New Horizons at Jupiter: Science Overview

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New Horizons Instrument Suite

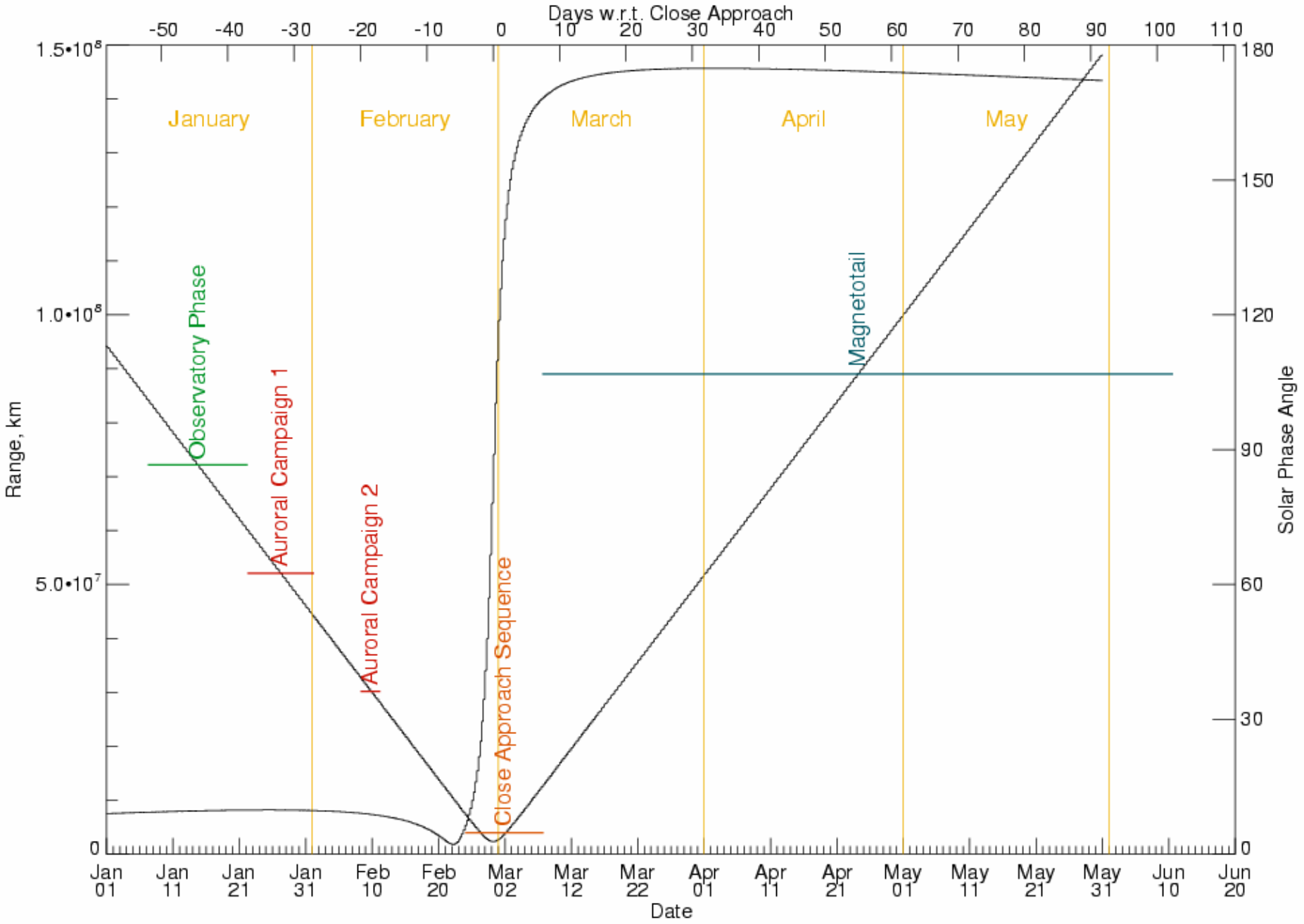
See http://www.pluto.jhuapl.edu/spacecraft/instruments.html for more details

- Alice: 0.052 – 0.180 μm UV spectrometer, 1700 x 5200 μrad/pixel
- LORRI: 0.4 – 1.0 μm unfiltered CCD camera, 5 μrad/pixel
- MVIC: 4-color CCD camera, 20 μrad/pixel
  - Saturation on sunlit surfaces at 5 AU limits its use during the Jupiter encounter
- LEISA: 1.25 – 2.50 μm near-IR spectograph, 62 μrad/pixel
- REX: Radio science and ~4 cm wavelength radiometer
- PEPSSI: 25 – 1000 keV plasma spectrometer
- SWAP: 0.03 – 8 keV plasma spectrometer
- SDC: Dust counter

Current Status of Jupiter Planning

- A detailed observation plan has been developed, and is described here. The plan maximizes scientific return while meeting the following constraints:
  - Instrument calibration necessary for Pluto takes priority over Jupiter science
  - Finite resources: fuel budget for attitude control, raw data storage capacity, downlinked data volume, etc.
  - Necessary trajectory correction maneuvers
  - Necessary periodic DSN coverage and associated spacecraft turns
  - Turn times between observations
- Translation of this plan into spacecraft commands will be done over the next few months
  - The practicalities of implementation may require modification or simplification of the plan
  - Improved knowledge of instrument behavior and calibration may also result in changes to the plan

Jupiter Encounter: The Big Picture



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Encounter Geometry and Significant Events

All Times are spacecraft event times, UT

Close encounter time = February 28th, 2007, 05:45 UT

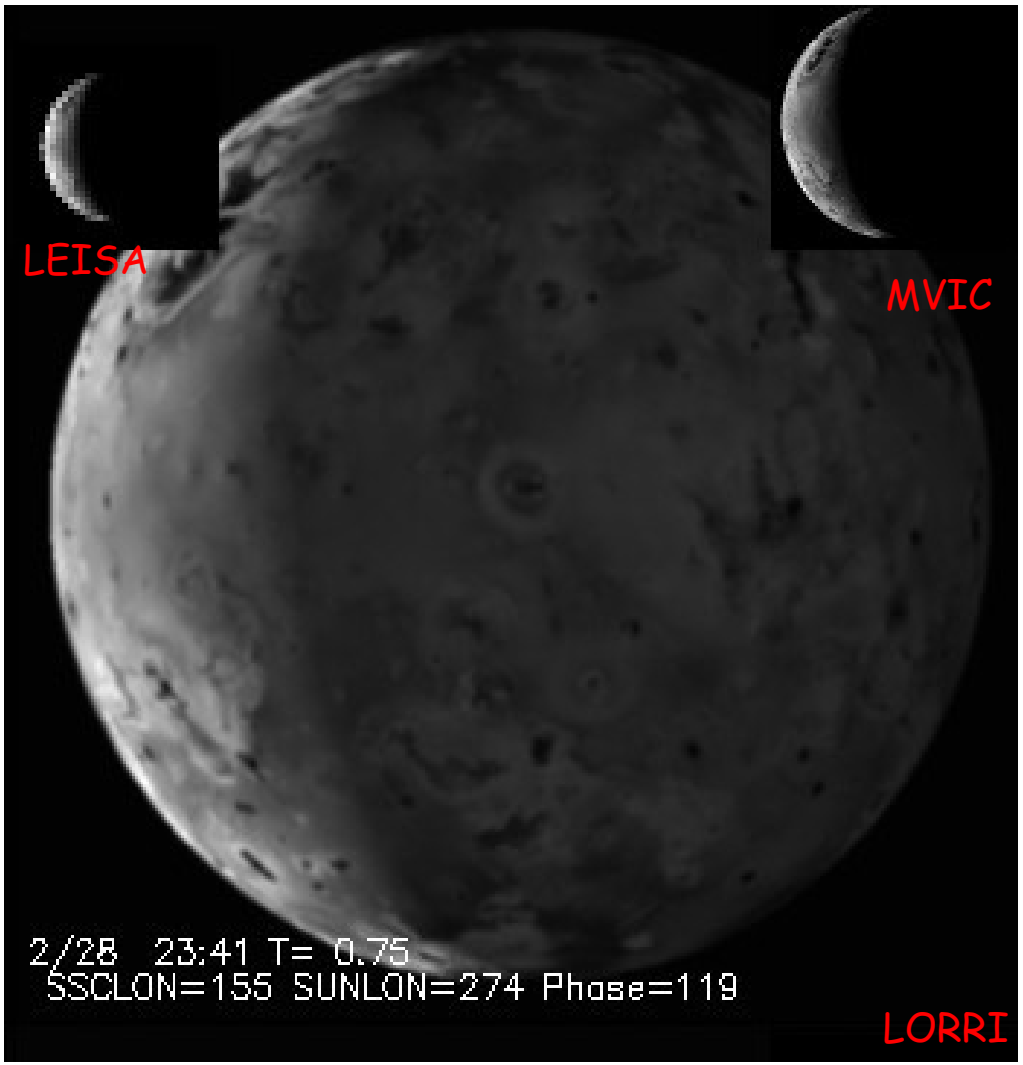
Range to Jupiter = 2,305,000 km

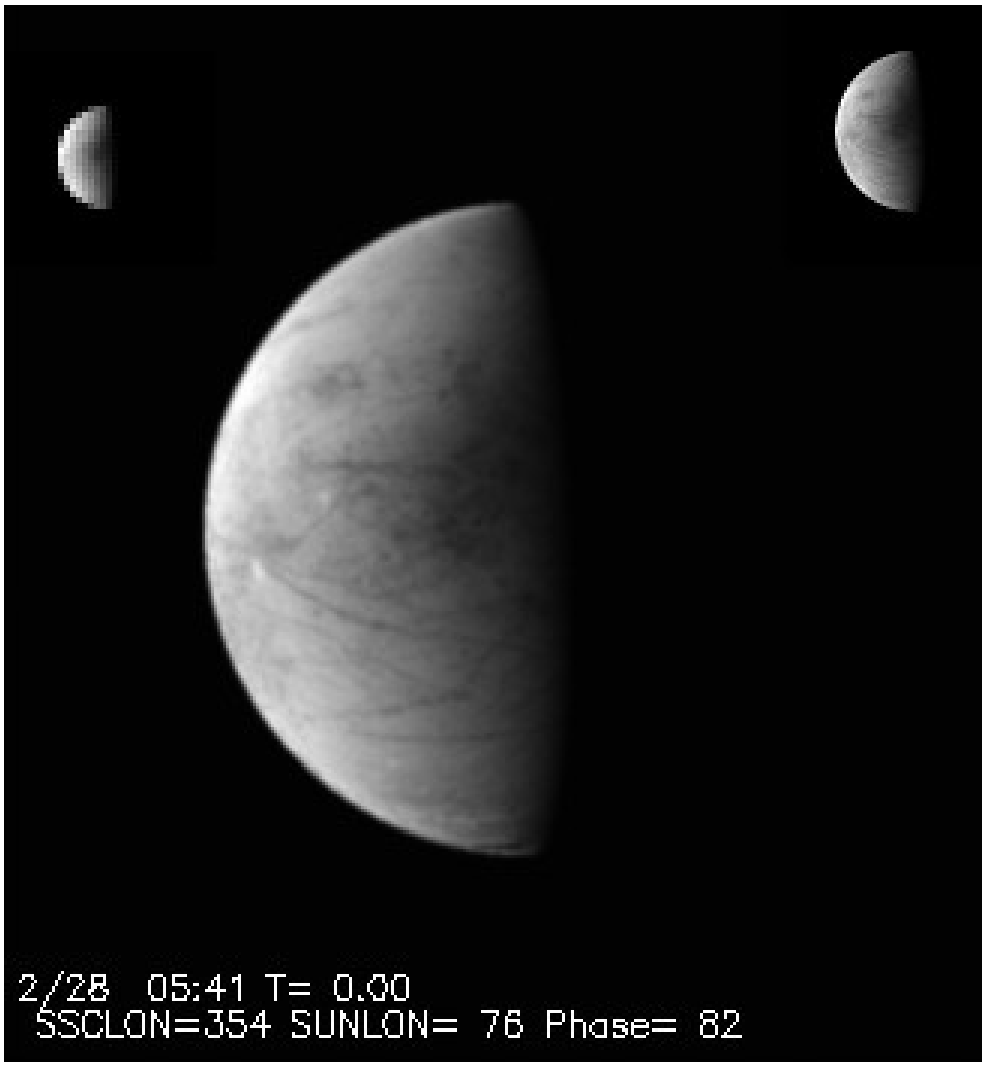
= 32.2 R_J

Date	Time	Range, km	mrad	Phase	Long.	Event
Feb 25	09:45	6,330,000	0.83	11	349	Ganymede eclipse ingress
Feb 25	11:45	6,220,000	0.85	12	352	Ganymede eclipse egress
Feb 27	10:46	3,070,000	1.02	40	315	Europa eclipse ingress
Feb 27	13:18	3,040,000	1.03	45	321	Europa eclipse egress
Feb 27	14:20	2,730,000	1.33	48	303	Io Eclipse ingress
Feb 27	16:28	2,750,000	1.32	53	316	Io Eclipse egress
Feb 28	02:00	2,950,000	1.06	72	347	Europa closest approach
Feb 28	05:00	2,300,000	61.92	82		Jupiter closest approach
Feb 28	06:00	3,020,000	1.73	102	41	Ganymede closest approach
Feb 28	06:30	4,150,000	1.15	81	353	Callisto closest approach
Feb 28	22:00	2,260,000	1.61	118	141	Io closest approach
Mar 1	08:48	2,740,000	1.32	120	231	Io eclipse ingress
Mar 1	10:58	2,950,000	1.23	121	248	Io eclipse ingress

Io, Europa near close approach

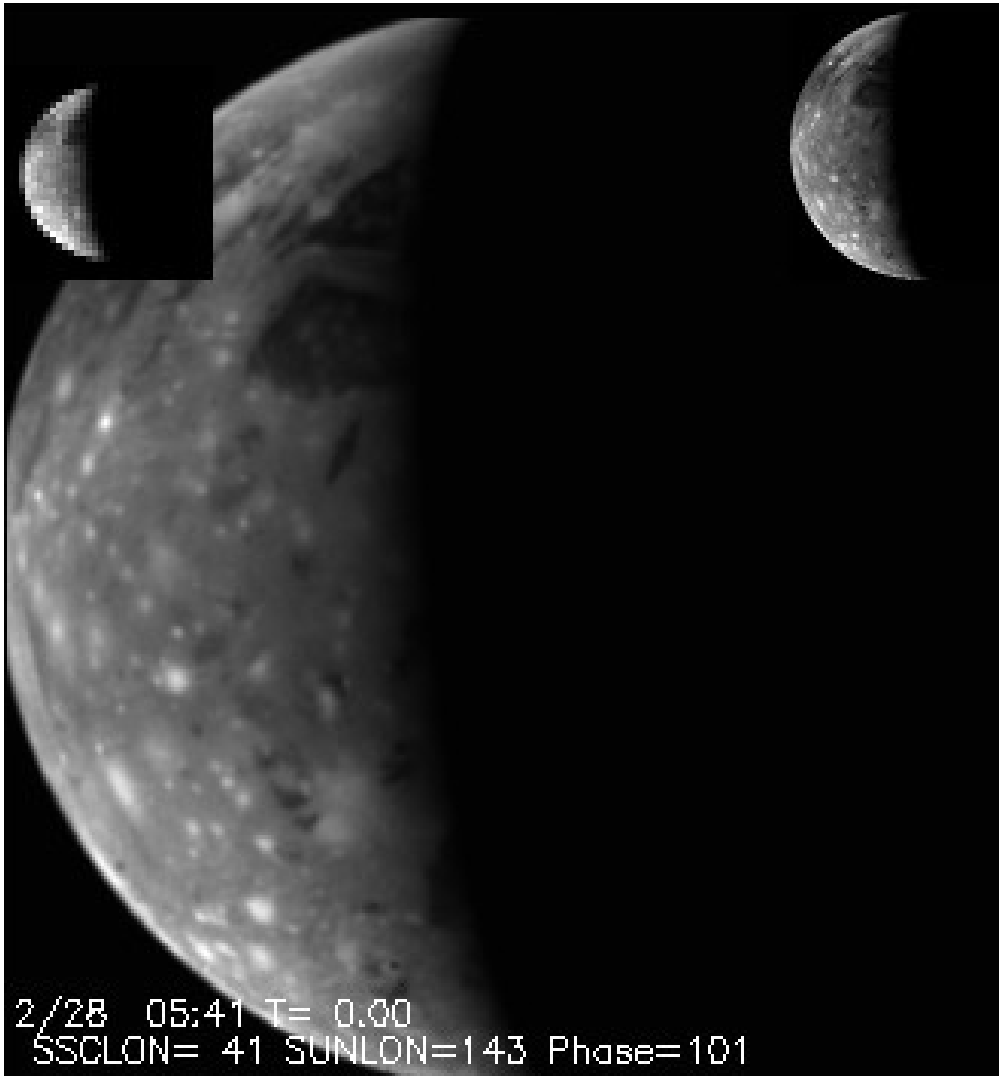
Simulated LORRI, MVIC, LEISA images

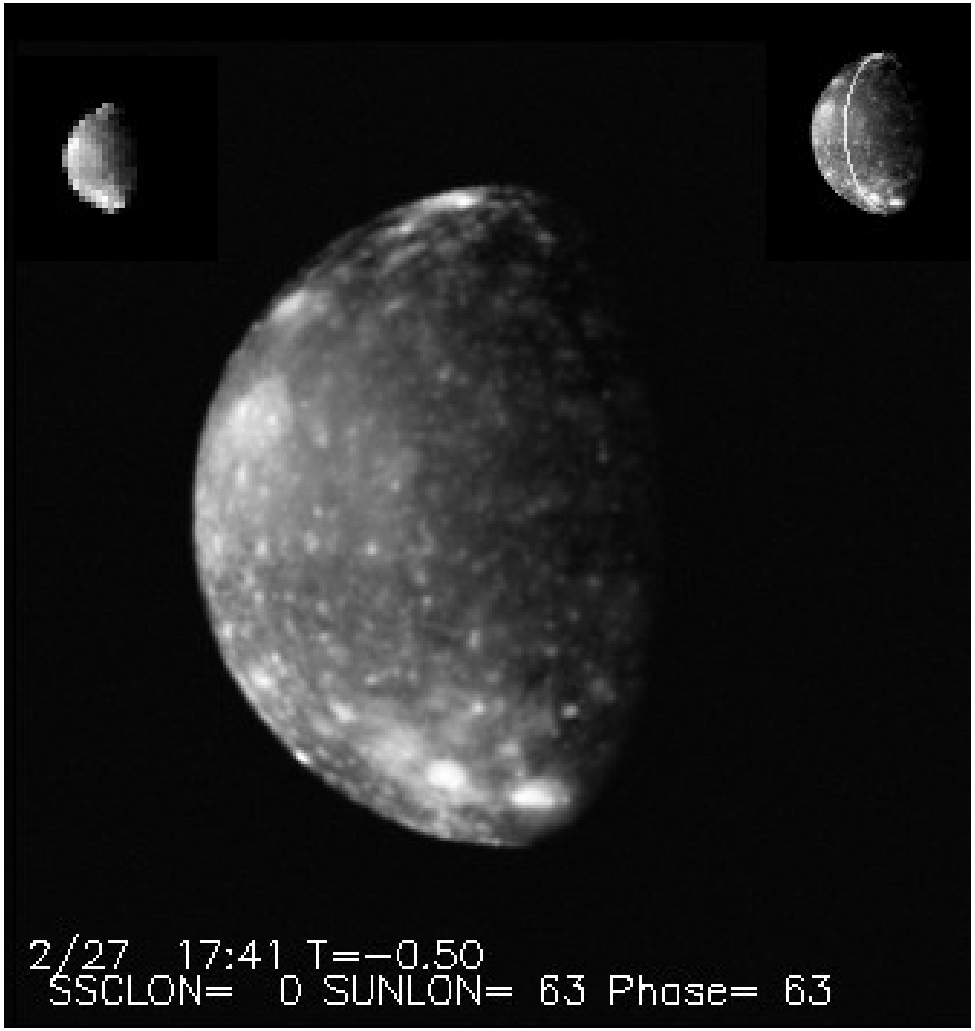




Ganymede, Callisto near close approach

Simulated LORRI, MVIC, LEISA images





Science Overview

Observation Categories

- Jupiter Atmosphere
- Io
- Icy Galilean Satellites
- Magnetosphere
- Rings
- Small Satellites
- Scenery

These categories are described in turn on subsequent slides, with references to specific visits to specific targets shown in red.

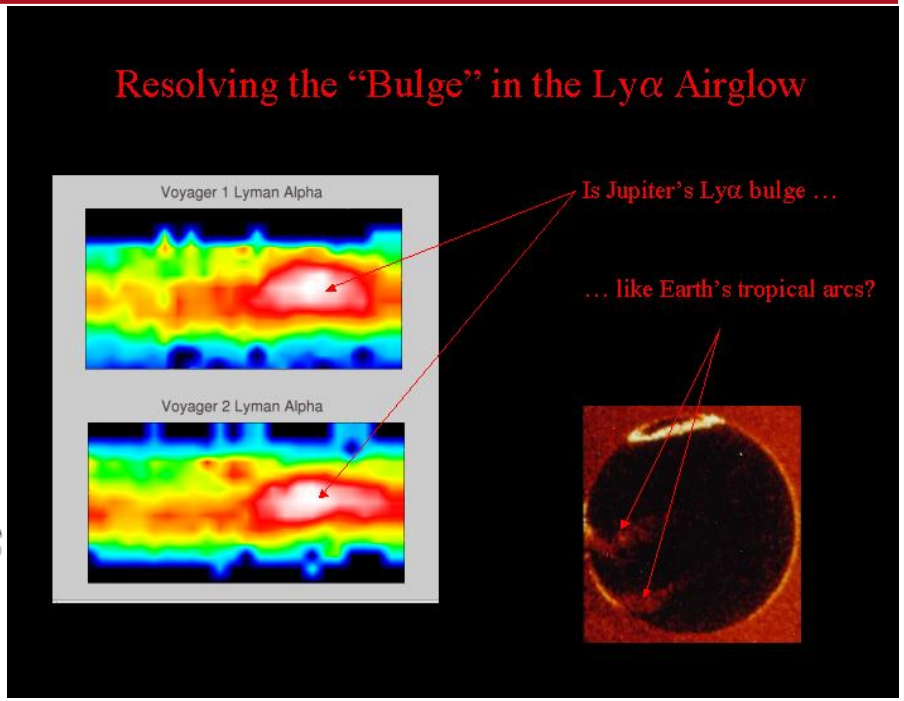
The implementation section (slide 29 onwards) describes the specific visits in more detail

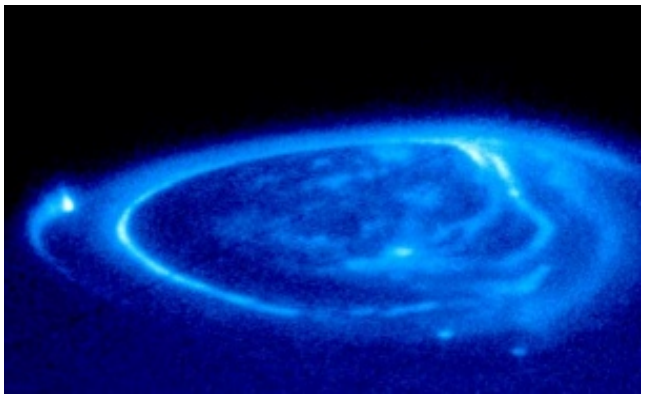
Jupiter Atmosphere: Stellar Occultation

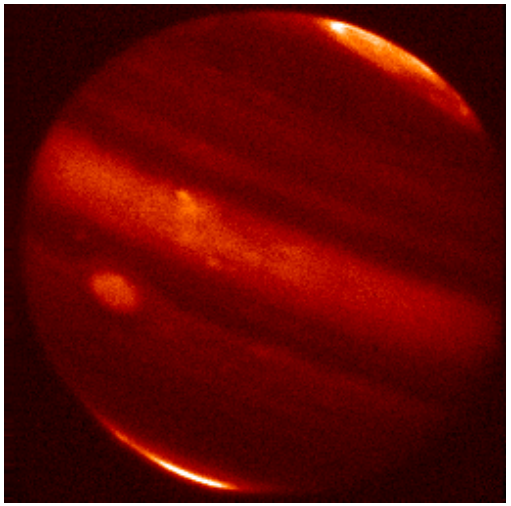
- Sound the poorly-known composition and structure of Jupiter's upper atmosphere
- Abundance and scale height information for many species
  - e.g., H_2, CH_4, C_2H_2, and higher hydrocarbons
  - 10^{-4} to 10^4 μbar
- Bulk atmosphere temperature profile
- Constraints on upper atmosphere dynamics and photochemical models.
- Observations:
  - Only one observable star (HR 7119) provides sufficient S/N
    - Jocc01, Jocc02, -1.3 days
  - Latitude 70 N

Jupiter Atmosphere: Aurorae and Airglow

- Aurorae
  - Influence of the solar wind?
  - Nightside behavior?
  - Different UV and near-IR morphology?
- Airglow
  - Nature of the Ly-α "bulge"?
- Observations
  - Synoptic Alice and SWAP observations (v. low resn. or disk-integrated)
    - Observatory phase: -52 -> -37 days (JobsUV01)
    - -37 -> -27 days (JappUV01)
    - -20 -> -17 days (JappUV02)
  - Resolved dayside Ly-α / H_3^+ map with Alice and LEISA, -3.2 days (JauroraO1, 02)
  - Resolved nightside Ly-α / H_3^+ map with Alice and LEISA, +3.0, +3.1 days (JauroraO3 - 06)

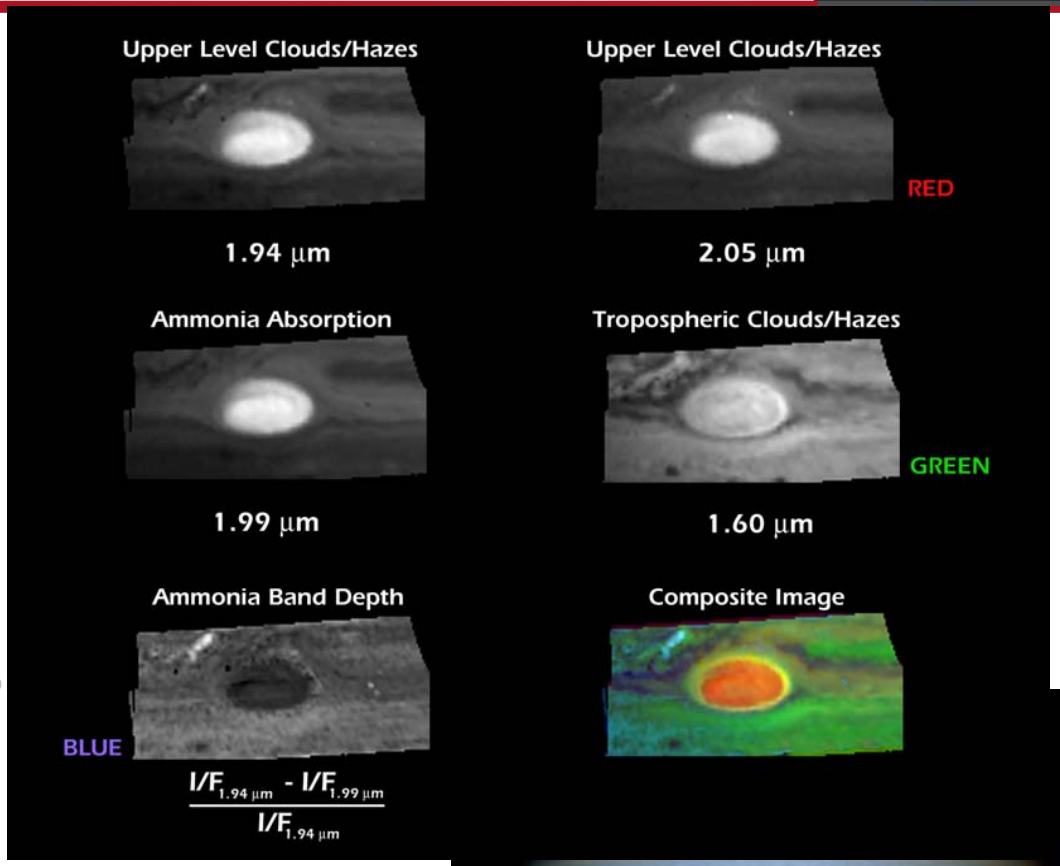


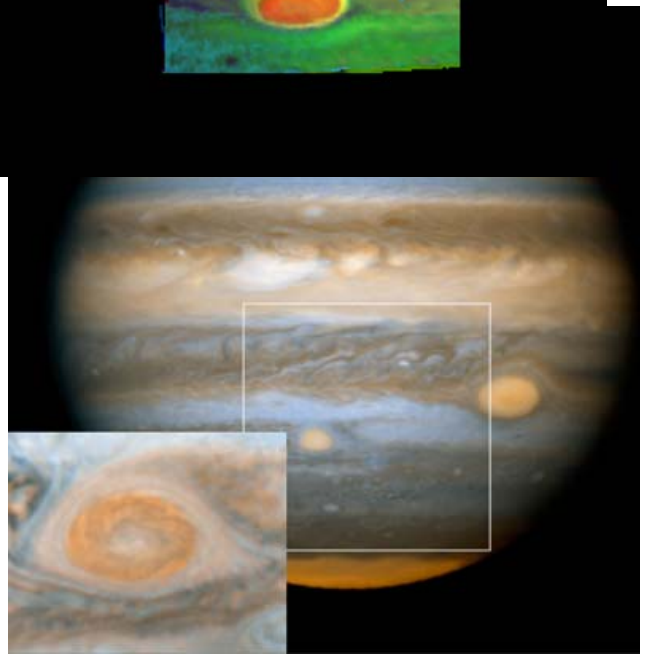




Jupiter Atmosphere: Cloud Dynamics

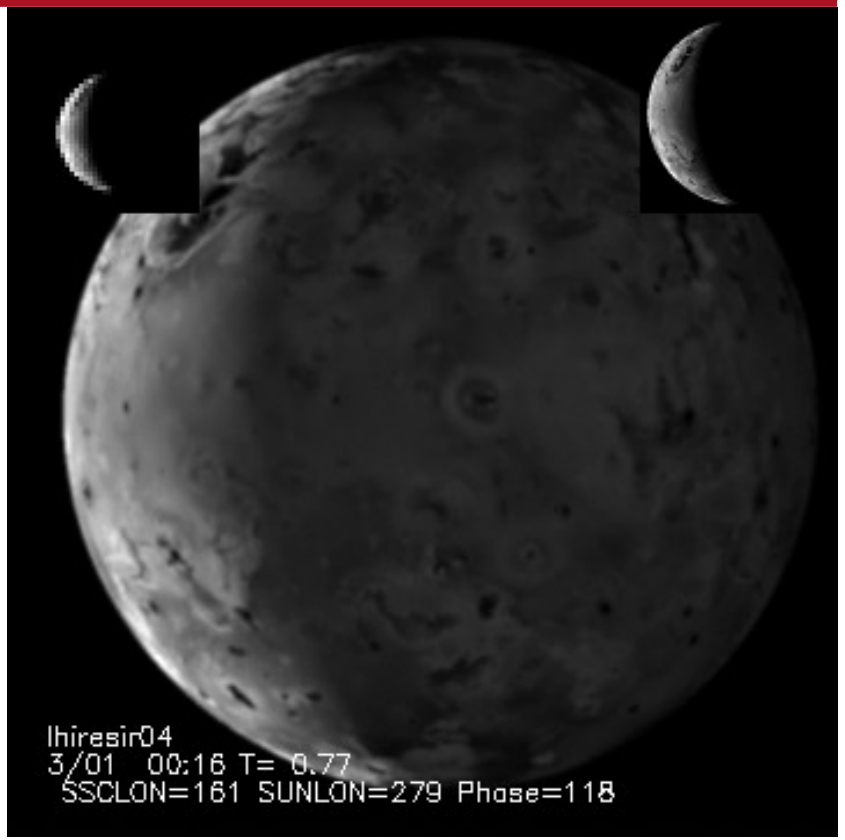
- 3-Dimensional circulation in Jovian storms
- Development of cloud particle sizes
- NH_3 gas inventory
- Cloud composition (NH_3, H_2O)
- Observations
  - Five LEISA image cubes of the Great Red Spot and its wake region on successive Jupiter rotations, with support LORRI imaging (Jstorm01 – 04, Jbest01, -1.4 - +0.3 days)
  - LORRI images of the new "Little Red Spot" (Jlrspot01, 02, -1.5, -1.1 days)
  - 3 pairs of global LORRI images in the observatory phase (Jobsatm01, -52 - -37 days)

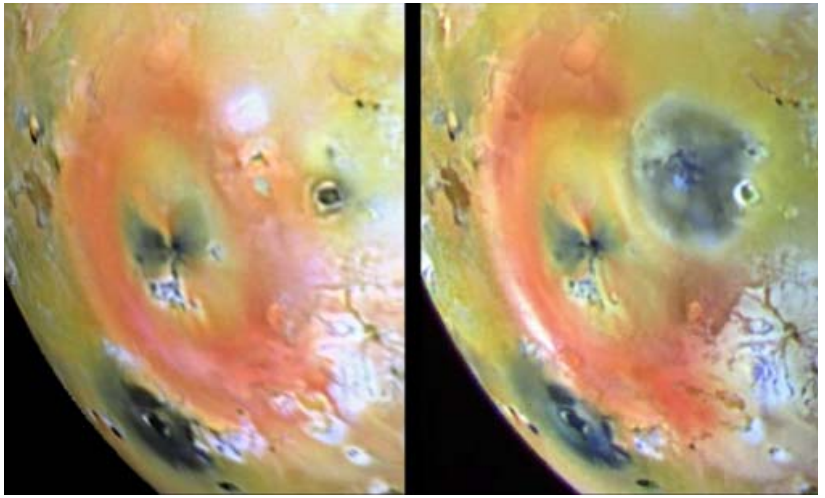




Io: Surface

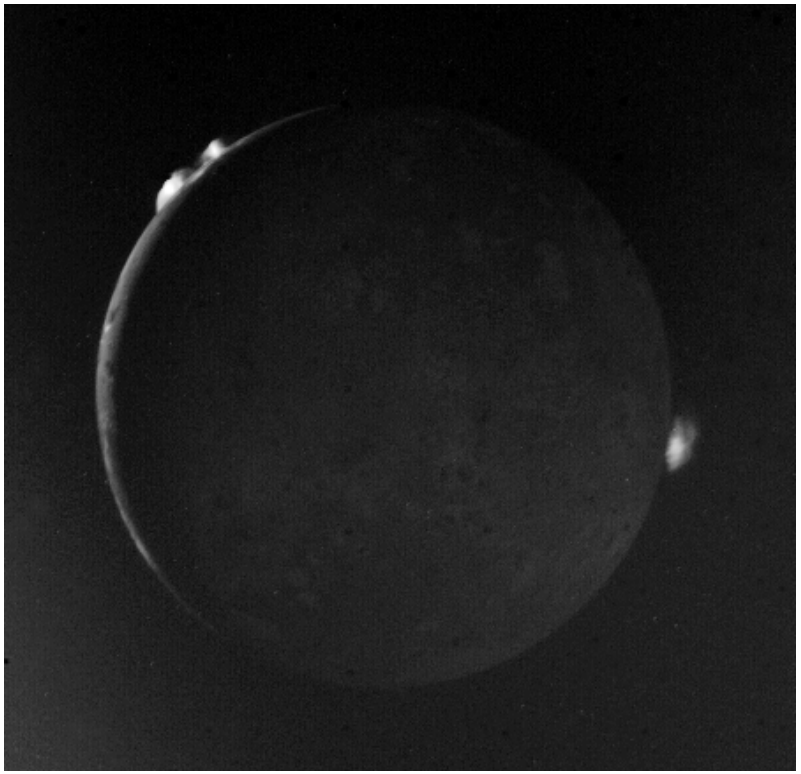
- Surface albedo changes since Galileo
  - Global panchromatic LORRI coverage at ~12 km/pix (Ihires01 – 06)
  - MVIC color coverage of Jupiter-facing hemisphere at ~60 km/pix (Ishine01, 02)
- Global topography from limb fits
  - Better longitude coverage than Galileo(?)
- Nature of the broad 1.2 μm absorption band? Global distribution of 1.98, 2.12 μm SO_2 bands?
  - Global 1.25 – 2.5 μm reflectance spectroscopy (Ihiresir01 – 04)

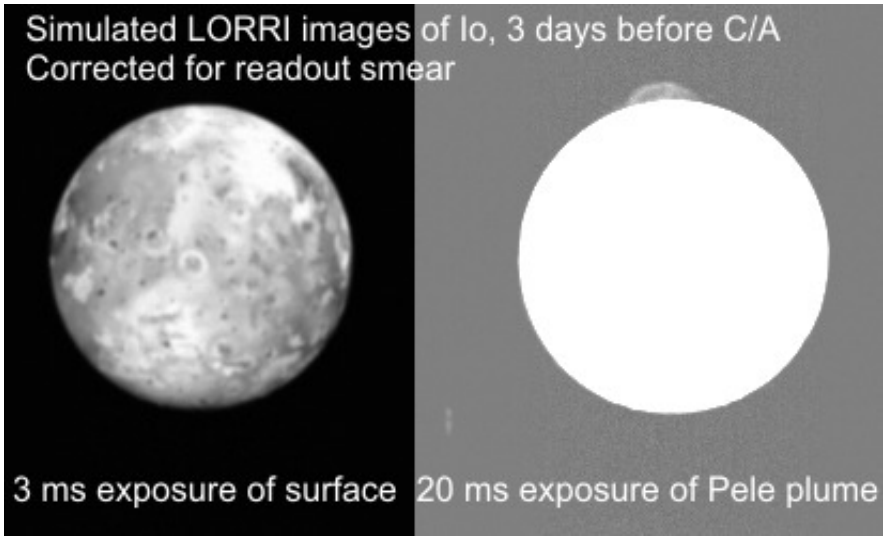




Io: Plumes

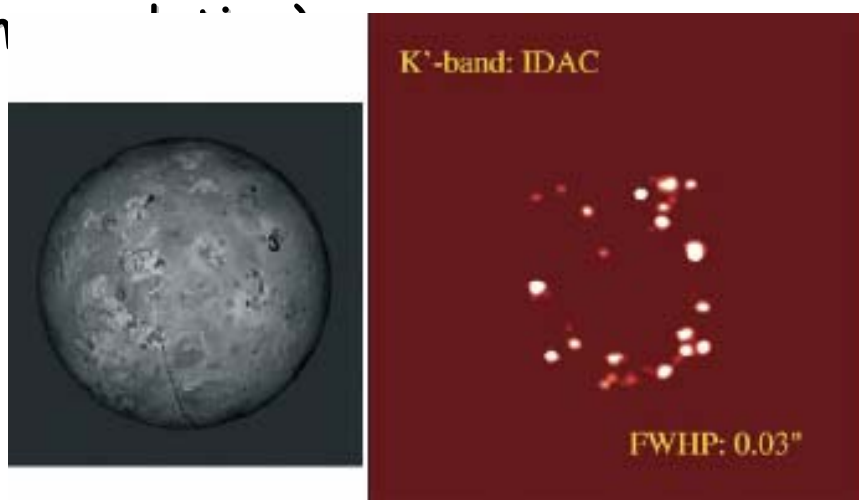
- Distribution, morphology, lifetime, short-term variability, and particle size distribution of the plumes
  - Global panchromatic LORRI coverage for plumes higher than ~60 km at high phase angles (Initemon01 – 14)
  - Color MVIC images of selected plumes (e.g. Pele, Prometheus, Tvashtar) on the limb (Ihires01, 05, Initemon05, Ieclipse05)
- Short-term plume variability: correlation of plumes with Jovian dust streams?
  - Multiple LORRI observations of the same longitudes on approach and departure, with an emphasis on Pele (Isunmon01 – 09, Initemon01 – 14)





Io: Hot Spots

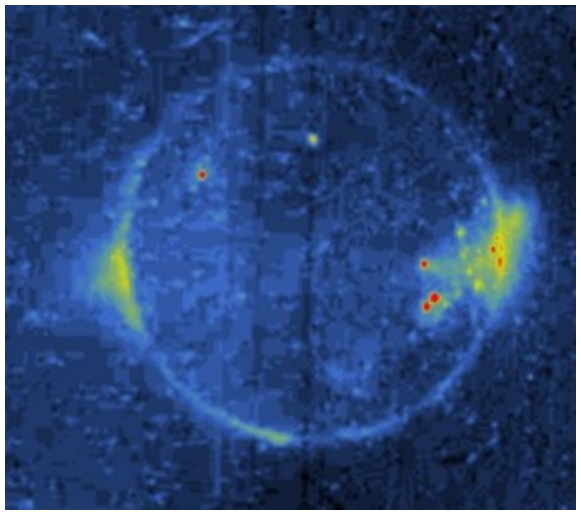
- Temperatures and global distribution of the hottest hot spots? Temperatures constrain the magma composition
  - Global eclipse and nightside imaging (Ieclipse01 – 05, Ihiresir04, Ishine01, 02)
    - LORRI (0.4 – 1.0μm panchromatic, ~12 km resolution)
    - MVIC (0.4 – 1.0 μm, ~50 km resolution)
    - LEISA (1.25 – 2.5 μm, ~150 km

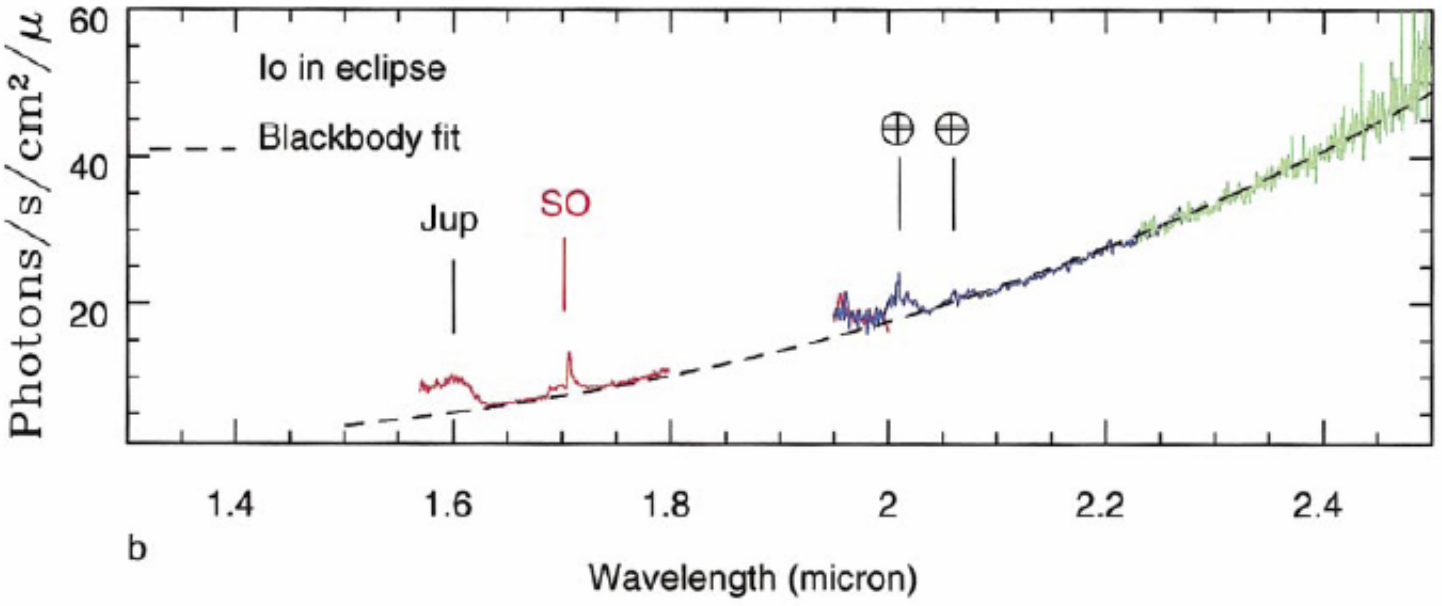


Io in eclipse, 2.2 μm, 100 km resn, de Pater et al. 2004

Io: Auroral Emissions

- Interaction of Io's atmosphere with the Jovian plasma
  - ~40 Alice spectra of FUV neutral O, S emissions at many geometries (every Io visit)
  - Eclipse imaging of visible SO_2, O, S, Na emissions (Ieclipse01 – 05)
- Thermal excitation of volcanic gases
  - Eclipse imaging of 1.7 μm SO emission (Ieclipse01 – 05)

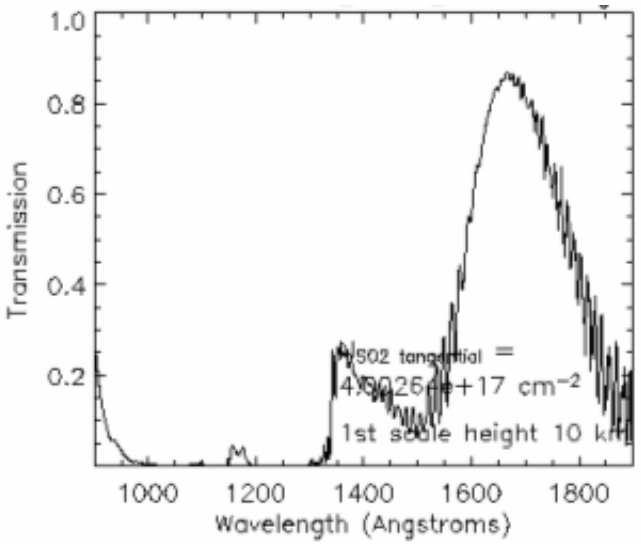




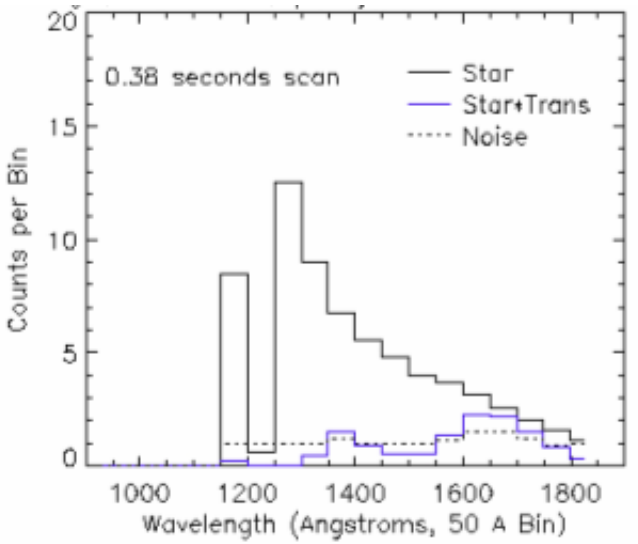
Io: Neutral bound atmosphere

- Does Io's atmosphere collapse at night?
  - Occultation of HD166052 (IoccO1, -2.1 days)
    - 55° S latitude
    - Phase angle 25°: see atmosphere at 7:40 am and 7:40 pm
    - Bright star: excellent S/N, strong absorption expected
    - First ever observation of Io's nightside atmosphere
  - Occultation of HD211802 (IoccO2, -0.0 days)
    - Equatorial
    - Phase 87°: Noon/midnight
    - Very low S/N

Simulated Occultation of HD 166052



Limb transmission, 1.6 x 10^{16} cm^{-2} SO_2

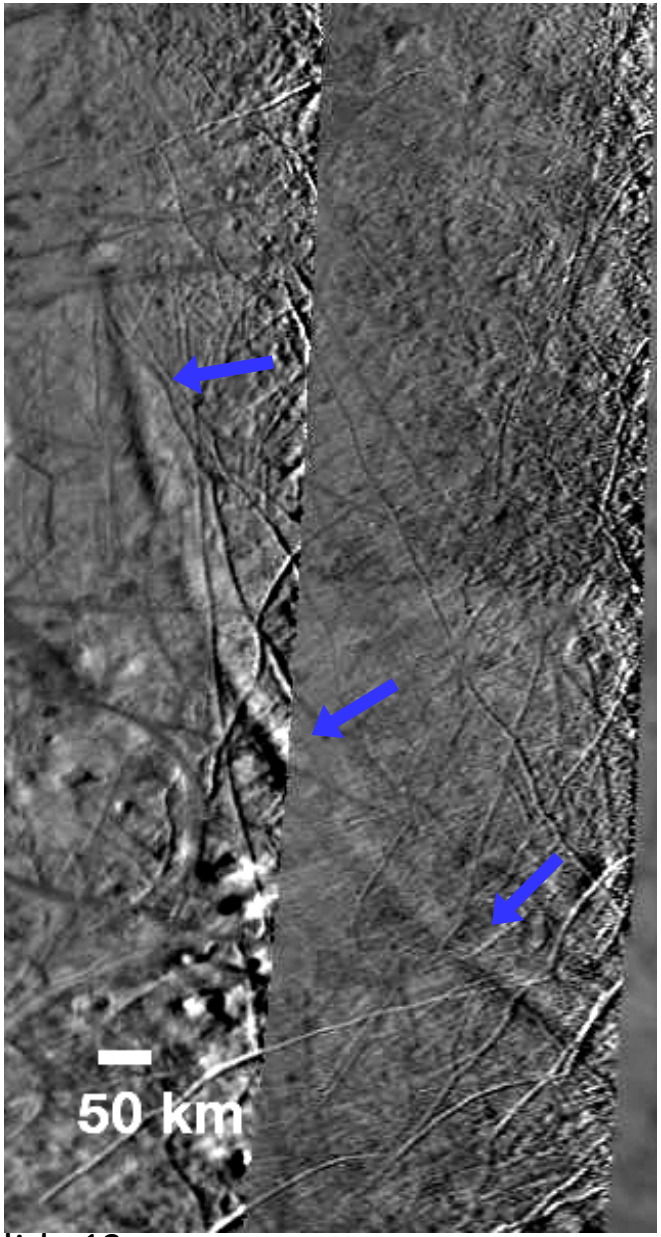


Star counts in bottom scale heigh

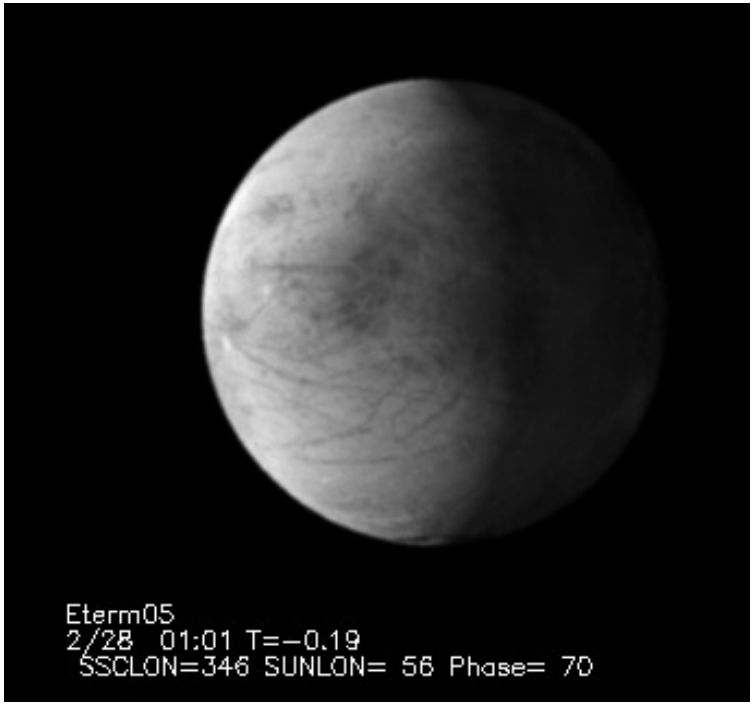
Europa science goals

- Atmosphere
  - Variability of disk-integrated UV emissions (neutral O at 1304, 1356 Å) with:
    - Europa Longitude
    - Magnetospheric longitude
    - Eclipse
  - Visible emissions in eclipse (disk-resolved)
- Surface composition
  - Disk-resolved 1.2 – 2.5 μm spectra at better spectral resolution than NIMS (R = 300), ≤ 20 pixels across the disk
- Surface geology
  - Distribution of large, broad, depressions ("crop circles") seen in near-terminator imaging…

Europa: "Crop Circles"

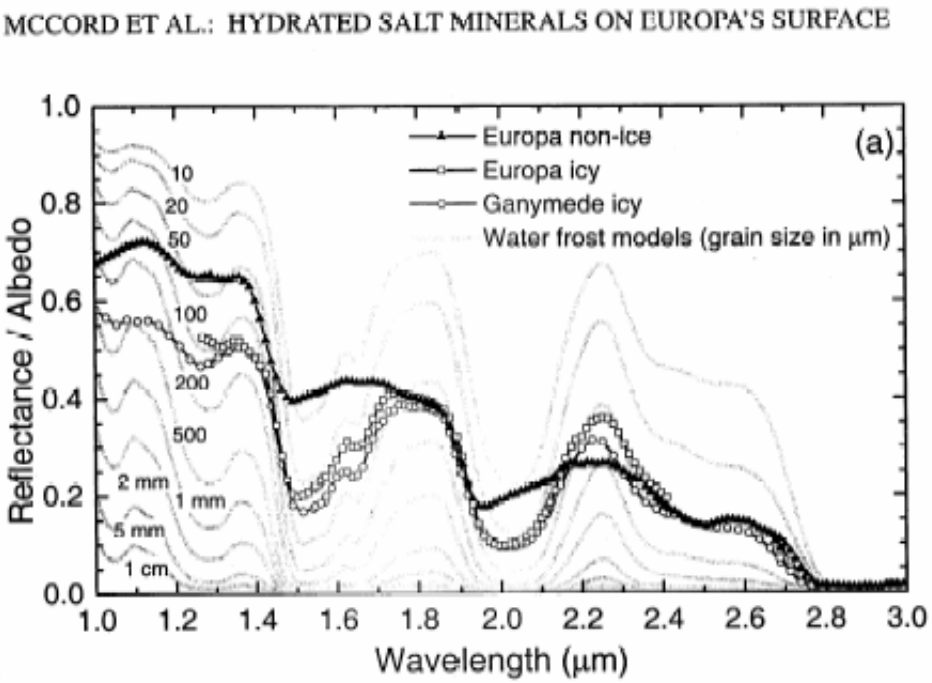


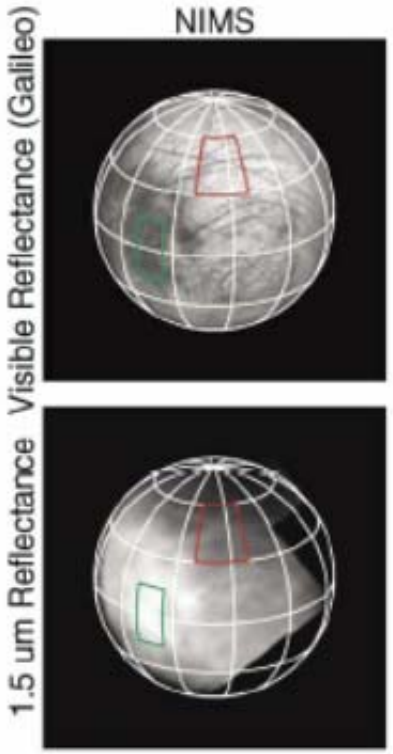
- Global pattern of arcuate depressions following small circles: what are they?
  - Near-terminator LORRI imaging at selected longitudes to improve on Galileo coverage (Eterm01 -08)



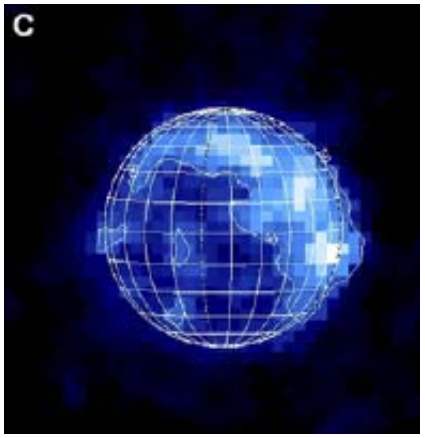
Europa: Surface composition

- What is the nature of the non-ice material?
  - Mapping of trailing hemisphere and adjacent longitude near-IR spectra at higher spectral resolution (R=300) than Galileo NIMS (R=~70) (Ecomp01, 02, Ebest01)

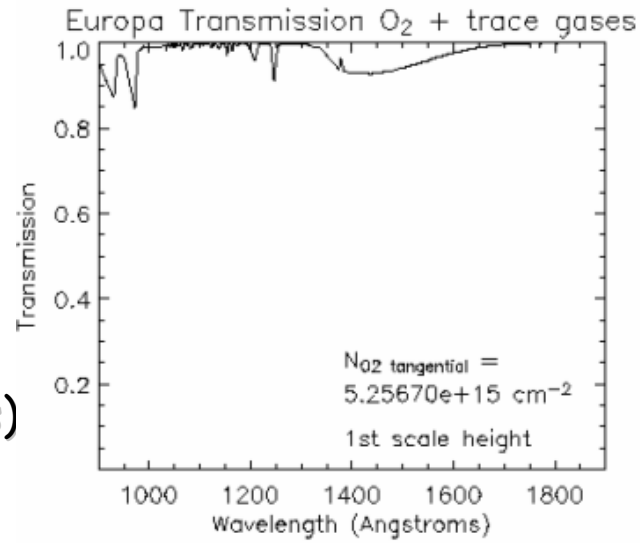


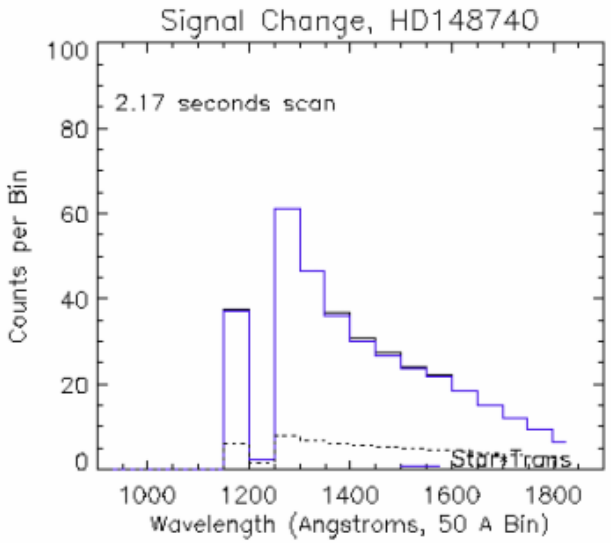


Europa: Atmosphere



- Response of Europa's atmosphere to the Jupiter magnetosphere? Origin of the atmosphere?
  - Disk-integrated Alice spectra of neutral O emission (1304, 1356 Å) on all 27 Europa visits (including UV-only visits Euvspec01 – 14), at a wide range of longitudes, local times, and magnetospheric longitudes
  - Visible-wavelength imaging of auroral emissions in eclipse with LORRI and MVIC (Eeclipse01)
  - NIR imaging in eclipse with LEISA (serendipity?)
- Response of Europa's atmosphere to Jupiter eclipse?
  - Time sequence of disk-integrated Alice spectra through an eclipse (Eeclipse01)
- Abundance and distribution of the molecular atmosphere?
  - Occultation of HD173375 (Eocc01, -1.0 days)
  - Star is bright but expected signal is small: (S/N ~0.2, unless star is brighter or atmosphere denser than the simulations)



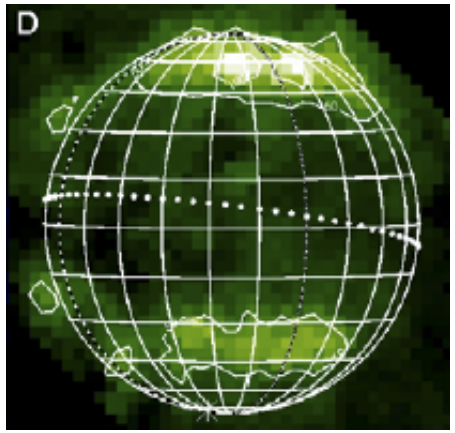


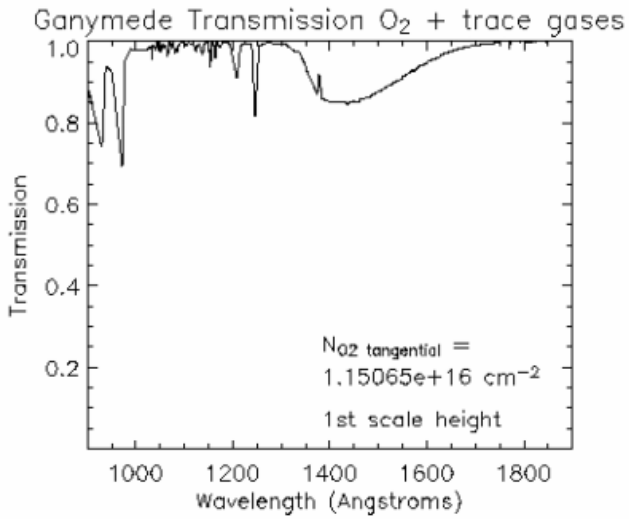
Ganymede: Composition

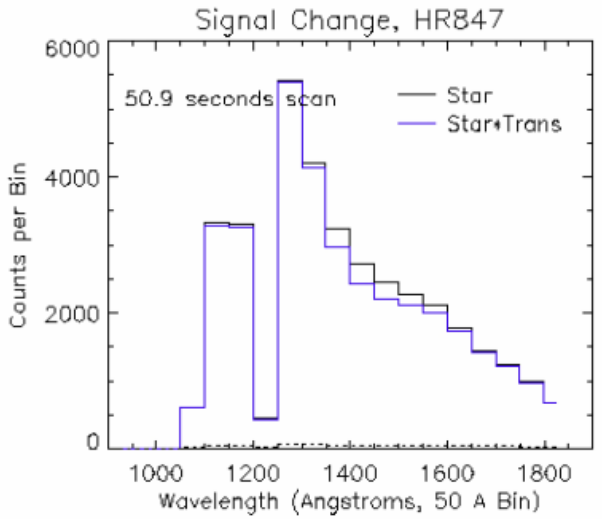
- Global distribution of water ice and other hydrated species on Ganymede?
  - Gap-fill and trailing side coverage at much better spectral resolution than Galileo NIMS (Gcomp01, 02, Gbest01)

Ganymede: Atmosphere

- Response of Ganymede's atmosphere to the Jupiter magnetosphere?
  - Disk-integrated Alice spectra of neutral O emission (1304, 1356 Å) on all 5 Ganymede visits (including 8 hours surrounding Gocc01 for magnetic longitude response study)
  - Visible-wavelength imaging of auroral emissions in eclipse with LORRI and MVIC (Geclipse01)
  - NIR imaging in eclipse with LEISA (serendipity?)
- Response of Ganymede's atmosphere to Jupiter eclipse?
  - Time sequence of disk-integrated Alice spectra through an eclipse (Geclipse01, 02)
- Abundance and distribution of the molecular atmosphere?
  - Occultation of Sigma Arietis (Gocc01, +4.5 days)
  - Latitude 70 N
  - Star is bright, expected signal is moderate: (S/N ~9)

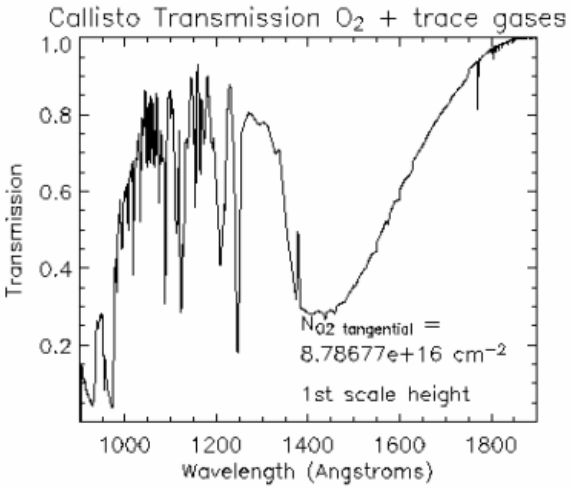


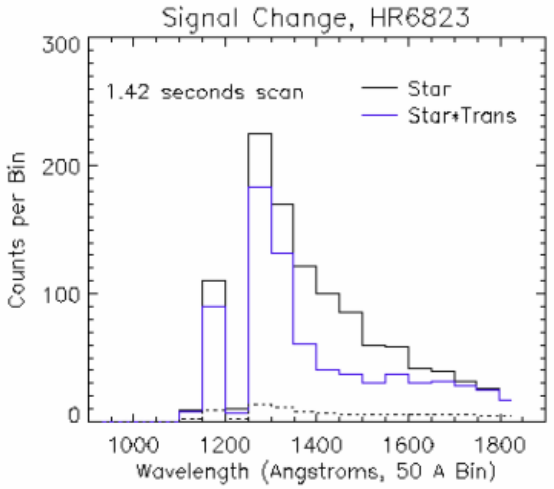




Callisto: Composition and Atmosphere

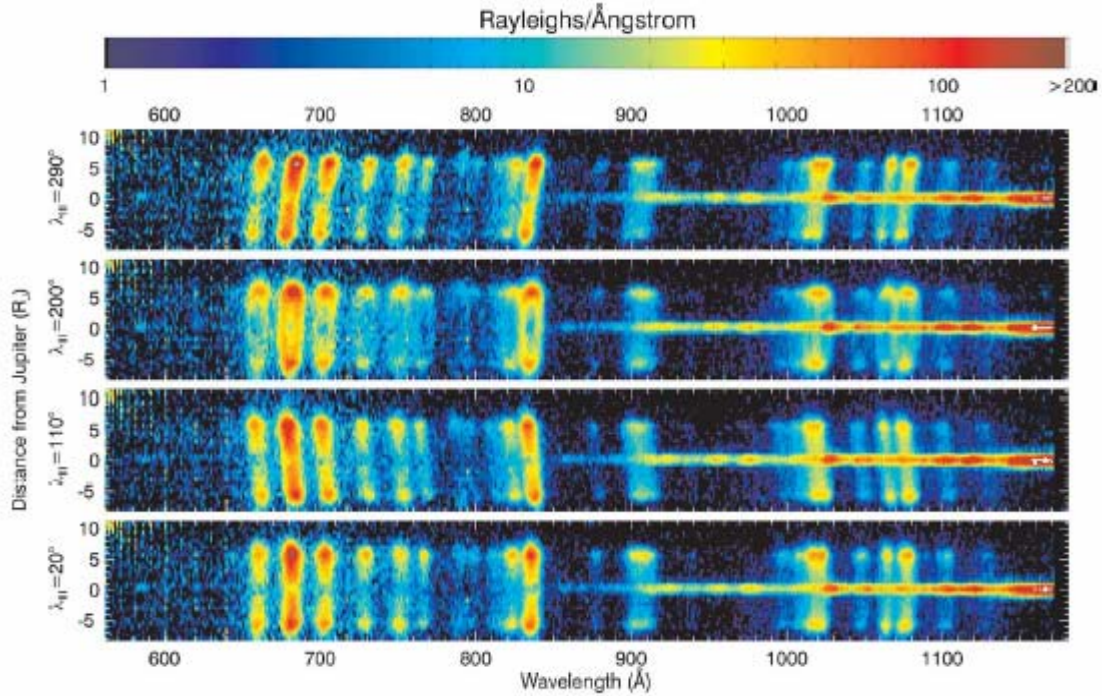
- How reliably can the T-dependent spectrum of water ice be used as a thermometer at arbitrary phase angles, e.g. on Charon? How much does the spectrum depend on phase angle?
  - Observe the same hemisphere of Callisto with LEISA at 18, 46 and 76 degree phase (Ccomp01, 02, Cbest01)
- Does Callisto have a substantial O_2 atmosphere (as recently predicted by Liang et al. 2005)?
  - Long (up to 7 hour) disk-integrated Alice UV spectra to look for 1304, 1356 Å neutral O emission (not yet seen) at different magnetic longitudes (Cuvspec01 – 04)
  - Two stellar occultations:
    - 16 Sgr, -1.9 days, 35 S (Cocc01) .
      Bright star, potential strong signal (S/N ~13
    - HD180699, -1.2 days 20 S. (Cocc02).
      Moderately bright star potential strong signal (S/N ~5)





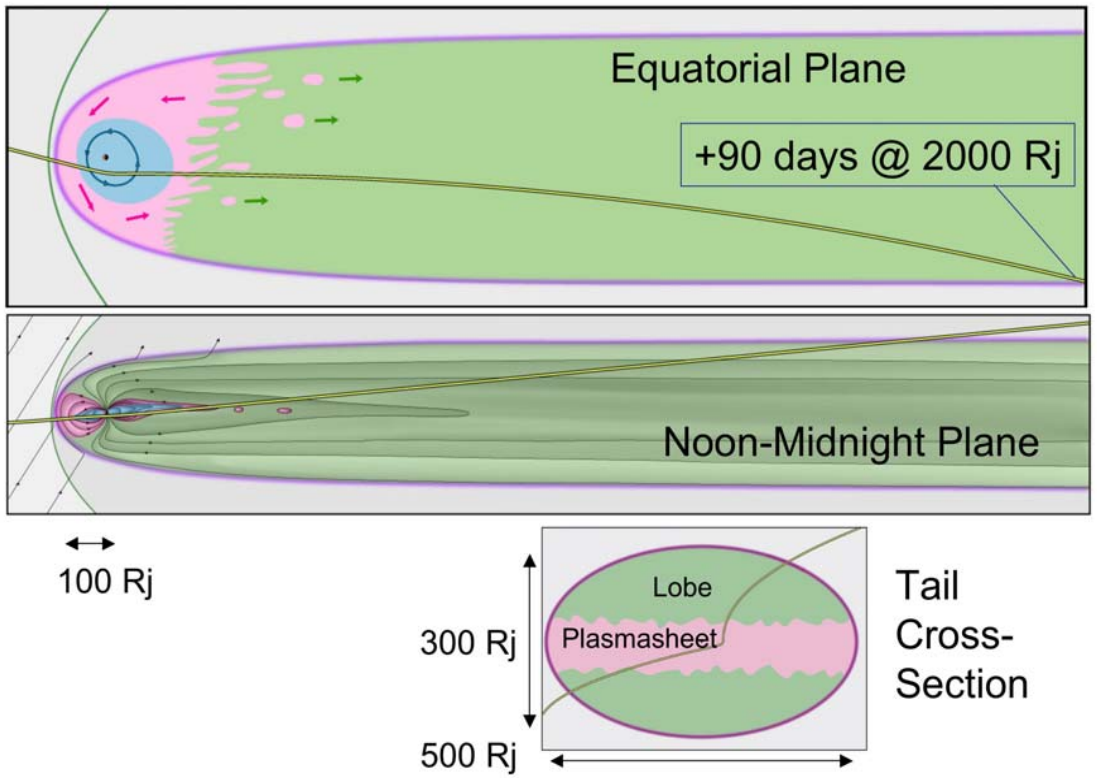
Io Plasma Torus

- How and why does the composition and density of the torus vary with time?
  - Synoptic EUV observations of S and O ions at both torus ansae using the same Alice spectra used for the Jupiter auroral study:
    - Observatory phase: -52 -> -37 days (JobsUV01)
    - -37 -> -27 days (JappUV01)
    - -20 -> -17 days (JappUV02)
- How does the detailed morphology of the torus vary with longitude?
  - Alice EUV scans of the torus noon, midnight, morning, and evening ansae with 2.3 x 7.1 R_{Io} spatial resolution (Tuvspec01 – 04)



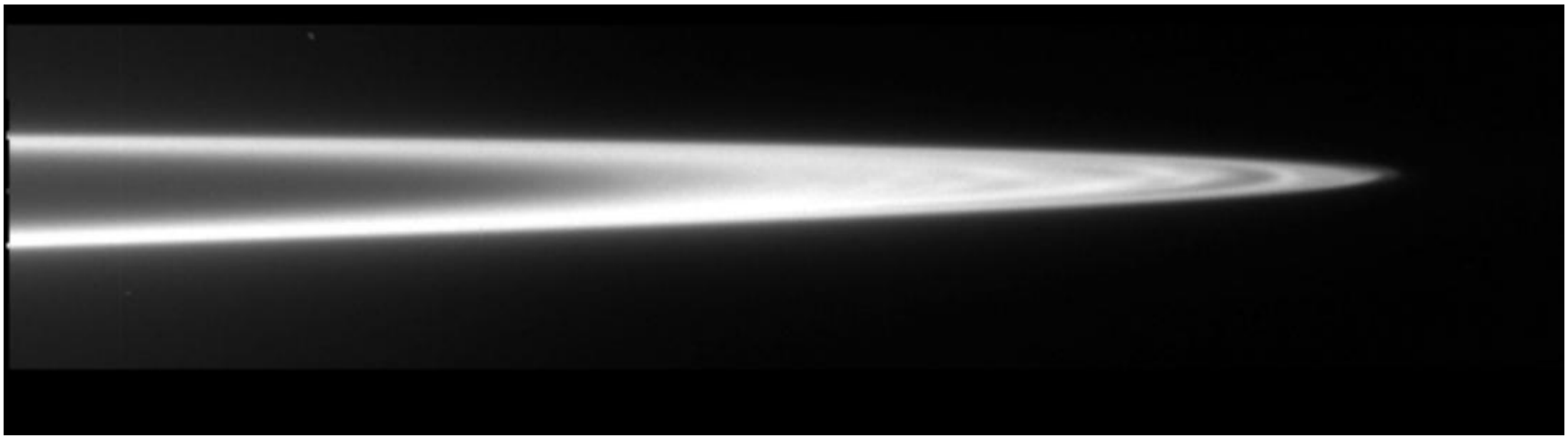
Magnetosphere

- How do plasma conditions near Jupiter compare to previous *in situ* observations?
  - Monitoring of the magnetospheric plasma during the flyby with SWAP and PEPPSI (Jnearmag01)
- How is plasma lost from the magnetosphere?
  - First-ever flight down Jupiter's magnetotail, with continuous plasma observations by SWAP and PEPSSI till +105 days (Jpostmag01, 02)



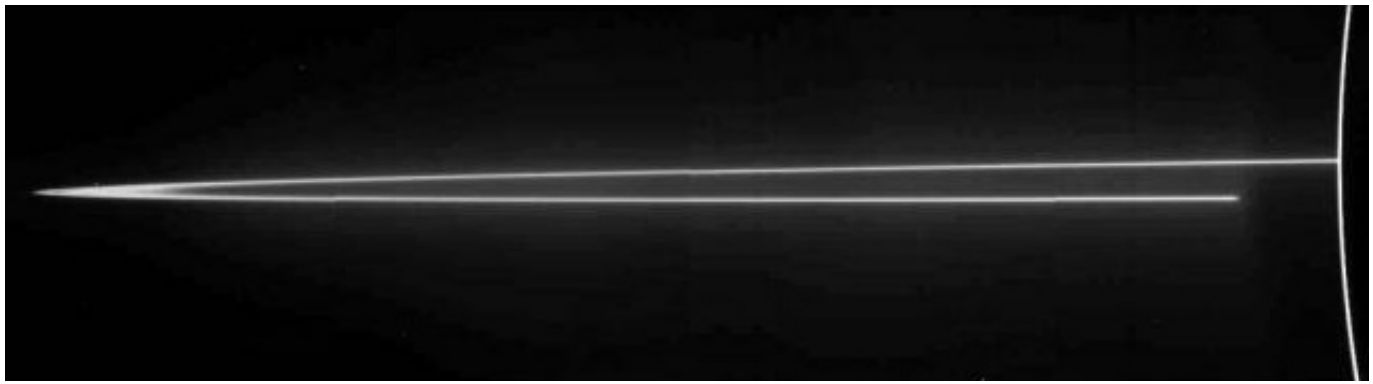
Rings

- Do the ring moons Metis and Adrastea represent the upper end of a broad size distribution of ring moon "parent bodies"?
  - Search all longitudes with LORRI for ~km-sized moons on approach, and determine their orbital periods by repeating the search (Rsatsrch01 – 03, -4.0, -2.3 days)
- What is the vertical structure of the rings? How thick are they? What are the "ripples" glimpsed by Galileo?
  - Image the rings with LORRI for 10 hours centered on ring plane crossing at +1.9 days (Rpcross02 – 04)



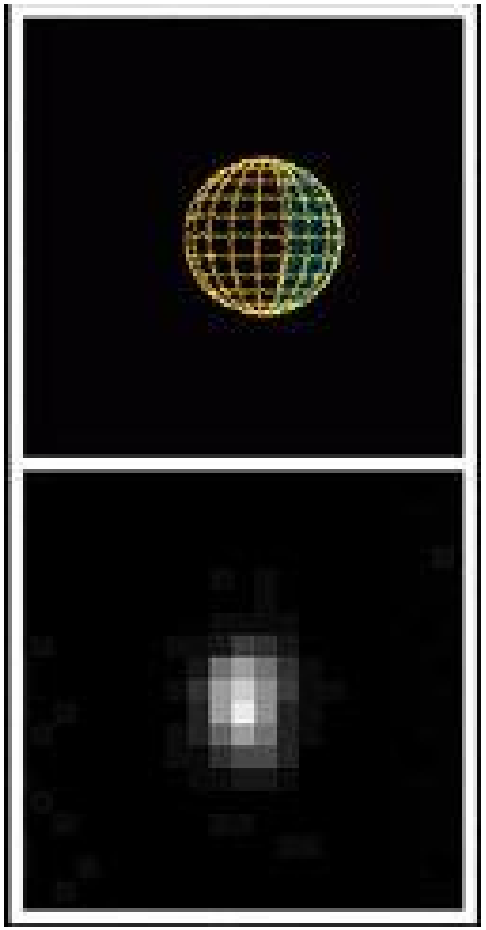
Rings, contd.

- What is the structure of Thebe's gossamer ring?
  - Image the Thebe ring with LORRI during its own ring plane crossing (Rpcross01)
- What is the ring made of?
  - Obtain a single LEISA frame near RPX, for a 1.25 – 2.5 micron spectrum (Rpcross03)
- Are there "quadrant asymmetries" or other longitudinal variations in the ring brightness?
  - Multiple images the ring away from the ring plane crossing (Rphase01 – 06, Rbest01)
- What are the relative spatial distributions of the ring dust and larger parent bodies?
  - Image the ring ansa at a wide range of phase angles (Rphase01 – 06)



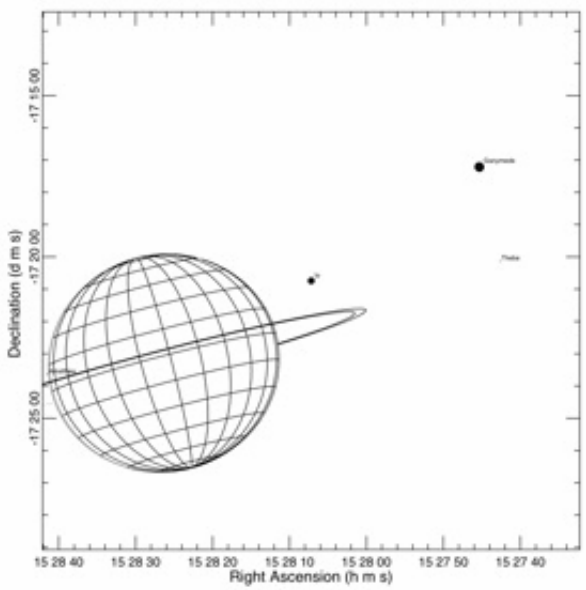
Small Satellites

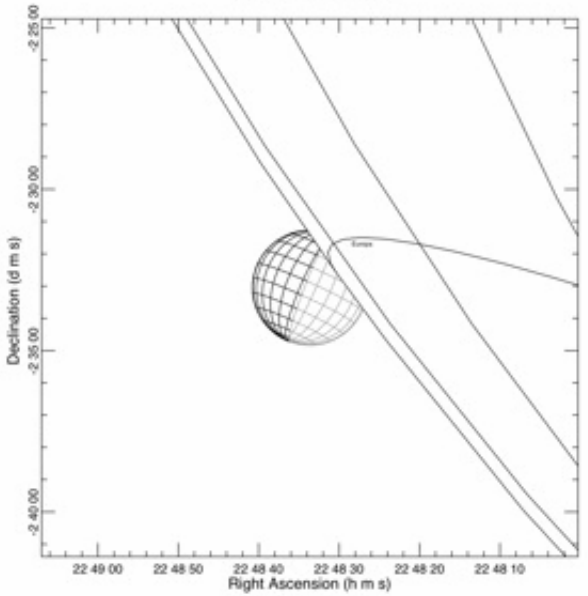
- What are the sizes, shapes, and photometric properties of Jupiter's outer irregular satellites?
  - Imaging of Himalia with LORRI at phase angles from 11 to 90 degrees (Hphase01 – 04), with up to 7 pixel diameter (comparable to Cassini)
  - Imaging of Elara with LORRI at phase angles from 20 to 90 degrees (Lphase01 – 04), with up to 3 pixel diameter

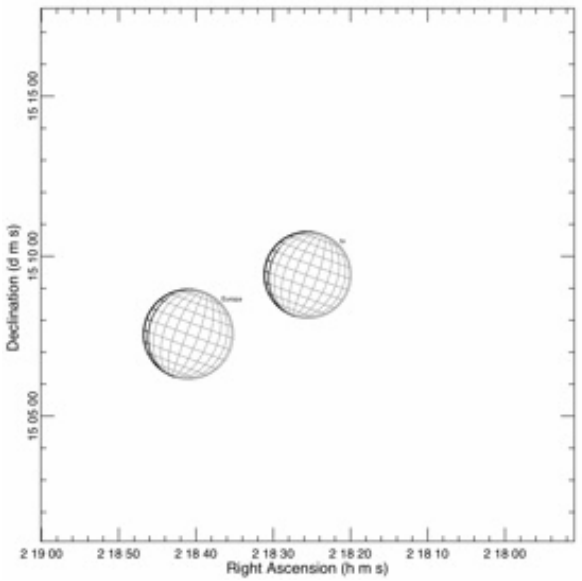


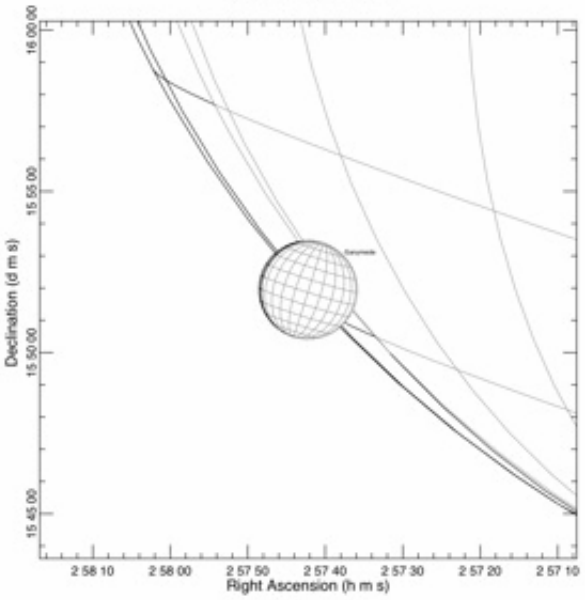
Kodak Moments

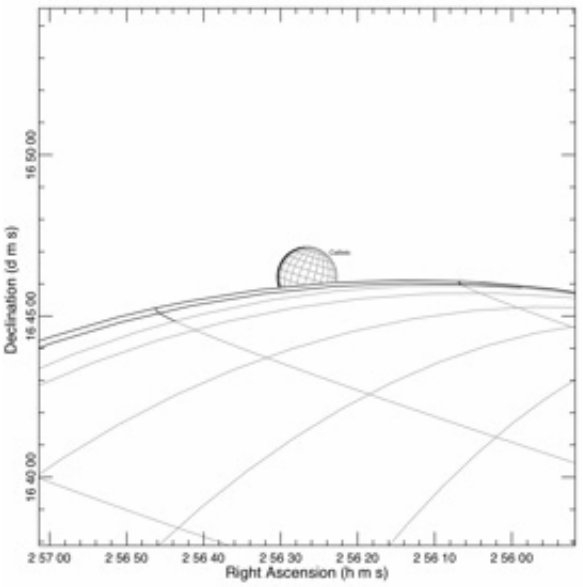
- What are the scenic properties of the Jupiter system?
  - LORRI images of selected scenic conjunctions and alignments of the satellites (Jkodak01, 02, 03, Ikodak01, Ekodak01, Gkodak01, Ckodak01)











Implementation

- The following slides illustrate the planned observation sequence
- Small (but only small) changes to this sequence are likely before the plan is finalized
- Visit names in red on previous slides are a combination of the visit descriptor and visit number in the following spreadsheets, e.g. Isunmon01 refers to

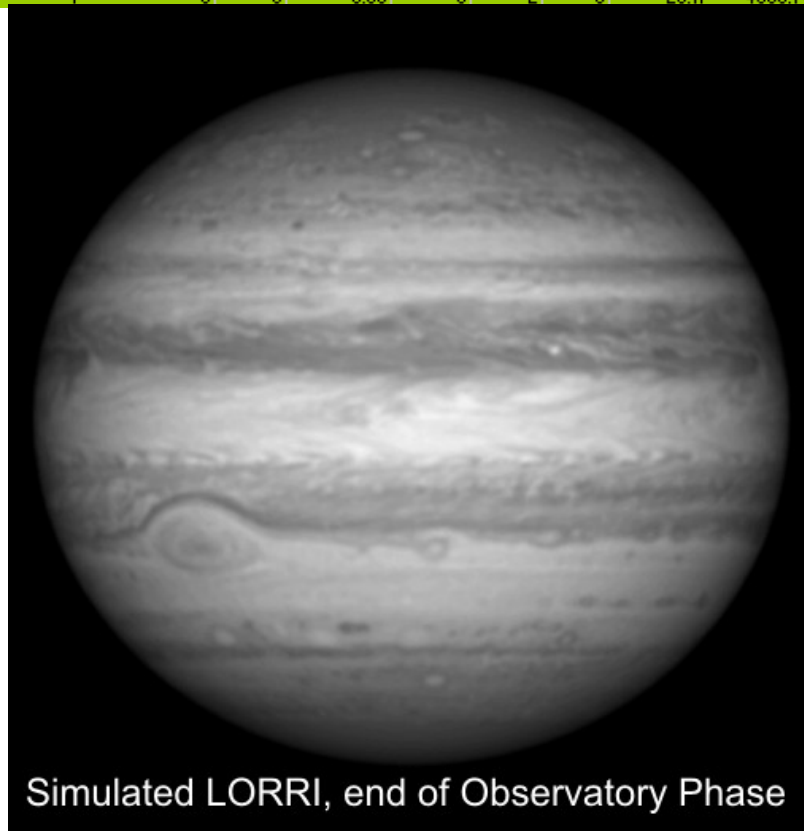
Visit Descriptor	Visit Number
ISunMon	1

- Times are UT, spacecraft event time

Observatory Phase

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-52.00	1/7/07 5:42	21600.00	1/22/07 5:42	84437821	9.3	Jupiter	Jupiter images - observatory phase	JObsATM	1	0	0	0.00	0	165	0	2076.18	2076.1
-52.00	1/7/07 5:42	21600.00	1/22/07 5:42	84437821	9.3	Jupiter	Auroral response to magnetosphere - observatory phase	JObsUV	1	0	0	0.00	0	0	3600	1887.44	3963.6
-52.00	1/7/07 5:42	15.00	1/7/07 5:57	84437821	9.3	Jupiter	Alice autonomous HV Ramp	JAliceCal	1	0	0	0.00	0	0	1	140.52	4104.1
-50.00	1/9/07 5:42	15.00	1/9/07 5:57	81351217	8.2	Callisto	Ralph - pt source Cal	CRalphCal	1	0	0	481.81	1	0	0	378.91	4483.0
-44.75	1/14/07 11:42	3600.00	1/16/07 23:42	0	0.0	Earth	Will be moved to coincide with a DSN pass in this time-frame/ Alice SOC	JAliceCal	2	0	0	0.00	0	0	1	0.52	4483.5
-42.17	1/17/07 1:41	5.00	1/17/07 1:46	68556638	9.7	Jupiter	Double Shadow Transit	Jkodak	1	0	0	0.00	0	2	0	25.17	4508.7

- -52 days -37 days
- 3 pairs of LORRI Jupiter global maps for cloud dynamics
- Three calibration observations
- One scenic global view of Jupiter + satellites
- Remainder of time (except for DSN passes) used for continuous Alice monitoring of Jupiter aurorae and Io torus
- Continuous SWAP and PEPSSI observations of the solar wind



Simulated LORRI, end of Observatory Phase

Auroral Campaigns

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-37.00	1/22/07 5:42	14400.00	2/1/07 5:42	60320219	9.8	Jupiter	Auroral response to magnetosphere	JAppUV	1	0	0	0.00	0	0	6519	3417.85	7926.5
-35.04	1/24/07 4:41	5.00	1/24/07 4:46	57106831	9.8	Jupiter	Double Shadow Transit	Jkodak	2	0	0	0.00	0	2	0	25.17	7951.7
-31.90	1/27/07 8:00	5.00	1/27/07 8:05	52171396	9.1	Europa	Alice pt source	EAliceCal	1	0	0	0.00	0	0	2	1.05	7952.8
-28.00	1/31/07 5:42	15.00	1/31/07 5:57	0	0.0	Forced	Ralph - MVIC blue rapid flat	JRalphCal	2	4982	1	0.00	0	0	0	1201.42	9154.2
-20.00	2/8/07 5:42	4320.00	2/11/07 5:42	60320219	9.8	Jupiter	Auroral response to magnetosphere	JAppUV	2	0	0	0.00	0	0	720	377.49	9531.7
-13.33	2/14/07 21:42	120.00	2/14/07 23:42	0	0.0	star	Alice - SOC occultation test	SAliceCal	1	0	0	0.00	0	0	2	5.50	9537.2
-12.75	2/15/07 11:42	5.00	2/15/07 11:47	20736082	8.6	Europa	Alice point source	EAliceCal	2	0	0	0.00	0	0	2	1.05	9538.2
-5.24	2/23/07 0:00	1440.00	2/24/07 0:00	0	0.0	Earth	TCM	TCM	1	0	0	0.00	0	0	0	0.00	0.0

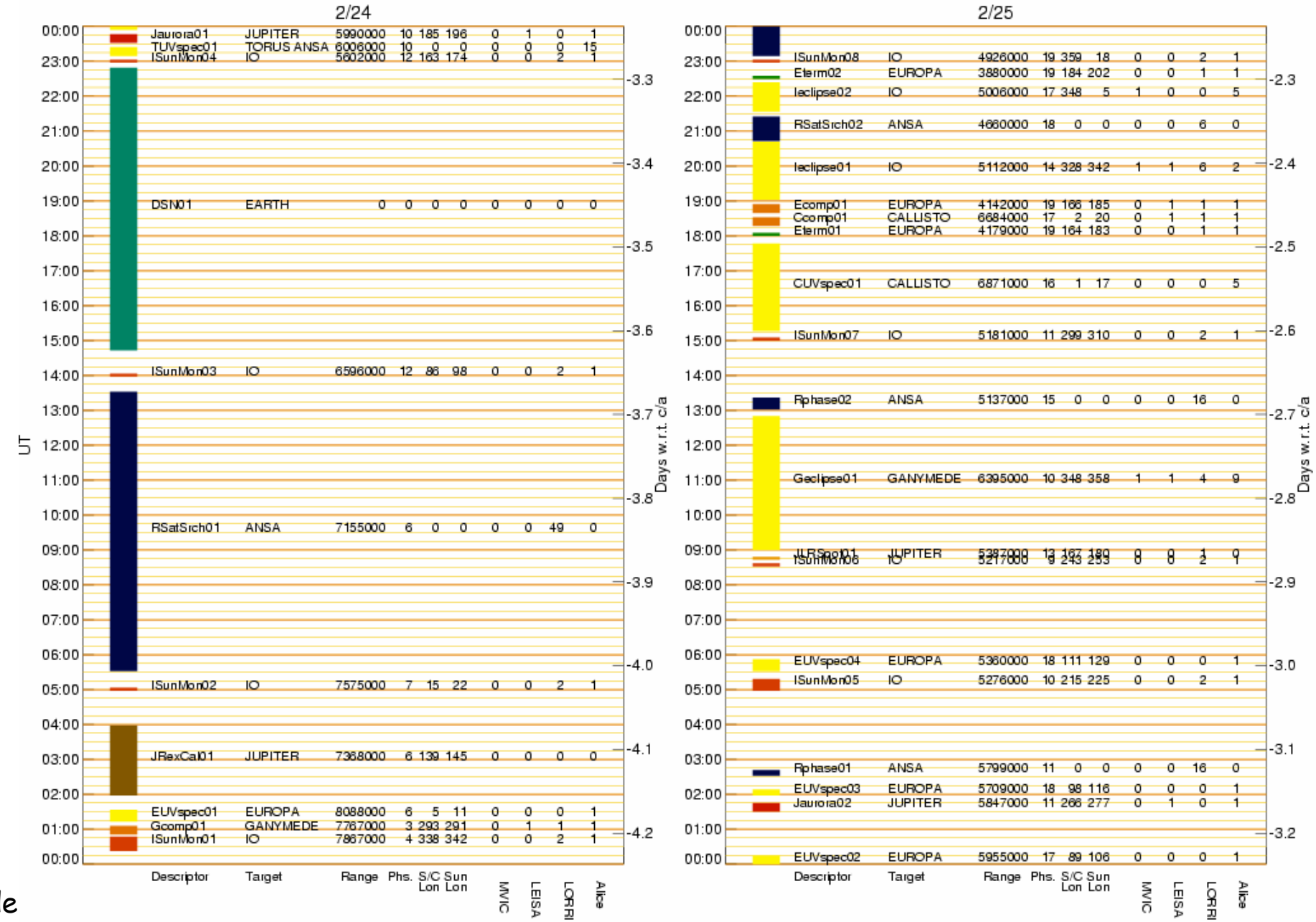
- Four calibration observations
- One scenic global view of Jupiter + satellites
- Break for TCM
- Remainder of time (except for DSN passes) used for continuous Alice monitoring of Jupiter aurorae and Io torus
- Continuous SWAP and PEPSSI observations of the solar wind
- Erase SSR at ~ -12 days
- TCM until -4.2 days

Close Encounter, -4.22 - -3.28 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-4.22	2/24/07 0:20	25.00	2/24/07 0:45	7867074	4.7	Io	Approach monitoring, Pele on limb	ISunMon	1	0	0	0.00	0	2	1	25.17	25.1
-4.20	2/24/07 0:50	15.00	2/24/07 1:05	7767502	3.4	Ganymed	Trailing composition	Gcomp	1	0	0	267.77	1	1	1	223.16	248.3
-4.19	2/24/2007 1:15	20.00	2/24/07 1:35	8088952	6.3	Europa	UV spectra	EUVspec	1	0	0	0.00	0	0	1	0.00	248.3
-4.15	2/24/07 2:00	120.00	2/24/07 4:00	7368276	6.2	Jupiter	REX - looking at Jupiter	JRexCal	1	0	0	0.00	0	0	0	13.20	261.5
-4.03	2/24/07 5:00	5.00	2/24/07 5:05	7575510	7.4	Io	Approach monitoring	ISunMon	2	0	0	0.00	0	2	1	25.17	286.6
-4.01	2/24/07 5:30	480.00	2/24/07 13:30	7155752	6.8	Ansa	Jupiter ring - search for embedded moons	RSatSrch	1	0	0	0.00	0	49	0	616.56	903.2
-3.65	2/24/07 14:00	5.00	2/24/07 14:05	6596221	12.0	Io	Approach monitoring	ISunMon	3	0	0	0.00	0	2	1	25.17	928.4
-3.63	2/24/07 14:42	486.00	2/24/07 22:48	0	0.0	Earth	DSN	DSN	1	0	0	0.00	0	0	0	0.00	928.4

- Io observations for plume monitoring (3, LORRI)
- Ganymede composition map (1, LEISA)
- Europa UV spectrum (1, Alice)
- Radiometric calibration on Jupiter (1, REX)
- 8-hour sequence of images of Jupiter's ring to search for satellites (epoch 1) (1, LORRI)
- DSN pass

Graphical timeline, -4.22 - -2.22 days



Slide

Close Encounter, -3.28 - -2.88 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-3.28	2/24/07 23:00	5.00	2/24/07 23:05	5602973	12.0	Io	Approach monitoring, Pele on limb	ISunMon	4	0	0	0.00	0	2	1	25.17	953.5
-3.27	2/24/2007 23:10	15.00	2/24/07 23:25	6006808	10.8	Torus An	UV spectra	TUVspec	1	0	0	0.00	0	0	15	0.00	953.5
-3.26	2/24/07 23:30	15.00	2/24/07 23:45	5990806	10.8	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	1	0	0	642.31	1	0	1	581.14	1534.7
-3.24	2/24/2007 23:55	20.00	2/25/07 0:15	5955032	17.2	Europa	UV spectra	EUVspec	2	0	0	0.00	0	0	1	0.00	1534.7
-3.18	2/25/07 1:30	15.00	2/25/07 1:45	5847069	11.5	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	2	0	0	650.75	1	0	1	587.77	2122.4
-3.15	2/25/2007 2:00	10.00	2/25/07 2:10	5709637	18.0	Europa	UV spectra	EUVspec	3	0	0	0.00	0	0	1	0.00	2122.4
-3.13	2/25/07 2:30	10.00	2/25/07 2:40	5799275	11.7	Ansa	Jupiter ring - phase curve	Rphase	1	0	0	0.00	0	16	0	201.33	2323.8
-3.03	2/25/07 5:00	20.00	2/25/07 5:20	5276976	10.3	Io	Approach monitoring	ISunMon	5	0	0	0.00	0	2	1	25.17	2348.9
-3.01	2/25/2007 5:30	20.00	2/25/07 5:50	5360342	18.9	Europa	UV spectra	EUVspec	4	0	0	0.00	0	0	1	0.00	2348.9

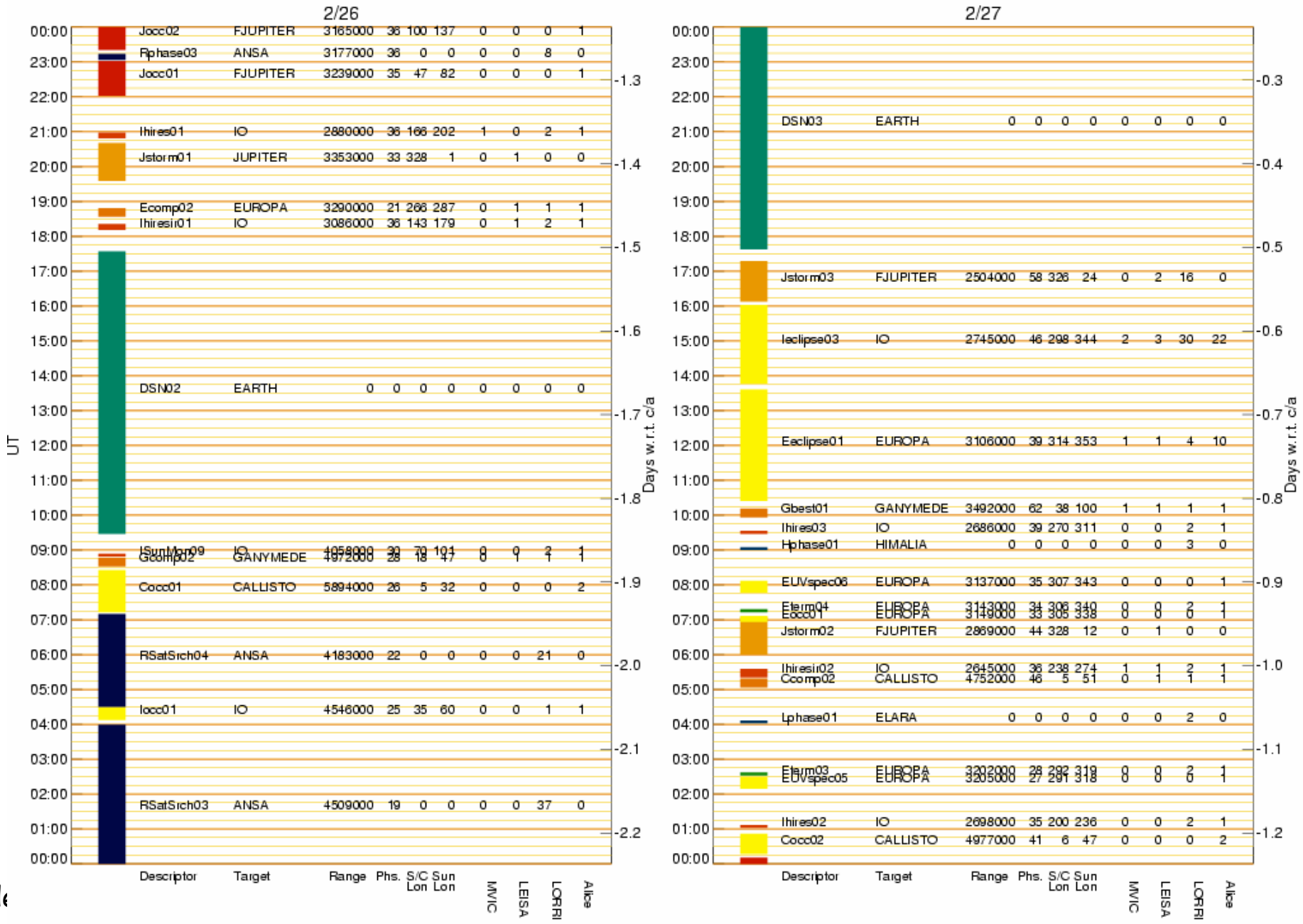
- Io observations for plume monitoring (2, LORRI)
- UV map of the Io torus ansa (1, Alice)
- Maps of Jupiter H_3^+ and UV aurorae (2, LEISA+Alice)
- Europa UV spectra (3, Alice)

Close Encounter, -2.88 - -2.45 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-2.88	2/25/07 8:30	5.00	2/25/07 8:35	5217587	9.9	Io	Approach monitoring	ISunMon	6	0	0	0.00	0	2	1	25.17	2374.15
-2.87	2/25/07 8:45	5.00	2/25/07 8:50	5387854	13.7	Jupiter	Little Red Spot near limb- placeholder	JLRSpot	1	0	0	0.00	0	1	0	12.58	2386.74
-2.86	2/25/2007 9:00	230.00	2/25/07 12:50	6395720	10.8	Ganymed	Eclipse	Geclipse	1	76.2406	1	270.27	1	4	9	301.27	2688.00
-2.70	2/25/07 13:00	20.00	2/25/07 13:20	5137562	15.2	Ansa	Jupiter ring - phase curve	Rphase	2	0	0	0.00	0	16	0	201.33	2889.33
-2.61	2/25/07 15:00	5.00	2/25/07 15:05	5181828	11.9	Io	Approach monitoring	ISunMon	7	0	0	0.00	0	2	1	25.17	2914.50
-2.60	2/25/07 15:15	150.00	2/25/07 17:45	6871867	16.3	Callisto	Long UV integration	CUVspec	1	0	0	0.00	0	0	5	0.00	2914.50
-2.49	2/25/2007 18:00	5.00	2/25/07 18:05	4179555	19.8	Europa	Term Topography	Eterm	1	0	0	0.00	0	1	1	12.58	2927.08
-2.48	2/25/07 18:15	15.00	2/25/07 18:30	6684598	17.9	Callisto	Spectrum vs. phase	Ccomp	1	0	0	268.57	1	1	1	223.79	3150.87
-2.46	2/25/07 18:40	15.00	2/25/07 18:55	4142772	19.8	Europa	Anti-Jupiter side composition	Ecomp	1	0	0	269.82	1	1	1	224.78	3375.65

- Io observations for plume monitoring (2, LORRI)
- Ganymede eclipse (1, all instruments)
- Images of the Little Red Spot (*now moved closer, to -1.5 and -1.1 days before encounter*) (2, LORRI)
- Mosaic of the Jupiter ring ansa (1, LORRI)
- Long series of Callisto UV integrations to search for atmosphere (1, Alice)
- Image of Europa terminator (1, LORRI)
- Callisto composition map (1, LEISA)
- Europa composition map (1, LEISA)

Graphical timeline, -2.22 - -0.22 days



Close Encounter, -2.45 – 1.48 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-2.45	2/25/2007 19:00	100.00	2/25/07 20:40	5112129	14.8	Io	Io Eclipse	Ieclipse	1	71.4593	1	268.73	1	6	2	324.07	3699.72
-2.37	2/25/07 20:44	42.00	2/25/07 21:26	4660658	18.4	Ansa	Jupiter ring - search for embedded moons	RSatSrch	2	0	0	0.00	0	6	0	75.50	3775.22
-2.34	2/25/2007 21:32	50.00	2/25/07 22:22	5006715	17.6	Io	Io Eclipse	Ieclipse	2	71.4593	1	0.00	0	0	5	37.23	3812.45
-2.30	2/25/2007 22:30	5.00	2/25/07 22:35	3880591	19.3	Europa	Term Topography	Eterm	2	0	0	0.00	0	1	1	12.58	3825.03
-2.28	2/25/07 23:00	5.00	2/25/07 23:05	4926675	19.3	Io	Approach monitoring	ISunMon	8	0	0	0.00	0	2	1	25.17	3850.20
-2.27	2/25/07 23:10	290.00	2/26/07 4:00	4509579	19.6	Ansa	Jupiter ring - search for embedded moons	RSatSrch	3	0	0	0.00	0	37	0	465.57	4315.76
-2.07	2/26/2007 4:05	22.00	2/26/07 4:27	4546235	25.3	Io	Stellar occultation	Iocc	1	0	0	0.00	0	1	1	32.58	4348.35
-2.05	2/26/07 4:30	160.00	2/26/07 7:10	4183154	22.5	Ansa	Jupiter ring - search for embedded moons	RSatSrch	4	0	0	0.00	0	21	0	264.24	4612.59
-1.94	2/26/2007 7:13	72.00	2/26/07 8:25	5894212	26.3	Callisto	Stellar occultation	Cocc	1	0	0	0.00	0	0	2	20.00	4632.59
-1.88	2/26/07 8:30	15.00	2/26/07 8:45	4972657	28.8	Ganymed	Gap Fill composition	Gcomp	2	0	0	274.41	1	1	1	228.39	4860.98
-1.87	2/26/07 8:50	5.00	2/26/07 8:55	4058389	30.7	Io	Approach monitoring	ISunMon	9	0	0	0.00	0	2	1	25.17	4886.14
-1.84	2/26/07 9:27	486.00	2/26/07 17:33	0	0.0	Earth	DSN	DSN	2	0	0	0.00	0	0	0	0.00	4886.14

- Io eclipse (interrupted by ring search longitude gap fill) (2, all instruments)
- Image of Europa terminator (1, LORRI)
- Io observations for plume monitoring (2, LORRI, Alice)
- Jupiter ring moon search: second epoch (interrupted by Io stellar occultation) (2, LORRI)
- Io stellar occultation (1, Alice)
- Callisto stellar occultation (1, Alice)
- Ganymede composition map (1, LEISA, LORRI, Alice)
- DSN pass

Close Encounter, -1.48 - -0.99 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-1.48	2/26/07 18:10	10.00	2/26/07 18:20	3086265	36.2	Io	Hi-res coverage, composition	Ihiresir	1	0	0	277.17	1	2	1	243.14	5129.2
-1.46	2/26/07 18:35	15.00	2/26/07 18:50	3290305	21.3	Europa	Trailng side compostion	Ecomp	2	0	0	273.36	1	1	1	227.56	5356.8
-1.42	2/26/07 19:35	65.00	2/26/07 20:40	3353109	33.2	Jupiter	Storm Evolution	Jstorm	1	0	0	788.26	1	0	0	619.91	5976.7
-1.37	2/26/07 20:52	10.00	2/26/07 21:02	2880909	36.2	Io	Hi-res coverage, Pele on limb	Ihires	1	102.23	1	0.00	0	2	1	49.82	6026.5
-1.32	2/26/2007 22:00	60.00	2/26/07 23:00	3239454	35.3	Fjupiter	Stellar occultation, ingress	Jocc	1	0	0	0.00	0	0	1	222.00	6248.5
-1.28	2/26/07 23:05	10.00	2/26/07 23:15	3177940	36.5	Ansa	Jupiter ring - phase curve	Rphase	3	0	0	0.00	0	8	0	100.66	6349.2
-1.27	2/26/2007 23:20	50.00	2/27/07 0:10	3165785	36.8	FJupiter	Stellar occultation, egress	Jocc	2	0	0	0.00	0	0	1	180.00	6529.2
-1.23	2/27/2007 0:15	35.00	2/27/07 0:50	4977370	41.0	Callisto	Stellar occultation	Cocc	2	0	0	0.00	0	0	2	20.00	6549.2
-1.20	2/27/07 1:00	5.00	2/27/07 1:05	2698137	35.7	Io	Hi-res coverage	Ihires	2	0	0	0.00	0	2	1	25.17	6574.4
-1.15	2/27/2007 2:10	20.00	2/27/07 2:30	3205652	27.7	Europa	UV spectra	EUVspec	5	0	0	0.00	0	0	1	0.00	6574.4
-1.13	2/27/2007 2:30	5.00	2/27/07 2:35	3202823	28.0	Europa	Term Topography	Eterm	3	0	0	0.00	0	2	1	25.17	6599.5
-1.07	2/27/07 4:00	5.00	2/27/07 4:05	0	0.0	Elara	Irregular satellites, phase coverage	Lphase	1	0	0	0.00	0	2	0	25.17	6624.7
-1.03	2/27/07 5:00	15.00	2/27/07 5:15	4752396	46.4	Callisto	Spectrum vs. phase	Ccomp	2	0	0	273.64	1	1	1	227.78	6852.5
-1.02	2/27/07 5:20	15.00	2/27/07 5:35	2645200	36.4	Io	Hi-res coverage, composition	Ihiresir	2	108.162	1	280.57	1	2	1	271.90	7124.4

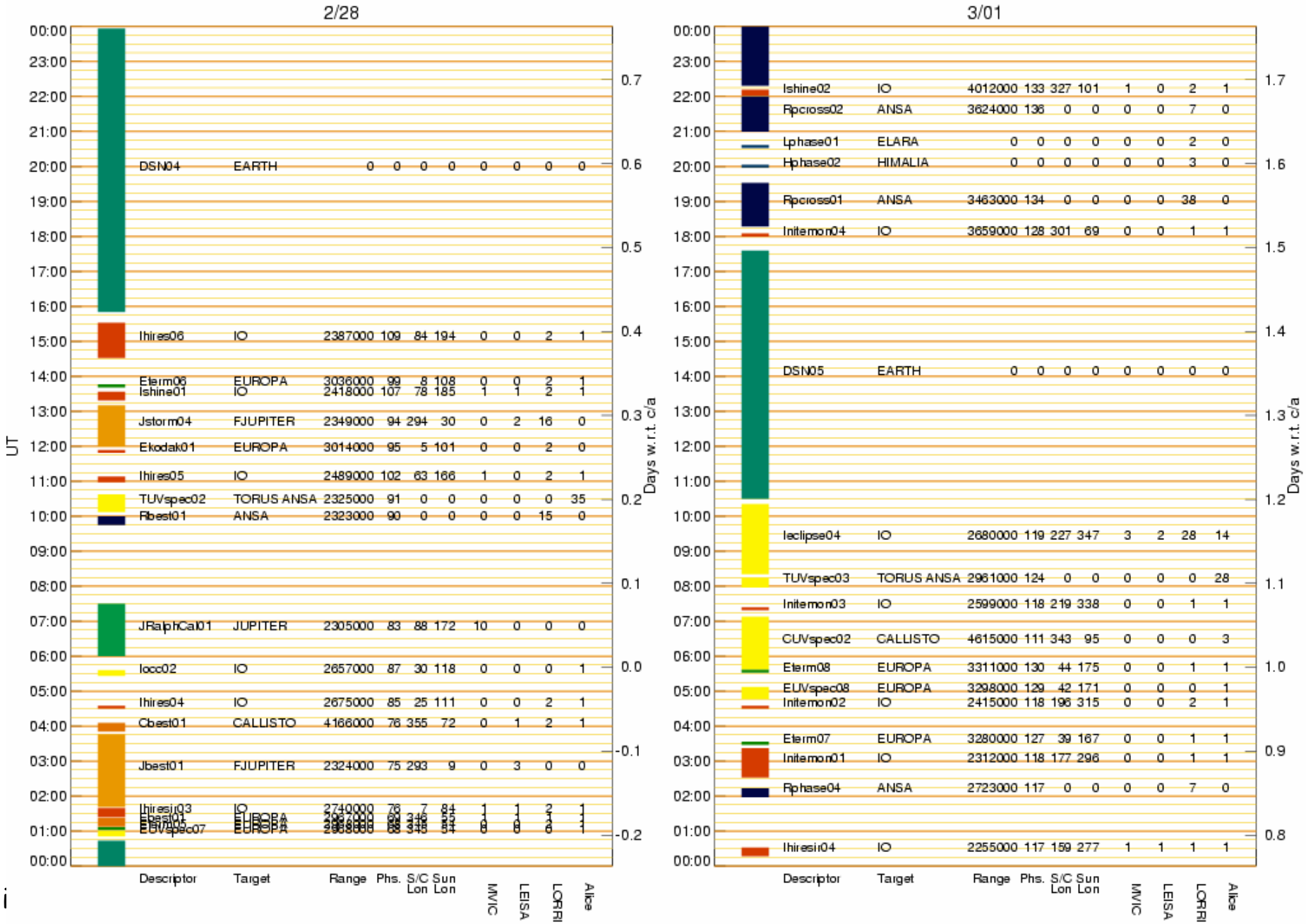
- Hi-res daylight Io observations with (4, all instruments (in various combinations))
- Europa composition map (1, LEISA)
- First Jupiter storm evolution observation (1, LEISA)
- Jupiter stellar occultation, ingress and egress (2, Alice)
- Jupiter ring mosaic (1, LORRI)
- Second Callisto stellar occultation (1, Alice)
- Europa UV spectrum (1, Alice)
- Europa terminator image (1, LORRI)
- First Elara phose coverage image (1, LORRI)
- Callisto compositional map (1, LEISA)

Close Encounter, -0.99 - -0.20 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-0.99	2/27/07 5:58	65.00	2/27/07 7:03	2869575	44.0	FJupiter	Storm Evolution	Jstorm	2	0	0	836.65	1	0	0	657.96	7782.3
-0.95	2/27/2007 6:55	10.00	2/27/07 7:05	3149865	33.8	Europa	Stellar occultation	Eocc	1	0	0	0.00	0	0	1	15.00	7797.3
-0.94	2/27/2007 7:15	5.00	2/27/07 7:20	3143746	34.5	Europa	Term Topography	Eterm	4	0	0	0.00	0	2	1	25.17	7822.5
-0.91	2/27/2007 7:50	20.00	2/27/07 8:10	3137589	35.3	Europa	UV spectra	EUVspec	6	0	0	0.00	0	0	1	0.00	7822.5
-0.86	2/27/07 9:00	5.00	2/27/07 9:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	1	0	0	0.00	0	3	0	37.75	7860.2
-0.84	2/27/07 9:30	5.00	2/27/07 9:35	2686323	39.9	Io	Hi-res coverage	Ihires	3	0	0	0.00	0	2	1	25.17	7885.4
-0.82	2/27/07 9:55	15.00	2/27/07 10:10	3492717	62.5	Ganymed	Best resolution	Gbest	1	113.247	1	282.21	1	1	1	261.83	8147.2
-0.80	2/27/2007 10:24	192.00	2/27/07 13:36	3106432	39.3	Europa	Eclipse	Eeclipse	1	88.9896	1	274.38	1	4	10	302.58	8449.8
-0.66	2/27/2007 13:45	135.00	2/27/07 16:00	2745402	46.2	Io	Io Eclipse	Ieclipse	3	210.658	2	838.96	3	30	22	1113.08	9562.9
-0.57	2/27/07 16:05	70.00	2/27/07 17:15	2504536	58.4	Fjupiter	Storm Evolution Experiment	Jstorm	3	0	0	1737.81	2	16	0	1567.99	11130.9
-0.50	2/27/07 17:40	426.00	2/28/07 0:46	0	0.0	Earth	DSN	DSN	3	0	0	0.00	0	0	0	0.00	11130.9

- Jupiter storm evolution observation of GRS (2, LEISA)
- Europa stellar occultation (1, Alice)
- Europa terminator image (1, LORRI)
- Europa UV spectrum (1, Alice)
- First Himalia phase-coverage image (1, LORRI)
- Io high-resolution daytime coverage (1, LORRI)
- Ganymede closest approach image (1, LORRI [MVIC should be removed…])
- Best Europa eclipse (1, all instruments)
- Best Io eclipse, interrupted by time-critical GRS observation (1, all instruments)
- DSN pass (shortened to accommodate bracketing time-critical observations)

Graphical timeline, -0.22 - +1.78 days



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Close Encounter, -0.20 - +0.25 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
-0.20	2/28/2007 0:50	10.00	2/28/07 1:00	2968624	68.9	Europa	UV spectra	EUVspec	7	0	0	0.00	0	0	1	0.00	11130.9
-0.20	2/28/2007 1:00	5.00	2/28/07 1:05	2968624	68.9	Europa	Term Topography	Eterm	5	0	0	0.00	0	2	1	25.17	11156.1
-0.19	2/28/07 1:05	15.00	2/28/07 1:20	2967838	69.5	Europa	Best resolution	Ebest	1	91.6165	1	275.23	1	1	1	251.13	11407.2
-0.18	2/28/07 1:23	15.00	2/28/07 1:38	2740307	76.0	Io	Hi-res coverage, composition	Ihiresir	3	105.614	1	279.75	1	2	1	270.64	11677.8
-0.17	2/28/07 1:40	125.00	2/28/07 3:45	2324745	75.1	Fjupiter	Best Jupiter Portrait - IR	Jbest	1	0	0	5026.06	3	0	0	3952.66	15630.5
-0.08	2/28/07 3:50	15.00	2/28/07 4:05	4166025	76.1	Callisto	Spectrum vs. phase (best res.)	Cbest	1	0	0	276.14	1	2	1	242.33	15872.8
-0.05	2/28/07 4:30	5.00	2/28/07 4:35	2675561	85.3	Io	Hi-res coverage	Ihires	4	0	0	0.00	0	2	1	25.17	15898.0
-0.01	2/28/2007 5:25	10.00	2/28/07 5:35	2657383	87.4	Io	Stellar occultation	Iocc	2	0	0	0.00	0	0	1	10.00	15908.0
0.01	2/28/07 6:00	90.00	2/28/07 7:30	2305446	83.5	Jupiter	MVIC terminator flat	JRalphCal	1	0	10	0.00	0	0	0	4200.00	20108.0
0.17	2/28/07 9:45	15.00	2/28/07 10:00	2323595	90.6	Ansa	Jupiter ring - best portrait	Rbest	1	0	0	0.00	0	15	0	188.74	20296.7
0.18	2/28/2007 10:05	30.00	2/28/07 10:35	2325901	91.1	Torus An:	UV spectra	TUVspec	2	0	0	0.00	0	0	35	0.00	20296.7
0.22	2/28/07 11:00	10.00	2/28/07 11:10	2489864	102.3	Io	Hi-res coverage- Prometheus on limb	Ihires	5	112.864	1	0.00	0	2	1	52.38	20349.1

- Europa UV spectrum (1, Alice)
- Europa terminator image (1, LORRI)
- Europa closest approach image (1, LORRI [MVIC has been removed])
- Io high-resolution daytime coverage (3, LORRI)
- Jupiter storm evolution observation, full illuminated hemisphere (1, LEISA)
- Callisto compositional map (1, LEISA)
- Second Io stellar occultation (1, Alice)
- Flat field calibration observation of Jupiter terminator (1, MVIC)
- Best-view mosaic of Jupiter ring (1, LORRI)
- Io torus ansa map (1, Alice)

Close Encounter, +0.25 - +0.91 days

Macro Timline Period (dags to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
0.25	2/28/07 11:48	5.00	2/28/07 11:53	3014186	95.2	Europa	Europa emerging from Jupiter occn	Ekodak	1	0	0	0.00	0	2	0	25.17	20374.3
0.26	2/28/07 12:00	70.00	2/28/07 13:10	2349172	94.7	Fjupiter	Storm Evolution Experiment	Jstorm	4	0	0	1770.06	2	16	0	1593.36	21967.6
0.32	2/28/2007 13:20	15.00	2/28/07 13:35	2418190	107.1	Io	Jupiter shine	Ishine	1	115.531	1	282.95	1	2	1	275.54	22243.2
0.33	2/28/2007 13:40	5.00	2/28/07 13:45	3036012	99.3	Europa	Term Topography	Eterm	6	0	0	0.00	0	2	1	25.17	22268.3
0.37	2/28/07 14:30	60.00	2/28/07 15:30	2387107	109.0	Io	Hi-res coverage	Ihires	6	0	0	0.00	0	2	1	25.17	22293.5
0.42	2/28/07 15:52	486.00	2/28/07 23:58	0	0.0	Earth	DSN	DSN	4	0	0	0.00	0	0	0	0.00	22293.5
0.77	3/1/07 0:15	15.00	3/1/07 0:30	2255661	117.9	Io	Hi-res nightside- Pele on limb	Ihiresir	4	121.207	1	284.78	1	1	1	265.77	22559.3
0.85	3/1/07 2:00	15.00	3/1/07 2:15	2723899	117.3	Ansa	Jupiter ring - phase curve	Riphase	4	0	0	0.00	0	7	0	88.08	22647.3

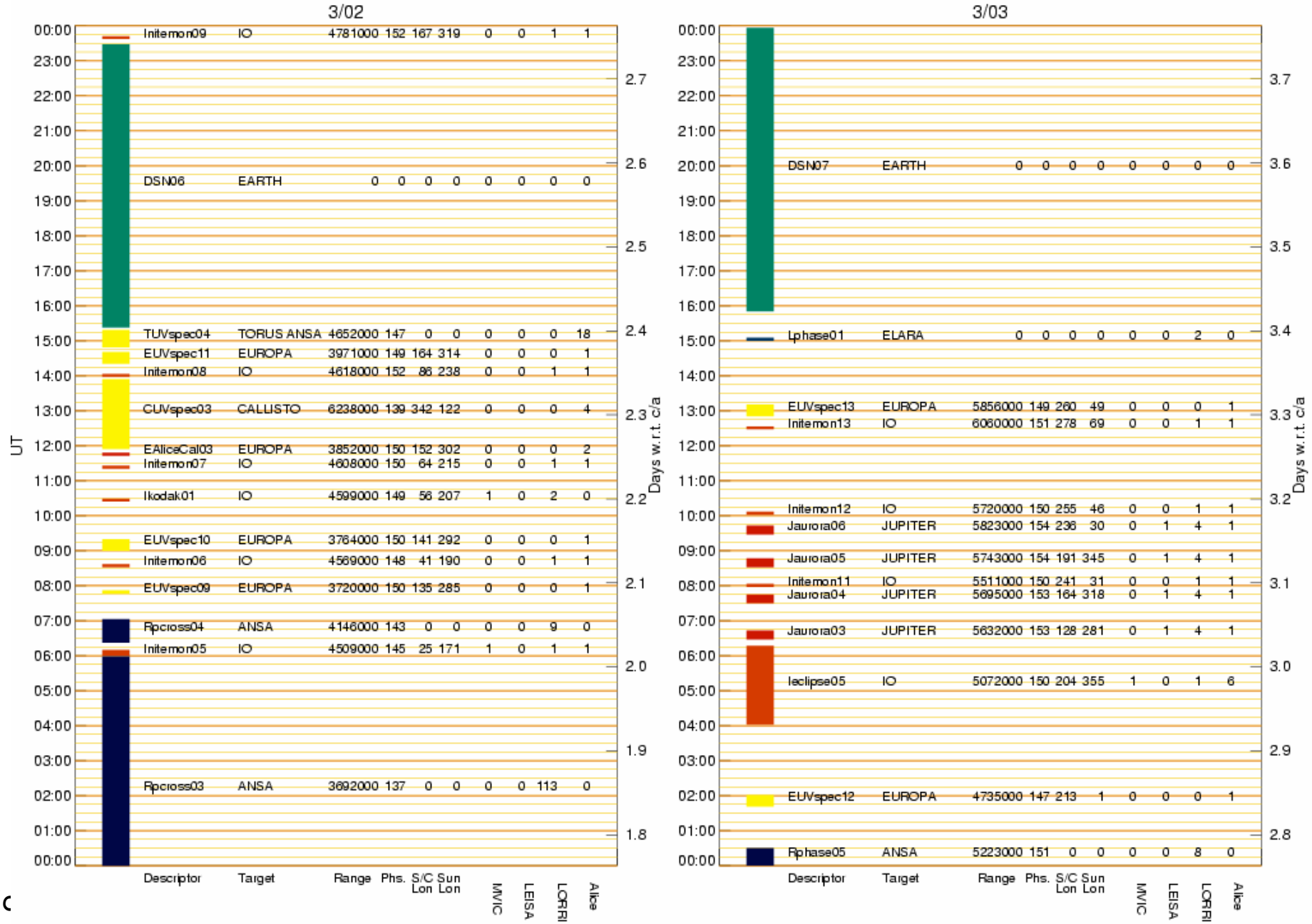
- Scenic view of Europa behind Jupiter's limb (1, LORRI)
- Jupiter storm evolution observation, full illuminated hemisphere (1, LEISA)
- Nightside color observation of Io in Jupiter shine (1, LEISA, MVIC)
- Europa terminator image (1, LORRI)
- Io high-resolution nighttime coverage (2, all instruments in various combinations)
- DSN pass
- Mosaic of Jupiter ring for phase coverage (1, LORRI)

Close Encounter, +0.91 - +1.51 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
0.91	3/1/2007 3:30	5.00	3/1/07 3:35	3280474	127.6	Europa	Term Topography	Eterm	7	0	0	0.00	0	1	1	12.58	22672.5
0.95	3/1/07 4:30	5.00	3/1/07 4:35	2415488	118.2	Io	High Phase Monitoring	Initemon	2	0	0	0.00	0	2	1	25.17	22697.7
0.96	3/1/2007 4:45	20.00	3/1/07 5:05	3298393	129.3	Europa	UV spectra	EUVspec	8	0	0	0.00	0	0	1	0.00	22697.7
0.99	3/1/2007 5:30	5.00	3/1/07 5:35	3311568	130.5	Europa	Term Topography	Eterm	8	0	0	0.00	0	1	1	12.58	22710.3
1.00	3/1/07 5:40	90.00	3/1/07 7:10	4615881	111.5	Callisto	Long UV integration	CUVspec	2	0	0	0.00	0	0	3	0.00	22710.3
1.07	3/1/07 7:20	5.00	3/1/07 7:25	2599769	118.7	Io	High phase monitoring	Initemon	3	0	0	0.00	0	1	1	12.58	22722.8
1.09	3/1/2007 7:58	16.00	3/1/07 8:14	2961787	124.4	Torus An	UV spectra	TUVspec	3	0	0	0.00	0	0	28	0.00	22722.8
1.11	3/1/2007 8:20	120.00	3/1/07 10:20	2680940	119.1	Io	Io Eclipse	Ieclipse	4	320.141	3	560.20	2	28	14	885.09	23607.9
1.20	3/1/07 10:28	426.00	3/1/07 17:34	0	0.0	Earth	DSN	DSN	5	0	0	0.00	0	0	0	0.00	23607.9

- Europa terminator images (2, LORRI)
- Io high-phase coverage (2, LORRI, Alice)
- Europa UV spectra (1, Alice)
- Callisto long UV integration (1, Alice)
- Io torus ansa UV scan (1, Alice)
- Io eclipse (1, all instruments)
- DSN pass

Graphical timeline, +1.78 - +3.78 days



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Close Encounter, +1.51 - +2.20 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
1.51	3/1/07 18:00	5.00	3/1/07 18:05	3659435	128.5	Io	High phase monitoring	Initemon	4	0	0	0.00	0	1	1	12.58	23620.5
1.52	3/1/07 18:15	75.00	3/1/07 19:30	3463466	134.5	Ansa	Jupiter ring - main ring vertical structure	Rpcross	1	0	0	0.00	0	38	0	478.15	24098.7
1.60	3/1/07 20:00	5.00	3/1/07 20:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	2	0	0	0.00	0	3	0	37.75	24136.4
1.62	3/1/07 20:30	5.00	3/1/07 20:35	0	0.0	Elara	Irregular satellites, phase coverage	Lphase	1	0	0	0.00	0	2	0	25.17	24161.6
1.64	3/1/07 21:00	60.00	3/1/07 22:00	3624083	136.9	Ansa	Jupiter ring - main ring vertical structure	Rpcross	2	0	0	0.00	0	7	0	88.08	24249.7
1.68	3/1/2007 22:00	10.00	3/1/07 22:10	4012380	133.9	Io	Jupiter shine	Ishine	2	82.0196	1	0.00	0	2	1	44.95	24294.6
1.69	3/1/07 22:20	460.00	3/2/07 6:00	3692447	137.9	Ansa	Jupiter ring - main ring vertical structure	Rpcross	3	0	0	30.00	0	113	0	1445.46	25740.1
2.01	3/2/07 6:00	10.00	3/2/07 6:10	4509936	145.5	Io	High phase monitoring: Tvashtar on limb	Initemon	5	76.6996	1	0.00	0	1	1	31.08	25771.1
2.03	3/2/07 6:20	40.00	3/2/07 7:00	4146541	143.1	Ansa	Jupiter ring - main ring vertical structure	Rpcross	4	0	0	0.00	0	9	0	113.25	25884.4
2.09	3/2/2007 7:45	5.00	3/2/07 7:50	3720038	150.3	Europa	UV spectra	EUVspec	9	0	0	0.00	0	0	1	0.00	25884.4
2.12	3/2/07 8:30	5.00	3/2/07 8:35	4569698	148.0	Io	High phase monitoring	Initemon	6	0	0	0.00	0	1	1	12.58	25897.0
2.14	3/2/2007 9:00	20.00	3/2/07 9:20	3764331	150.3	Europa	UV spectra	EUVspec	10	0	0	0.00	0	0	1	0.00	25897.0

- Io high-phase coverage (3, LORRI, Alice, MVIC)
- Jupiter Thebe ring-plane crossing observation (1, LORRI)
- Himalia, Elara phase-coverage images (2, LORRI)
- Jupiter main ring-plane crossing observations, interrupted by time-critical Io observations (3, LORRI)
- Nightside color observation of Io in Jupiter shine (1, LEISA, MVIC)
- Io high-phase coverage (2, LORRI, Alice)
- Europa UV spectra (2, Alice)

Close Encounter, +2.20 - +2.83 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
2.20	3/2/07 10:24	5.00	3/2/07 10:29	4599917	149.9	Io	Io/Europa conjunction	Ikodak	1	75.7869	1	0.00	0	2	0	43.44	25940.4
2.23	3/2/07 11:18	5.00	3/2/07 11:23	4608589	150.8	Io	High phase monitoring	Initemon	7	0	0	0.00	0	1	1	12.58	25953.0
2.25	3/2/07 11:42	5.00	3/2/07 11:47	3852281	150.0	Europa	Alice pt source	EAliceCal	3	0	0	0.00	0	0	2	0.00	25953.0
2.26	3/2/07 11:55	120.00	3/2/07 13:55	6238171	139.3	Callisto	Long UV integration	CUVspec	3	0	0	0.00	0	0	4	0.00	25953.0
2.35	3/2/07 14:00	5.00	3/2/07 14:05	4618682	152.4	Io	High phase monitoring	Initemon	8	0	0	0.00	0	1	1	12.58	25965.6
2.36	3/2/2007 14:20	20.00	3/2/07 14:40	3971845	149.6	Europa	UV spectra	EUVspec	11	0	0	0.00	0	0	1	0.00	25965.6
2.38	3/2/2007 14:50	30.00	3/2/07 15:20	4652993	147.5	Torus An	UV spectra	TUVspec	4	0	0	0.00	0	0	18	0.00	25965.6
2.40	3/2/07 15:22	486.00	3/2/07 23:28	0	0.0	Earth	DSN	DSN	6	0	0	0.00	0	0	0	0.00	25965.6
2.75	3/2/07 23:40	5.00	3/2/07 23:45	4781951	152.3	Io	High phase monitoring	Initemon	9	0	0	0.00	0	1	1	12.58	25978.2
2.76	3/3/07 0:00	30.00	3/3/07 0:30	5223244	151.3	Ansa	Jupiter ring - phase curve	Riphase	5	0	0	0.00	0	8	0	100.66	26078.8

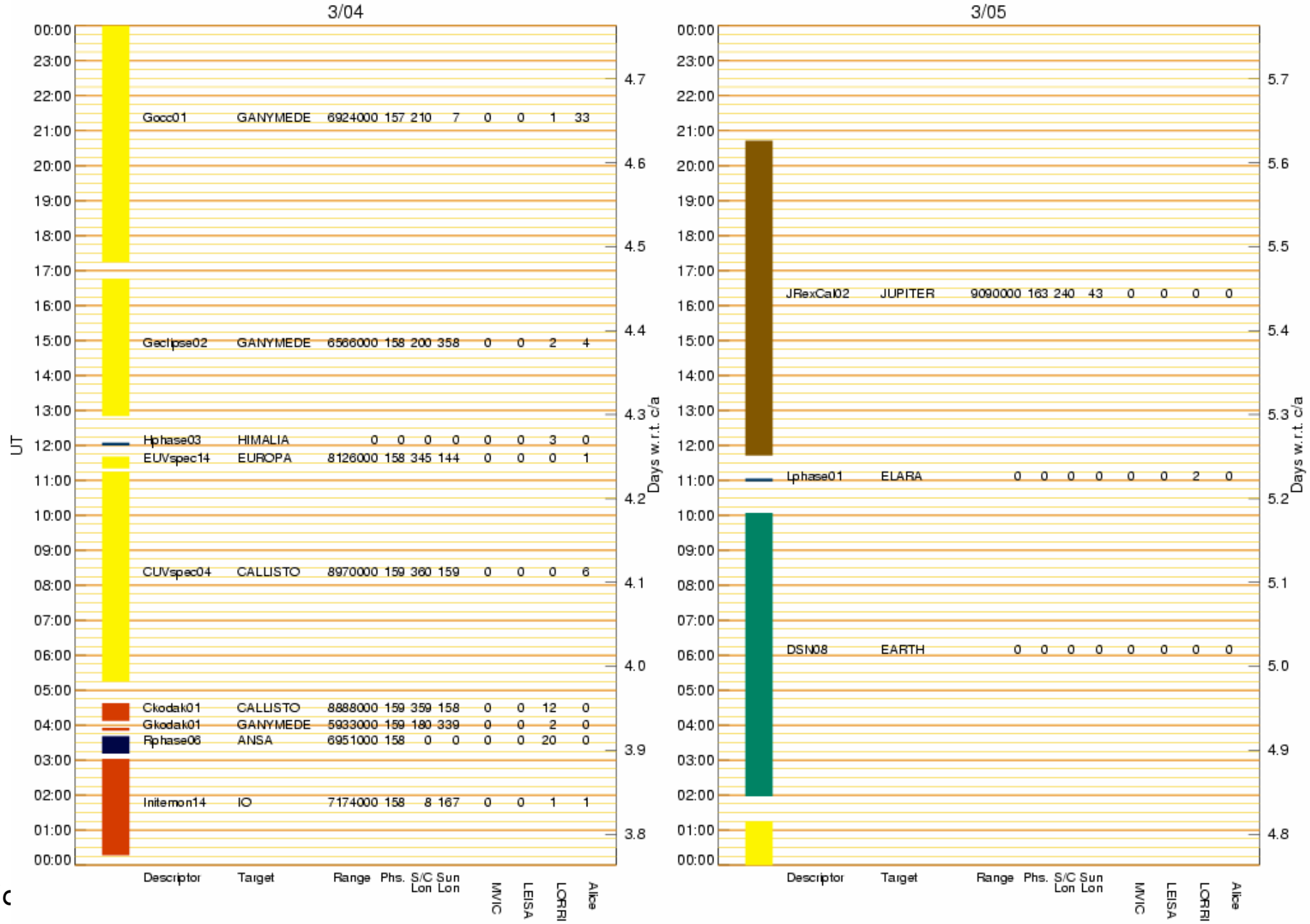
- Scenic Io/Europa conjunction (1, LORRI, MVIC)
- Io high-phase coverage (3, LORRI, Alice)
- Europa UV calibration (1, Alice)
- Callisto long UV integration (1, Alice)
- Europa UV spectra (1, Alice)
- Io torus ansa UV scan (1, Alice)
- DSN pass
- Mosaic of Jupiter ring for phase coverage (1, LORRI)

Close Encounter, +2.83 - +3.92 days

Macro Timline Period (dags to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
2.83	3/3/2007 1:40	20.00	3/3/07 2:00	4735210	147.9	Europa	UV spectra	EUVspec	12	0	0	0.00	0	0	1	0.00	26078.8
2.93	3/3/07 4:00	135.00	3/3/07 6:15	5072327	150.8	Io	High phase monitoring	Ieclipse	5	71.5954	1	0.00	0	1	6	29.85	26108.7
3.03	3/3/07 6:30	15.00	3/3/07 6:45	5632395	153.5	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	3	0	0	666.35	1	4	1	605.37	26714.1
3.07	3/3/07 7:30	15.00	3/3/07 7:45	5695831	153.8	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	4	0	0	661.78	1	4	1	601.78	27315.8
3.10	3/3/07 8:00	5.00	3/3/07 8:05	5511595	150.3	Io	High phase monitoring	Initemon	11	0	0	0.00	0	1	1	12.58	27328.4
3.12	3/3/07 8:30	15.00	3/3/07 8:45	5743486	154.1	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	5	0	0	657.30	1	4	1	598.25	27926.7
3.16	3/3/07 9:30	15.00	3/3/07 9:45	5823051	154.4	Jupiter	Lyman alpha/H3+ airglow map	Jaurora	6	0	0	652.91	1	4	1	594.80	28521.5
3.18	3/3/07 10:00	5.00	3/3/07 10:05	5720677	150.5	Io	High phase monitoring	Initemon	12	0	0	0.00	0	1	1	12.58	28534.1
3.28	3/3/07 12:30	5.00	3/3/07 12:35	6060982	151.3	Io	High phase monitoring	Initemon	13	0	0	0.00	0	1	1	12.58	28546.6
3.30	3/3/2007 12:50	20.00	3/3/07 13:10	5856305	149.0	Europa	UV spectra	EUVspec	13	0	0	0.00	0	0	1	0.00	28546.6
3.39	3/3/07 15:00	5.00	3/3/07 15:05	0	0.0	Elara	Irregular satellites, phase coverage	Lphase	1	0	0	0.00	0	2	0	25.17	28571.8
3.42	3/3/07 15:52	486.00	3/3/07 23:58	0	0.0	Earth	DSN	DSN	7	0	0	0.00	0	0	0	0.00	28571.8
3.77	3/4/07 0:15	165.00	3/4/07 3:00	7174596	158.6	Io	High phase monitoring	Initemon	14	0	0	0.00	0	1	1	12.58	28584.4
3.89	3/4/07 3:10	30.00	3/4/07 3:40	6951777	158.7	Ansa	Jupiter ring - phase curve	Rphase	6	0	0	0.00	0	20	0	251.66	28836.0

- Europa UV spectra (2, Alice)
- Last Io high-phase coverage (5, LORRI, Alice)
- Maps of Jupiter H_3^+ and UV aurorae (4, LEISA+Alice)
- Elara phase-coverage image (2, LORRI)
- DSN pass
- Last mosaic of Jupiter ring for phase coverage (1, LORRI)

Graphical timeline, +3.78 - +5.78 days



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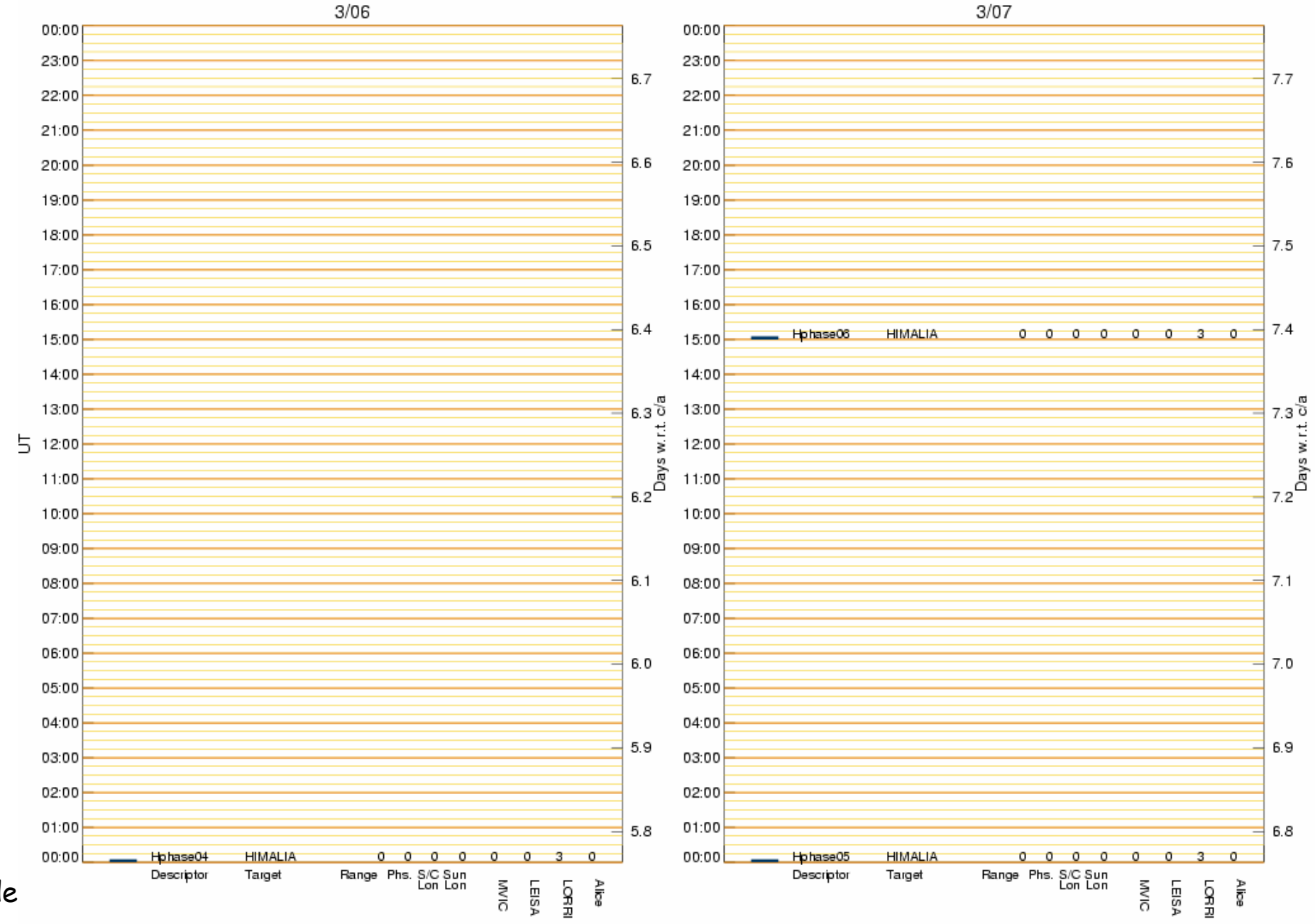
Close Encounter, +3.92 - +7.39 days

Macro Timline Period (days to JCA)	Visit Start Time	Activity Time Allocation (min)	End Time	Range, km	Phase	Target	Description	Visit Descriptor	Visit Number	MVIC frames	MVIC	LEISA frames	LEISA	LORRI	Alice	SSR Raw Est (Mbits)	SSR Raw Running Total (Mbits)
3.92	3/4/07 3:50	5.00	3/4/07 3:55	5933345	159.2	Ganymed	Ganymede crossing crescent Jupiter	Gkodak	1	0	0	0.00	0	2	0	25.17	28861.2
3.93	3/4/07 4:08	30.00	3/4/07 4:38	8888995	159.1	Callisto	Jupiter crescent with Callisto emerging	Ckodak	1	0	0	0.00	0	12	0	150.99	29012.2
3.98	3/4/07 5:15	360.00	3/4/07 11:15	8970109	159.5	Callisto	Long UV integration	CUVspec	4	0	0	0.00	0	0	6	0.00	29012.2
4.23	3/4/2007 11:20	20.00	3/4/07 11:40	8126755	158.7	Europa	UV spectra	EUVspec	14	0	0	0.00	0	0	1	0.00	29012.2
4.26	3/4/07 12:00	5.00	3/4/07 12:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	3	0	0	0.00	0	3	0	37.75	29050.0
4.30	3/4/2007 12:50	235.00	3/4/07 16:45	6566130	158.1	Ganymed	Eclipse	Geclipse	2	0	0	0.00	0	2	4	65.17	29115.1
4.48	3/4/2007 17:15	480.00	3/5/07 1:15	6924334	157.7	Ganymed	Stellar occultation	Gocc	1	0	0	0.00	0	1	33	12.58	29127.7
4.85	3/5/07 1:59	486.00	3/5/07 10:05	0	0.0	Earth	DSN	DSN	8	0	0	0.00	0	0	0	0.00	29127.7
5.22	3/5/07 11:00	5.00	3/5/07 11:05	0	0.0	Elara	Irregular satellites, phase coverage	Lphase	1	0	0	0.00	0	2	0	25.17	29152.9
5.25	3/5/07 11:42	540.00	3/5/07 20:42	9090948	163.8	Jupiter	REX - looking at Jupiter	JRexCal	2	0	0	0.00	0	0	0	13.20	29166.
5.76	3/6/07 0:00	5.00	3/6/07 0:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	4	0	0	0.00	0	3	0	37.75	29203.8
6.76	3/7/07 0:00	5.00	3/7/07 0:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	5	0	0	0.00	0	3	0	37.75	29241.6
7.39	3/7/07 15:00	5.00	3/7/07 15:05	0	0.0	Himalia	Irregular satellites, phase coverage	Hphase	6	0	0	0.00	0	3	0	37.75	29279.3

- Scenic view of Ganymede in front of Jupiter
- Scenic full-crescent mosaic of Jupiter, Callisto, and Ganymede
- Callisto long UV integration (1, Alice)
- Europa UV spectra (1, Alice)
- Elara, Himalia phase coverage, including closest approach (5, LORRI)
- Ganymede eclipse (1, LORRI, Alice)
- Ganymede stellar occultation (1, Alice)
- DSN pass (later ones are not yet scheduled)
- Jupiter radiometry calibration (1, REX)

Graphical timeline, +5.78 - +7.78 days



Slide

Magnetotail: +7.39 - +100 days

- No remote sensing observations planned except for calibrations
- Spacecraft is assumed to be Earth-pointed for most of this period
- Annual checkout at ~ +30 days