

Aggregate IOAG Missions Using GNSS

Last Updated by IOAG Secretariat: 2014-Apr-29

N°	Agency	Mission	GNSS System/s Used	GNSS Signals Used	GNSS Application	Orbit	Launch (Actual or Target)	Notes	Last Updated	Updated By
1	ASI	CSK	GPS			Es	2007	4 satellites	2013-May	
2	ASI	CSG	GPS, Galileo Ready			Es	2016	2 satellites	2013-May	
3	ASI	AGILE	GPS			Ee	2007		2013-May	
4	ASI	PRISMA	GPS			Es	2015		2013-May	
5	ASI	OPIS	GPS			Es	2017		2013-May	
6	CNES	CALIPSO	GPS	L1 C/A	Orbit, Time	Es	2006	CNES controls the in flight satellite .	2014-Apr-23	JMS
7	CNES	COROT	GPS	L1 C/A	Orbit, Time	Ep (90°)	2006	CNES controls the in flight satellite .	2014-Apr-23	JMS
8	CNES	JASON-2	GPS*	L1 C/A	Orbit, Time	Ei (66°)	2008	CNES controls the in flight satellite in case of emergency on behalf of NASA/NOAA or EUMETSAT.* GPS on Bus + GPSP Launch was Nov 02, 2009. CNES controls the satellite in routine operations ; ESA operates the mission.	2014-Apr-23	JMS
9	CNES	SMOS	GPS	L1 C/A	Orbit, Time	Es	2009		2014-Apr-23	JMS
10	CNES	ELISA	GPS	L1 C/A	Orbit, Time	Es	2011	The system is with four satellites launched in Dec 2011. Receiver: MOSAIC	2014-Mar-10	JMS
11	CNES	JASON-3	GPS*	L1 C/A	Orbit, Time	Ei (66°)	2015	CNES controls the in flight satellites in case of emergency on behalf of NASA/NOAA or EUMETSAT.* GPS on Bus + GPSP	2014-Apr-23	JMS
12	CNES	MICROSCOPE	GPS, Galileo	L1 C/A, E1	Precise Orbit Determination (POD), Time	Es	2016	One satellite to be launched in 2016 Receiver: SKYLOC	2014-Mar-10	JMS
13	CNES	CSO-MUSIS	GPS, Galileo	L1 C/A, L2C, L5 E1, E5a	Orbit, Time	Es	2017	The system is with three satellites to be launched from 2017. Receiver : LION	2014-Mar-10	JMS
14	CNES	MERLIN	GPS, Galileo	L1 C/A, E1	Orbit, Time	Es (TBC)	2018	Receiver : not yet decided	2014-Mar-10	JMS
15	CNES	SWOT	GPS, Galileo (to be decided)	GPS L1 C/A, other (to be decided)	Orbit, Time	Ep (77,6°)	2020	Receiver : not yet decided	2014-Apr-23	JMS
16	DLR/NASA	GR1 / GR2 (GRACE)	GPS	GPS L1 C/A, L1/L2 P(Y)	Navigation, POD, RO	Ep	17-Mar-2002	Joint mission with NASA.	2014-Mar-17	MP
17	DLR	TSX-1	GPS	GPS L1 C/A, L1/L2 P(Y)	Navigation, POD, RO, precise relative determination	Es	15-Jun-2007		2014-Mar-17	MP
18	DLR	TDX-1	GPS	GPS L1 C/A, L1/L2 P(Y)	Navigation, POD, RO, precise relative determination	Es	21-Jun-2010		2014-Mar-17	MP
19	DLR	TET	GPS	GPS L1 C/A	onboard navigation, orbit determination (flight dynamics support)	Ep	22-July-2012		2014-Mar-17	MP
20	DLR	TET NOX experiment	GPS	GPS L1 C/A, L1/L2 P(Y)	Experiment (POD, RO)	Ep	22-July-2012		2014-Mar-17	MP
21	DLR	BIROS	GPS	GPS L1 C/A	onboard navigation, orbit determination (flight dynamics support)	Ep	2015		2014-Mar-17	MP
22	DLR	HAG-1	GPS	GPS L1 C/A	Experiment (navigation)	G	2014	GPS used for on-board experiment	2014-Mar-17	MP
23	DLR	Eu.CROPIS	GPS	GPS L1 C/A	navigation, flight dynamics	Ep	2016		2014-Mar-17	MP
24	DLR	ENMAP	GPS			Ep	2017		2013-May 27	MP
25	DLR/NASA	GRACE_FO	GPS GLO/GAL?	GPS L1 C/A, L1/L2 P(Y), (others?)	Navigation, POD	Ep	2018	Joint mission with NASA.	2014-Mar-17	MP
26	DLR	DEOS	GPS	GPS L1 C/A	onboard navigation, orbit determination (flight dynamics support), relative navigation (formation flight/ rendezvous)	Ep	2017		2014-Mar-17	MP
27	DLR	Electra	GPS		orbit determination	G	2018		2013-May 27	MP
28	DLR	PAZ	GPS	GPS L1 C/A, L1/L2 P(Y)	Navigation, POD	Ep	2014	Same as TSX	2014-Mar-17	MP
29	ESA	GOCE			POD	LEO	2009		2014-Feb-02	MS
30	ESA	Swarm			POD	LEO	2013		2014-Feb-02	MS
31	ESA	MetOp			Radio Occultation	LEO	2006		2014-Feb-02	MS

32	ESA	EarthCare			Orbital GPB	LEO	2016		2014-Feb-02	MS
33	ESA	BIOMASS				LEO	2018		2014-Feb-02	MS
34	ESA	GMES S1			Orbit, POD	LEO	2013		2014-Feb-02	MS
35	ESA	GMES S2			Orbit	LEO	2015		2014-Feb-02	MS
36	ESA	GMES S3			Orbit, POD	LEO	2015		2014-Feb-02	MS
37	ESA	MTG			Orbit, Time	GEO	2018		2014-Feb-02	MS
38	ESA	NGGM			FF with MetOp	LEO			2014-Feb-02	MS
39	ESA	STE-QUEST			Orbit, Time	LEO			2014-Feb-02	MS
40	ESA	Proba 2			Orbit	LEO	2009		2014-Feb-02	MS
41	ESA	Proba 3			FF with MetOp	HEO	2017		2014-Feb-02	MS
42	ESA	ATV			Rendezvous	LEO	Began in 2009		2014-Feb-02	MS
43	ESA	Small GEO			Orbit, Time	GEO	2014		2014-Feb-02	MS
44	JAXA	GOSAT	GPS	L1	Orbit, time	LEO	2009-present	Remote Sensing	2013-May-27	
45	JAXA	GCOM-W1	GPS	L1	Orbit, time	LEO	2012-present	Remote Sensing	2013-May-27	
46	JAXA	GCOM-C1	GPS	L1	Orbit, time	LEO	2016	Remote Sensing	2013-May-27	
47	JAXA	ALOS-2	GPS	L1, L2	Precise orbit (3σ<1m), Orbit, time,	LEO	2013	Remote Sensing	2013-May-27	
48	JAXA	HTV-series	GPS	L1	Orbit(relative)	LEO	2009-present	Unmanned ISS transportation	2013-May-27	
49	JAXA	GOSAT-2	GPS	L1, L2 (TBD)	Orbit, time	LEO	2017	Remote Sensing	2013-May-27	
50	JAXA	ASTRO-H	GPS	L1, L2	Orbit, time	LEO	2015	Remote Sensing	2013-May-27	
51	NASA	ISS	GPS	L1 C/A	Attitude Dynamics	LEO	Since 1998	Honeywell SIGI receiver	2014-Feb-4	JJ Miller/AJ Oria
52	NASA	COSMIC (6 satellites)	GPS	L1 C/A, L1/L2 semicodeless, L2C	Radio Occultation	LEO	2006	IGOR (BlackJack) receiver; spacecraft nearing end of life	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
53	NASA	SAC-C	GPS	L1 C/A, L1/L2 semicodeless, L2C	Precise Orbit Determination, Occultation, surface reflections	LEO	2000	BlackJack receiver; mission retired 15 August 2013	2014-Feb-4	JJ Miller/AJ Oria
54	NASA	IceSat	GPS	L1 C/A, L1/L2 semicodeless	Precise Orbit Determination	LEO	2003	BlackJack receiver; mission retired 14 August 2010	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
55	NASA	GRACE (2 satellites)	GPS	L1 C/A, L1/L2 semicodeless	Precise Orbit Determination, Occultation	LEO	2002	BlackJack receiver, joint mission with DLR	2014-Feb-4	JJ Miller/AJ Oria
56	CNES/NASA	OSTM/Jason 2	GPS	L1 C/A, L1/L2 semicodeless	Precise Orbit Determination	LEO	2008	IGOR (BlackJack) receiver	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
57	NASA	Landsat-8	GPS	L1 C/A	Orbit	LEO	2013	GD Viceroy receiver	2014-Feb-4	JJ Miller/AJ Oria
58	NASA	ISS Commercial Crew and Cargo Program - Dragon	GPS	L1 C/A	Orbit / ISS rendezvous	LEO	2013+		2014-Feb-4	JJ Miller/AJ Oria
59	NASA	ISS Commercial Crew and Cargo Program: Cygnus	GPS	L1 C/A	Orbit / ISS rendezvous	LEO	2013+		2014-Feb-4	JJ Miller/AJ Oria
60	NASA	CONNECT / SCaN Test-Bed (ISS)	GPS	L1 C/A, L1/L2 semicodeless, L2C, L5, + option for Galileo & GLONASS	Radio occultation, precision orbit, time	LEO	2013	Blackjack-based SDR. Monitoring of GPS CNAV testing began in June 2013.	April 28 2014	JJ Miller/AJ Oria/FH Bauer
61	NASA	GPM	GPS	L1 C/A	Orbit, time	LEO	2014	Navigator receiver	2014-Feb-4	JJ Miller/AJ Oria
62	NASA	Orion/MPCV	GPS	L1 C/A	Orbit / navigation	LEO	2014 - Earth Orbit, 2017 Cislunar	Honeywell Aerospace Electronic Systems 'GPSR' receiver	2014-Feb-4	JJ Miller/AJ Oria
63	NSPO/USAF/NASA	COSMIC IIA (6 satellites)	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Occultation	LEO	2015	TriG receiver	2014-Feb-4	JJ Miller/AJ Oria
64	NASA	DSAC	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Time transfer	LEO	2015	TriG receiver	2014-Feb-4	JJ Miller/AJ Oria
65	CNES/NASA	Jason-3	GPS, GLONASS, Galileo	L1 C/A, L1/L2 semicodeless, L2C	Precise Orbit Determination, Oceanography	LEO	2015	IGOR+ (BlackJack) receiver	2014-Feb-4	JJ Miller/AJ Oria

66	NASA	MMS	GPS	L1 C/A	Rel. range, orbit, time	up to 30 Earth radii	2015	Navigator receiver (8 receivers)	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
67	NASA	GOES-R	GPS	L1 C/A	Orbit	GEO	2016	General Dynamics Viceroy-4	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
68	NASA	ICESat-2	GPS	-	-	LEO	2016	RUAG Space receiver	2014-Feb-4	JJ Miller/AJ Oria
69	NASA	CYGNSS (8 sats)	GPS	-	GPS bi-scatterometry	LEO	2016	Delay Mapping Receiver (DMR)	2014-Feb-4	JJ Miller/AJ Oria
70	NSPO/USAF/NASA	COSMIC IIB (6 satellites)	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS, BeiDou	Occultation	LEO	2017	Trig receiver	2014-Feb-4	JJ Miller/AJ Oria
71	NASA/DLR	GRACE FO	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Occultation, precision orbit, time	LEO	2018	Trig receiver, joint mission with DLR	2014-Feb-4	JJ Miller/AJ Oria
72	NASA	Jason-4	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Precise Orbit Determination	LEO	2018	Trig receiver (proposed)	2014-Feb-4	JJ Miller/AJ Oria
73	NASA	GRASP	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Precise Orbit Determination	LEO	2017	Trig receiver (proposed)	2014-Feb-4	JJ Miller/AJ Oria
74	NASA	GRACE II	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Science	LEO	2020	Trig receiver (proposed)	2014-Feb-4	JJ Miller/AJ Oria
75	NASA	NICER (ISS)	GPS	L1 C/A	Orbit	LEO	2016	Moog/Navigator receiver	2014-Apr-28	JJ Miller/AJ Oria/FH Bauer
76	NASA	Pegasus Launcher	GPS	L1 C/A	Navigation	Surface to LEO	Since 1990	Trimble receiver	2014-Feb-4	JJ Miller/AJ Oria
77	NASA	Antares (formerly Taurus II) Launcher	GPS	L1 C/A	Integrated Inertial Navigation System (INS) & GPS	Surface to LEO	Since 2010	Orbital GPB receiver	2014-Feb-4	JJ Miller/AJ Oria
78	NASA	Falcon-9 Launcher	GPS	L1 C/A	Overlay to INS for additional orbit insertion accuracy	Surface to LEO	Since 2013		2014-Feb-4	JJ Miller/AJ Oria
79	NASA	Launchers* at the Eastern and Western Ranges	GPS	L1 C/A	Autonomous Flight Safety System	Range Safety	2016*	(*) Including ULA Atlas V and Delta IV (GPS system: Space Vector SIL, uses a Javad receiver). (**) Estimated initial operational test.	2014-Feb-4	JJ Miller/AJ Oria
80	NASA	NI-SAR (was Desdyni)	GPS, GLONASS, Galileo	L1 C/A, L2C, L5, Galileo, GLONASS	Precise Orbit Determination, timing	LEO	2020	Trig receiver	2014-Mar-12	JJ Miller/AJ Oria

Notes: (1) Orbit Type: Ee = Equatorial Earth Orbiter; Ei = Inclined Earth Orbiter; Ep = Polar Earth Orbiter; Es = Sun Synchronous Earth Orbiter; G = Geostationary; H = High Elliptical Earth Orbit; R = Earth orbiter Relay; O = Other orbit type (specify in remarks)