# ALOS-2 Basic Observation Scenario （Second Edition Rev.A ）

February 17, 2017
JAXA/ALOS-2 Project

# Revision details

| Rev. | Date | Page | Revision details |
|---|---|---|---|
| A | February 17, 2017 | P23 | ・Updated the area of Wetlands & Rapid deforestation monitoring (Solomon Islands, Seychelles) |

＜Contents＞

# 1. Second edition

This document constituted the 2nd edition of the ALOS-2 Basic Observation Scenario.

ALOS-2 was launched on May 24, 2014 .

The 4th year Basic observation scenario, which is based on the observation acquisition status during operations, has been added.

The ALOS-2 Basic observation scenario is reviewed periodically to meet user requests.

# 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 is reviewed periodically 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

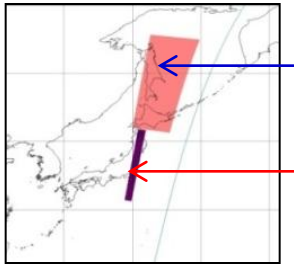
(1) Observation over Japan are undertaken for the preparation of base maps for “Disaster” and “Differential InSAR”.

(2) Observations for the "Disaster" base map are undertaken in modes 3 m Ultra-Fine (U2 and U3) and 100 m ScanSAR (W2) the first year (U3 in descending only). In the fourth year, ascending observations in U3 mode are added.

(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 second 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.



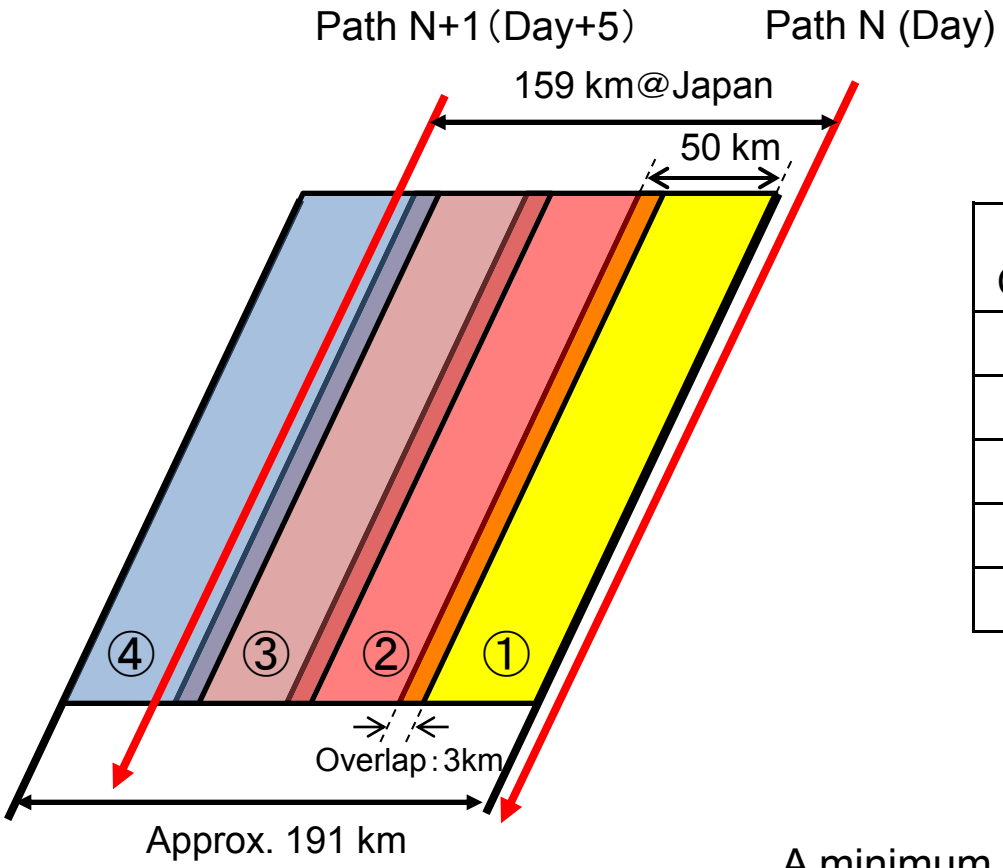

(6) To accommodate "ship movement management", observations in U3 and U2 modes are extended from the land and coastal zones to also include sea areas.

## 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）<br>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 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年 | | | | | | | | | | | 2018年 | | | | | | | | | | | | | | |
| 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 |

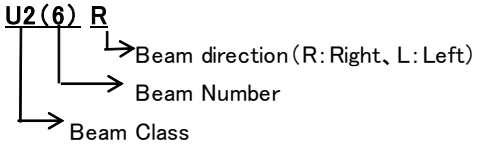
*Ascending observations during cycles 84 (FP6-7) and 94 (U2-9) are only undertaken as fill-in over paths and latitudes where gaps between beams occur.

* During descending cycles 91 to 99, several ScanSAR observations are for Sea ice.

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

# 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 |

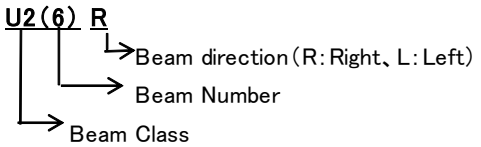
■3st Year

| 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 in ScanSAR (350km HH+HV) mode 9 times per year. Observations of Crustal Deformation in ScanSAR (350km HH) mode 6 times per year. (after 4th year *1)
  - Observations of Crustal Deformation in Stripmap (10m HH+HV) mode during one cycle for InSAR applications (after 4th year *2)
  - Global observations in Stripmap (3m HH) mode once per three years (Until cycle 64).

  ***(Super Sites)***
  - Observations of JAXA super sites in *Stripmap (10m HH+HV) mode* once a time per year
  - InSAR observations of *Antarctica Glaciers in Stripmap (10m HH+HV) mode*

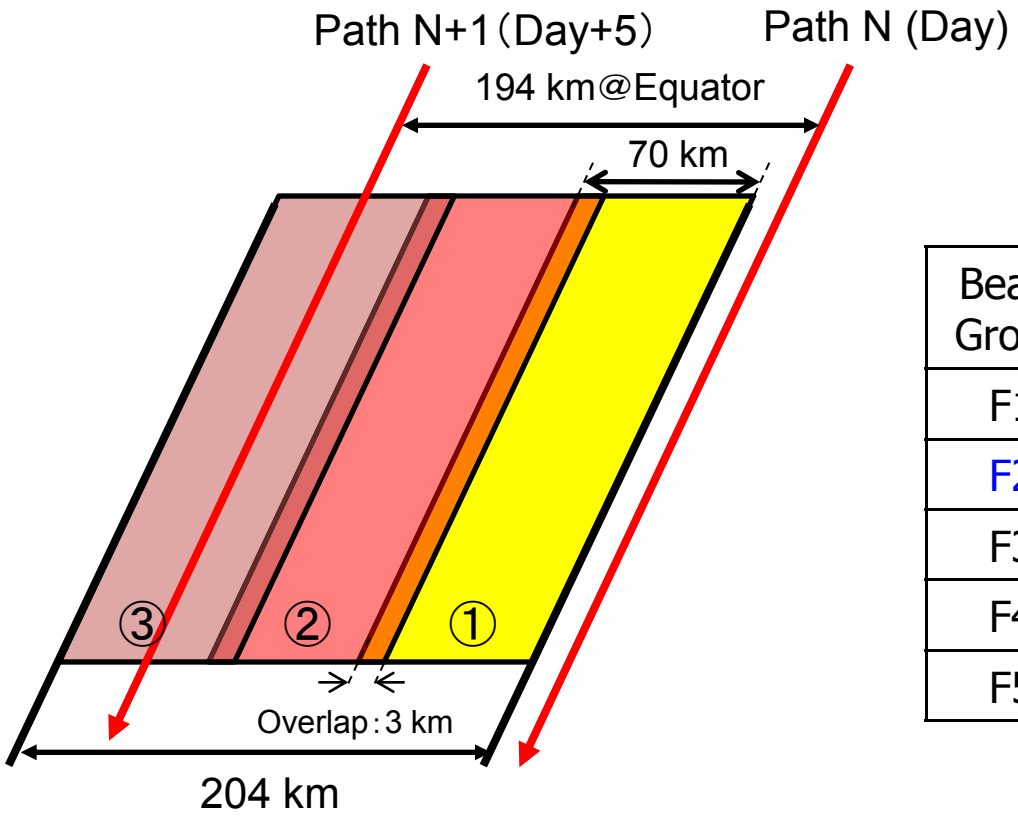
- Ascending acquisitions (midnight, ~24:00)
  - Global observations in Stripmap (10m *HH+HV*) mode twice per year
  - Observations of polar regions in ScanSAR (350km HH+HV) mode three times per year to cover summer/winter seasons. Antarctica observed in left-looking mode to cover higher southern latitudes.
  - Global observations in Stripmap (6m HH+HV+VH+VV) mode once per five years
  - Observations of special focus areas with Stripmap (6m HH+HV+VH+VV) mode three times per five years
  - Observations of crustal movement monitoring (ScanSAR) once a time per year
  - Observations of Forest in *Stripmap (10m HH+HV) mode* once a time per year

  ***(Super Sites)***
  - InSAR observations of *Greenland Glaciers with Stripmap (10m HH+HV) mode*

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

*2 Observations of Forests in Stripmap (10m HH+HV) mode twice per year (1st – 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 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年 | | | | | | | | | | | 2018年 | | | | | | | | | | | | | | |
| 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 | | Crustal | Wetland Deforest | | Crustal | Wetland Deforest | Crustal | Crustal | Wetland Deforest | | Crustal | Wetland Deforest | Crustal | Wetland Deforest |
| | | 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 | | F2 (5)R | W2 (2)R | W2(2)R | F2 (6)R | W2 (2)R | | F2 (7)R | W2 (2)R | W2(2)R | W2 (2)R |
| | F2(6)L | F2(6)L | | F2(6)L | F2(6)L | | | | | | | | | | | | | | | | | | | | | |
| Ascending | North Pole Crustal | Pole | World 1-1(10m) | | | | World 2-1(10m) | | | Pole | South Pole | World 1-2(10m) | | | GR Super Site | Forest | | | Global FP6m (4/5) | | | | | World 2-2(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 (7)R | F2 (5)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 |
| | | W2(2)L | | | | | | | | W2(2)L | | | | | 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

(*) *Beam No.

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

- Beam direction (R:Right、L:Left)
- Beam Number
- Beam Class

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

# 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年 | | | | | | | | | | | 2015年 | | | | | | | | | | | | | | |
| 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 | Pole | World 1-1(10m) | | | | | World 2-1(10m) | | | Pole | North Pole | 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 |

■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年 | | | | | | | | | | | | | | |
| 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 Pole | Pole | World 1-1(10m) | | | | | World 2-1(10m) | | | Pole | South Pole | 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 |

■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年 | | | | | | | | | | | 2017年 | | | | | | | | | | | | | | |
| 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 | D+W+F | 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 Pole Crustal | Pole | World 1-1(10m) | | | | | World 2-1(10m) | | | Pole | South Pole | 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

(*) *Beam No.

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

【Number system】

EX：U2(6)R　U2(6) R

- Beam direction（R：Right、L：Left）
- Beam Number
- Beam Class

Super sites（TBD）

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

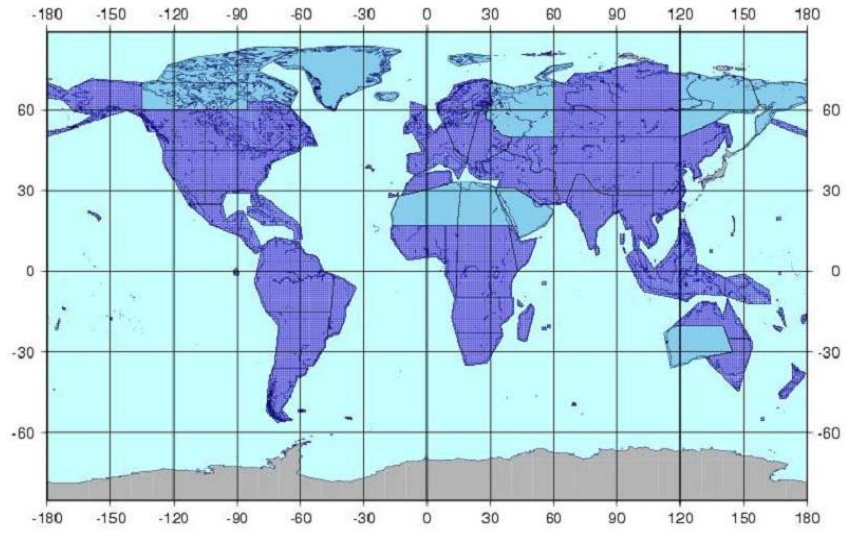
# Basic Observation Scenario (Global)

**Global land areas – baseline mapping (4th year )**

Temporal repeat: 2 cov/year

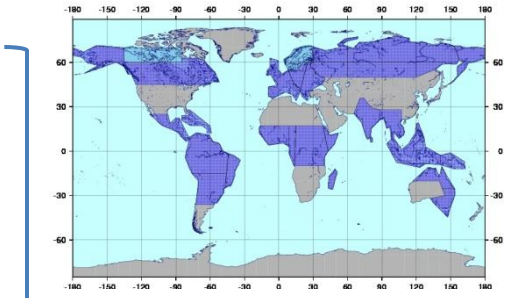
GSD: 10 m (off-nadir 28.2°  -36.2°  )

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

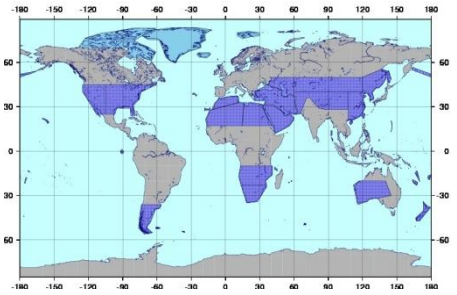


Prio 1

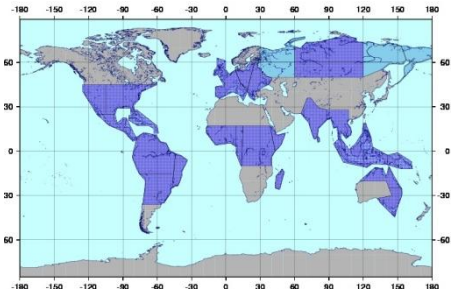
Prio 2



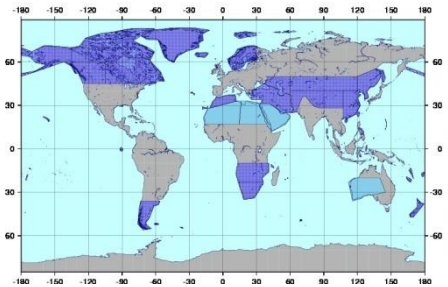
OBS Pattern①(World1-1)



OBS Pattern ②(World2-1)



OBS Pattern ①(World1-2)



OBS Pattern ②(World2-2)

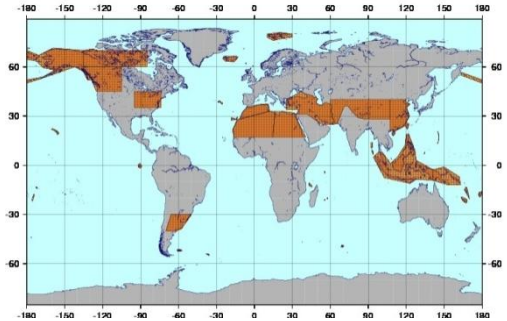
# Basic Observation Scenario (Global)

**Global land areas – Quad-polarimetric baseline**

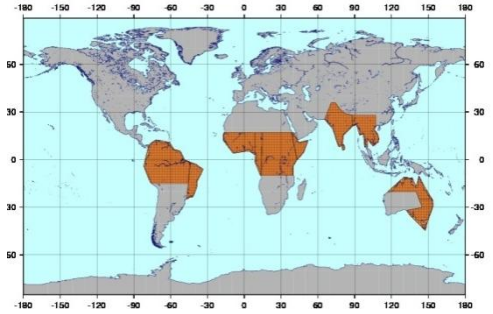
Temporal repeat: 1 cov/ 5 years

GSD: 6 m (off-nadir 25.0° -34.9° )

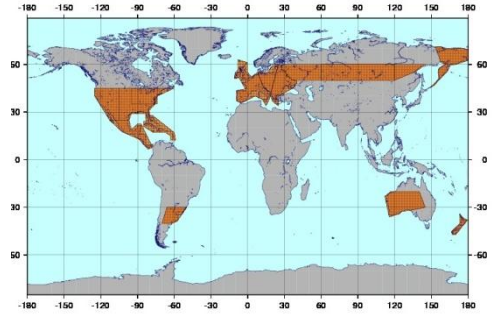
Mode: Stripmap Quad-pol (HH+HV+VV+VH/42MHz)



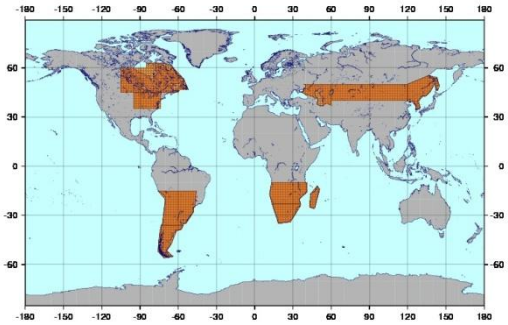
1st year



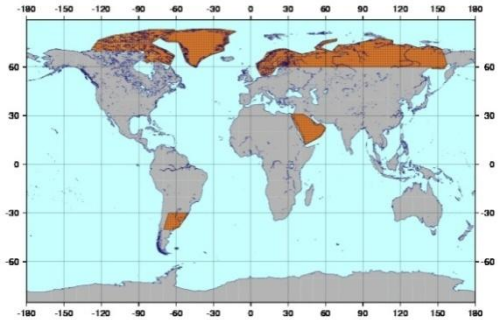
2nd year



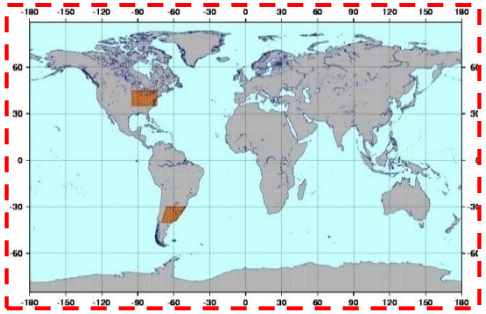
3rd year



4th year



5th year



2 areas 3 cov/5 years

* 5 years required for global coverage in 6m QP mode

# Basic Observation Scenario (Global)

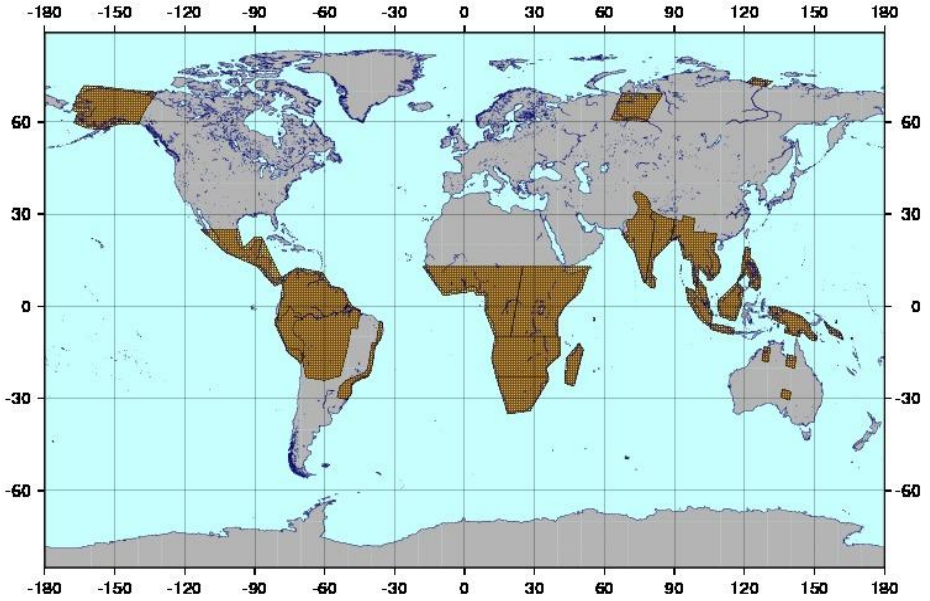
**Wetlands & Rapid deforestation monitoring**

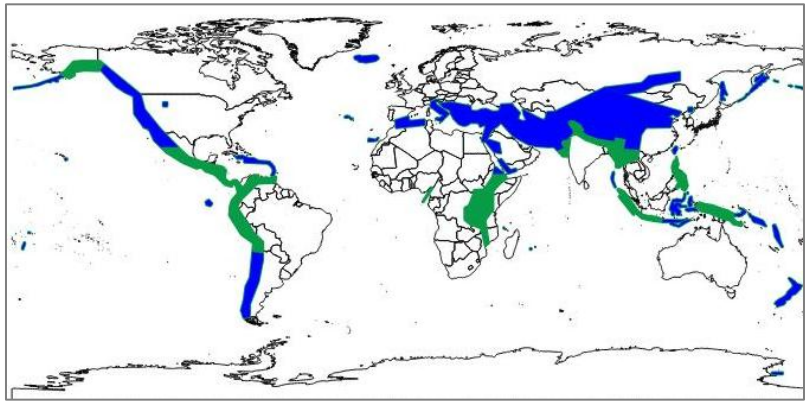
Temporal repeat: 9 cov/year

GSD: 100 m (off-nadir 26.2° -41.8° )

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

A



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

Wetlands & Rapid deforestation monitoring Area

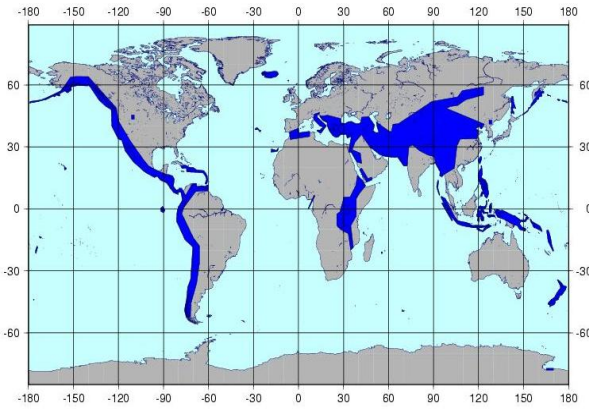
# Basic Observation Scenario (Global)

**Crustal Deformation (4th year )**

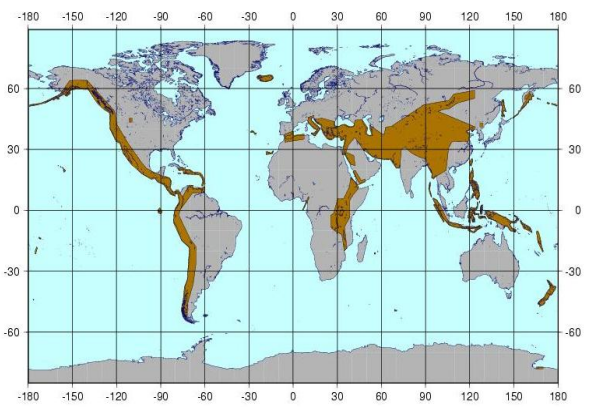
Temporal repeat: 1 cov/year & 6 cov/year

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

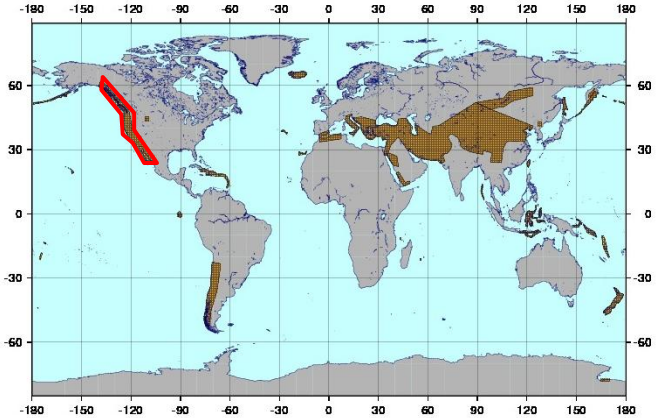
Mode: Stripmap Dual-pol (HH+HV/28MHz)
& ScanSAR 350km (HH/14MHz)



10 m（HH+HV）: 1 cov/year



ScanSAR 350km（HH）: 1 cov/year



ScanSAR 350km（HH）: 6cov/year

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

Ascending

Descending

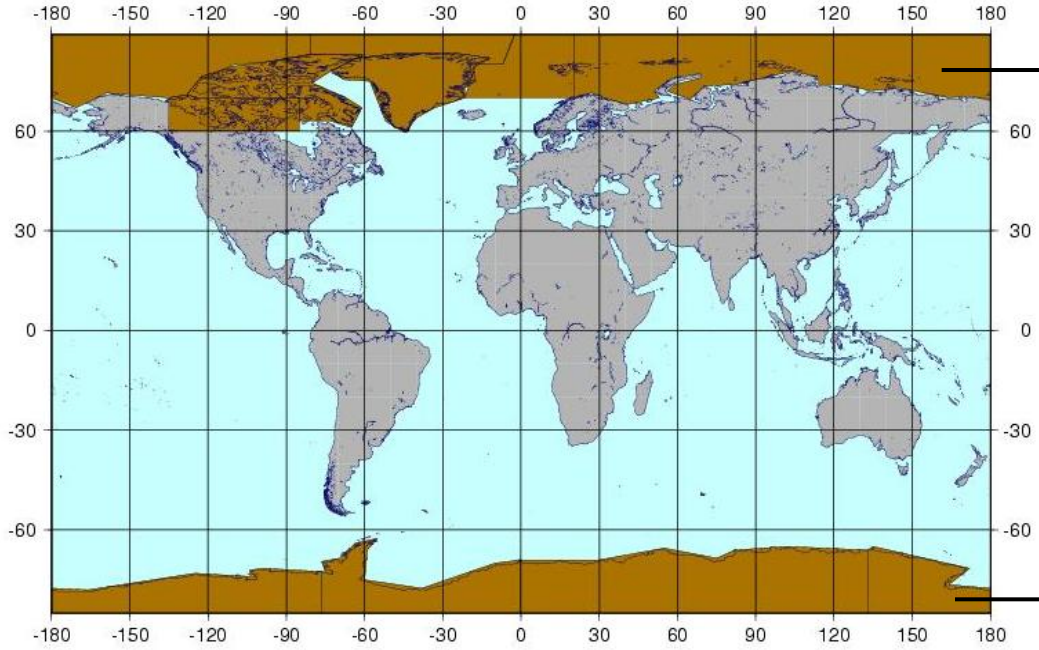
# Basic Observation Scenario (Global)

**Polar Ice**

Temporal repeat: 3 cov/year

GSD: 100 m (off-nadir 26.2° – 41.8° )

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



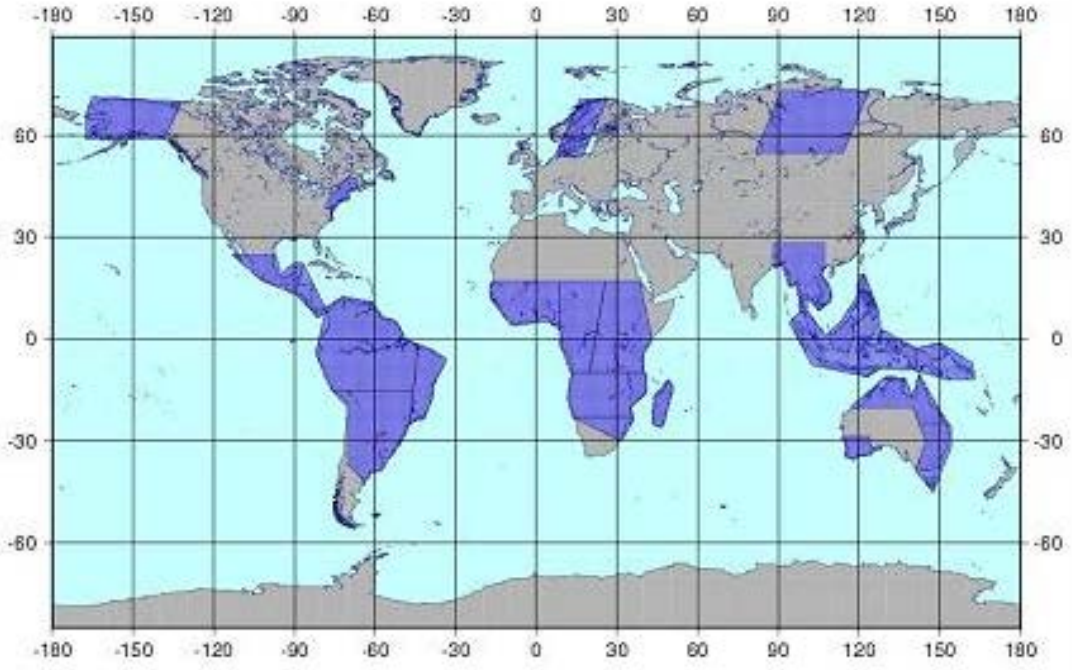
# Basic Observation Scenario (Global)

**Forest monitoring**

Temporal repeat: 2-6 cov/year (tropics 6 cov)

GSD: 10 m (off-nadir 28.2° -36.2° )

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

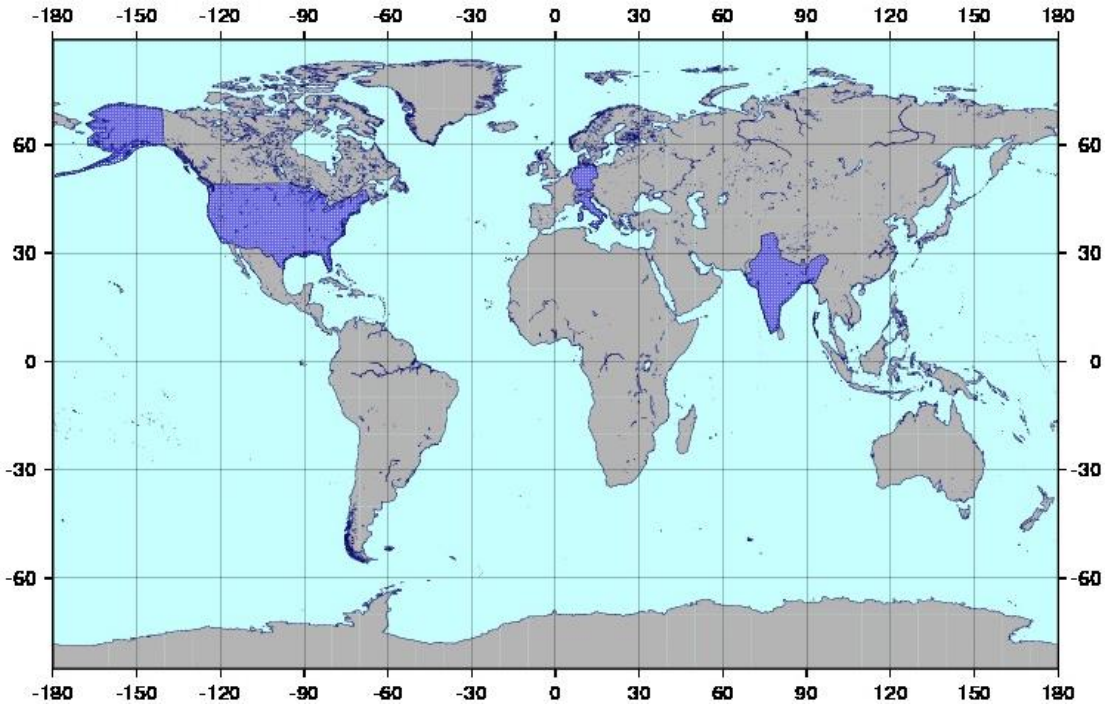


# Super Sites (JAXA)

Temporal repeat: 1 cov/year **(4th year )**

GSD: 10 m (off-nadir 28.2° – 36.2° )

Mode: Stripmap Dual-pol (HH＋HV/28MHz)



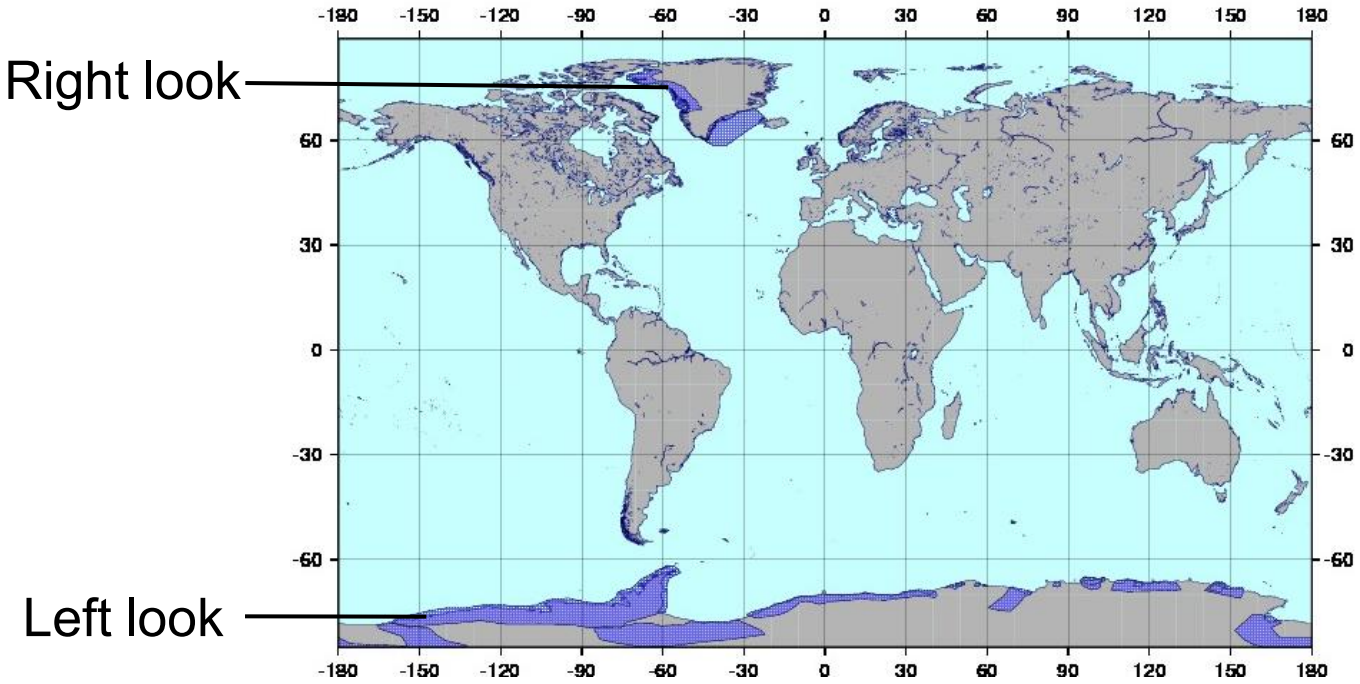
# Super Sites (K&C)

**Glacier movement**

Temporal repeat: 3 cov/year

GSD: 10 m (off-nadir 32.5° )

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

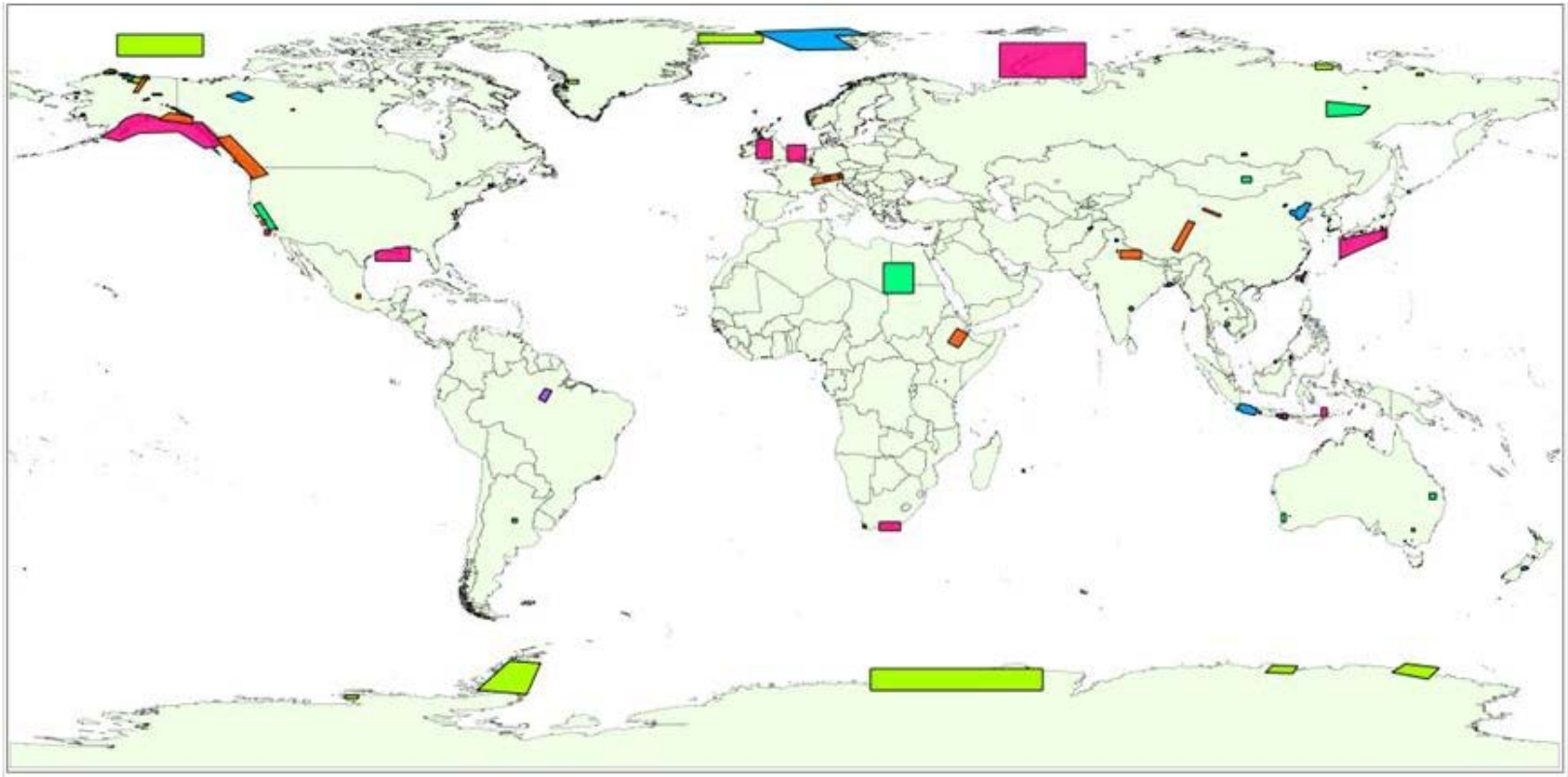


# Super Sites (PI)

Temporal repeat: When not affecting the BOS

GSD:  according to PI requests

Mode: according to PI requests



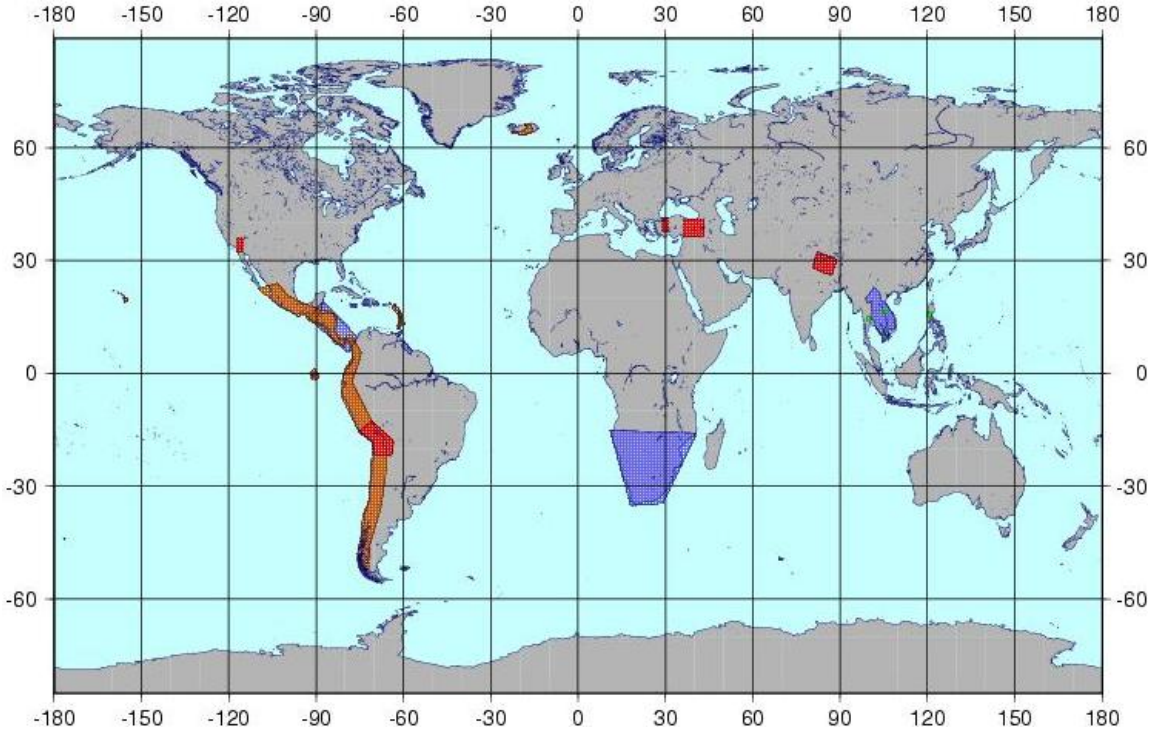
# Super Sites (CEOS)

Temporal repeat: when coinciding with BOS observations

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)

- Agriculture
- Earthquakes
- Volcanos
- Flooding

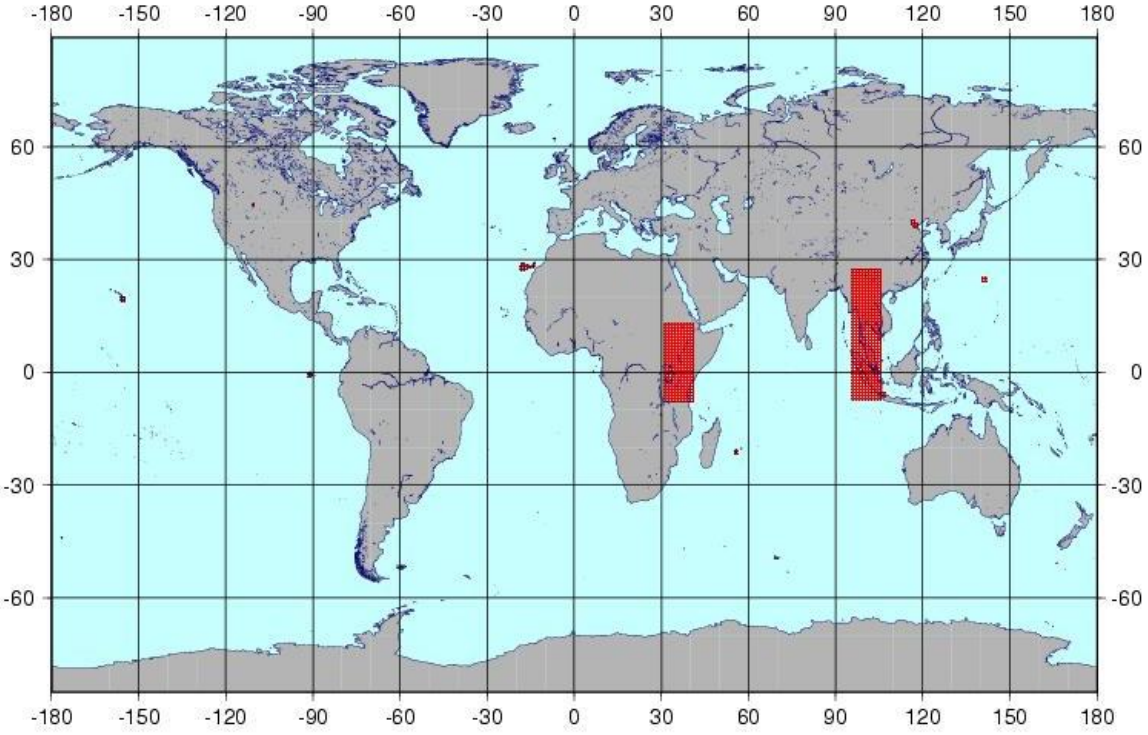


# Super Sites (Crustal WG)

Temporal repeat: When not affecting the BOS

GSD:  according to WG request

Mode: according to WG request



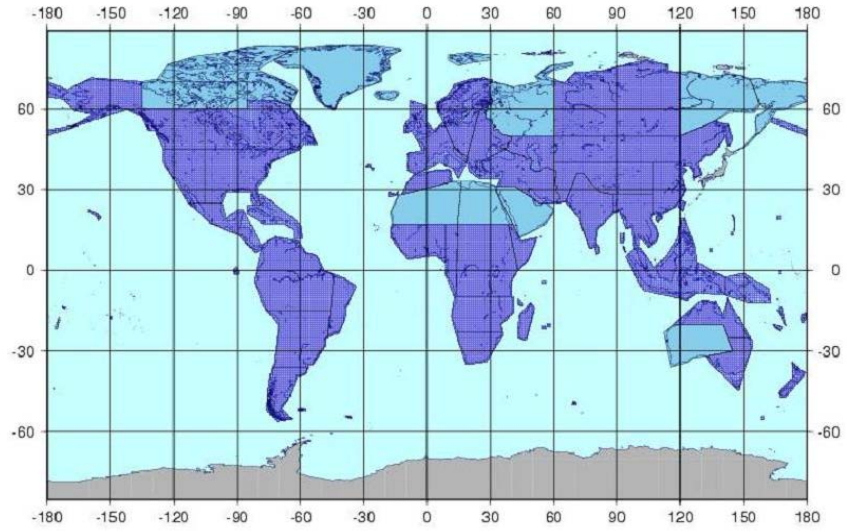
# Basic Observation Scenario (Global)

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

Temporal repeat: 2 cov/year

GSD: 10 m (off-nadir 28.2° -36.2° )

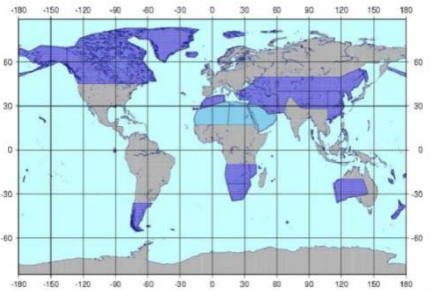
Mode: Stripmap Dual-pol (HH+HV/28MHz)



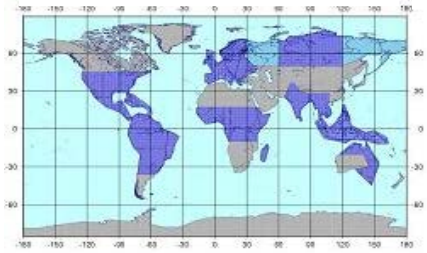

Prio 1

Prio 2

OBS Pattern①(World1-1)



OBS Pattern ②(World2-1)



OBS Pattern ①(World1-2)

OBS Pattern ②(World2-2)

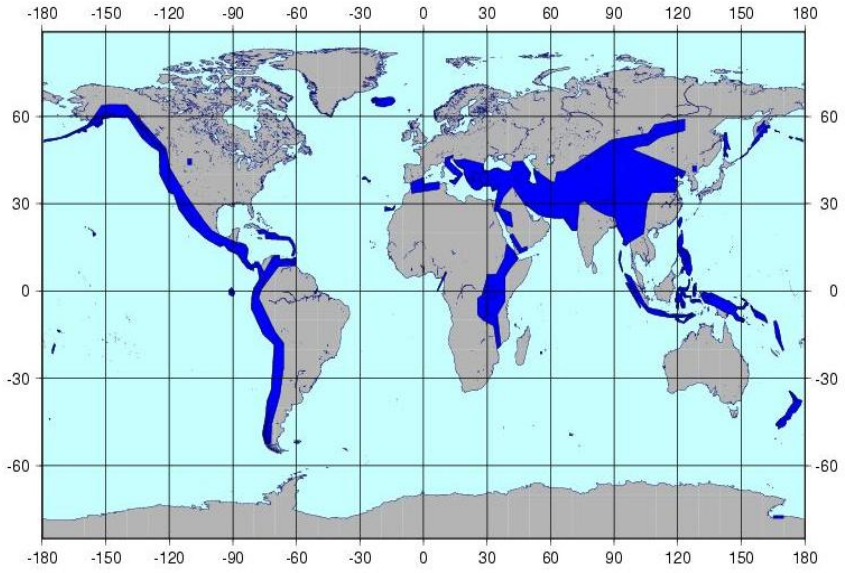
# Basic Observation Scenario (Global)

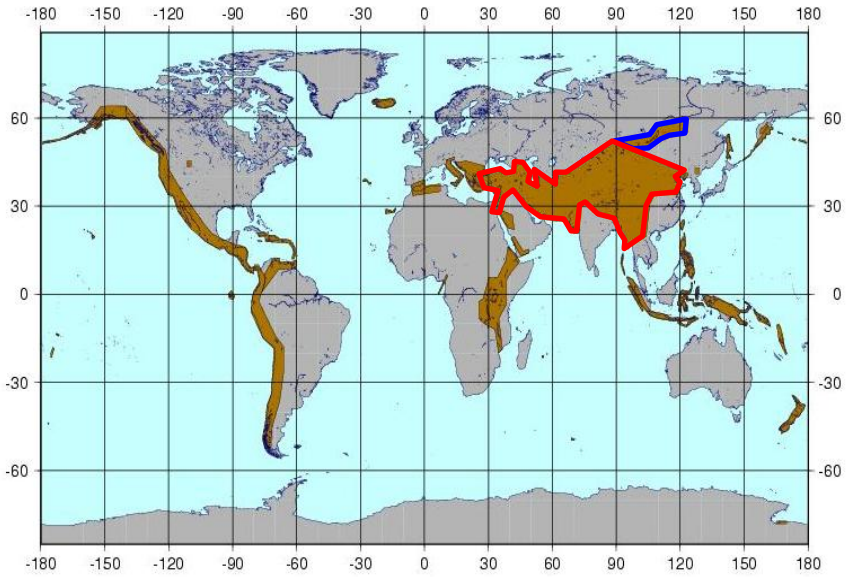
**Crustal Deformation (1st – 3rd year )**

Temporal repeat: 2-6 cov/year & 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

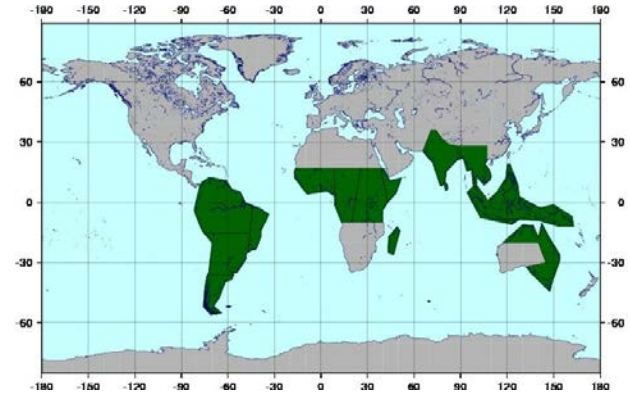
# Basic Observation Scenario (Global)

**Global land areas – VHR baseline mapping**

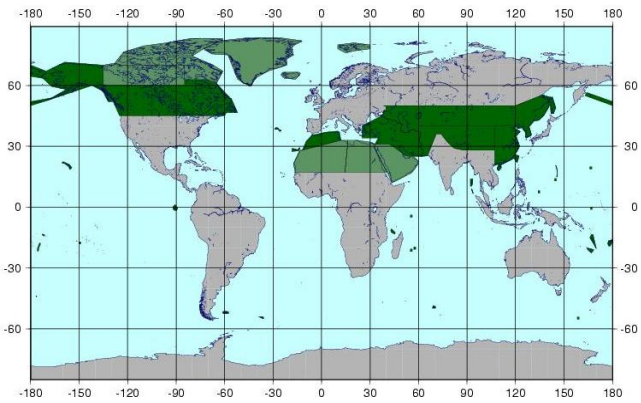
Temporal repeat: 1 coverage in 3 years（until cycle 68）

GSD: 3 m (off-nadir 29.1°  -38.2°  )

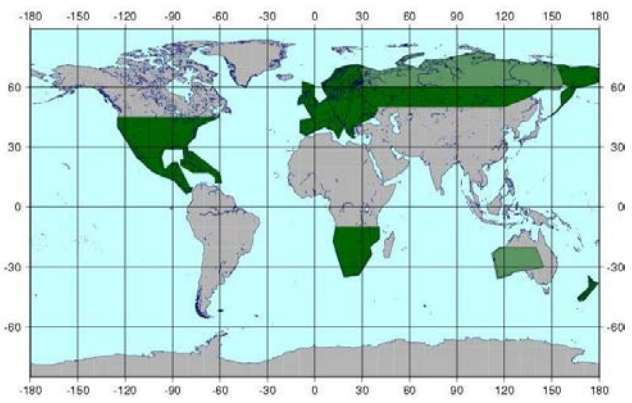
Mode: Stripmap Single-pol（HH/84MHz）



1st year



2nd year



3rd year

Prio 1

Prio 2

* 3 years required for global coverage in 3m mode

# Super Sites (K&C)

**Boreal and sub-Arctic**

Temporal repeat: 3 cov/year (until cycle 52)

GSD: 100 m (offnadir 34.9° -51.5° )

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