ALOS-2 Basic Observation Scenario
（3rd Edition　Ver. B）

March 20, 2019
JAXA/ALOS-2 Project

Details of revision

Version	Date	Page	Details of revision
A	2018/8/15	P4, 8, 14	・Changed the observation mode of Japanese Ascending Scenario (Cycle110-115)
B	2019/3/20	P4, 8, 14	・Changed the observation mode of Japanese Descending Scenario (Cycle127-130)
		P4, 14,19	・Added the Basic Observation Scenario for 6th year【Japan/Global】(Cycle132-157)
		P17,22	・Changed the observation frequency and priority of Global land observations in Stripmap mode (after Cycle 125)
		P25	・Changed the observation priority of the Crustal Deformation in ScanSAR mode (after Cycle 125)
		P30	・Added the new sites (Canada and Greenland) in K&C Super Sites
		P31	・Canceled the areas which selected as PI super site at the 1st PI Work Shop (until Cycle124)
		P32	・Canceled the earthquake and flood sites from the CEOS Super Sites
		P33	・Finished the observations of Crustal WG Super Sites (until Cycle124)

＜Contents＞

1. 3rd edition

This document is the 3rd edition of the ALOS-2 Basic Observation Scenario.
In order to expand the use of ALOS-2 data further and create new outcome, we conducted the survey to ALOS-2 users. Based on these results, we reviewed the basic observation scenarios of Global after the second half of the 4th year and planned for the 5th year of Japan and Global. Regarding the scenarios of Japan in addition, we reviewed the first half of the 5th year in the 3rd edition version A based on the user request. Furthermore we reviewed the scenarios of Japan after the second half of the 5th year and planned for the 6th year of Japan and Global. In response to these changes, we revised the Scenario as the 3rd edition version B.
The ALOS-2 Basic observation scenario will be reviewed every 6 months based on the requests from users.

A

B

2. Purpose and Background

The PALSAR-2 instrument onboard ALOS-2 has several observation modes (Spotlight, Stripmap, ScanSAR) and right-and-left looking function to fulfill the mission requirements. This flexibility may however also trigger conflicts among user request without adequate planning.

As implementation of systematic observations are required to achieve temporally and spatially consistent data, a Basic Observation Scenario (BOS) had been developed for ALOS-2, partially succeeding ALOS systematic observation scenario. The BOS will be reviewed every 6 months to meet user requests.

3. Concepts of the Basic Observation Scenario

- Emergency observations and cal/val have highest priority. The BOS follows with the second highest priority.
- The BOS scenario is designed to fulfill the following general acquisition concepts:
  - Spatial and temporal consistency at global scales with fine spatial resolution;
  - Adequate revisit frequency, considering acquisition timing of target areas;
  - Sensor operability;
  - Long-term systematic observations.
- The BOS comprises separate plans for Japan and for the rest of the world.
- Observations over Super Sites are undertaken to the extent that they do not affect the BOS.

Notes

- The success rate for acquisitions within the BOS is 70-80%.

4. Basic Observation Scenario (Japan)

4.1 Overview for the Basic Observation Scenario for Japan

(1) Observation over Japan are undertaken for the preparation of base maps for “Disaster” and “Differential InSAR”.

(2) Observations for the "Disaster" base map were undertaken in modes 3 m Ultra-Fine (U2 and U3) and 100 m ScanSAR (W2) in the 1st year (U3 in descending only). In the 4th year, ascending observations in U3 mode were added. In addition, ascending observations in U3 (Left) mode and W2(Left) mode were added in the first half of 5th year. Furthermore descending observations in U2 (Left) mode are planned in the second half of 5th year.

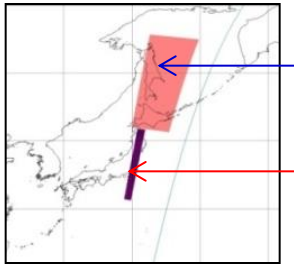
A

B

(3) Open cycles without pre-set default observation modes are planned once every 6 cycles.

(4) Observations in 6 m Fully Polarimetric (PLR) mode for landslide disaster and land use start from the 2nd year and are repeated every year.

(5) Observations in ScanSAR mode for "sea ice observations" are planned over the Sea of Okhotsk during the winter (December to April).
South of Hokkaido, observation are planned in stripmap mode.



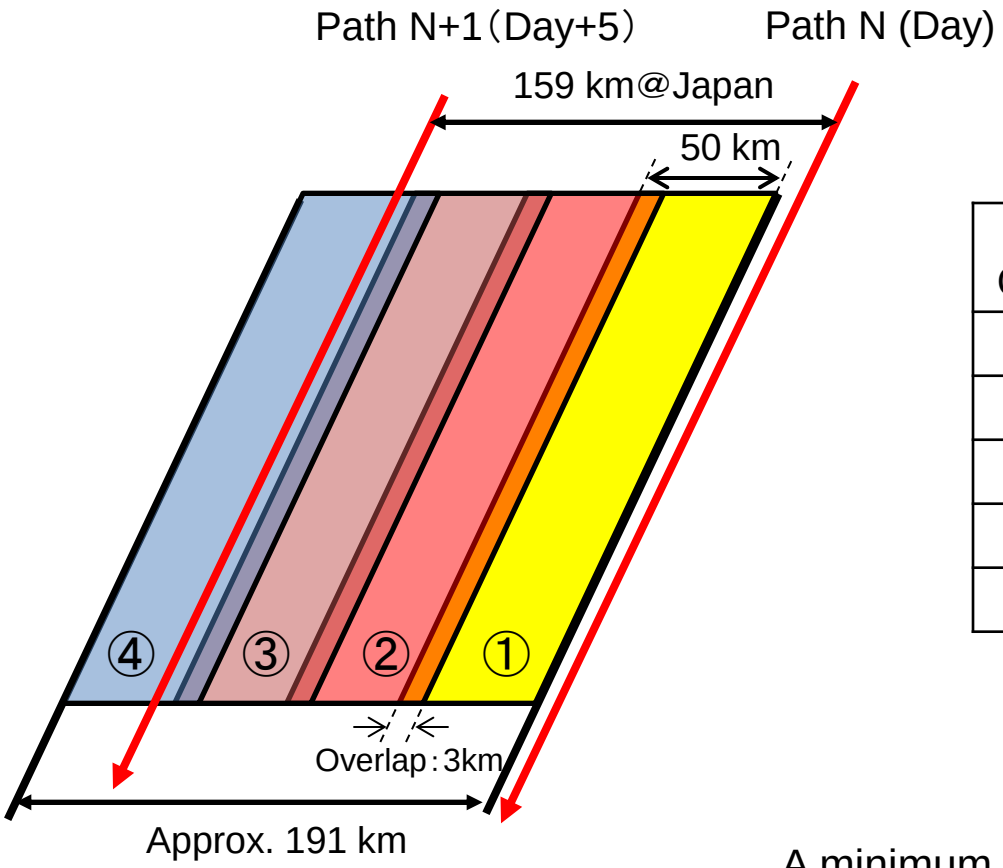
(6) To accommodate "ship movement management", observations in U3 and U2 modes are extended from the land and coastal zones to also include sea areas.

4.2 Baseline mapping

The Japan Base Map serves the objectives of “Disaster” and “Differential InSAR”. It is based on observations in two modes: Ultra-Fine Stripmap 3 m and ScanSAR 100 m .

	contents
Base Map for disaster	Observations to collect data at various incidence angles, to accommodate interferometric analysis of pre- and post-disaster data.
Base Map for Differential InSAR	Observations for periodic collection of data for differential interferometry

4.3 Japan coverage in Ultra-Fine Stripmap Mode [3 m]



Stripmap mode [3m]

Beam Group	Incidence Angle	Number of beams to cover
U1	8-30 deg.	5 beams
U2	30-44 deg.	4 beams
U3	44-56 deg.	5 beams
U4	56-64 deg.	5 beams
U5	64-70 deg.	5 beams

U2: Nominal

A minimum of 4 beams is required for gap-free coverage of Japan

⇒ Minimum: 14 days × 4 cycles = 56 days

4.4 Observation conditions for disaster base map

Items	Stripmap [3m]		ScanSAR [350km]
Satellite direction	Descending（towards south）and Ascending（towards north）	Descending and Ascending	Descending and Ascending
Beam direction	Left and right		
Beam range (incidence angle)	U2 (30.2°～44.4°)	U3 (44.3°～55.8°)	W2 (19.7°～45.3°)
Polarisation	Single（HH）		Dual（HH+HV）
Frequency band	84 MHz		28 MHz

4.5 Observation conditions for Differential InSAR base map

Items	Stripmap [3m]	ScanSAR [350km]
Satellite direction	Descending（towards south) and Ascending（towards north）	
Beam direction	right	
Beam range (incidence angle)	U2 (30.2° ～44.4°)	W2 (19.7° ～45.3°)
Polarisation	Single（HH）	Dual（HH+HV）
Frequency band	84 MHz	28 MHz

Temporal frequency is a priority for interferometry. Observations are carried out during the same time periods each year.

4.6 Analysis results: Revisit-times for Basic Observation Scenario over Japan and frequency of Differential InSAR

(1) Revisit-times after completion of base map observations of Japan

Observation mode	Average	Maximum
U2（Ascending, Descending）U3（Descending only）	65 hr	74 hr*
U2（Ascending, Descending）U3（Ascending, Descending）	53hr	62hr*
Reference: U2（Ascending, Descending） *W2（*Ascending, Descending)	*61hr*	*132 hr*

*excluding parts of Kyushu,Okinawa and some areas in southern Japan

(2) Frequency of Differential InSAR
(note: Emergency observations in case of disasters are undertaken separately)

Orbit direction	Stripmap 3m		ScanSAR 100m	
	Maximum number of observations（year）**	InSAR interval	Maximum number of observations（year）**	InSAR interval
Descending・right	4	3～3.5 months	6	1.5～4.5 months
Ascending・right	4	2.5～3.5 months	6	1.5～4.5 months

** In case of no conflict with crustal movement users

4.7 Basic Observation Scenario (Japan) - 【 4th -6thyear】 -

■4th Year

Cycle	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Year	2017											2018														
Month/Day	07/31	08/14	08/28	09/11	09/25	10/09	10/23	11/06	11/20	12/04	12/18	01/01	01/15	01/29	02/12	02/26	03/12	03/26	04/09	04/23	05/07	05/21	06/04	06/18	07/02	07/16
Descending	Differential InSAR						Differential InSAR					Sea Ice			Differential InSAR+Sea Ice					Sea Ice		Differential InSAR				
	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R				U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	
Ascending						Differential InSAR						Differential InSAR				Differential InSAR					Disaster Base Map					
	FP (3)R	FP (4)R	FP (5)R	FP (6)R	FP(7)R	U3 (10)L	U3 (11)L	U3 (12)L	U3 (13)L	U3 (14)L		U2 (6)R	U2 (7)R	U2 (8)R	U2(9)R	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R		U3 (10)R	U3 (11)R	U3 (12)R	U3 (13)R	U3 (14)R	W2 (2)R

■5th Year

Cycle	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131
Year	2018												2019													
Month/Day	07/30	08/13	08/27	09/10	09/24	10/08	10/22	11/05	11/19	12/03	12/17	12/31	01/14	01/28	02/11	02/25	03/11	03/25	04/08	04/22	05/06	05/20	06/03	06/17	07/01	07/15
Descending		Differential InSAR					Differential InSAR+Sea Ice					Sea Ice			Differential InSAR+Sea Ice					海氷		Disaster Base Map				
	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R				U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)L	U2 (7)L	U2 (8)L	U2 (9)L	
Ascending						Disaster Base Map								Differential InSAR							Differential InSAR					
	FP (3)R	FP (4)R	FP (5)R	FP (6)R	FP (7)R	U2 (6)L	U2 (7)L	U2 (8)L	U2 (9)L	W2 (2)L				U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R	

■6th Year

Cycle	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157
Year	2019年												2020年													
Month/Day	07/29	08/12	08/26	09/09	09/23	10/07	10/21	11/04	11/18	12/02	12/16	12/30	01/13	01/27	02/10	02/24	03/09	03/23	04/06	04/20	05/04	05/18	06/01	06/15	06/29	07/13
Descending	Differential InSAR						Differential InSAR+Sea Ice					Sea Ice			Differential InSAR+Sea Ice					Sea Ice		Differential InSAR				
	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R				U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	
Ascending							Disaster Base Map							Disaster Base Map							Disaster Base Map					
	FP (3)R	FP (4)R	FP (5)R	FP (6)R	FP (7)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R	

A

B

* Regarding the ascending cycle84(FP6-7), cycle94(U2-9) and cycle110(FP6-7), the observations are carried out only paths where gaps occur between paths observed with other beams.
* Several descending ScanSAR observations are planned for monitoring the sea ice at cycle91-99, cycle117-125 and cycle143-151.

4.8 Basic Observation Scenario (Japan) - 【1st – 3rd year】 -

■1st Year

Cycle	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Year	2014																		2015							
Month/Day	08/04	08/18	09/01	09/15	09/29	10/13	10/27	11/10	11/24	12/08	12/22	01/05	01/19	02/02	02/16	03/02	03/16	03/30	04/13	04/27	05/11	05/25	06/08	06/22	07/06	07/20
Descending	Disaster Base Map							Disaster Base Map							Disaster Base Map							Disaster Base Map				
	U2 (6)R	U2 (7)R		U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)L	U2 (7)L	W2 (2)L	W2(2)L / U2(8)L	W2(2)L / U2(9)L	W2 (2)L	W2(2)R	W2(2)R / U3(10)R	W2(2)R / U3(11)R	W2(2)R / U3(12)R	W2(2)R / U3(13)R	W2(2)R / U3(14)R	W2 (2)R		U3 (10)L	U3 (11)L	U3 (12)L	U3 (13)L	U3 (14)L
Ascending	Disaster Base Map							Disaster Base Map							Differential InSAR							Differential InSAR				
	U2 (6)R	U2 (7)R		U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)L	U2 (7)L	W2 (2)L	U2 (8)L	U2 (9)L	W2 (2)L		U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	

■2st Year

Cycle	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Year	2015年																		2016							
Month/Day	08/03	08/17	08/31	09/14	09/28	10/12	10/26	11/09	11/23	12/07	12/21	01/04	01/18	02/01	02/15	02/29	03/14	03/28	04/11	04/25	05/09	05/23	06/06	06/20	07/04	07/18
Descending		Differential InSAR						Differential InSAR							Differential InSAR							Differential InSAR				
		W2 (2)R	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R		U2 (6)R	U2 (7)R	W2 (2)R	W2(2)R / U2(8)R	W2(2)R / U2(9)R	W2 (2)R	W2(2)R	W2(2)R / U2(6)R	W2(2)R / U2(7)R	W2 (2)R	W2(2)R / U2(8)R	W2(2)R / U2(9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	
Ascending							Differential InSAR							Differential InSAR								Differential InSAR				
	FP (3)R	FP (4)R	FP (5)R	FP (6)R	FP (7)R		U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R

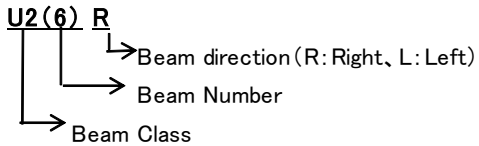
■3st Year

Cycle	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Year	2016											2017														
Month/Day	08/01	08/15	08/29	09/12	09/26	10/10	10/24	11/07	11/21	12/05	12/19	01/02	01/16	01/30	02/13	02/27	03/13	03/27	04/10	04/24	05/08	05/22	06/05	06/19	07/03	07/17
Descending		Differential InSAR					Differential InSAR＋Sea Ice					Sea Ice			Differential InSAR＋Sea Ice					Sea Ice		Differential InSAR				
	U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R		U2 (6)R	U2 (7)R	U2 (8)R	W2(2)R / U2(9)R	W2 (2)R	W2(2)R	W2(2)R	W2(2)R	W2(2)R / U2(6)R	W2(2)R / U2(7)R	W2(2)R / U2(8)R	W2(2)R / U2(9)R	W2 (2)R	W2(2)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	
Ascending							Differential InSAR							Differential InSAR							Differential InSAR					
	FP (3)R	FP (4)R	FP (5)R	FP (6)R	FP (7)R		U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R			U2 (6)R	U2 (7)R	U2 (8)R	U2 (9)R	W2 (2)R	

White	ScanSAR[350km], Beam class: W2, Observation direction: Right, Beam Number: No.2
Black	ScanSAR[350km], Beam class: W2, Observation direction: Left, Beam Number: No.2
White	Stripmap[3m], Beam class: U2, Observation direction: Right, Beam Number: No.6 - 9
Black	Stripmap[3m], Beam class: U2, Observation direction: Left, Beam Number: No.6 - 9
White	Stripmap[3m], Beam class: U3, Observation direction: Right, Beam Number: No.10 - 14
Black	Stripmap[3m], Beam class: U3, Observation direction: Left, Beam Number: No.10 - 14
White	Stripmap[6m] Full Polarization, Beam Number: No.3 - 7

【Number system】

EX：U2(6)R



Non-base map observations
Adjustment with other observations necessary

5. Basic Observation Scenario (Global)

5.1 Overview for Basic Observation Scenario (Global)

- Descending acquisitions (noon, ~12:00)
  - Observations of Wetlands & Rapid deforestation monitoring in ScanSAR (350km HH+HV) mode are 9 times per year. The overlap areas between Wetlands & Rapid Deforestation monitoring and Crustal Deformation are observed in ScanSAR (350km HH+HV) mode 9 times per year.
  - Observations of Crustal Deformation in ScanSAR (350km HH) mode are 4 times per year. (after 4th year *1)
  - Observations of Crustal Deformation in Stripmap (10m HH+HV) mode are once per year for InSAR applications (after 4th year *2)

  (Super Sites)
  - Observations of JAXA super sites in *Stripmap (10m HH+HV) mode* are once per year.
  - InSAR observations of Antarctic Glaciers are carried out in Stripmap (10m HH+HV) left-looking mode.

- Ascending acquisitions (midnight, ~24:00)
  - Global observations in Stripmap (10m *HH+HV*) mode are once per year.
  - Observations of polar regions in ScanSAR (350km HH+HV) mode are 3 times per year to cover summer/winter seasons. Antarctic observations are carried out in left-looking mode to cover the high latitudes.
  - Observations of crustal movement monitoring (ScanSAR) are once per year.

  (Super Sites)
  - InSAR observations of Greenland Glaciers are undertaken in Stripmap (10m HH+HV) mode

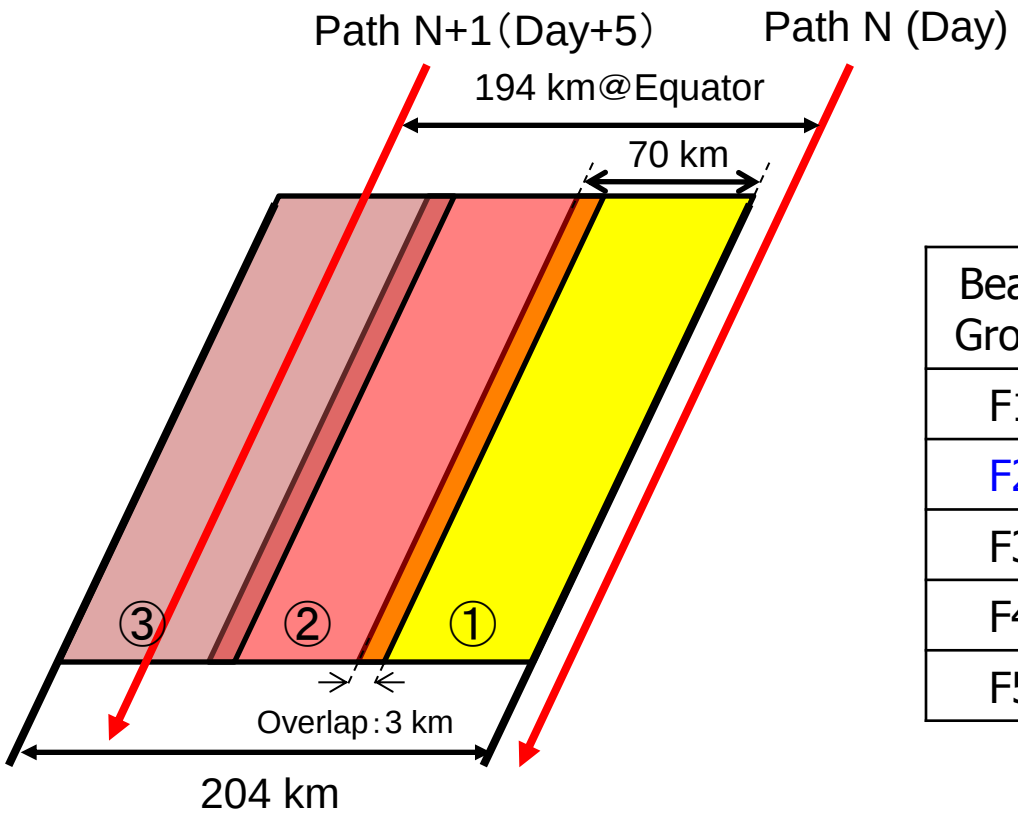
B

*1 Observations of Wetlands, Rapid Deforestation and Crustal Deformation in ScanSAR (350km HH+HV) mode are 9 times per year (1st – 3rd year).

*2 Observations of Forests in Stripmap (10m HH+HV) mode are twice per year (1st – 3rd year).

※ Global observations in Stripmap (3m HH) mode and Stripmap (6m HH+HV+VV+VH) mode have finished at 3rd year.

5.2 Global coverage by Fine Beam Mode [10m]



Fine Beam Mode [10m]

Beam Group	Incidence Angle	Number of beams to cover
F1	8-30 deg.	4 beams
F2	30-44 deg.	3 beams
F3	44-56 deg.	5 beams
F4	56-64 deg.	5 beams
F5	64-70 deg.	5 beams

F2: Nominal

A minimum of 3 beams is required for gap-free coverage
⇒ Minimum: 14 days × 3 cycles = 42 days

5.3 Basic Observation Scenario (Global) - 【 4th - 6th year】-

■4th Year

Cycle	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Year	2017											2018														
Month/Day	07/31	08/14	08/28	09/11	09/25	10/09	10/23	11/06	11/20	12/04	12/18	01/01	01/15	01/29	02/12	02/26	03/12	03/26	04/09	04/23	05/07	05/21	06/04	06/18	07/02	07/16
Descending	Glacier Super Site	Crustal Glacier Super Site	Wetland Deforest	Glacier Super Site	Crustal Glacier Super Site	Wetland Deforest	10m (SuperSite)		Wetland Deforest	10m (SuperSite)	Crustal	Wetland Deforest 1&2	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Wetland Deforest 2	Wetland Deforest 1
		W2(2)R	W2 (2)R		W2(2)R	W2 (2)R	F2(7)R	F2(5)R	W2 (2)R	F2(6)R	W2(2)R	W2 (2)R	W2 (2)R	W2(2)R	W2 (2)R	F2 (7)R	W2(2)R	W2 (2)R	F2 (5)R	W2(2)R	W2 (2)R	F2 (6)R	W2(2)R	W2 (2)R	W2 (2)R	W2 (2)R
	F2(6)L	F2(6)L		F2(6)L	F2(6)L									W2(2)R			F2(7)R			F2(5)R			F2(6)R			
Ascending	North Polar Crustal	Polar	World 1-1(10m)				World 2-1(10m)			Polar	South Polar	World A(10m)			GR Super Site	World B(10m)				World C(10m)			South Polar	World D(10m)		
	W2 (2)R	W2(2)R	F2 (7)R	F2 (5)R	F2 (6)R		F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R	W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R	F2(6)R	F2 (6)R	F2 (7)R	F2 (5)R		F2 (7)R	F2 (5)R	F2 (6)R	W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R
		W2(2)L								W2(2)L																

■5th Year

Cycle	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131
Year	2018											2019														
Month/Day	07/30	08/13	08/27	09/10	09/24	10/08	10/22	11/05	11/19	12/03	12/17	12/31	01/14	01/28	02/11	02/25	03/11	03/25	04/08	04/22	05/06	05/20	06/03	06/17	07/01	07/15
Descending	Glacier Super Site	Wetland Deforest 2 Glacier SuperSite	Wetland Deforest 1	Crustal 1 Glacier Super Site	Wetland Deforest 2 Crustal 2 Glacier Super	Wetland Deforest 1	Crustal 1 10m Super Site	Wetland Deforest 2 Crustal 2	Wetland Deforest 1 10m Super	Crustal 1 10m Super Site	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Wetland Deforest 2	Wetland Deforest 1
		W2(2)R	W2 (2)R	W2(2)R	W2(2)R	W2 (2)R	W2(2)R	W2(2)R	W2(2)R	W2(2)R	W2(2)R	W2 (2)R	W2 (2)R	W2(2)R	W2 (2)R	F2 (7)R	W2(2)R	W2 (2)R	F2 (5)R	W2(2)R	W2 (2)R	F2 (6)R	W2(2)R	W2 (2)R	W2 (2)R	W2 (2)R
	F2(6)L	F2(6)L		F2(6)L	F2(6)L		F2(7)R	W2(2)R	F2(5)R	F2(6)R	W2(2)R			W2(2)R			F2(7)R			F2(5)R			F2(6)R			
Ascending	World E(10m)			North Polar Crustal	North Polar	World F(10m)					World A(10m)			Polar	GR Super Site South Polar	World B(10m)				World C(10m)				World D(10m)		
	F2 (7)R	F2 (5)R	F2 (6)R	W2 (2)R	W2(2)R	F2 (7)R	F2 (5)R	F2 (6)R			F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R	F2(6)R	F2 (6)R	F2 (7)R	F2 (5)R		F2 (7)R	F2 (5)R	F2 (6)R		F2 (7)R	F2 (5)R	F2 (6)R
														W2(2)L	W2(2)L											

■6th Year

Cycle	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157
Year	2019											2020														
Month/Day	07/29	08/12	08/26	09/09	09/23	10/07	10/21	11/04	11/18	12/02	12/16	12/30	01/13	01/27	02/10	02/24	03/09	03/23	04/06	04/20	05/04	05/18	06/01	06/15	06/29	07/13
Descending	Glacier Super Site	Wetland Deforest 2 Glacier SuperSite	Wetland Deforest 1	Crustal 1 Glacier Super Site	Wetland Deforest 2 Crustal 2 Glacier Super	Wetland Deforest 1	Crustal 1 10m Super Site	Wetland Deforest 2 Crustal 2	Wetland Deforest 1 10m Super	Crustal 1 10m Super Site	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Crustal 1	Wetland Deforest 2 Crustal 2	Wetland Deforest 1	Wetland Deforest 2	Wetland Deforest 1
		W2(2)R	W2 (2)R	W2(2)R	W2(2)R	W2 (2)R	W2(2)R	W2(2)R	W2(2)R	W2(2)R	W2(2)R	W2 (2)R	W2 (2)R	W2(2)R	W2 (2)R	F2 (7)R	W2(2)R	W2 (2)R	F2 (5)R	W2(2)R	W2 (2)R	F2 (6)R	W2(2)R	W2 (2)R	W2 (2)R	W2 (2)R
	F2(6)L	F2(6)L		F2(6)L	F2(6)L		F2(7)R	W2(2)R	F2(5)R	F2(6)R	W2(2)R			W2(2)R			F2(7)R			F2(5)R			F2(6)R			
Ascending	World E(10m)			North Polar Crustal	North Polar	World F(10m)					World A(10m)			Polar	GR Super Site South Polar	World B(10m)				World C(10m)				World D(10m)		
	F2 (7)R	F2 (5)R	F2 (6)R	W2 (2)R	W2(2)R	F2 (7)R	F2 (5)R	F2 (6)R			F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R	F2(6)R	F2 (6)R	F2 (7)R	F2 (5)R		F2 (7)R	F2 (5)R	F2 (6)R		F2 (7)R	F2 (5)R	F2 (6)R
					W2(2)L									W2(2)L	W2(2)L											

B

5.4 Basic Observation Scenario (Global) - 【1st – 3rd year】-

■1st Year

Cycle	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Year	2014											2015														
Month/Day	08/04	08/18	09/01	09/15	09/29	10/13	10/27	11/10	11/24	12/08	12/22	01/05	01/19	02/02	02/16	03/02	03/16	03/30	04/13	04/27	05/11	05/25	06/08	06/22	07/06	07/20
Descending	Crustal Wetland Deforest	Glacier Super Site	Crustal Wetland Deforest	Glacier Super Site	sub-Arctic Super Site	Crustal Wetland Deforest	Global 3m (1/3)		Crustal Wetland Deforest	Global 3m (1/3)		Crustal Wetland Deforest		sub-Arctic Super Site	Crustal Wetland Deforest	Crustal & Forest 14-day InSAR		Crustal Wetland Deforest	Crustal & Forest 14-day InSAR		Crustal Wetland Deforest	Crustal & Forest 14-day InSAR		Crustal Wetland Deforest	sub-Arctic Super Site	Crustal Wetland Deforest
	W2 (2)R	F2(6)L	W2 (2)R	F2(6)L	V2(2)R	W2 (2)R	U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R		V2(2)R	W2 (2)R	F2 (5)R	F2 (5)R	W2 (2)R	F2 (6)R	F2 (6)R	W2 (2)R	F2 (7)R	F2 (7)R	W2 (2)R	V2(2)R	W2 (2)R
Ascending	Crustal	Polar	World 1-1(10m)					World 2-1(10m)			Polar	North Polar	World 1-2(10m)			GR Super Site	GR Super Site	Global FP6m (1/5)						World 2-2(10m)		
	W2 (2)R	W2(2)R / W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R			F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R / W2(2)L	W2(2)R	F2 (7)R	F2 (5)R	F2 (6)R	F2(6)R	F2(6)R	FP (6)R	FP (5)R	FP (4)R	FP (3)R	FP (7)R		F2 (7)R	F2 (5)R	F2 (6)R

■2nd Year

Cycle	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Year	2015											2016														
Month/Day	08/03	08/17	08/31	09/14	09/28	10/12	10/26	11/09	11/23	12/07	12/21	01/04	01/18	02/01	02/15	02/29	03/14	03/28	04/11	04/25	05/09	05/23	06/06	06/20	07/04	07/18
Descending	Glacier Super Site	Glacier Super Site	Crustal Wetland Deforest	Glacier Super Site	sub-Arctic Super Site	Crustal Wetland Deforest	Global 3m (2/3)		Crustal Wetland Deforest	Global 3m (2/3)		Crustal Wetland Deforest		sub-Arctic Super Site	Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest	sub-Arctic Super Site	Crustal Wetland Deforest
	F2(6)L	F2(6)L	W2 (2)R	F2(6)L	V2(2)R	W2 (2)R	U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R		V2(2)R	W2 (2)R	F2 (5)R	F2 (6)R	W2 (2)R	F2 (7)R	F2 (5)R	W2 (2)R	F2 (6)R	F2 (7)R	W2 (2)R	V2(2)R	W2 (2)R
Ascending	North Polar	Polar	World 1-1(10m)					World 2-1(10m)			Polar	South Polar	World 1-2(10m)			GR Super Site	GR Super Site	Global FP6m (2/5)						World 2(10m)		
	W2(2)R	W2(2)R / W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R			F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R / W2(2)L	W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R	F2(6)R	F2(6)R	FP (6)R	FP (5)R	FP (4)R	FP (3)R	FP (7)R		F2 (7)R	F2 (5)R	F2 (6)R

■3rd Year

Cycle	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Year	2016											2017														
Month/Day	08/01	08/15	08/29	09/12	09/26	10/10	10/24	11/07	11/21	12/05	12/19	01/02	01/16	01/30	02/13	02/27	03/13	03/27	04/10	04/24	05/08	05/22	06/05	06/19	07/03	07/17
Descending	Glacier Super Site	Glacier Super Site	Crustal Wetland Deforest	Glacier Super Site		Crustal Wetland Deforest	Global 3m (3/3)		Crustal Wetland Deforest	Global 3m (3/3)		Crustal Wetland Deforest			Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest	Crustal & Forest		Crustal Wetland Deforest		Crustal Wetland Deforest
	F2(6)L	F2(6)L	W2 (2)R	F2(6)L		W2 (2)R	U2 (6)R	U2 (7)R	W2 (2)R	U2 (8)R	U2 (9)R	W2 (2)R			W2 (2)R	F2 (5)R	F2 (6)R	W2 (2)R	F2 (7)R	F2 (5)R	W2 (2)R	F2 (6)R	F2 (7)R	W2 (2)R		W2 (2)R
Ascending	North Polar Crustal	Polar	World 1-1(10m)					World 2-1(10m)			Polar	South Polar	World 1-2(10m)			GR Super Site	GR Super Site	Global FP6m (3/5)						World 2-2(10m)		
	W2 (2)R	W2(2)R / W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R			F2 (7)R	F2 (5)R	F2 (6)R	W2(2)R / W2(2)L	W2(2)L	F2 (7)R	F2 (5)R	F2 (6)R	F2(6)R	F2(6)R	FP (6)R	FP (5)R	FP (4)R	FP (3)R	FP (7)R		F2 (7)R	F2 (5)R	F2 (6)R

F2 10m — 10m(HH+HV)28MHz Right

U2 3m — 3m(HH)84MHz Right

FP 6m — 6m(HH+HV+VH+VV)42MHz Right

W2 350km — ScanSAR350km(HH) 14MHz Right

W2 350km — ScanSAR350km(HH+HV)14MHz Right

W2 350km — ScanSAR350km(HH+HV)14MHz Left

V2 490km — ScanSAR490km(HH+HV)14MHz Right

F2 10m — 10m(HH+HV)28MHz Left

Super sites (TBD)

【Number system】

EX: U2(6)R

U2(6)R

- U2: Beam Class
- 6: Beam Number
- R: Beam direction (R: Right, L: Left)

* 3m Ultra-Fine and 6m QP modes require 3 and 5 years for global coverage

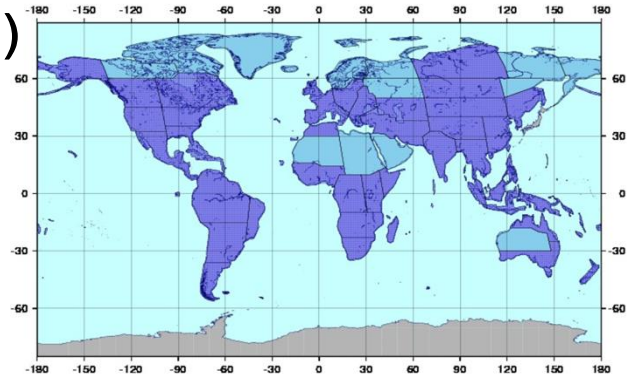
Basic Observation Scenario (Global)

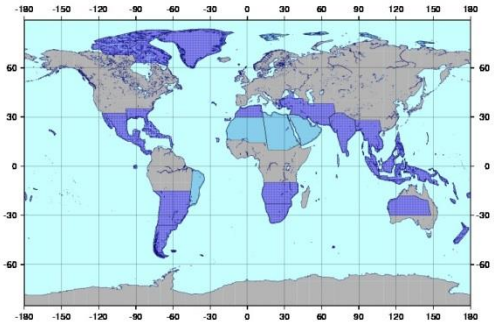
Global land areas – baseline mapping (Cycle 99-124)

Temporal repeat: Ascending 2 cov/year - 4 cov/year

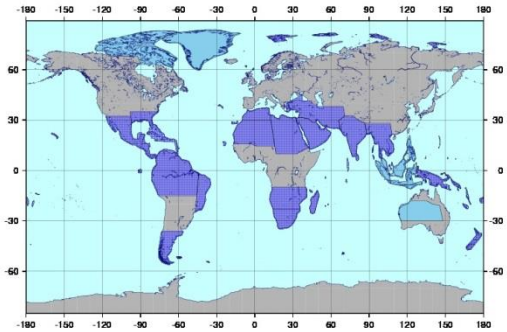
GSD: 10 m (off-nadir 28.2˚ -36.2˚)

Mode: Stripmap Dual-pol (HH+HV/28MHz)

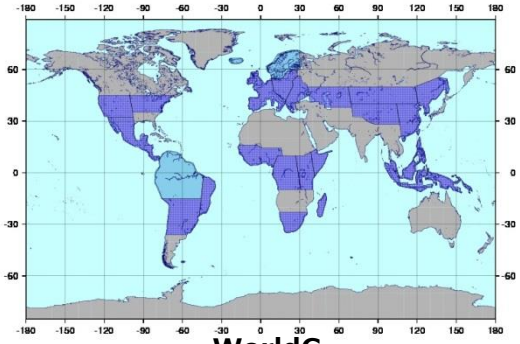




WorldA

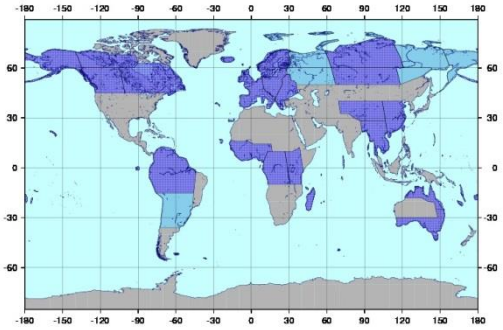


WorldB

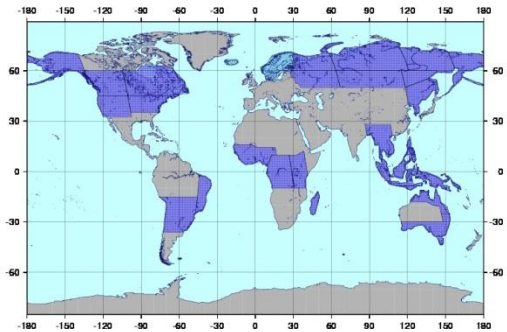


WorldC

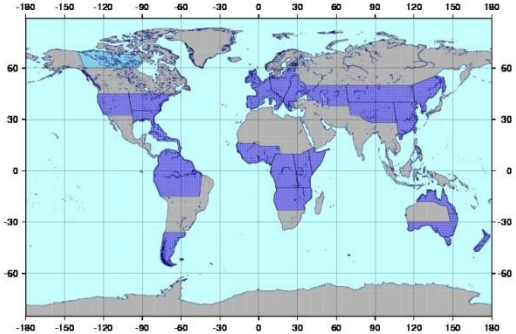
High priority
Low priority



WorldD



WorldE



WorldF

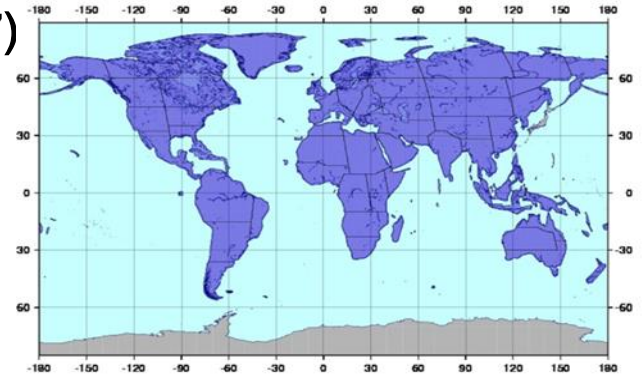
4-2 Basic Observation Scenario (Global)

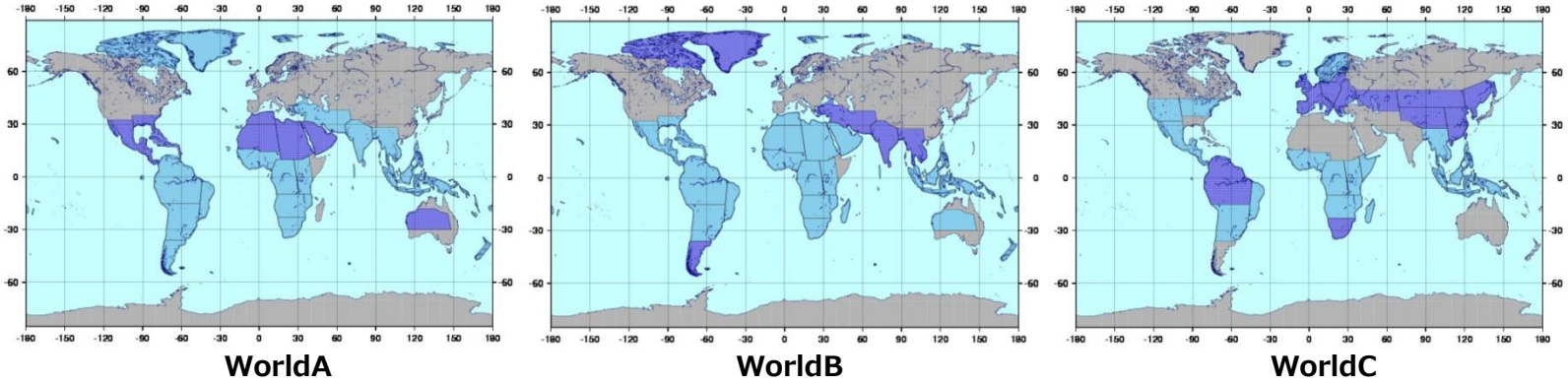
Global land areas – baseline mapping (Cycle125-157)

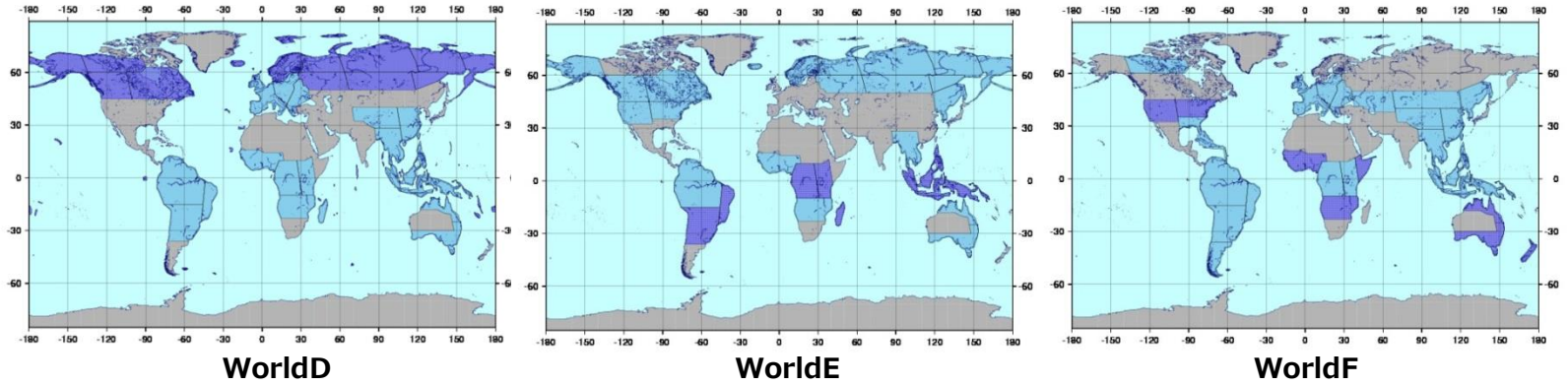
Temporal repeat: Ascending 1 cov/year

GSD: 10 m (off-nadir 28.2° -36.2°)

Mode: Stripmap Dual-pol (HH+HV/28MHz)







B

Basic Observation Scenario (Global)

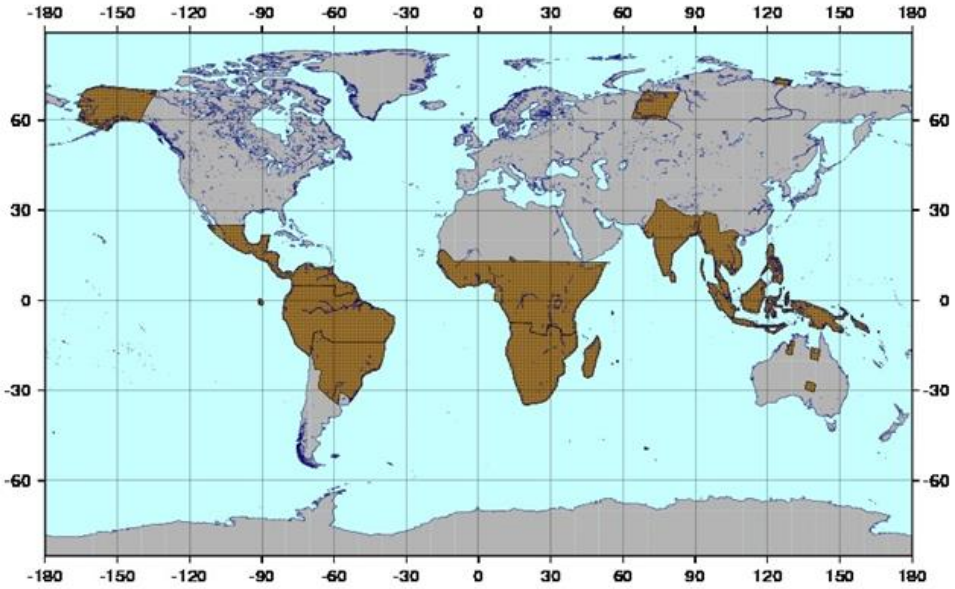
Wetlands & Rapid deforestation monitoring (Cycle 91-157 **)**

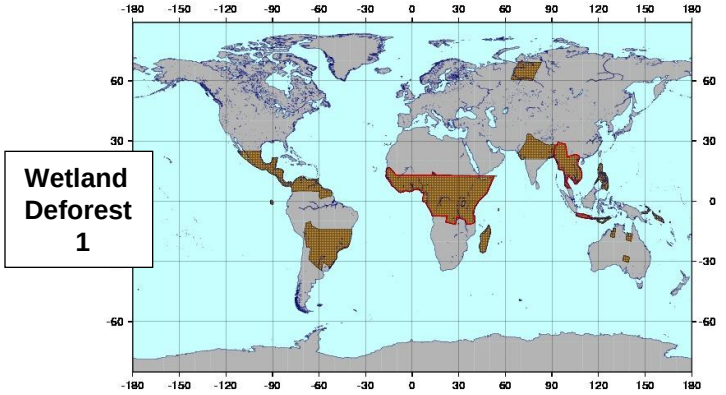
Temporal repeat: Descending 9 cov/year

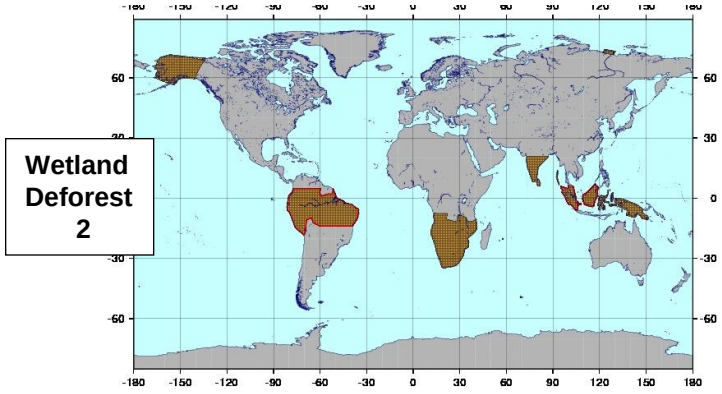
GSD: 100 m (off-nadir 26.2˚ -41.8˚)

Mode: ScanSAR 350km Dual-pol (HH+HV/14MHz)

: High priority







Wetlands & Rapid deforestation monitoring Area

The observation area is divided into "Wetland Deforest 1" and "Wetland Deforest 2".

*The overlap areas between "Wetland Deforest" and "Crustal Deformation" are observed in ScanSAR (HH+HV) mode at the Cycle of Wetland Deforest.

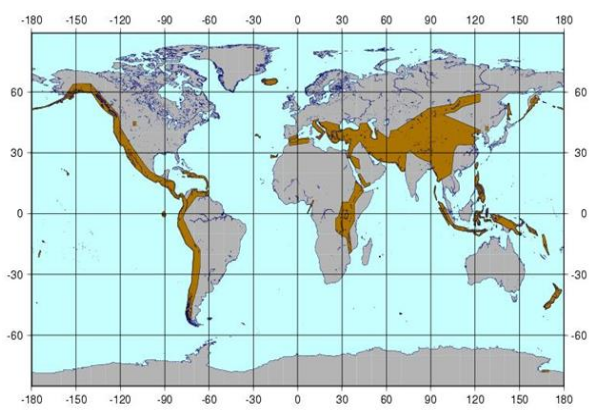
Basic Observation Scenario (Global)

Crustal Deformation (Cycle 91-124)

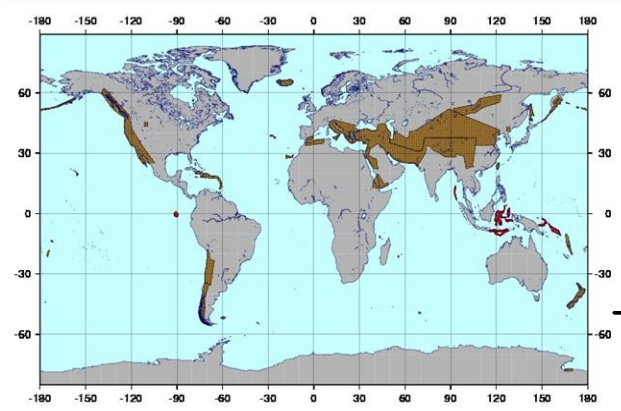
Temporal repeat: Ascending 1 cov/year, Descending 4 cov/year

GSD: 100 m (off-nadir 26.2° – 41.8°)

Mode: ScanSAR 350km (HH/14MHz)

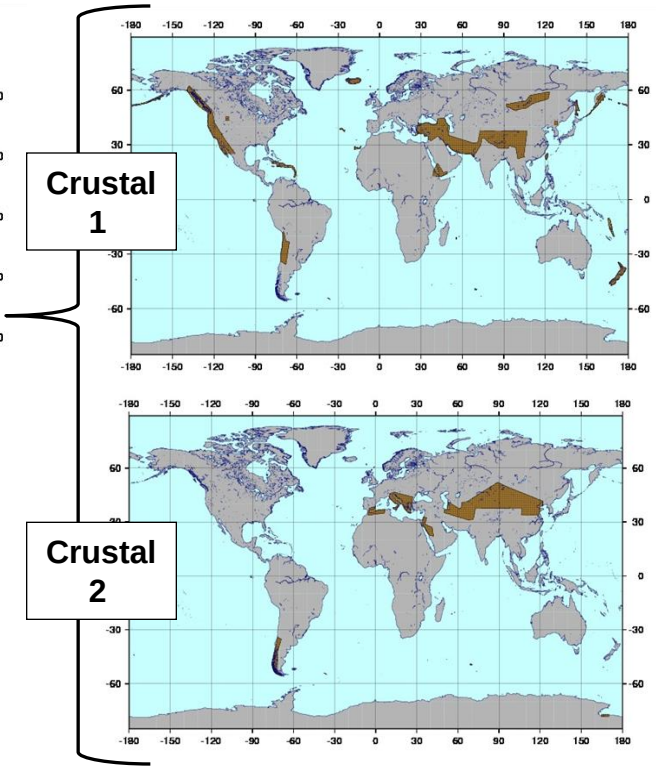


Ascending: 1cov/year



Descending: 4cov/year

The observation area is divided into "Crustal 1" and "Crustal 2".
*The red area is observed in ScanSAR (HH+HV) mode at the Cycle of Wetland Deforest.



4-5 Basic Observation Scenario (Global)

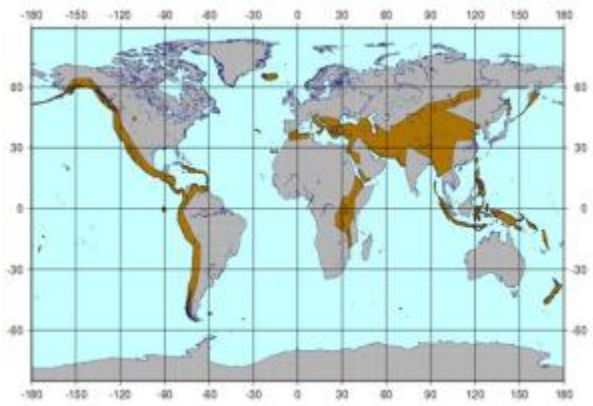
Crustal Deformation (Cycle 125-157)

Temporal repeat: Ascending 1 cov/year, Descending 4 cov/year

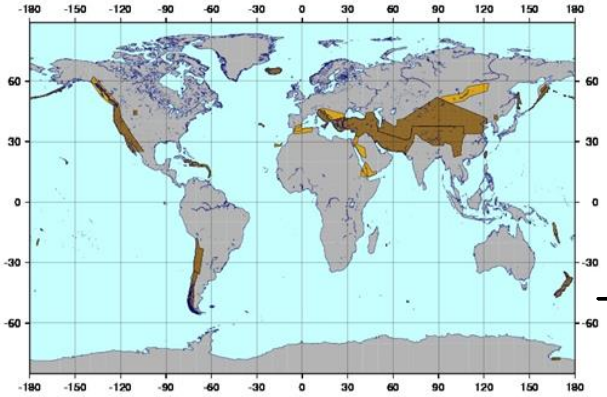
GSD: 100 m (off-nadir 26.2° – 41.8°)

Mode: ScanSAR 350km (HH/14MHz)

High Priority
Low Priority

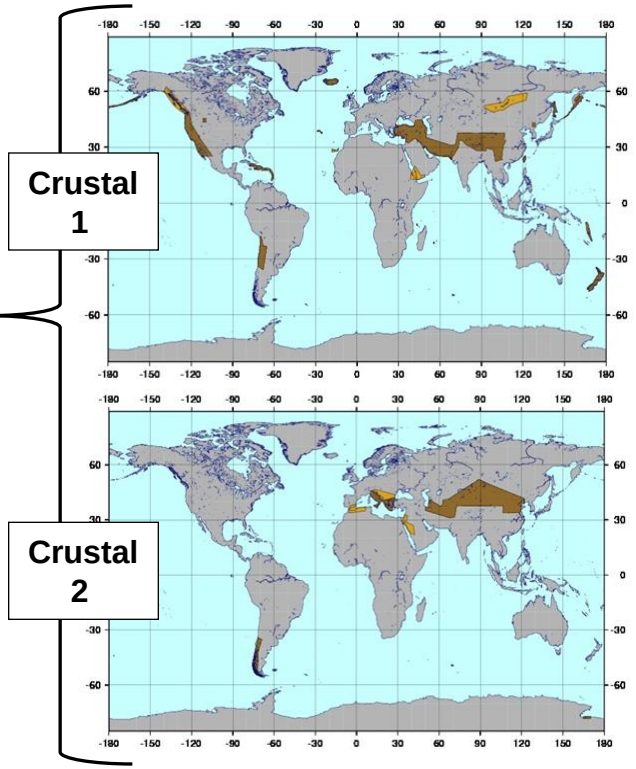


Ascending: 1cov/year



Descending: 4cov/year

The observation area is divided into "Crustal 1" and "Crustal 2".
*The red area is observed in ScanSAR (HH+HV) mode at the Cycle of Wetland Deforest.



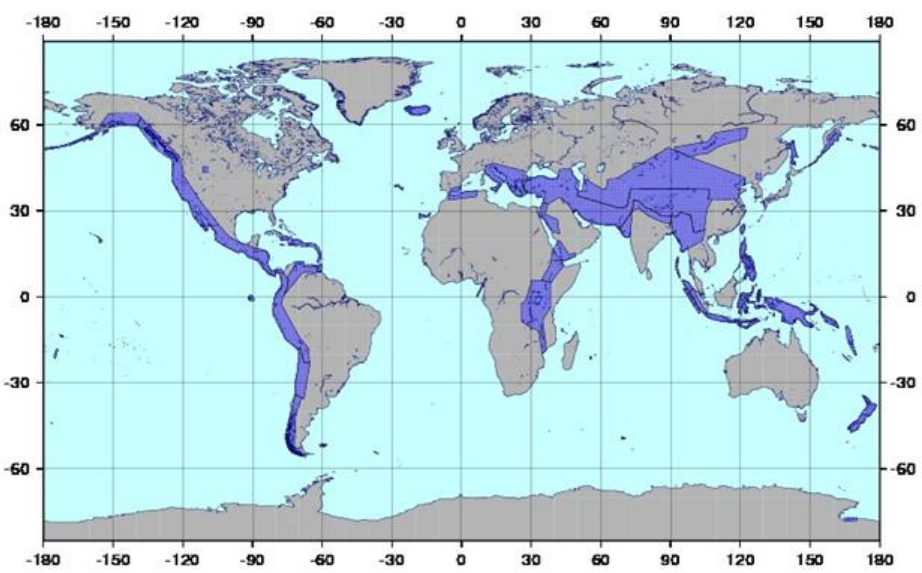
Basic Observation Scenario (Global)

Crustal Deformation (Cycle 91-157)

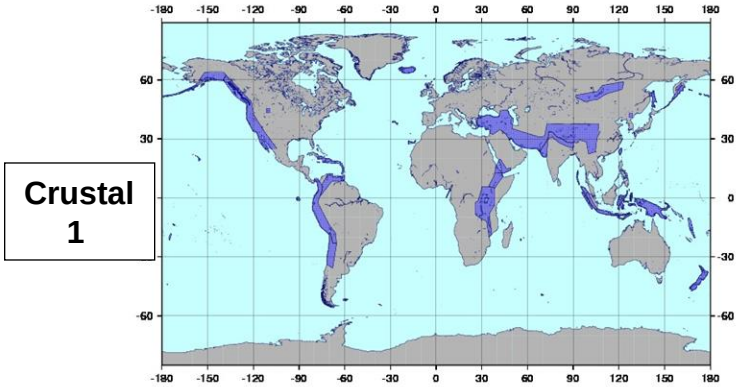
Temporal repeat: Descending 1 cov/year

GSD: 10 m (off-nadir 28.2˚ – 36.2˚)

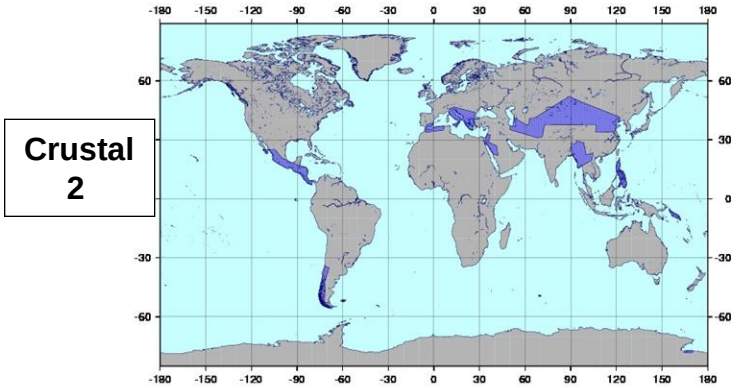
Mode: Stripmap Dual-pol (HH+HV/28MHz)



Crustal 10m



Crustal 1



Crustal 2

The observation area is divided into "Crustal 1" and "Crustal 2".

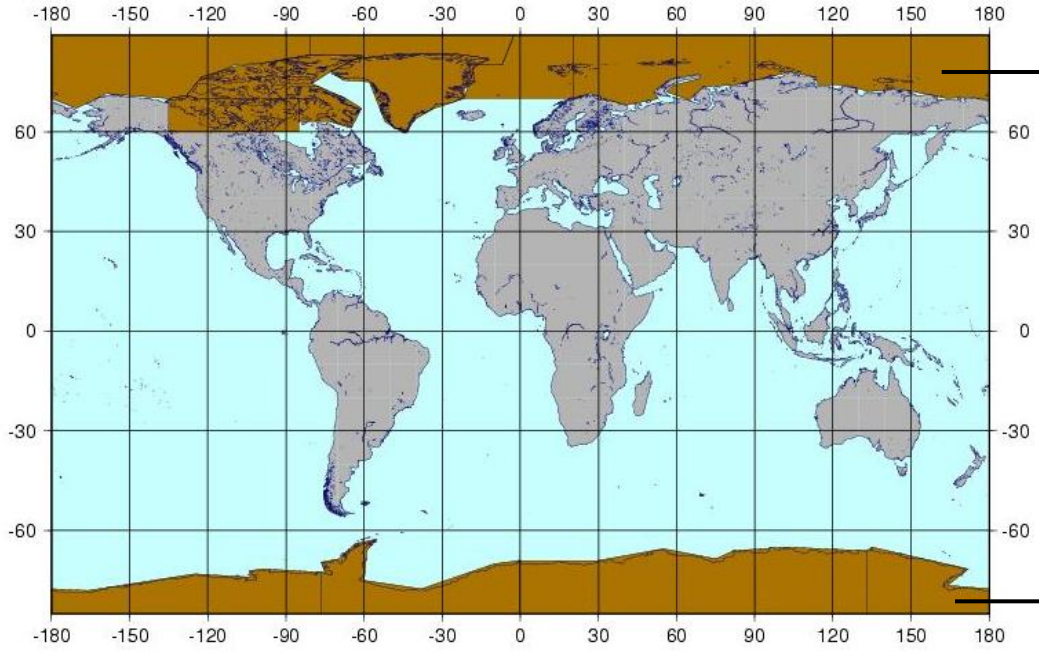
Basic Observation Scenario (Global)

Polar Ice

Temporal repeat: Ascending 3 cov/year

GSD: 100 m (off-nadir 26.2˚ – 41.8˚)

Mode: ScanSAR 350km (HH+HV/14MHz)



Super Sites 10m (JAXA)

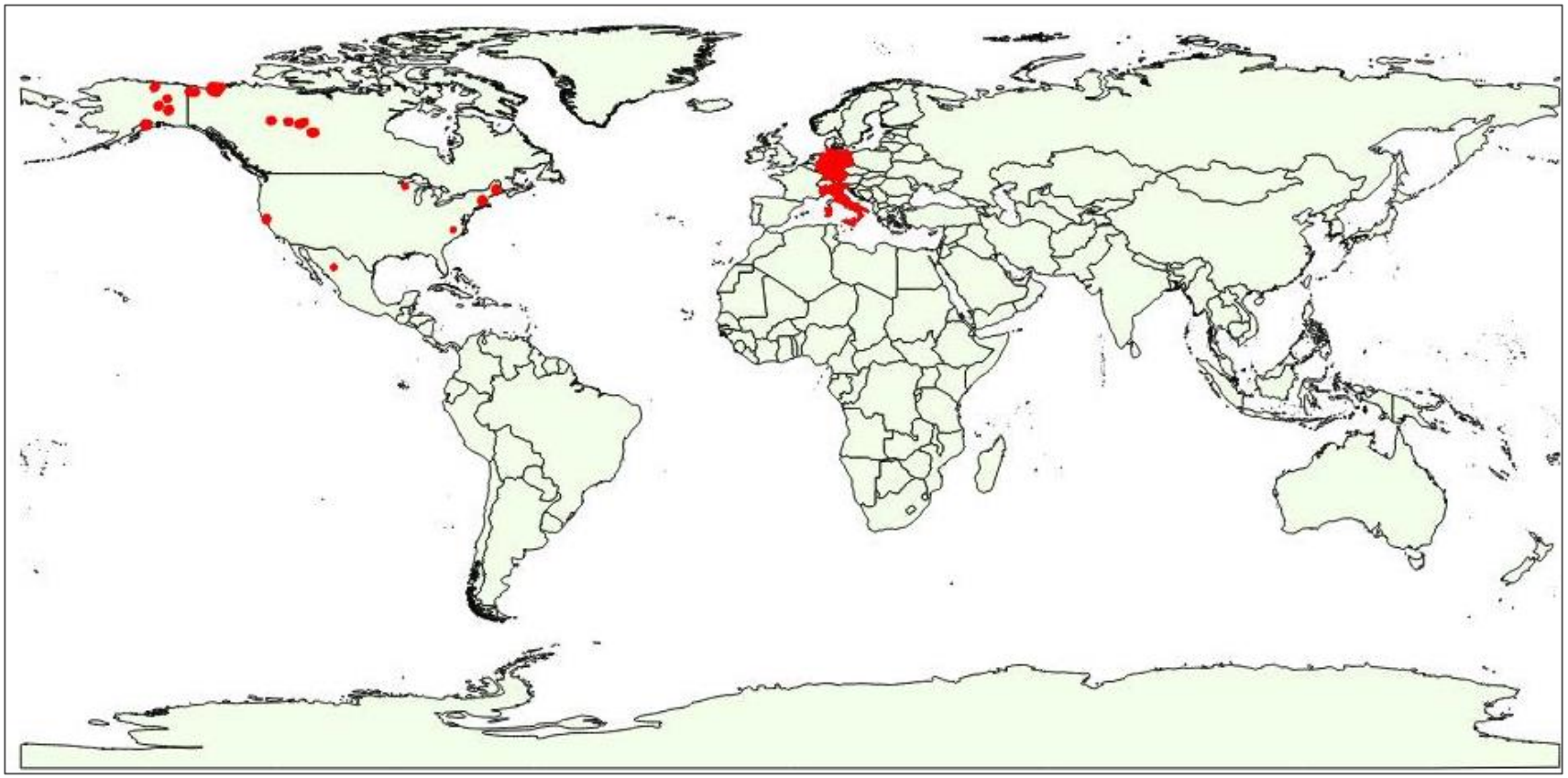
10m Super Sites (Cycle112-115)

Temporal repeat: Descending 1 cov/year

GSD: 10 m (off-nadir 28.2° – 36.2°)

Mode: Stripmap Dual-pol (HH＋HV/28MHz)

●:10m Super Site



Super Sites (K&C)

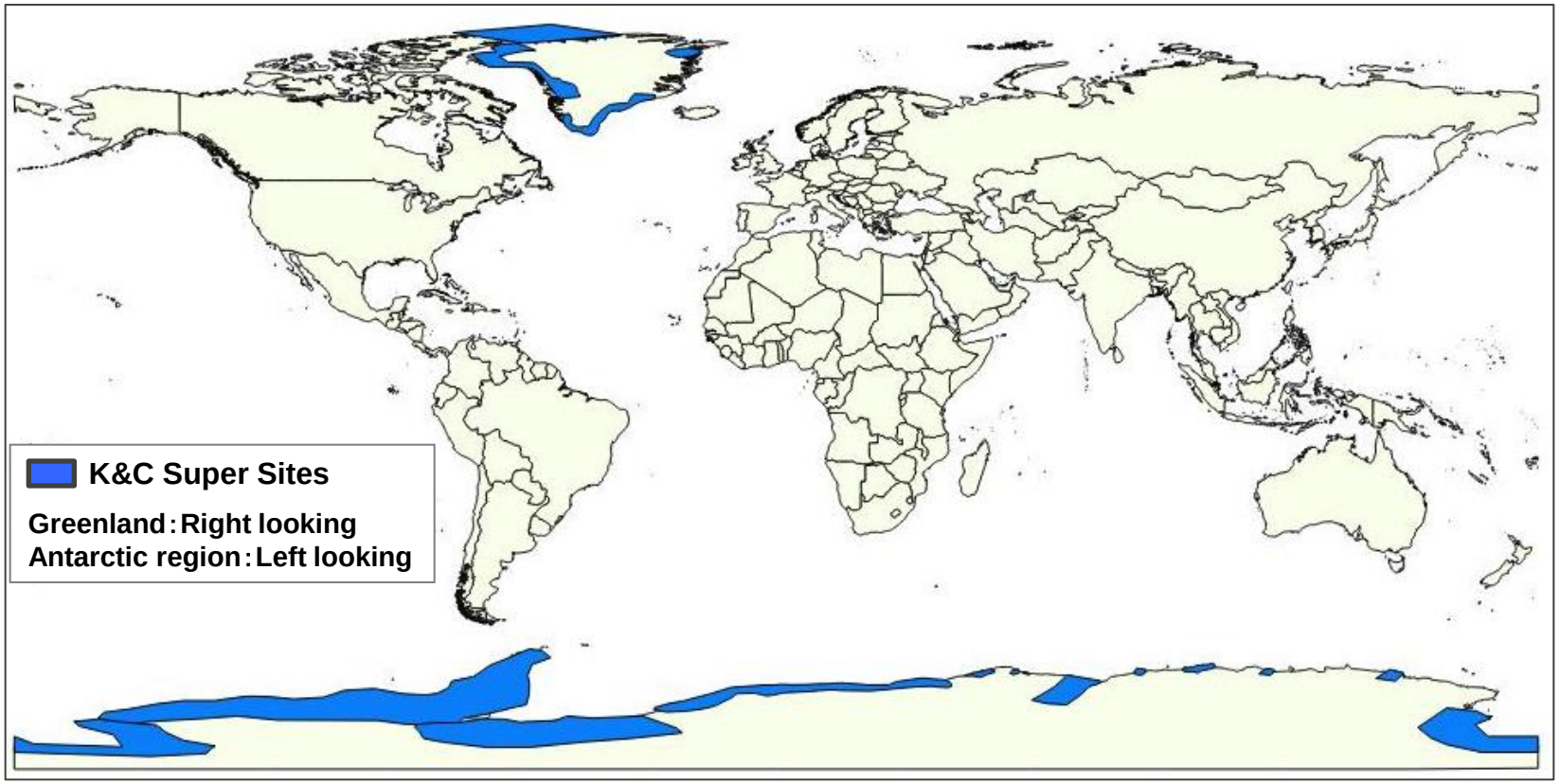
Glacier movement

Temporal repeat : Descending Antarctic region 4 cov/year, Ascending Greenland 3 cov/year,

Descending/Ascending Greenland 4 cov/year

GSD: 10 m (off-nadir 32.5˚), 100 m (off-nadir 34.9˚)

Mode: Stripmap Dual-pol (HH/28MHz), ScanSAR 350km (HH+HV/14MHz)



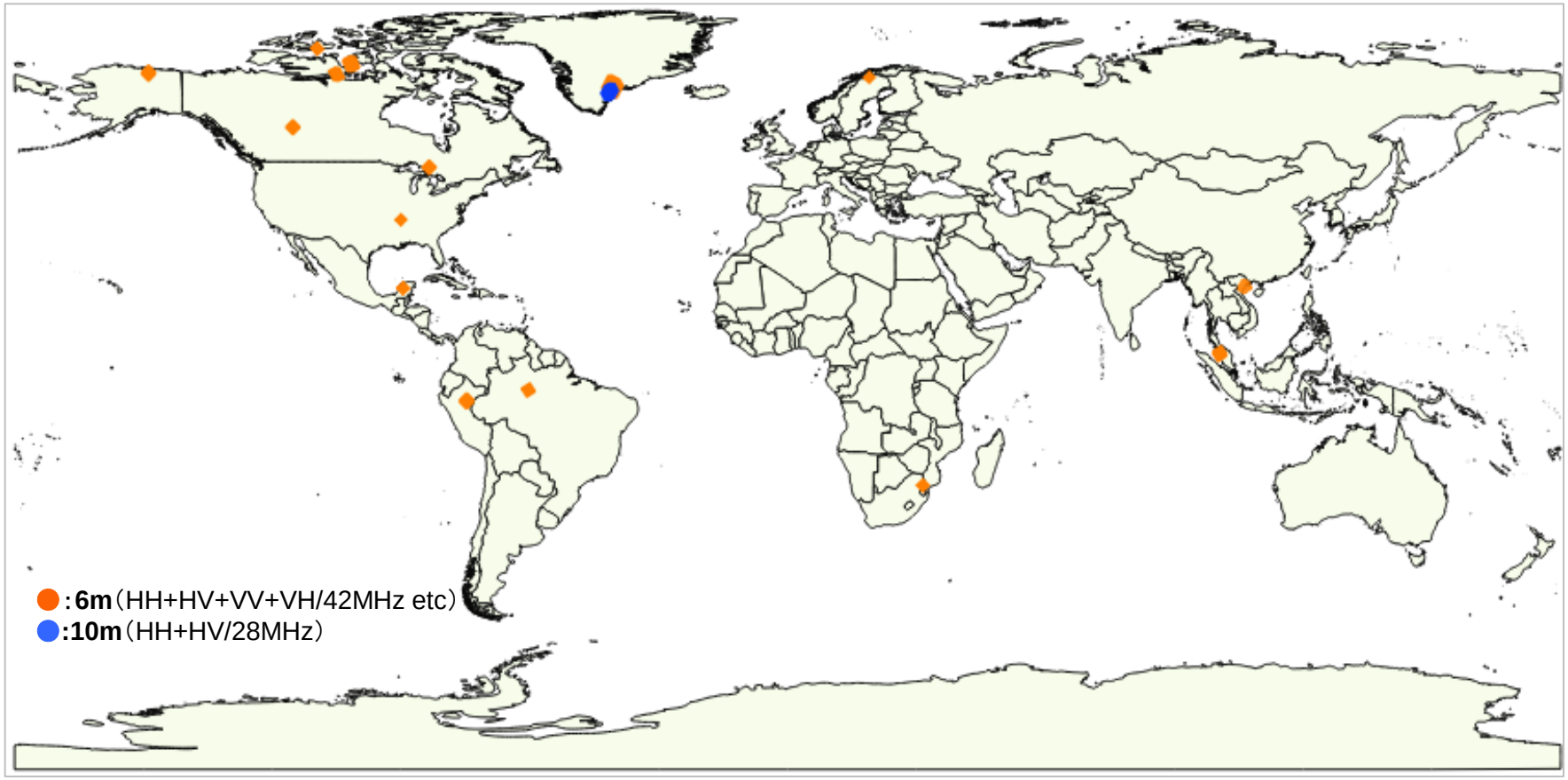
Super Sites (K&C)

K&C Super Sites

Temporal Repeat: When observation requests do not conflict with the BOS

GSD/Mode: based on the PI requests

B

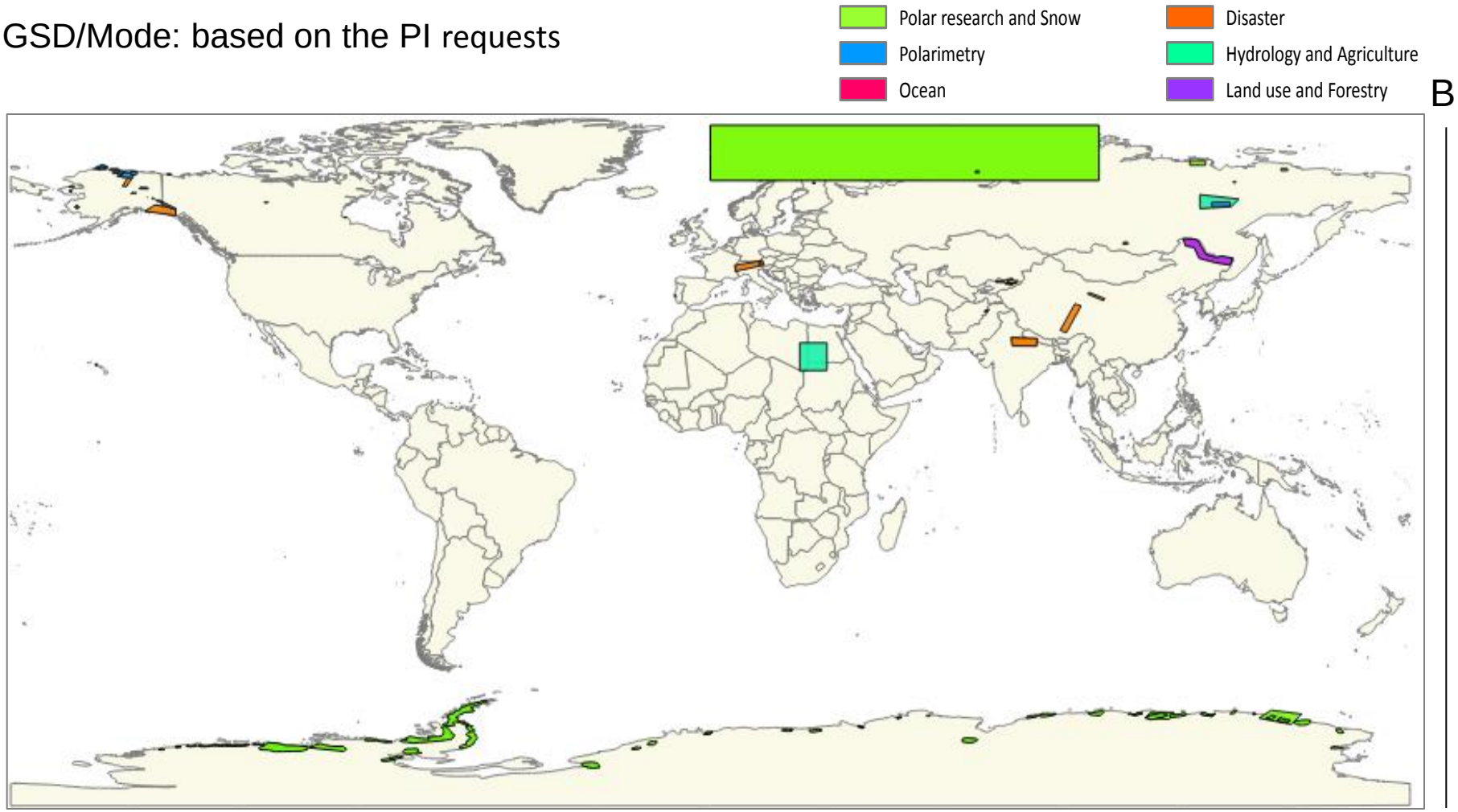


Super Sites (PI)

PI Super Sites

Temporal repeat: When observation requests do not conflict with the BOS

GSD/Mode: based on the PI requests



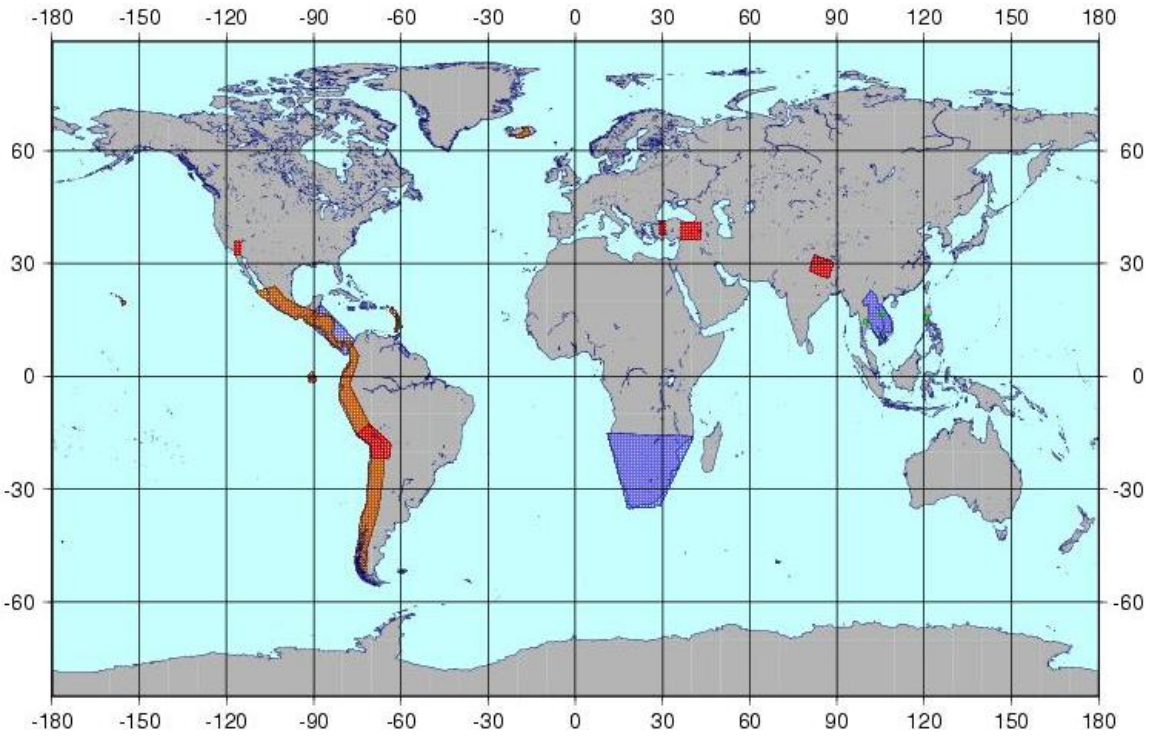
Super Sites (CEOS)

CEOS Super Sites

Temporal repeat: When observation requests match the BOS

GSD: 10 m (off-nadir 28.2° – 36.2°)
& 100 m (off-nadir 26.2° – 41.8°)

Mode: Stripmap Dual-pol (HH+HV/28MHz) & ScanSAR 350km (HH+HV/14MHz)



Earthquakes
Volcanos
Flooding

※ The earthquake and flood sites were canceled from CEOS Super Sites after Cycle112.

B

Super Sites (Crustal WG)

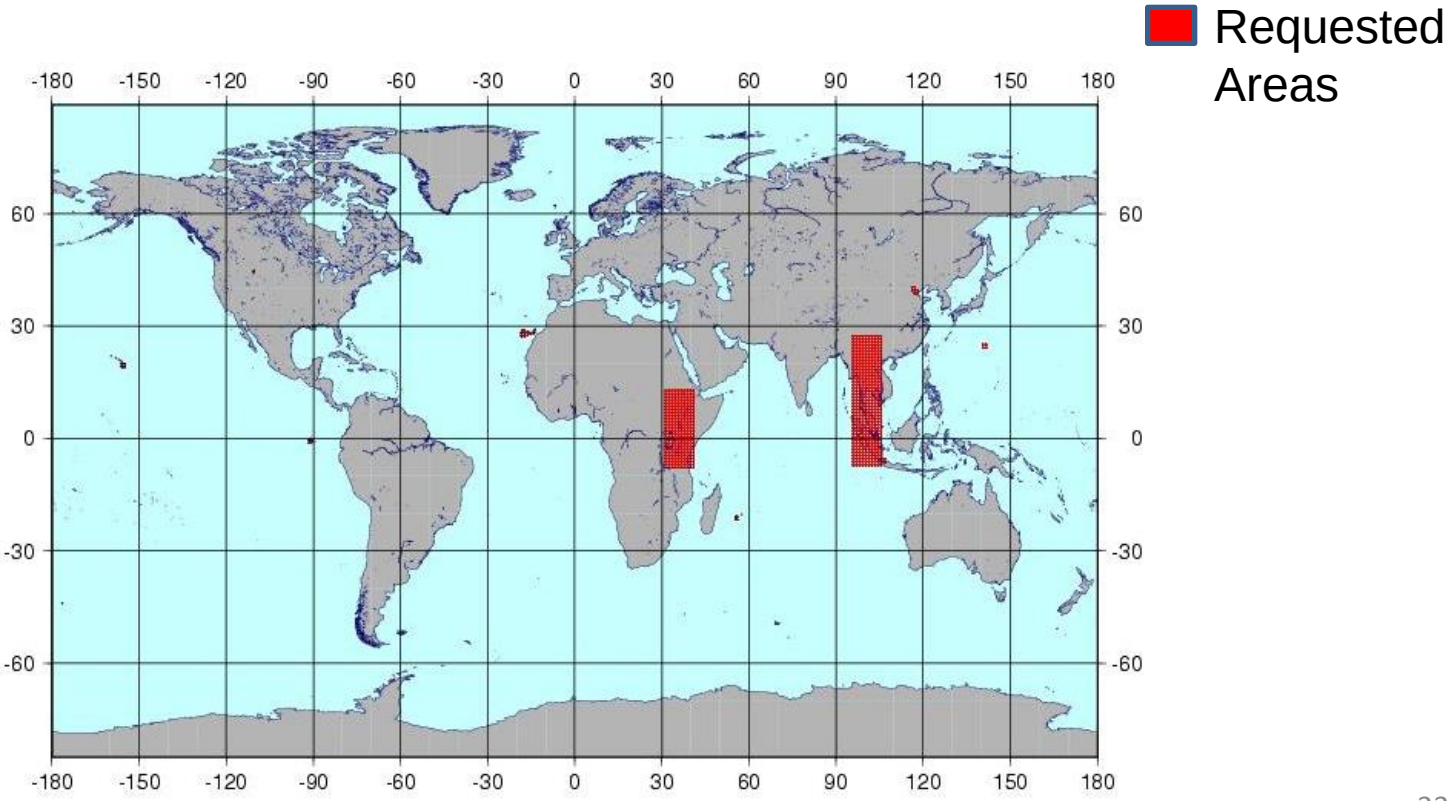
B

Crustal WG Super Sites (Until Cycle124)

Temporal repeat: When observation requests do not conflict with the BOS

GSD: based on the user requests

Mode: based on the user requests



Reference:
Basic Observation Scenario (Global) until 2nd edition

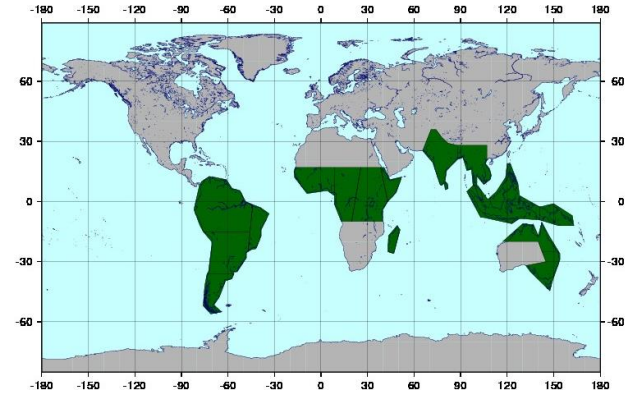
Basic Observation Scenario (Global)

Global land areas – VHR baseline mapping（until Cycle 64）

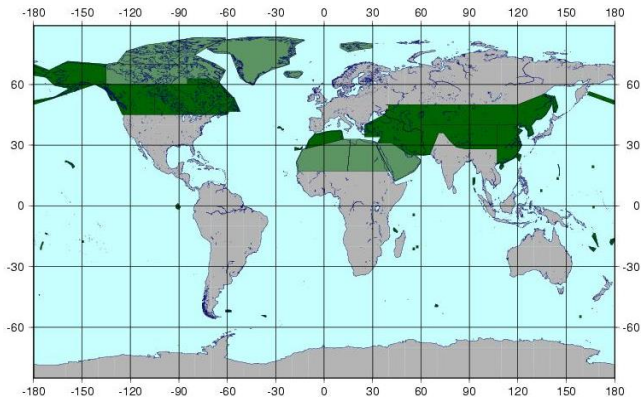
Temporal repeat: Descending 1 cov / 3 years

GSD: 3 m (off-nadir 29.1°-38.2°)

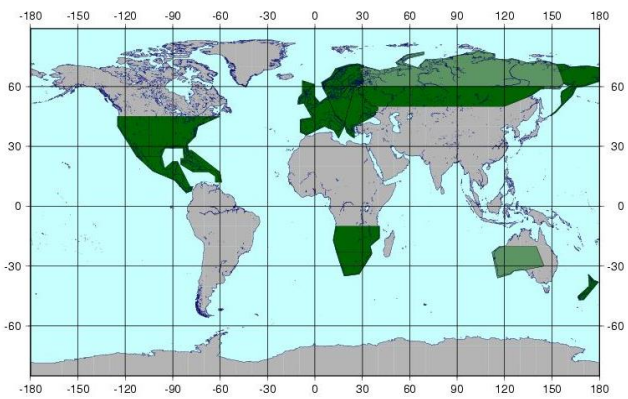
Mode: Stripmap Single-pol（HH/84MHz）



1st year



2nd year



3rd year

High priority
Low priority

* 3 years required to cover the global land areas in 3m mode.

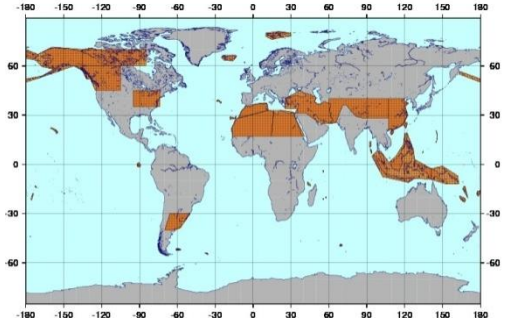
Basic Observation Scenario (Global)

Global land areas – Quad-polarimetric baseline (Until Cycle75)

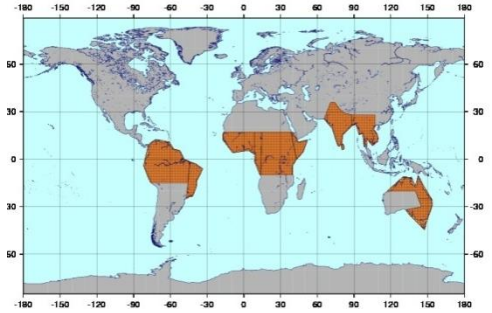
Temporal repeat: Ascending 1 cov/ 5 years

GSD: 6 m (off-nadir 25.0°-34.9°)

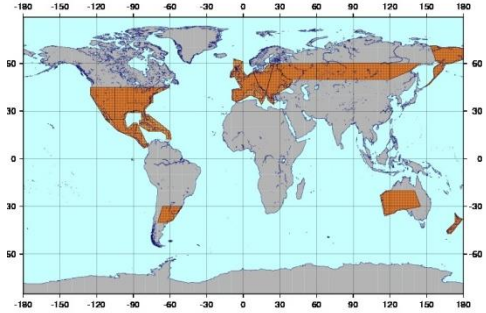
Mode: Stripmap Quad-pol (HH+HV+VV+VH/42MHz)



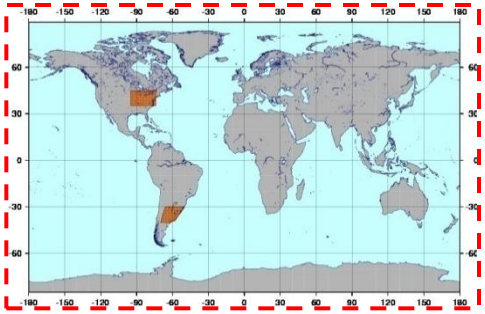
1st year



2nd year



3rd year



The above area : 2 cov/3years

* 5 years required to cover the global land areas in 6m QP mode, however the observation have finished at 3rd year.

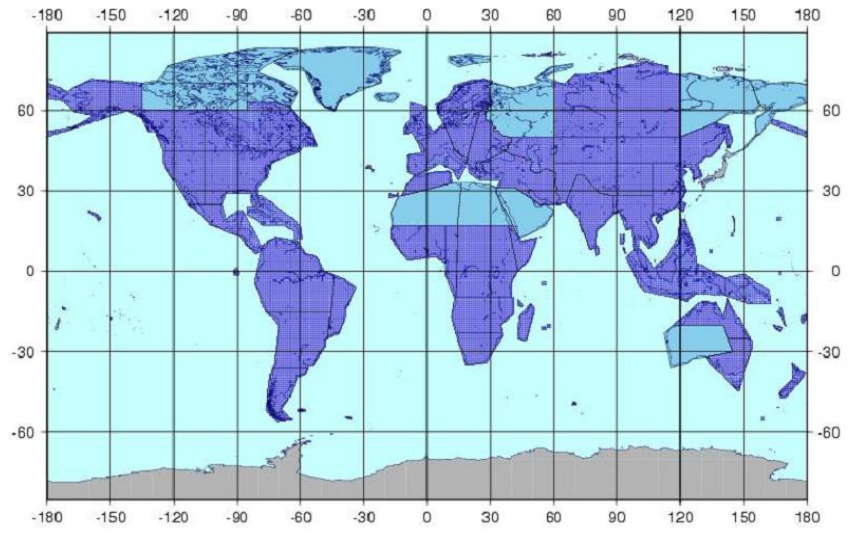
Basic Observation Scenario (Global)

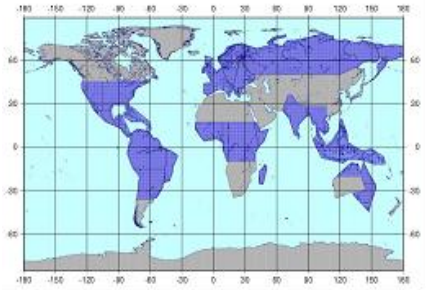
Global land areas – baseline mapping (1st – 3rd year)

Temporal repeat: Ascending 2 cov/year

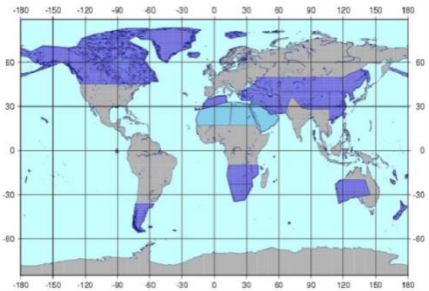
GSD: 10 m (off-nadir 28.2˚ -36.2˚)

Mode: Stripmap Dual-pol (HH+HV/28MHz)

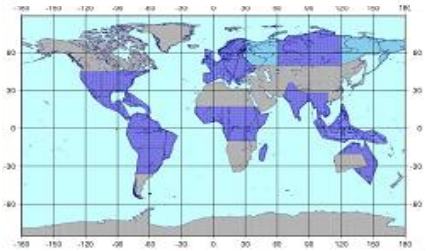




OBS Pattern①(World1-1)



OBS Pattern ②(World2-1)



OBS Pattern ①(World1-2)

OBS Pattern ②(World2-2)

High priority

Low priority

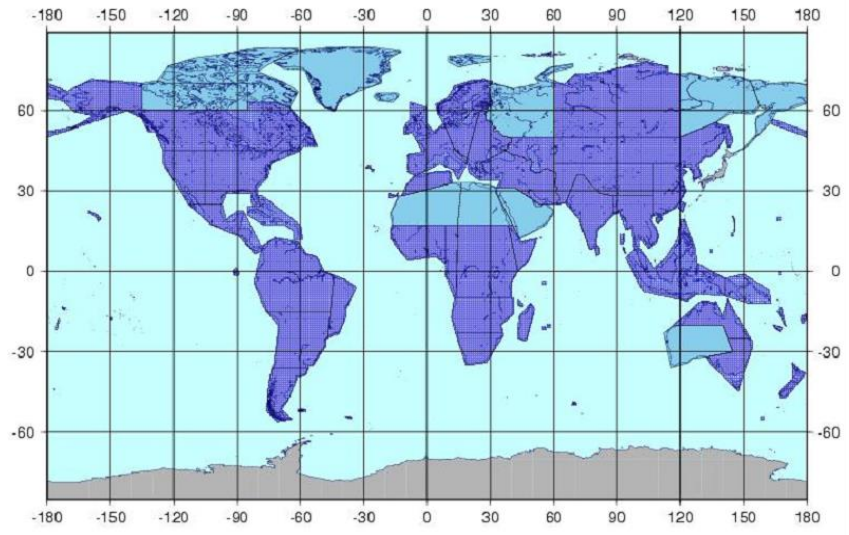
Basic Observation Scenario (Global)

Global land areas – baseline mapping (Cycle 80 - 90 **)**

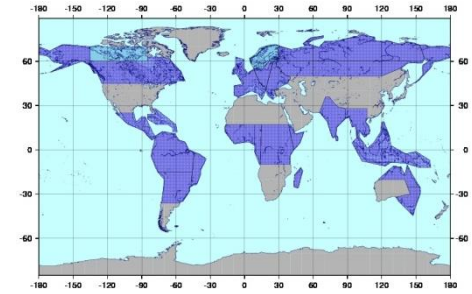
Temporal repeat: Ascending 2 cov/year

GSD: 10 m (off-nadir 28.2˚ -36.2˚)

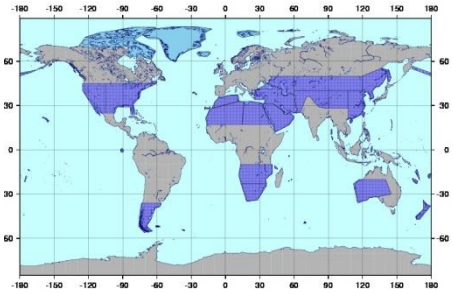
Mode: Stripmap Dual-pol (HH+HV/28MHz)



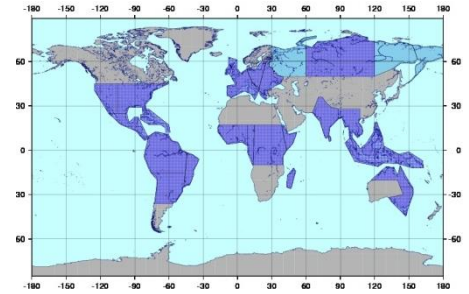
High priority
Low priority



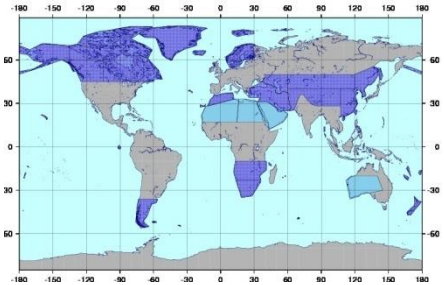
OBS Pattern①(World1-1)



OBS Pattern ②(World2-1)



OBS Pattern ①(World1-2)



OBS Pattern ②(World2-2)

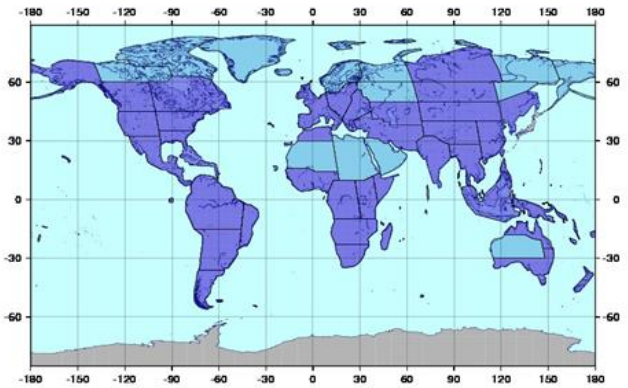
Basic Observation Scenario (Global)

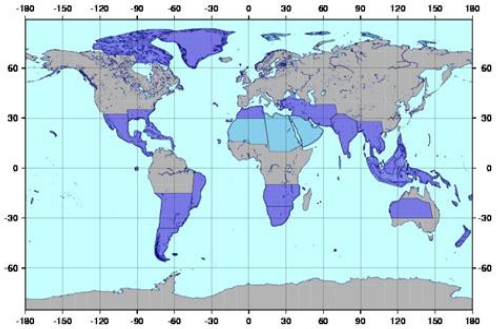
Global land areas – baseline mapping (Cycle 91-98)

Temporal repeat: Ascending 2 cov/year - 4 cov/year

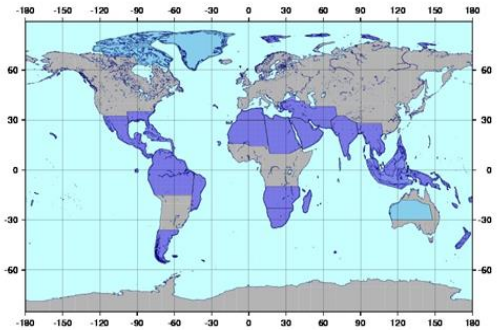
GSD: 10 m (off-nadir 28.2˚ -36.2˚)

Mode: Stripmap Dual-pol (HH+HV/28MHz)

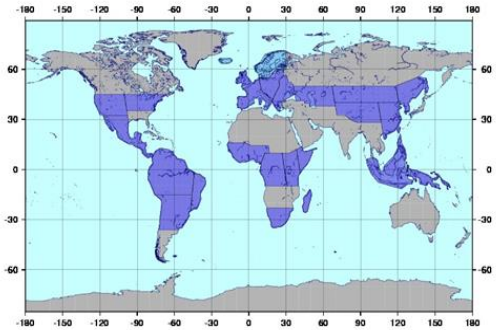




WorldA



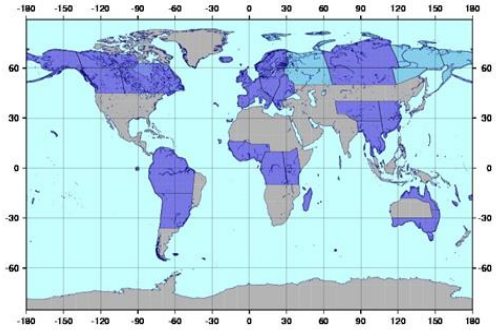
WorldB



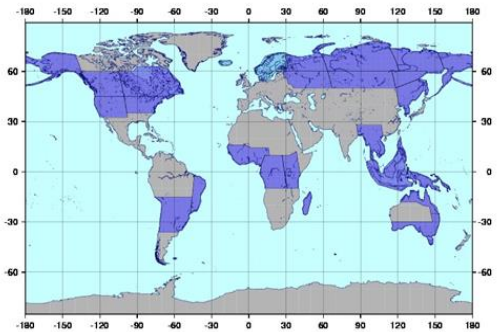
WorldC

High priority

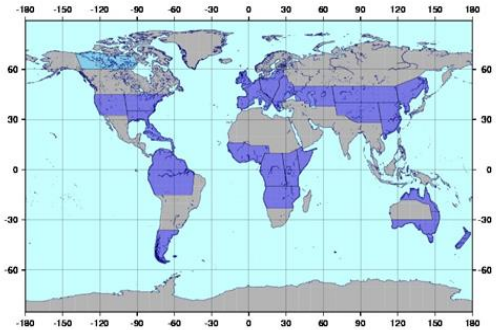
Low priority



WorldD



WorldE



WorldF

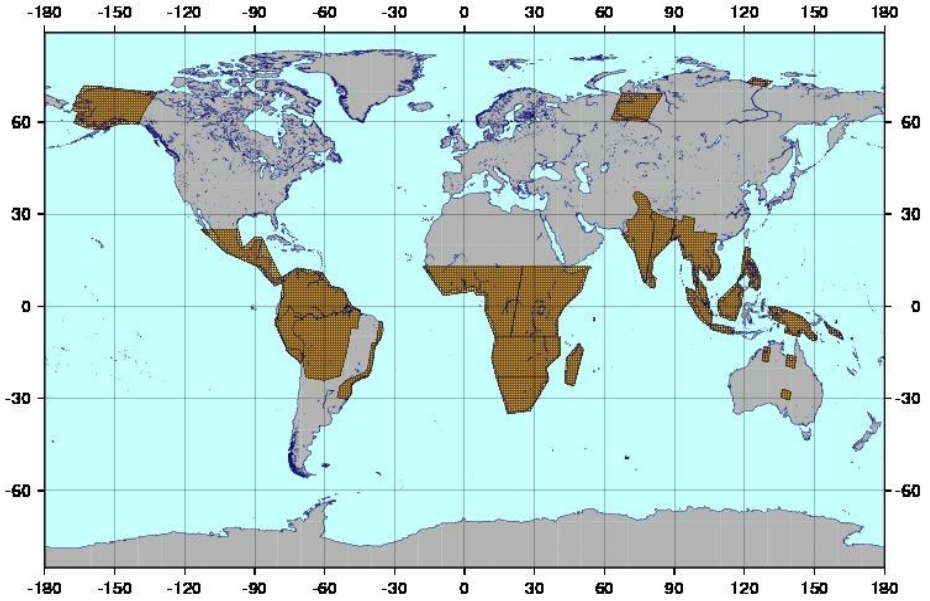
Basic Observation Scenario (Global)

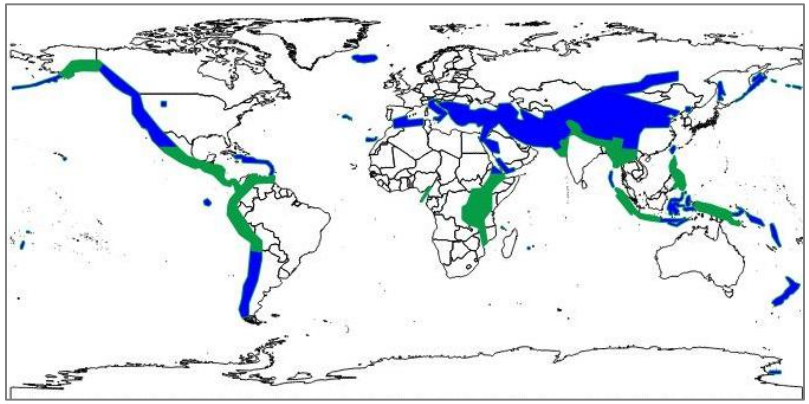
Wetlands & Rapid deforestation monitoring (Cycle80-90)

Temporal repeat: Descending 9 cov/year

GSD: 100 m (off-nadir 26.2˚ -41.8˚)

Mode: ScanSAR 350km Dual-pol (HH+HV/14MHz)





The green area of 'The past of Crustal Deformation Area' is included In the Wetlands & Rapid deforestation monitoring Area

Wetlands **&** Rapid deforestation monitoring Area

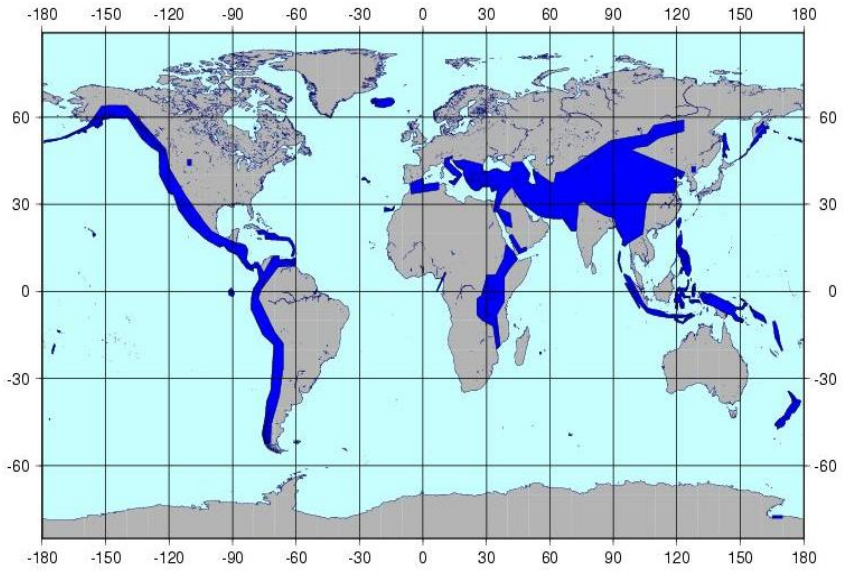
Basic Observation Scenario (Global)

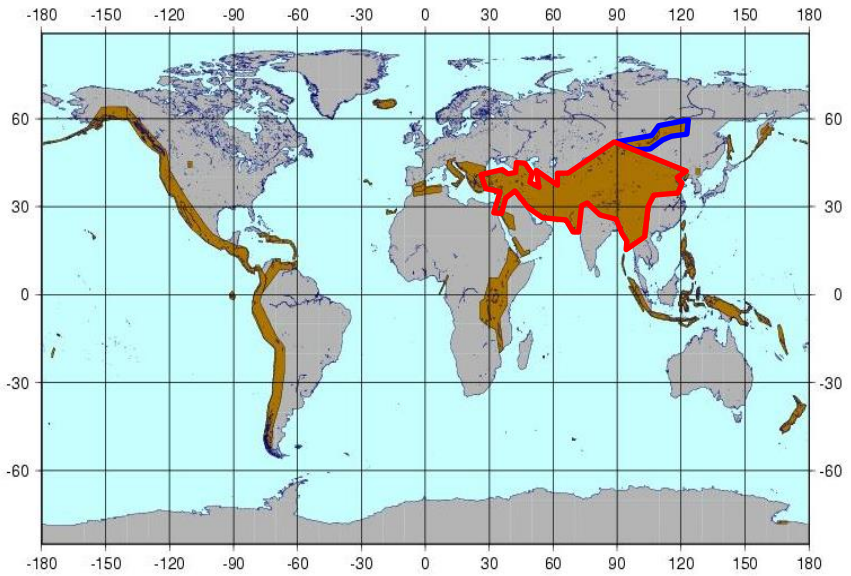
Crustal Deformation　(1st – 3rd year)

Temporal repeat: Ascending 2-6 cov/year & Descending 9 cov/year

GSD: 10 m (off-nadir 28.2° – 36.2°)
　　& 100 m (off-nadir 26.2° – 41.8°)

Mode: Stripmap Dual-pol (HH+HV/28MHz)
　　& ScanSAR 350km (HH+HV/14MHz)





＊Red　Area（K1）7 cov./1 year, Blue　Area（K46）2 cov./1 year

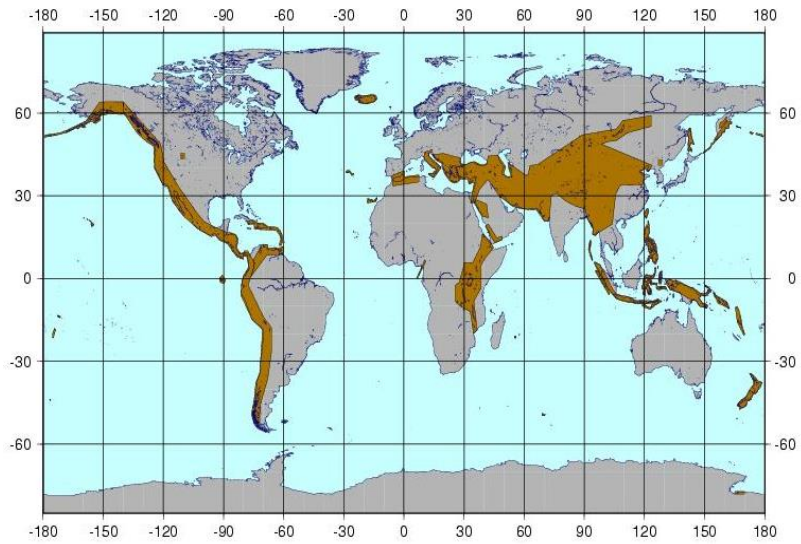
Basic Observation Scenario (Global)

Crustal Deformation (Cycle80-90）

Temporal repeat: Ascending 1cov/year, Descending 6 cov/year

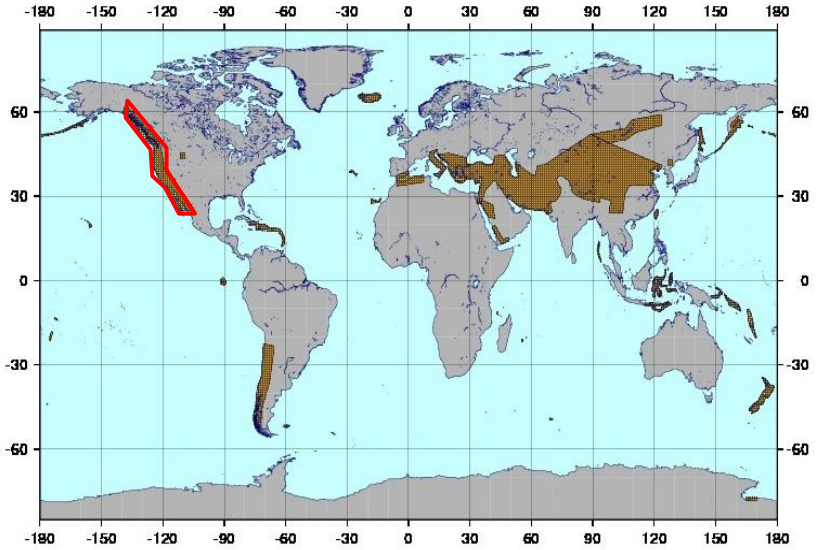
GSD: 100 m (off-nadir 26.2° – 41.8°)

Mode: ScanSAR 350km (HH/14MHz)



ScanSAR 350km（HH）: 1 cov/year

Ascending



ScanSAR 350km（HH）: 6cov/year

*The red area observed the low priority when observing Wetlands & Rapid deforestation monitoring Area

Descending

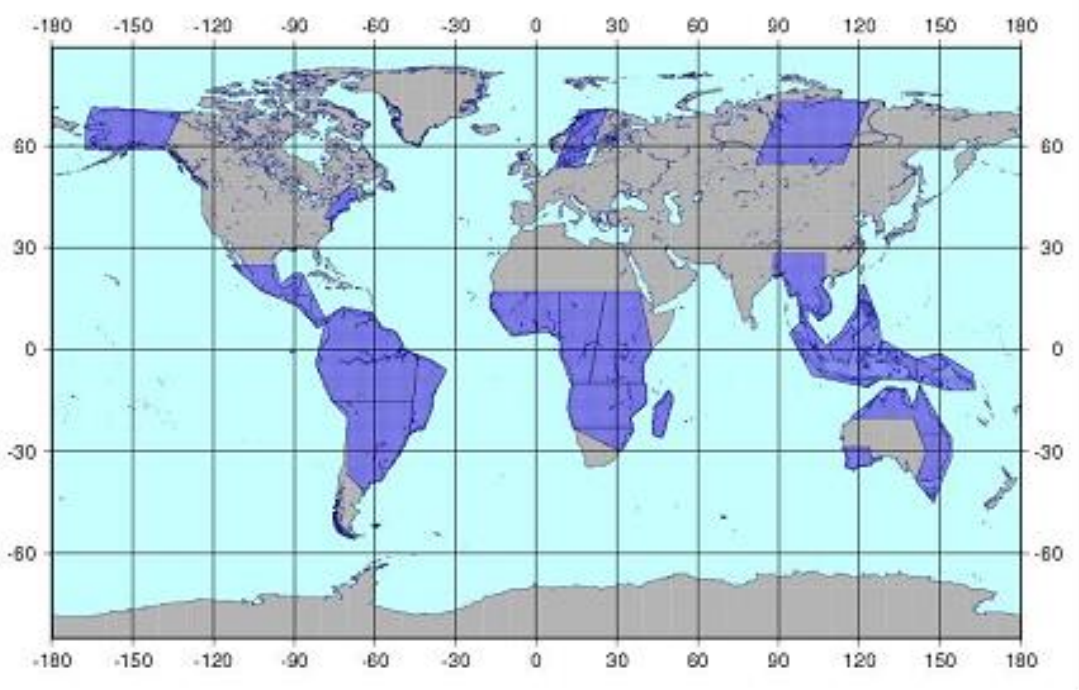
Basic Observation Scenario (Global)

Forest monitoring (Until Cycle76)

Temporal repeat: Descending 3-6 cov/year

GSD: 10 m (off-nadir 28.2° -36.2°)

Mode: Stripmap Dual-pol (HH+HV/28MHz)



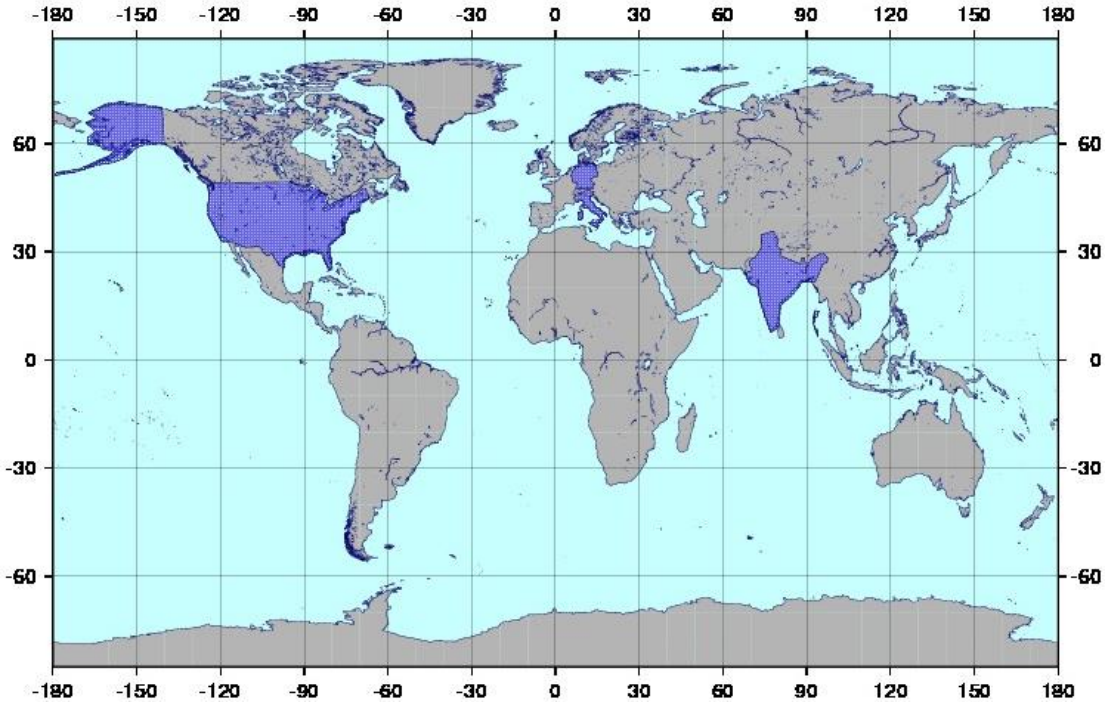
Super Sites 10m (JAXA)

10m Super Sites (Cycle86-89)

Temporal repeat: Descending 1 cov/year

GSD: 10 m (off-nadir 28.2° – 36.2°)

Mode: Stripmap Dual-pol (HH＋HV/28MHz)



Super Sites (K&C)

Boreal and sub-Arctic (until Cycle 52)

Temporal repeat: Descending 3 cov/year

GSD: 100 m (offnadir 34.9° -51.5°)

Mode: ScanSAR 490km (HH+HV/14MHz)