

Explanation of PALSAR-3 images with variable PRF and fixed PRF

Update: Dec 12, 2025

- ALOS-4 adopts the new digital beamforming SAR (Synthetic Aperture Radar) technology to expand the observation swath from ALOS-2. The ALOS-4 is planned to conduct observations with the "Variable PRF^{*1}" function turned on in order to produce continuous images over a wide area. However, JAXA have confirmed that when this function is turned on, false image noise (ambiguity) is generated in some observation areas.
- JAXA has confirmed that processing improvements to mitigate ambiguities satisfy the original requirements specification. However, differences in image quality between ALOS-2 and ALOS-4 remain. Therefore, for the basic observation scenario of ALOS-4 operation using "Variable PRF" will not be implemented as of now. Instead, operation will be conducted in the "Fixed PRF" observation mode. In the "fixed PRF" observation, the above false images do not occur, although a blind area of about 10 to 20% is generated in the image.
- JAXA will continue to adjust the image quality and will issue updates as necessary.

^{*1} PRF (Pulse Repetition Frequency): The number of times per second that radio waves are transmitted and received for observation. ALOS-4 employs a variable PRF system to avoid the overlap of transmission and reception caused by DBF and to obtain continuous images over a wide area.

Explanation of PALSAR-3 images with variable PRF and fixed PRF



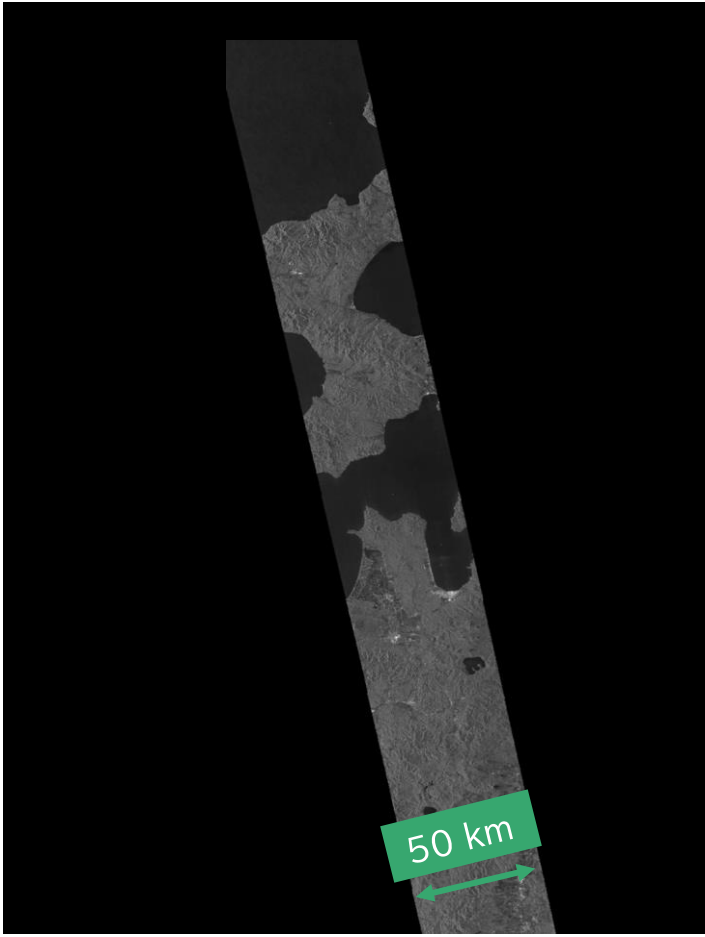
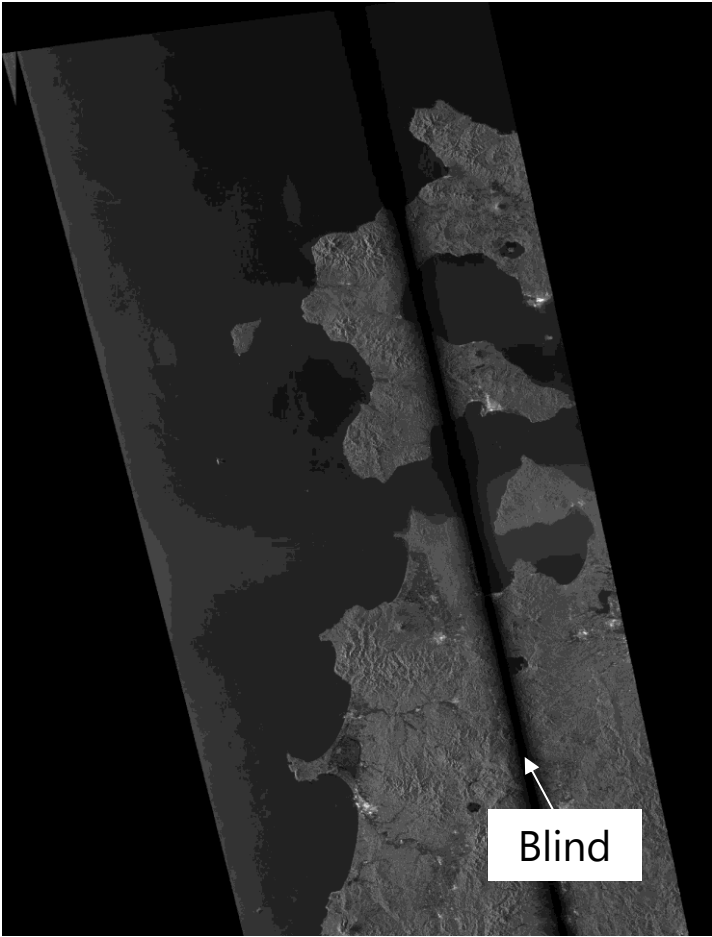
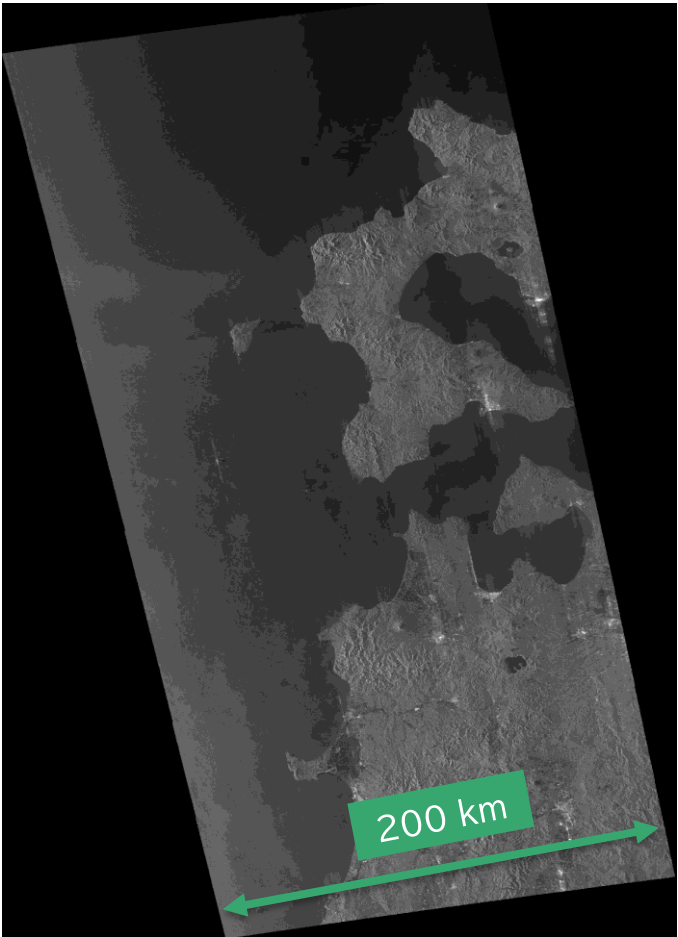
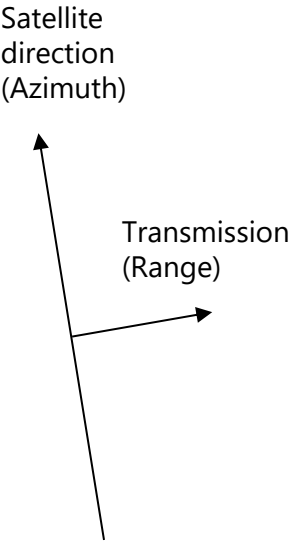
ALOS-4

ALOS-2

Feb. 5, 2025 (Valuable PRF)

Feb. 19, 2025 (Fixed PRF)

Stripmap 3 m
200 km swath
Japan
HH-pol.



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Notes on Product Use

Standard products by fixed PRF observation can be identified by the scene ID in the file name below.

Scene_ID = ALOS41112222YYMMDDUWD**P**RA0106

Satellite	Path#	Frame#	Obs. date	Mode	Right/Left, Ascending/Descending, Beam#
name					

If "P", fixed PRF observation

Nominal observation is "_" (under bar)

- To check for the presence and location of missing areas (blinds) within a scene, please follow the procedure below:
 - Confirm the browse image displayed on the AUIG4 search screen.
 - If no browse image is available, refer to the "PALSAR-3 PRF Fixed Observation Mode Blind Map" on the JAXA EORC ALOS website.

How to check the information on fixed PRF observation images

Display for fixed PRF observation mode-related information on the AUIG4 product search

The screenshot displays the AUIG4 product search interface. On the left, the 'プロダクト検索' (Product Search) panel includes various filters. The 'PRF固定観測モード' (PRF Fixed Observation Mode) is set to 'ON', highlighted by a red circle. The central map shows a grid of observation swaths over Japan, with a red square indicating the selected area. On the right, the 'シーン中心情報' (Scene Center Information) table lists scene details. Below the map, the 'プロダクト検索結果' (Product Search Results) table shows search results, with the 'PRF固定観測モード' (PRF Fixed Observation Mode) and '固定PRF値' (Fixed PRF Value) highlighted by a red circle.

プロダクト検索 ※日時は全てUTC表記

プロダクト検索 シーンID検索 再生ID検索

サブビーム番号 5 ~ 12

オフナディア角 [deg] 28.2 ~ 48.2

☐ WD3 (ScanSAR 700km)

観測波 指定なし

観測方向 指定なし

ビーム番号 XB01 ~ XB03

オフナディア角 [deg] 33.8 ~ 53.2

PRF固定観測モード ON

ATIモード 指定なし

電離層補正モード (84MHz送受信) 指定なし

電離層補正モード (オンボード帯域分割) 指定なし

☐ PALSAR-2詳細設定

☒ 干渉ペア候補検索

干渉ペア候補詳細設定

共通設定

リセット 検索

観測波 指定なし

観測方向 指定なし

ビーム番号 XB01 ~ XB03

オフナディア角 [deg] 33.8 ~ 53.2

PRF固定観測モード ON

ATIモード 指定なし

電離層補正モード (84MHz送受信) 指定なし

電離層補正モード (オンボード帯域分割) 指定なし

☐ PALSAR-2詳細設定

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干渉ペア候補詳細設定

共通設定

リセット 検索

プロダクト検索結果: 1229 件

☒ 選択したシーンへ自動で移動する

検索結果表示項目設定 EORC [] カートに追加 CSVファイル出力

KMZファイル出力 シェープファイル出力 削除 カート画面へ移動

表示	選択	削除	再生ID	シーンカタログ状態	プロダクト状態
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SARD000000034734-00003	処理済 (確定軌道)	ARCHIVED ALOS-4
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SARD000000034734-00003	処理済 (確定軌道)	ARCHIVED ALOS-4

シーン中心フレーム番号	シーン中心日時	観測パラメタセット番号	シーンカタログ: シーン左上緯度経度	シーンカタログ: シーン右上緯度経度	シーンカタログ: シーン右下緯度経度	シーンカタログ: シーン中心緯度経度
2940	2025/05/27 03:18:23.336	15510	33.984013, 130.323608	33.897731, 130.914839	33.275019, 130.780752	

成分	観測中心位置Y成分	観測中心位置Z成分	拡張モード	固定PRF値
			PRF 固定観測モード	3464

マニュアルDBFモードパターン

地上局名 SKIS

シーンカタログ状態 処理済 (確定軌道)

プロダクト状態 ARCHIVED

軌道データ種別 FIXD

緊急フラグ OFF

一次総合品質 Good

To select fixed PRF observation mode, set this option to "ON".

Check "fixed PRF value"

How to check the information on fixed PRF observation images

Table of fixed PRI values v.s. observation modes

Fixed PRI values are set in two patterns for each observation mode, with different blind positions for each. Since values change based on satellite altitude, settings are divided into five global zones (see next page for zone divisions).

Zone	Altitude	Stripmap 3 m 1-2 pol.				Stripmap 3 m 4 pol.		Stripmap 6 m 4 pol.		Stripmap 10m 1-2 pol.		ScanSAR 1-2 pol.	
		SM1 200 km Pattern 1	SM1 200 km Pattern 2	SM1 100 km Pattern 1	SM1 100 km Pattern 2	SM1 FP Pattern 1	SM1 FP Pattern 2	SM2 FP Pattern 1	SM2 FP Pattern 2	SM3 200 km Pattern 1	SM3 200 km Pattern 2	XB Pattern 1	XB Pattern 2
I	642 km	4004	3500	4004	3500	1868	1752	2804	2548	5608	4672	3500	3112
II	635 km	3960	3464	3960	3464	1848	1732	2772	2520	5548	4620	3464	3080
III	640 km	3992	3492	3992	3492	1864	1744	2792	2540	5592	4656	3492	3104
IV	647 km	4032	3528	4032	3528	1884	1764	2824	2568	5652	4708	3528	3136
V	655 km	4084	3572	4084	3572	1904	1788	2860	2600	5720	4764	3572	3176

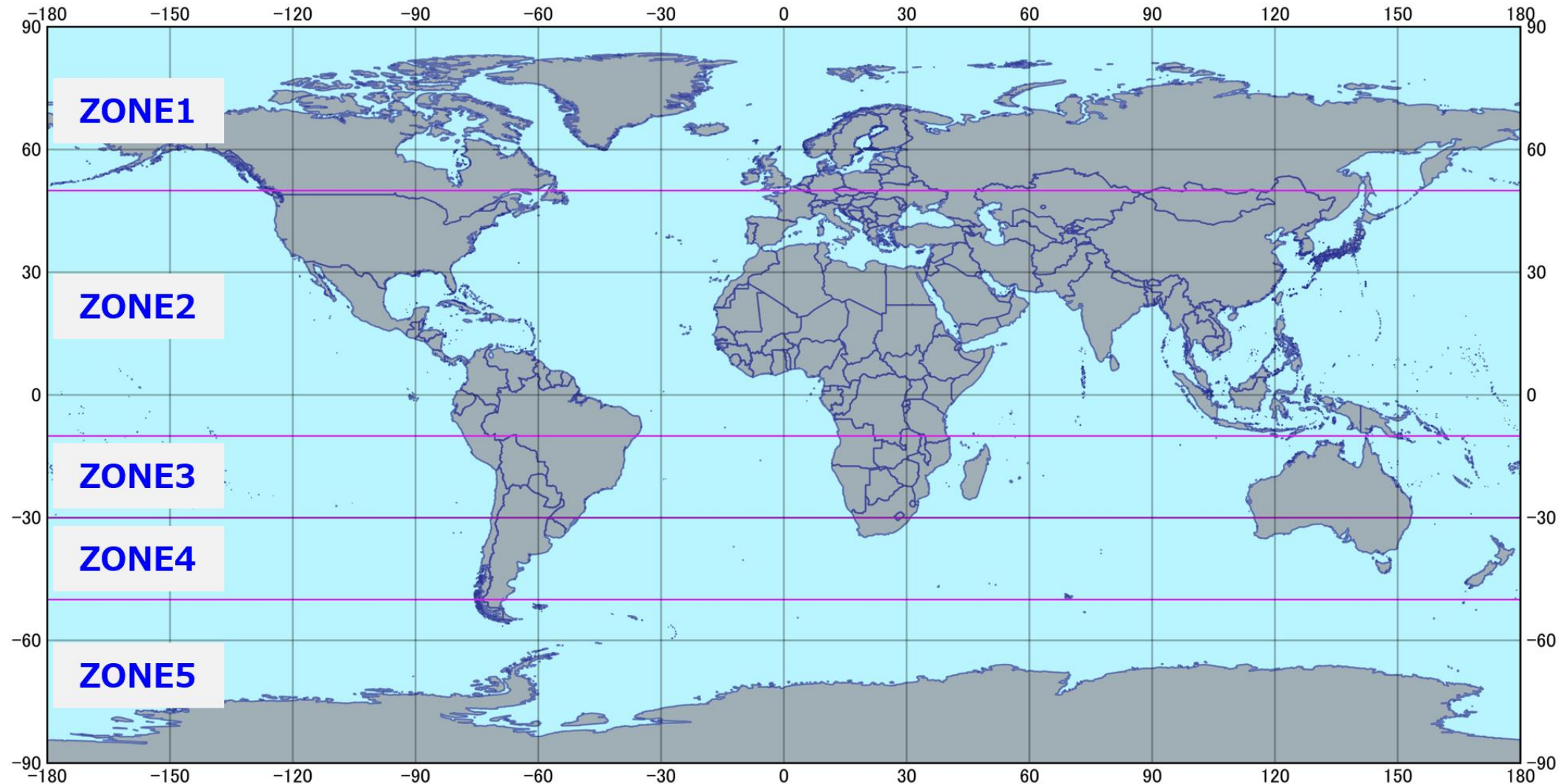
※ Spotlight mode always operates at a fixed PRF and does not have this setting.

※ Observation modes and beams not listed in the table above are omitted because they are not intended for use in basic observation scenarios or emergency observations for disasters.

※ Some observations may be conducted using settings different from those listed above.

How to check the information on fixed PRF observation images

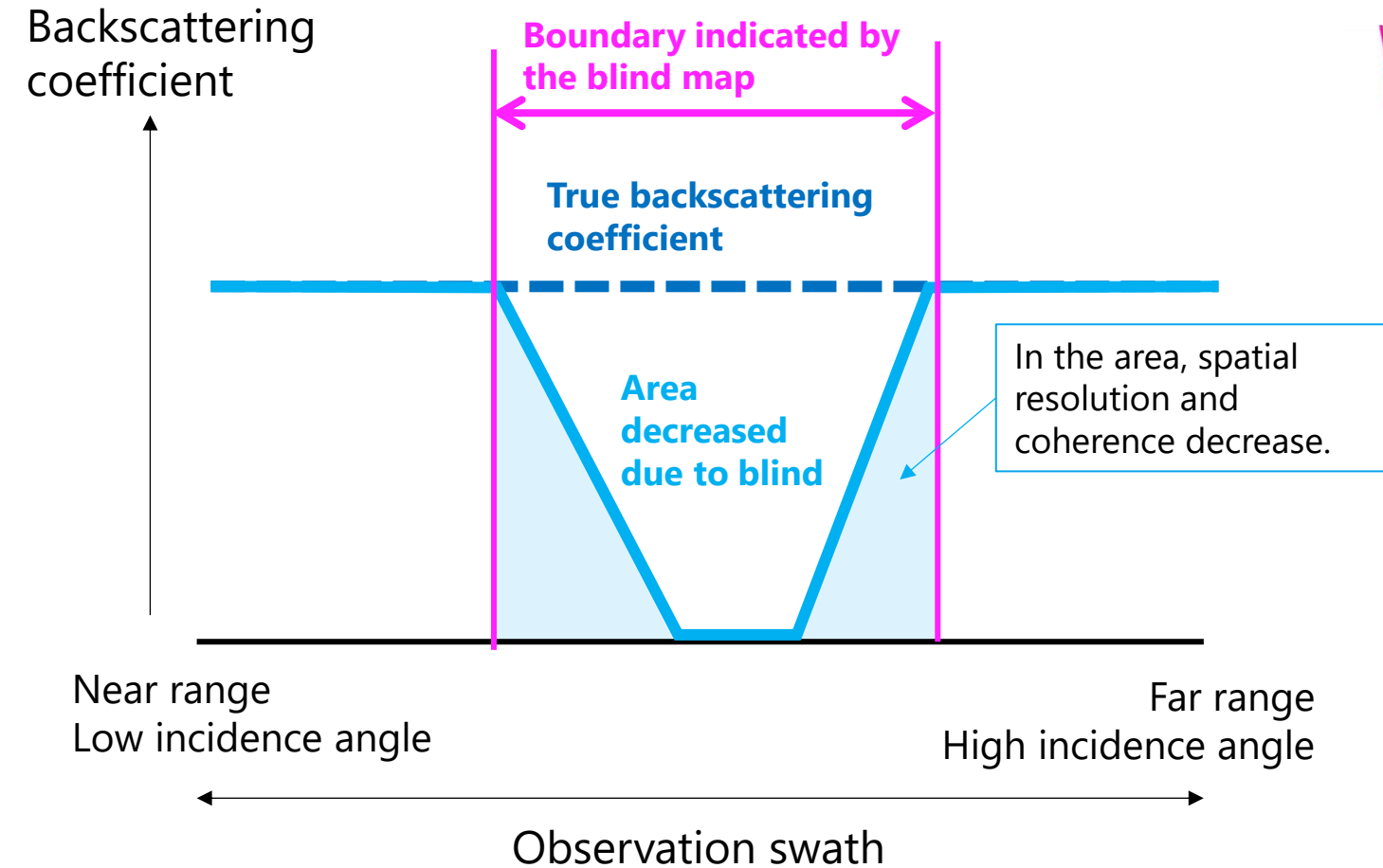
Zone definition based on satellite altitude



How to check the information on fixed PRF observation images

Profile of backscattering coefficient (i.e., image intensity)

Example when the backscattering coefficient is constant



Blind map for Stripmap 3 m/ 200 km swath
Left : fixed PRF pattern 1、 Right : fixed PRF pattern 2

