

Juno Extended Mission Io & Plasma Torus

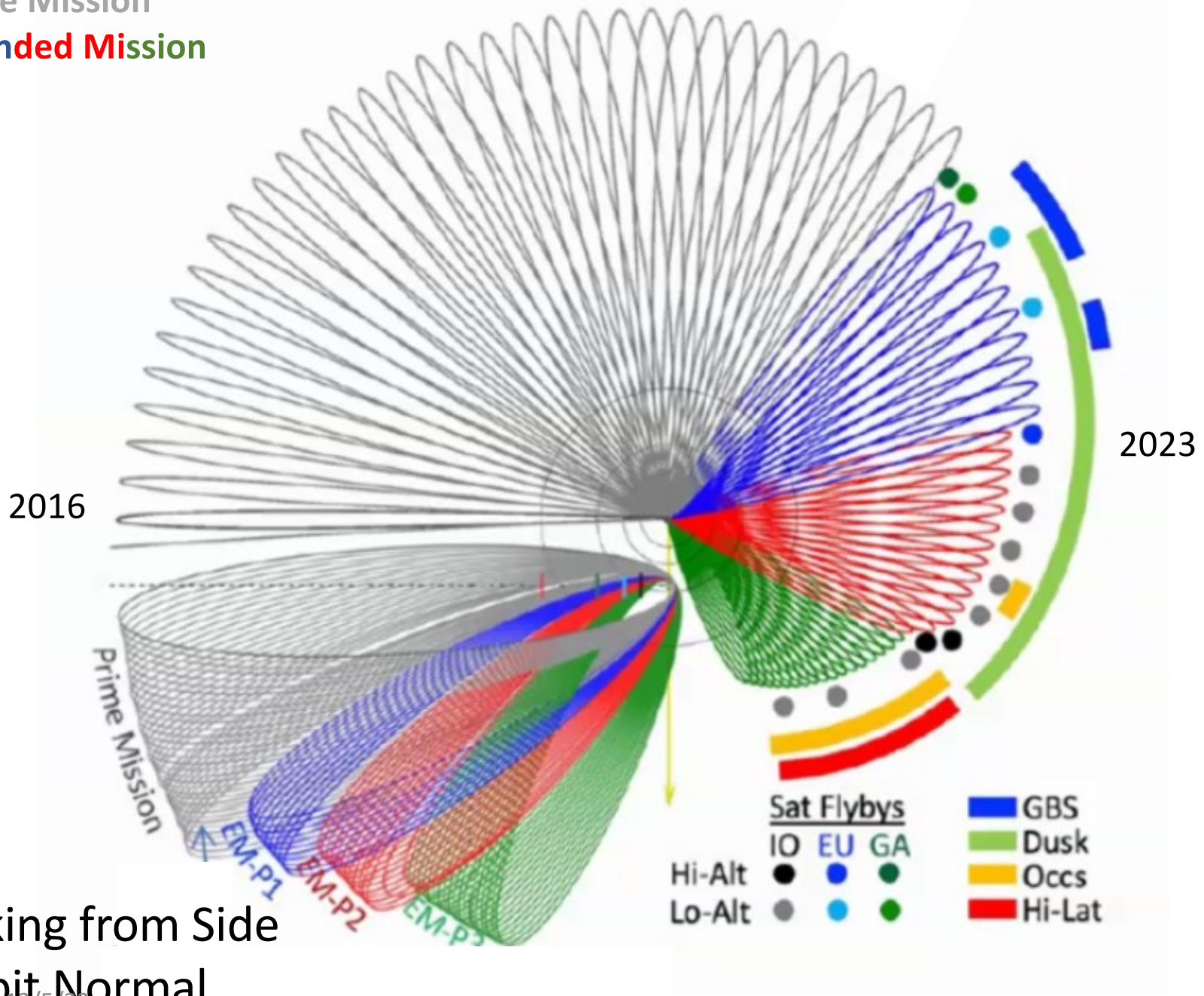
- Through Sept 2025 Juno will make several passes through the Io plasma torus – and a couple passing close to Io
- Earth-based observations of emissions at and around Io would provide context and complementary science
- Here are some plots and dates to help planning
- For further trajectory information go to <https://lasp.colorado.edu/home/mop/missions/juno/trajectory-information/>

Juno Orbits

Prime Mission

Extended Mission

Looking Down - Local Time



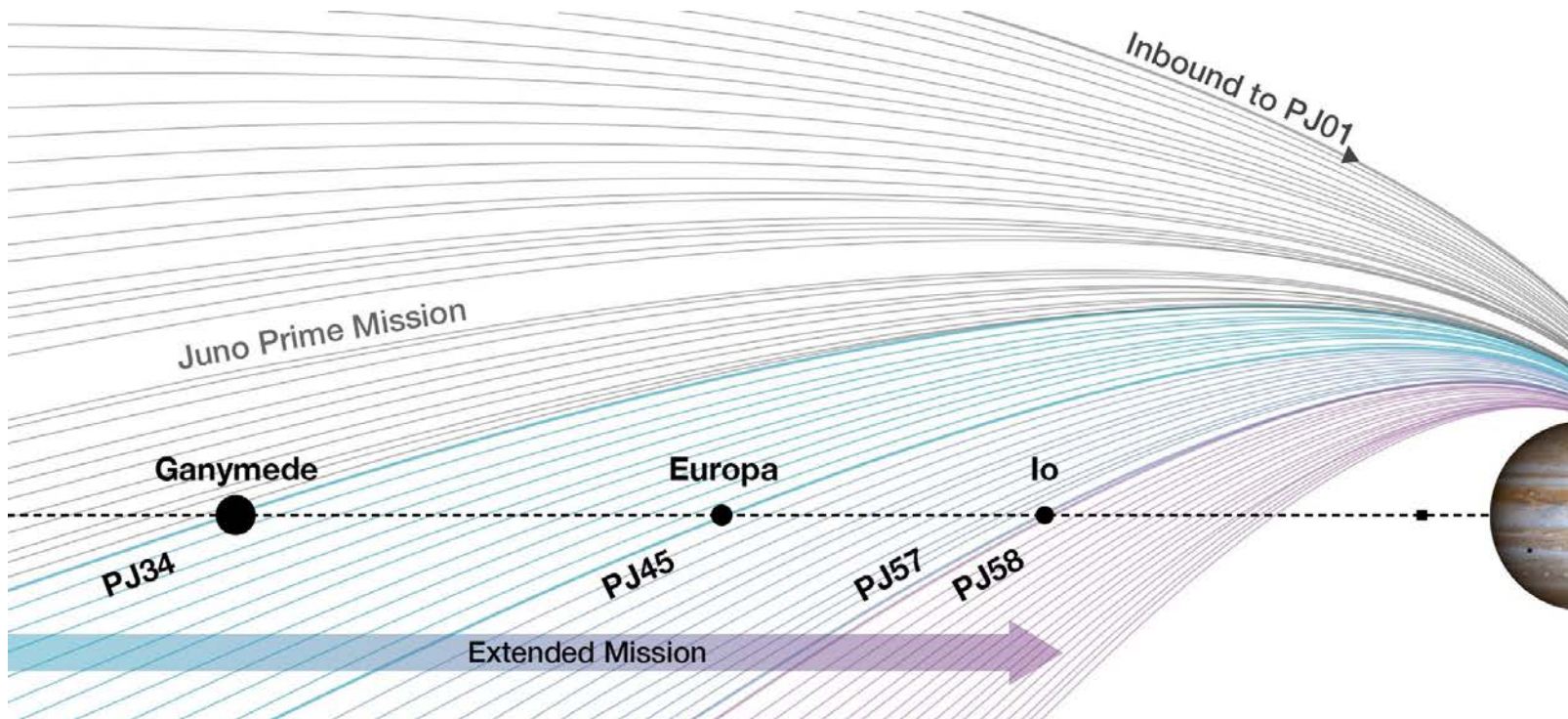
Looking from Side
- Orbit Normal

12/5/22

Juno Extended Mission

– Orbit-Normal View

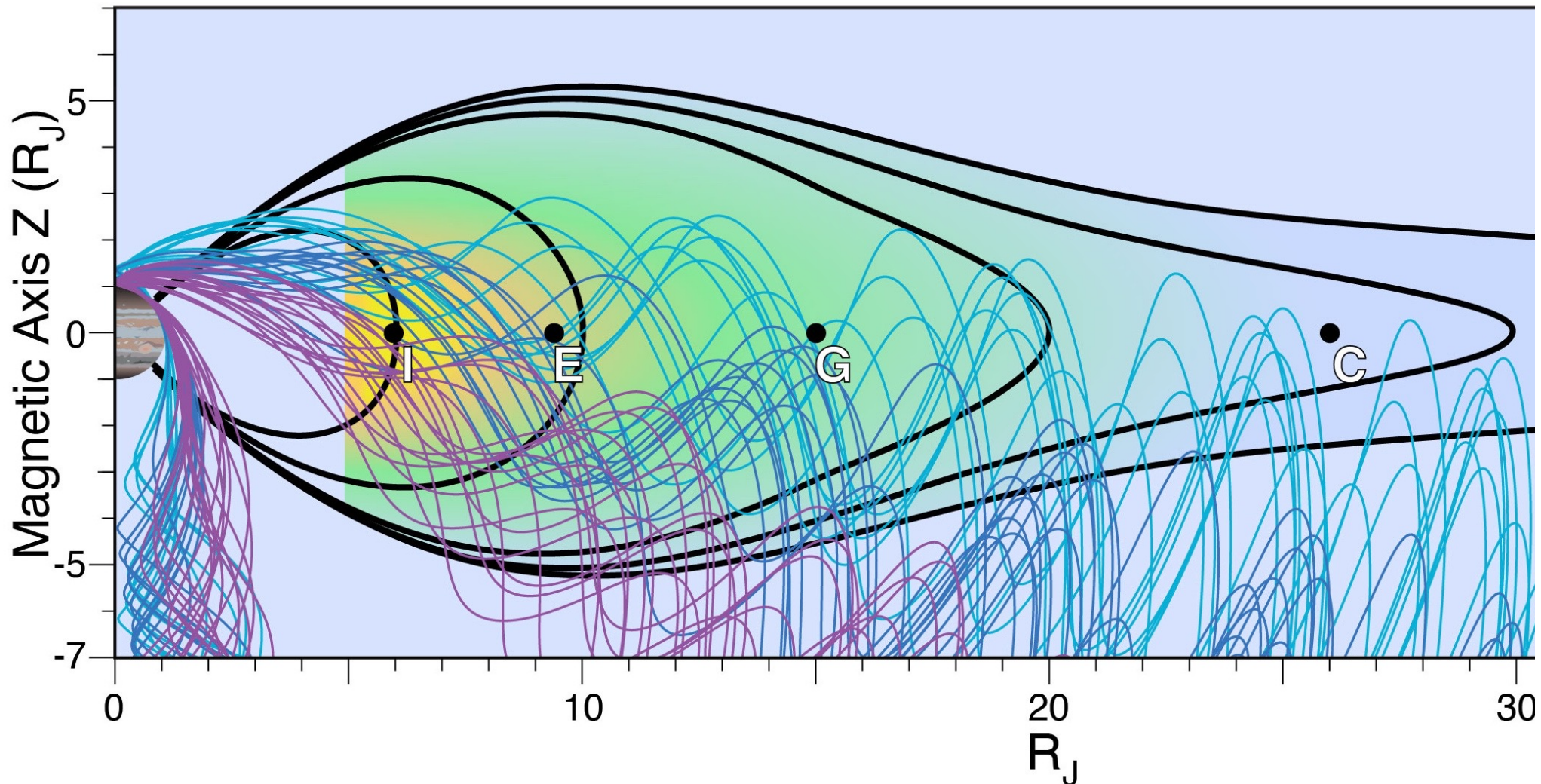
Showing how crossing of the equator progresses over mission



PJ	Date	Lat °	Science Feature
34	Jun 08 '21	28	Gan 1,000 km (+Occultation)
35	Jul 21 '21	29	Ganymede flyby 50,000 km
36	Sep 02 '21	30	Map Great Blue Spot (GBS)
37	Oct 16 '21	31	Map GBS Eu 88,000 km
38	Nov 29 '21	31	Map Great Blue Spot
39	Jan 12 '22	32	Map Great Blue Spot
40	Feb 25 '22	33	Europa flyby 46,900 km
41	Apr 09 '22	34	Map Great Blue Spot
42	May 23 '22	35	Map Great Blue Spot
43	Jul 05 '22	36	Io flyby 85,800 km
44	Aug 17 '22	37	1st Europa Torus
45	Sep 29 '22	37	Eu 320 km (+Occultation)
46	Nov 06 '22	38	ASC Ganymede image
47	Dec 15 '22	39	Io flyby 63,200 km
48	Jan 22 '23	40	Dynamic Tide Threshold
49	Mar 01 '23	41	Io flyby 51,300 km
50	Apr 08 '23	42	1st Nightside PJ Obs.
51	May 16 '23	43	MAG BS, MP Io 35,300 km
52	Jun 23 '23	44	Water at 75N
53	Jul 31 '23	45	32N / 21N Io 22,000 km
54	Sep 07 '23	45	36N / 16N Auroral Curtain
55	Oct 15 '23	46	Cyclone Map Io 11,600 km
56	Nov 22 '23	47	1st Io Torus
57	Dec 30 '23	47	Io flyby 1,500 km
58	Feb 03 '24	48	Io flyby 1,500 km
59	Mar 07 '24	49	GRAV map
60	Apr 09 '24	50	40N / 16N Io 18,600 km
61	May 12 '24	51	51N / 04S Earth Occultation
62	Jun 14 '24	52	58N / 20S Ingress/Egress
63	Jul 17 '24	53	63N / 34S
64	Aug 18 '24	54	66N / 44S
65	Sep 20 '24	55	68N / 49S MAG map
66	Oct 23 '24	56	68N / 49S
67	Nov 25 '24	57	66N / 42S Io 83,600 km
68	Dec 28 '24	57	64N / 32S
69	Jan 30 '25	58	62N / 25S
70	Mar 04 '25	59	63N / 27S
71	Apr 06 '25	60	65N / 35S Water at 90N
72	May 08 '25	61	69N / 46S Io 93,900 km
73	Jun 10 '25	62	72N / 60S
74	Jul 13 '25	63	76N / 74S Auroral Curtain
75	Aug 15 '25	63	78N / 87S Cyclone map
76	Sep 17 '25	64	81N / 81S

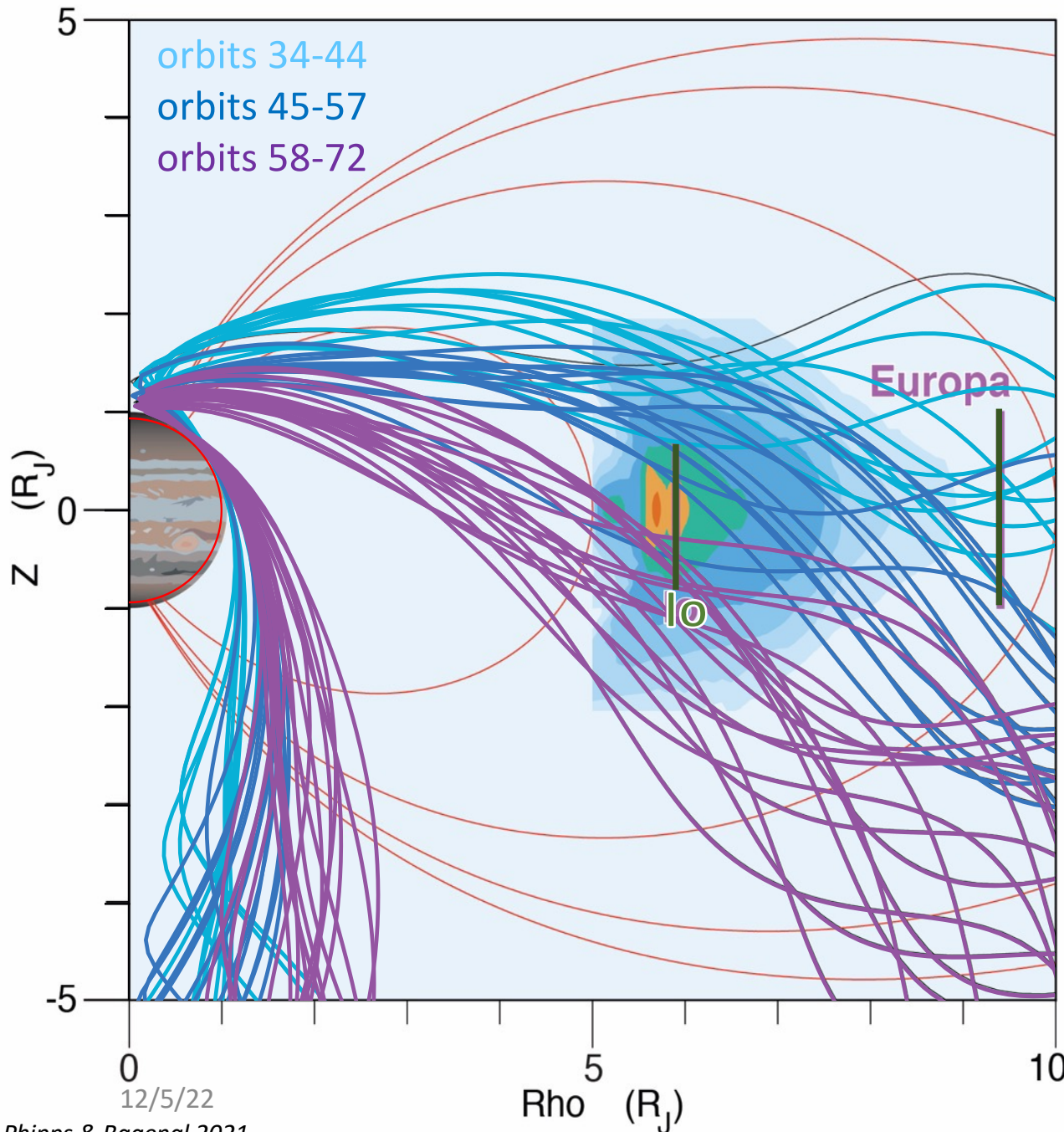
Juno Extended Mission

– Magnetic Coordinates



Note that the plasma disk is in the centrifugal equator – not quite same as magnetic

Zooming in..... CENTRIFUGAL COORDINATES
 Fields lines are fiducial – not fixed in this system

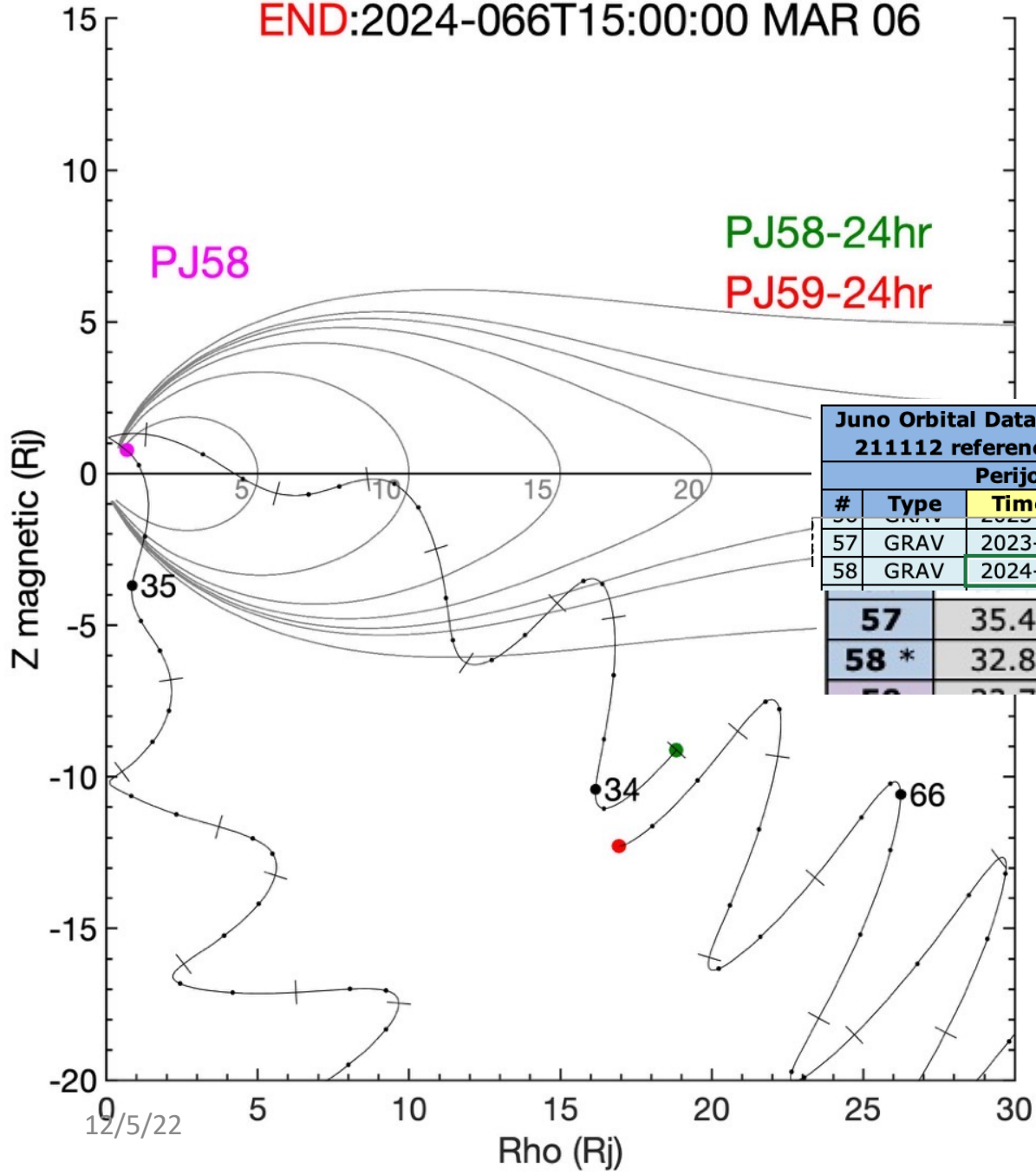


Phipps & Bagenal 2021

Orbit (PJ)	Orbit period (days)	PJ CY	PJ Date	PJ FY	Galilean satellite flyby altitudes, for C/A $\leq 100,000$ km
36	43.8		9/2		
37	43.9		10/16	'22	Europa 81,358 km
38	43.8		11/29		
39	43.6	'22	1/12		
40	43.6		2/25		Europa 46,911 km
41	43.4		4/9		
42 *	43.3		5/23		
43	43.2		7/5		Io 86,097 km
44	43.1		8/17		
45	38.2		9/29		Europa 355 km
46	38.2		11/6	'23	
47	38.1		12/15		Io 63,732 km
48	38.0	'23	1/22		
49	38.2		3/1		Io 51,571 km
50	37.9		4/8		
51	38.0		5/16		Io 37,399 km
52	38.1		6/23		
53	38.1		7/31		Io 22,170 km
54	38.0		9/7		
55	38.1		10/15	'24	Io 11,631 km
56	38.0		11/22		
57	35.4		12/30		Io 1,500 km
58 *	32.8	'24	2/3		Io 1,423 km
59	32.7		3/7		
60	32.9		4/9		Io 18,557 km
61	32.8		5/12		
62	32.9		6/14		
63	32.9		7/17		
64	32.9		8/18		
65	32.8		9/20		
66	32.8		10/23	'25	
67	32.9		11/25		Io 83,862 km
68	32.8		12/28		
69	32.9	'25	1/30		
70	32.9		3/4		
71	32.9		4/5		
72	33.0		5/8		Io 89,125 km
73	32.9		6/10		
74	33.0		7/13		
75	32.9		8/15		
76	32.9		9/17		

START:2024-033T21:00:00 FEB 02

END:2024-066T15:00:00 MAR 06

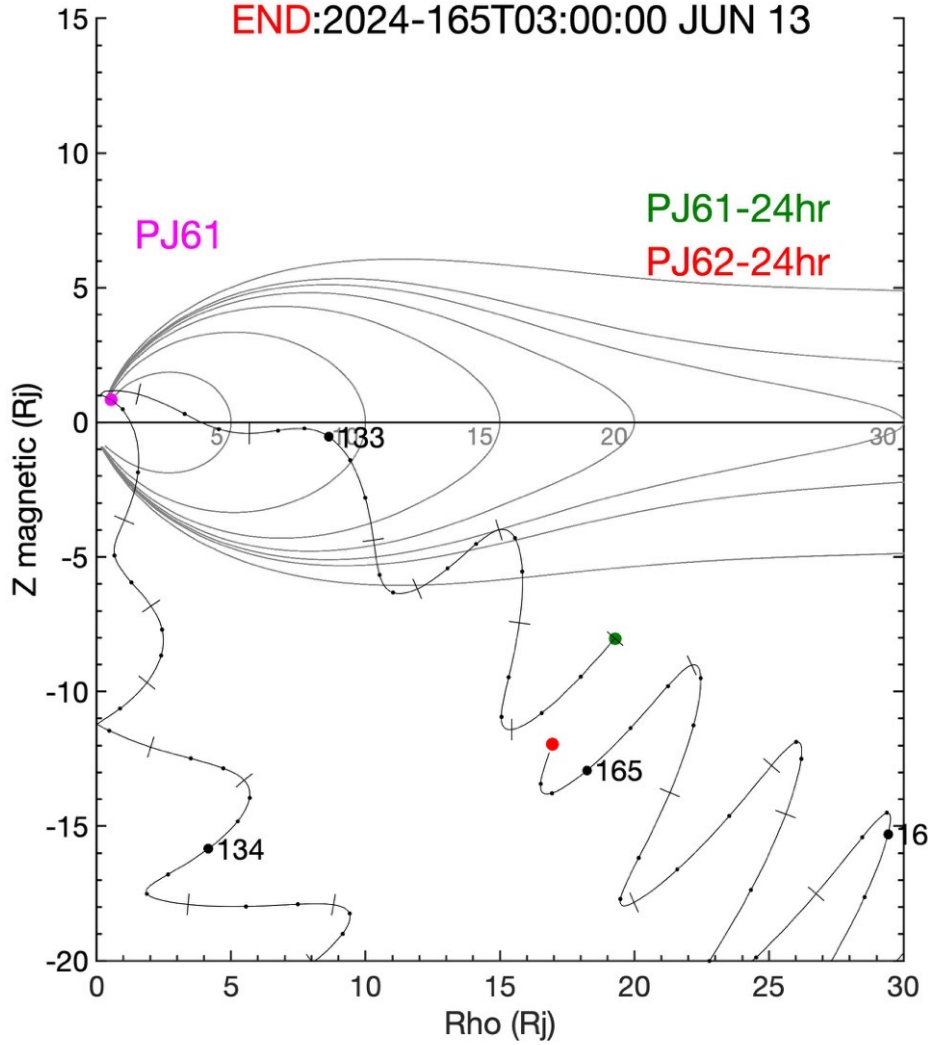


Juno Orbital Data (including EM 211112 reference trajectory)				Jupiter Range at Far EqX (Rj)	Local Time at Far EqX (hrs)
Perijove		Far Equator Crossing			
#	Type	Time (UTC/SCET)	Time (UTC/SCET)		
57	GRAV	2023-12-30 12:36:21	2024-02-03 17:51:00	5.83	15.9
58	GRAV	2024-02-03 21:47:31	2024-03-07 12:13:05	5.53	15.7
57		35.4	12/30	Io 1,500 km	
58 *		32.8	'24 2/3	Io 1,423 km	

This document was reviewed and approved for export, see Juno-Generic-15-001

START:2024-132T06:00:00 MAY 11

END:2024-165T03:00:00 JUN 13

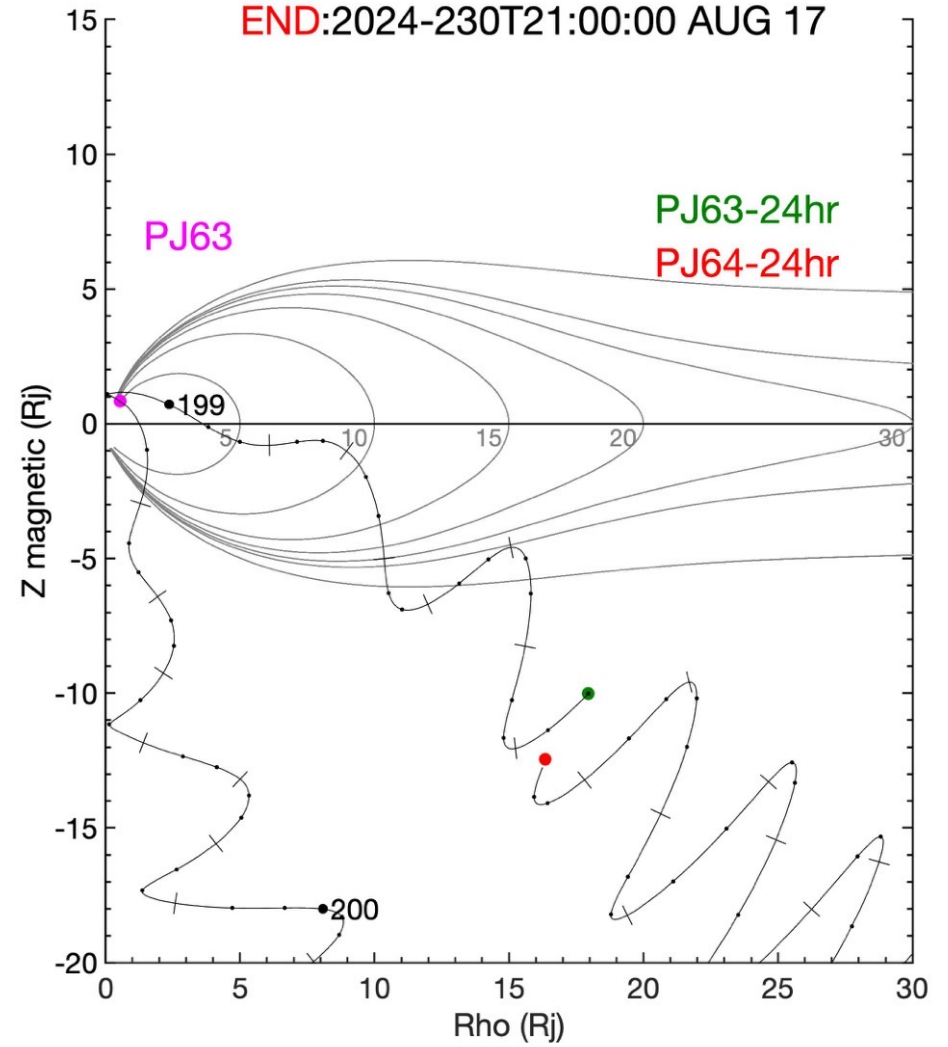


This document has been reviewed and determined not to contain export-controlled technical data

This document was reviewed and approved for export, see Juno-Generic-15-001

START:2024-198T01:00:00 JUL 16

END:2024-230T21:00:00 AUG 17



This document has been reviewed and determined not to contain export-controlled technical data

Jupiter is at opposition:

2021 Aug 20

2022 Sept 26

2023 Nov 3

2024 Dec 7

2025

2026 Jan 10

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