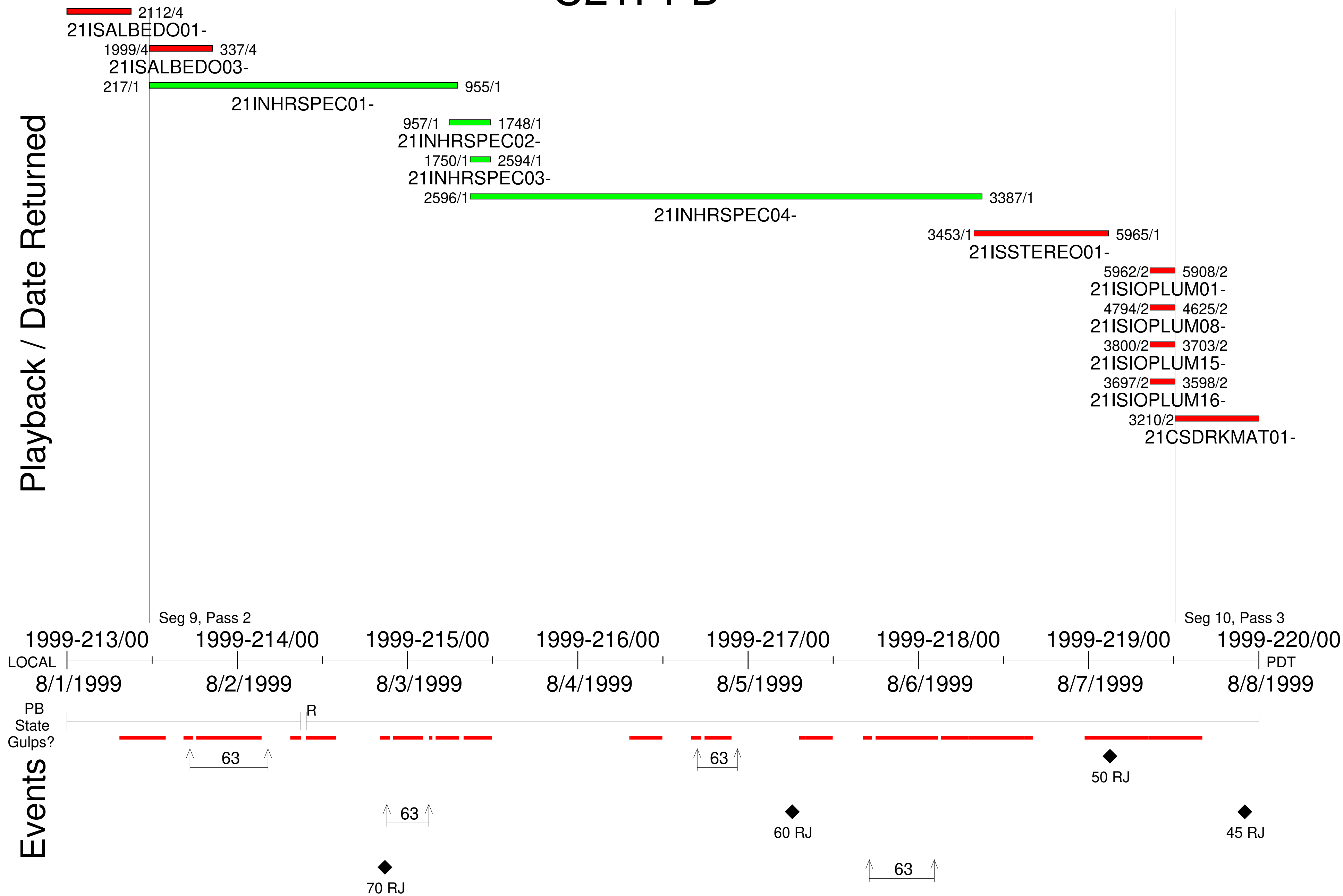
C21PFD



Playback / Date Returned
2112/4
21ISALBEDO01-
1999/4
337/4
21ISALBEDO03-
217/1
955/1
21INHRSPEC01-
957/1
1748/1
21INHRSPEC02-
1750/1
2594/1
21INHRSPEC03-
2596/1
3387/1
21INHRSPEC04-
3453/1
5965/1
21ISSTEREO01-
5962/2
5908/2
21ISIOPLUM01-
4794/2
4625/2
21ISIOPLUM08-
3800/2
3703/2
21ISIOPLUM15-
3697/2
3598/2
21ISIOPLUM16-
3210/2
21CSDRKMAT01-
Seg 9, Pass 2
Seg 10, Pass 3
1999-213/00
1999-214/00
1999-215/00
1999-216/00
1999-217/00
1999-218/00
1999-219/00
1999-220/00
LOCAL
PDT
8/1/1999
8/2/1999
8/3/1999
8/4/1999
8/5/1999
8/6/1999
8/7/1999
8/8/1999
PB State
Gulps?
R
Events
63
63
63
63
50 RJ
60 RJ
45 RJ
70 RJ

C21PFD

ORPROs Loaded: orpro.c21bqg

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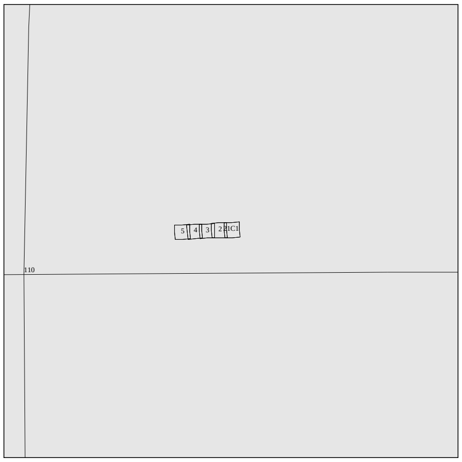
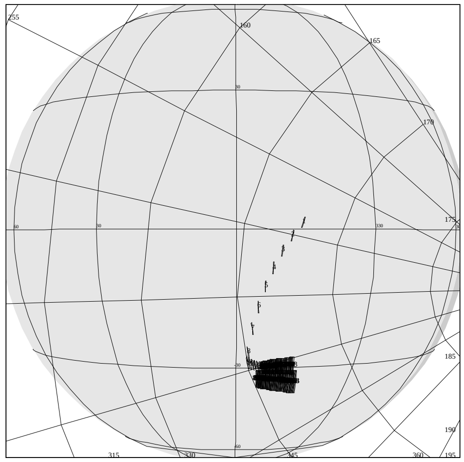
C21 NIMS A



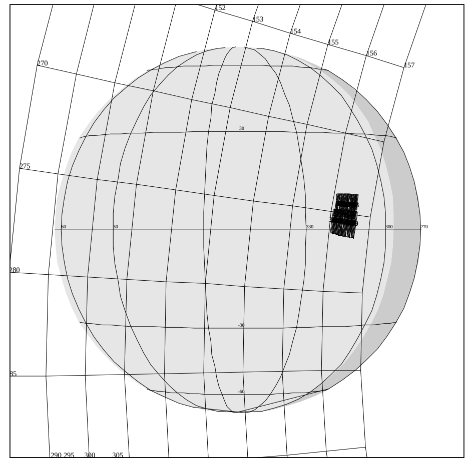
21CSDRKMAT01

99-181/07:39:11



21CNFEATRE03

99-181/08:07:30



21CNFEATRE04

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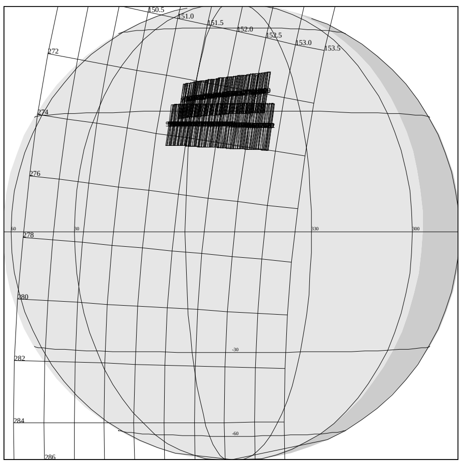

21CNFEATRE01

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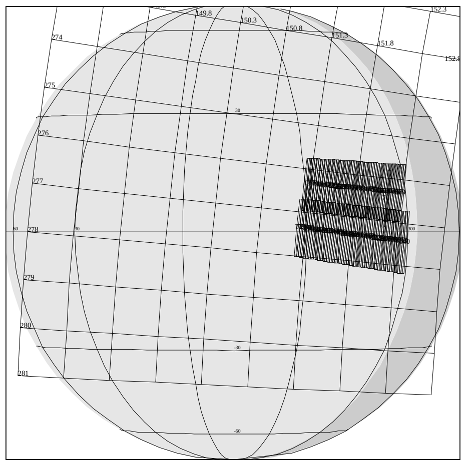
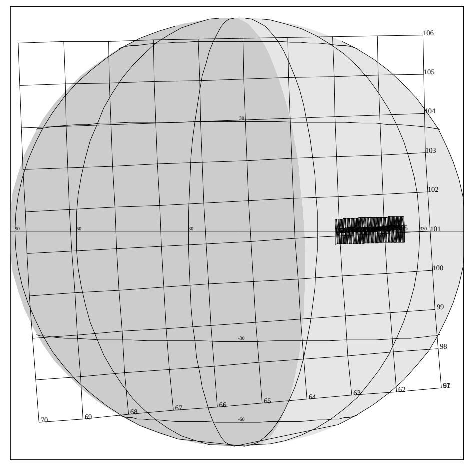


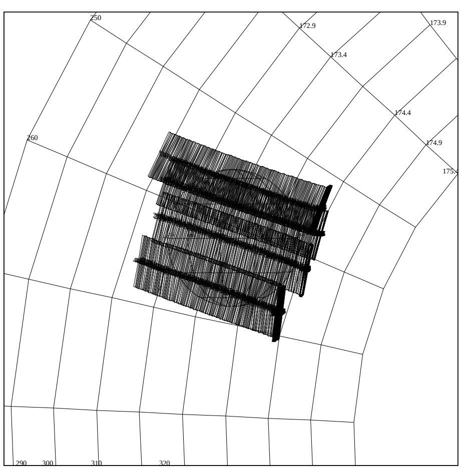
21CNFEATRE02

99-181/09:25:21



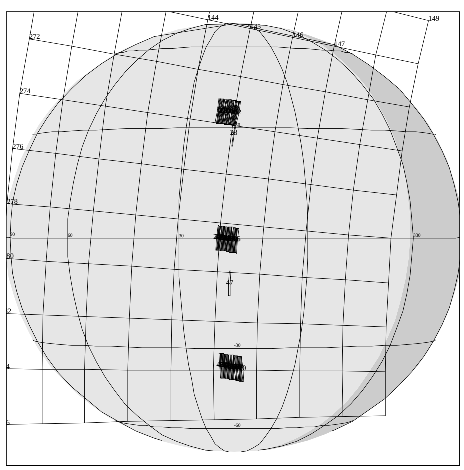
21JNJUPRTS02

99-182/16:31:52



21INHRSPEC01

99-183/06:35:08



21JNJUPRTS03

99-183/16:36:45