表 1. 現地調査データのまとめ（津波高の測定値）

調査地点・測定点番号	気象庁の地点番号*1	現地調査								
		測定場所					測定日時*2	測定高*3 (m), a	津波高の種類*4	測定対象
		都道府県	市町村	地点名	北緯	東経				
1	-	石川県	羽咋郡志賀町安部屋	安部屋漁港	37°00'25.1"	136°45'22.2"	3/14 14:10	1.2 (1.15)	該当なし (最大津波高の下限)	岸壁の上面
3A	-		七尾市府中町	七尾港	37°02'57.4"	136°58'06.4"	1/17 10:40	2.1 (2.08)	該当なし (津波高の上限)	検潮所に渡る橋の歩行面
5A	石川県⑪-1		七尾市佐々波町	下佐々波漁港	37°00'50.3"	137°02'50.7"	1/17 12:50	2.2 (2.18)	R	漁港内の坂道途中
5B	-				37°00'52.2"	137°02'52.5"	1/17 12:50	1.4 (1.39)	I	漁港内の壁画
5C	石川県⑪-2				37°00'48.1"	137°02'47.8"	1/17 13:20	2.6 (2.64)	R	傾斜した道路のセンターライン
102A	富山県④	富山県	高岡市太田	雨晴海岸	36°48'54.0"	137°02'32.6"	3/14 16:01	1.0 (0.98)	I	岩
104	-		射水市放生津町	湊橋	36°47'02.7"	137°04'58.1"	1/16 16:20	1.1 (1.05)	該当なし (津波高の上限)	護岸の上面
105	-		射水市海王町	海王丸パーク	36°46'49.3"	137°06'29.9"	1/18 09:30	0.8 (0.75)	該当なし (津波高の上限)	岸壁の上面
107	富山県③		射水市海竜新町	新湊マリーナ	36°46'13.6"	137°08'09.6"	1/18 12:45	1.4 (1.41)	R	新湊マリーナのレストラン前の芝生
110A	富山県②		富山市岩瀬古志町	岩瀬浜	36°45'51.9"	137°14'20.0"	3/13 13:45	2.4 (2.42)	R	砂浜
110B	-				36°45'52.8"	137°14'20.0"	3/13 13:50	1.8 (1.76)	*7	砂浜
110C	-				36°45'53.5"	137°14'20.0"	3/13 13:55	1.4 (1.37)	*7	砂浜
111	-		黒部市生地四十物町	生地検潮所	36°53'26.8"	137°24'54.3"	3/13 15:52	1.2 (1.20)	該当なし (津波高の上限)	岸壁の上面

*1 令和 6 年度災害時自然現象報告書「災害時地震・津波報告　令和 6 年能登半島地震」(気象庁, 2024f) の地点番号.
*2 日本標準時で示した (2024 年).
*3 気象庁 (2024f)にあわせて，括弧内の数値の小数点第 2 位を四捨五入した値を測定値とし，潮位補正等に用いた.
*4 津波高の種類:
R: 遡上高
I: 浸水高
P: 港内津波高 (港湾において，岸壁は越えてはいないが明確に高さが分かる津波)
W: 微弱な津波 (常時波浪との判別が不可能な微弱な津波)
*5 信頼度の判断基準:
A: 信頼度大なるもの．痕跡明瞭にして，測量誤差最も小なるもの.
B: 信頼度中なるもの．痕跡不明につき，聞き込みにより，周囲の状況から信頼ある水位を知るもの．測量誤差小.
C: 信頼度小なるもの．その他砂浜などで異常に波がはい上がったと思われるもの，あるいは測点が海辺より離れ，測量誤差が大なるもの.
D: 信頼度極小なるもの．高潮・台風などの影響で痕跡が重複し，不明瞭なもの，等.
*6 T.P.は東京湾平均海水面.
*7 カメラ映像の解析の参考にするため，汀線と遡上限界 (測定点 110A) の間の地点の地盤高を測定した.

表 1. 続き

現地調査			潮位補正						調査地点・測定点番号
根拠	信頼度*5	備考	測定時の潮位*6 (m), b	**測定点の高さ*6 (m), a+b**	最大波到達日時(推定)と潮位*2, *6 (m), c		参照地点	**補正後の津波高 (m), a+b-c**	
カメラ映像(津波の浸水状況を撮影)	該当なし	映像での津波到達は日没後のため，これを最大波だと仮定し，日の入り時刻を最大波の時刻とした	T.P.+0.26	**T.P.+1.46**	1/1 16:48	T.P.+0.20	富山	**1.3 以上**	**1**
浸水痕なし	該当なし		T.P.+0.08	**T.P.+2.18**	1/1 16:35			**2.0 以下**	**3A**
漂着物(枯草)	A		T.P.+0.04	**T.P.+2.24**				**2.0**	**5A**
目撃情報(津波警報等の解除後に壁画への泥の付着を視認)	B	1 月 2 日に地元の漁師が見た情報に基づく聞き取り		**T.P.+1.44**				**1.2**	**5B**
目撃情報(津波警報等の解除後に道路の濡れを視認)	B	1 月 2 日に地元の住民が見た情報に基づく聞き取り		**T.P.+2.64**				**2.4**	**5C**
ライブカメラ映像(岩の浸水状況を撮影)	B	最大波の時刻はライブカメラ映像による	T.P.+0.34	**T.P.+1.34**				**1.1**	**102A**
浸水痕なし＋目撃情報	該当なし		T.P.+0.19	**T.P.+1.29**				**1.1 以下**	**104**
浸水痕なし＋目撃情報	該当なし		T.P.+0.29	**T.P.+1.09**				**0.9 以下**	**105**
漂着物（枯葉）	A		T.P.+0.25	**T.P.+1.65**				**1.5**	**107**
ライブカメラ映像(浸水状況を撮影)＋漂着物(列をなした木片群)	A	測定高 a は近傍の三角点を用いて測定した T.P.上の高さ．最大波の時刻はライブカメラ映像による．測定時の潮位 b の補正は不要	不要（三角点を利用）	**T.P.+2.40**	1/1 17:03			**2.2**	**110A**
漂着物(木片群)と汀線の中間付近	該当なし			**T.P.+1.80**				**1.6**	**110B**
汀線手前の段差の上段	該当なし			**T.P.+1.40**				**1.2**	**110C**
浸水痕なし	該当なし		T.P.+0.32	**T.P.+1.52**	1/1 16:35			**1.3 以下**	**111**

Table 1. Summary of field survey data (measured tsunami heights)

Site No., Measurement point No.	Site No. in JMA*1	Field survey								
		Measurement site					Date and time of measurement *2	Raw measurement of height*3 (m), a	Classification of tsunami height*4	Target tsunami trace
		Prefecture	Municipality	Site name	Latitude (N)	Longitude (E)				
1	-	Ishikawa	Abuya, Shika-machi, Hakui-gun	Abuya fishing port	37°00'25.1"	136°45'22.2"	14:10, 14 March	1.2 (1.15)	Not defined (lower limit of the maximum tsunami height)	Top of quay
3A	-		Fuchumachi, Nanao	Nanao Port	37°02'57.4"	136°58'06.4"	10:40, 17 January	2.1 (2.08)	Not defined (upper limit of tsunami height)	Walking surface of the bridge across to the tide gauge station
5A	Ishikawa 11-1		Sazanamimachi, Nanao	Shimosazanami fishing port	37°00'50.3"	137°02'50.7"	12:50, 17 January	2.2 (2.18)	R	Middle of the slope in the fishing port
5B	-				37°00'52.2"	137°02'52.5"	12:50, 17 January	1.4 (1.39)	I	Mural in the fishing port
5C	Ishikawa 11-2				37°00'48.1"	137°02'47.8"	13:20, 17 January	2.6 (2.64)	R	Centerline of a sloped road
102A	Toyama 4	Toyama	Ota, Takaoka	Amaharashi Coast	36°48'54.0"	137°02'32.6"	16:01, 14 March	1.0 (0.98)	I	Rock
104	-		Hojozumachi, Imizu	Minato Bridge	36°47'02.7"	137°04'58.1"	16:20, 16 January	1.1 (1.05)	Not defined (upper limit of tsunami height)	Top of seawall
105	-		Kaiomachi, Imizu	Kaiwomaru Park	36°46'49.3"	137°06'29.9"	09:30, 18 January	0.8 (0.75)	Not defined (upper limit of tsunami height)	Top of quay
107	Toyama 3		Kairyushinmachi, Imizu	Shinminato Marina	36°46'13.6"	137°08'09.6"	12:45, 18 January	1.4 (1.41)	R	Lawn in front of the restaurant in Shinminato Marina
110A	Toyama 2		Iwasekoshimachi, Toyama	Iwasehama	36°45'51.9"	137°14'20.0"	13:45, 13 March	2.4 (2.42)	R	Sand beach
110B	-				36°45'52.8"	137°14'20.0"	13:50, 13 March	1.8 (1.76)	*7	Sand beach
110C	-				36°45'53.5"	137°14'20.0"	13:55, 13 March	1.4 (1.37)	*7	Sand beach
111	-		Aimonocho, Ikuji, Kurobe	Ikuji tide gauge station	36°53'26.8"	137°24'54.3"	15:52, 13 March	1.2 (1.20)	Not defined (upper limit of tsunami height)	Top of quay

*1 Site No. in "Report on earthquake and tsunami: the 2024 Noto Peninsula earthquake" (JMA, 2024f).

*2 Japan Standard Time, 2024.

*3 The values in parentheses are rounded to the second decimal place in accordance with the method of JMA (2024f) and are used for tide correction.

*4 Classification of tsunami heights:

R: Runup height

I: Inundation height

P: The height of a tsunami trace in a port (no inundation)

W: Runup height which is difficult to distinguish from that caused by wind waves and swells

*5 Reliability level:

A: High reliability. Clear tsunami trace. Lowest measurement error.

B: Moderate reliability. Unclear tsunami trace. The reliable water level is determined from the surrounding conditions through interviews. Low measurement error.

C: Low reliability. It seems that the wave flooded the beach abnormally, or the measurement error should be low because the measurement point is far from the coastline.

D: Lowest reliability. The tsunami trace is unclear because traces due to storm surges and typhoons overlap.

*6 T.P.: Tokyo Peil Datum.

*7 The ground elevation at locations between the coastline and the runup limit (measurement point 110A) was measured to aid in the analysis of the camera footage.

Table 1. Continued.

Field survey			Information on tide correction						Site No., Measurement point No
Identified evidence	Reliability level*5	Remarks	Tide level at the time of survey*6 (m), b	**Height relative to T.P.*6 (m), a+b**	Tide level at the estimated time of the maximum tsunami height*2, *6 (m), c		Station used for tide correction	**Tsunami height after tide correction (m), a+b-c**	
Camera footage (inundation)	Not defined	Camera footage shows that the tsunami arrived after sunset. Assuming this was the maximum wave, the sunset time was used as the maximum wave time.	T.P.+0.26	**T.P.+1.46**	16:48, 1 January	T.P.+0.20	Toyama	**1.3 or more**	**1**
No watermark	Not defined		T.P.+0.08	**T.P.+2.18**	16:35, 1 January			**2.0 or less**	**3A**
Drifting debris (dead grasses)	A		T.P.+0.04	**T.P.+2.24**				**2.0**	**5A**
Eyewitness observation of mud on mural found after the cancellation of tsunami warning	B	Information seen by a local fisherman on 2 January, 2024.		**T.P.+1.44**				**1.2**	**5B**
Eyewitness observation of wetting of road found after the cancellation of tsunami warning	B	Information seen by a local resident on 2 January, 2024.		**T.P.+2.64**				**2.4**	**5C**
Live camera footage (flooded rock)	B	The time of the maximum wave is based on live camera footage.	T.P.+0.34	**T.P.+1.34**				**1.1**	**102A**
No watermark, but eyewitness	Not defined		T.P.+0.19	**T.P.+1.29**				**1.1 or less**	**104**
No watermark, but eyewitness	Not defined		T.P.+0.29	**T.P.+1.09**				**0.9 or less**	**105**
Drifting debris (dead leaves)	A		T.P.+0.25	**T.P.+1.65**				**1.5**	**107**
Live camera footage (inundation) + drifting debris (aligned wood chips)	A	Raw measurement of height, a, is the height above T.P. because the measurement was performed using a nearby triangulation point. The time of the maximum wave is based on live camera footage. The correction using the tide level at the time of the survey, b, is not required.	Not required (using a triangulation point)	**T.P.+2.40**	17:03, 1 January			**2.2**	**110A**
Location near the middle of the drifting debris (wood chip groups) and coastline	Not defined			**T.P.+1.80**				**1.6**	**110B**
Upper side of the step formed in front of the coastline	Not defined			**T.P.+1.40**				**1.2**	**110C**
No watermark	Not defined		T.P.+0.32	**T.P.+1.52**	16:35, 1 January			**1.3 or less**	**111**

表 2.　現地調査データのまとめ（状況確認のみ）

調査地点・測定点番号	現地調査						
	調査場所					調査日時 *1	備考
	都道府県	市町村	地点名	北緯	東経		
2A	石川県	輪島市輪島崎町	輪島験潮場	37°24'20.7"	136°54'01.1"	3/14 11:50	験潮場が土砂崩れに巻き込まれていたことを確認
4		七尾市庵町ノ	百海漁港	37°02'56.3"	137°02'54.5"	1/17 11:30	港内の様子からは浸水の有無は判断できず．地元の漁師・住民が不在で，聞き取りもできず
101	富山県	氷見市比美町 氷見市南大町	氷見漁港 氷見漁港南方の砂浜	36°51'17.5"	136°59'27.0"	1/17 16:00	地元の住民から，砂浜での砂の色の変化及び地形の変状は地震前後で変化なしとの証言
103		高岡市伏木錦町	伏木富山港 伏木検潮所	36°47'35.3"	137°03'44.3"	3/14 16:35	検潮所は立入禁止区域内のため，遠方からの目視観察のみ
106		射水市堀岡新明神	伏木富山港 新湊検潮所	36°46'31.0"	137°07'04.0"	1/18 10:25	検潮所周辺の消波ブロックの変色部分を測定したが，信頼度は極めて低いため不採用
108		富山市萩浦橋	萩浦橋水位観測所	36°44'46.0"	137°13'05.3"	1/18 13:13	水位観測所は立入禁止区域内のため，走行中の自動車からの観察のみ
109		富山市草島	富山検潮所	36°45'43.7"	137°13'28.6"	3/15 11:05	検潮所は立入禁止区域内のため，観測点周辺の目視観察のみ

*1 日本標準時で示した (2024 年).

Table 2.　Summary of field survey data (site survey only)

Site No., Measurement point No.	Field survey						
	Survey site					Date and time of survey*1	Remarks
	Prefecture	Municipality	Site name	Latitude (N)	Longitude (E)		
2A	Ishikawa	Wajimazakimachi, Wajima	Wajima tide gauge station	37°24'20.7"	136°54'01.1"	11:50, 14 March	Tide gauge station was found to be destroyed by a landslide.
4		No Iorimachi, Nanao	Domi fishing port	37°02'56.3"	137°02'54.5"	11:30, 17 January	Inundation could not be determined from observation of the port. Local fishers and residents were not present during our survey and no interviews were performed.
101	Toyama	Himimachi, Himi; Minamiomachi, Himi	Himi fishing port; sand beach to the south of Himi fishing port	36°51'17.5"	136°59'27.0"	16:00, 17 January	According to testimony of a local resident, there was no change in the situation of the beach before and after the earthquake, which includes the color of the sand and the topography.
103		Fushikinishikimachi, Takaoka	Fushiki Port tide gauge station in the Port of Fushiki-Toyama	36°47'35.3"	137°03'44.3"	16:35, 14 March	Visual observation from a distance because the tide gauge station is within a restricted area.
106		Horiokashinmyojin, Imizu	Shinminato Port tide gauge station in the Port of Fushiki-Toyama	36°46'31.0"	137°07'04.0"	10:25, 18 January	The height of the uppermost watermark on the wave-dissipating block near the tide gauge station was measured, but the reliability level is the lowest rank, and we did not adopt the value.
108		Hagiura Bridge, Toyama	Hagiura Bridge water-level gauge station	36°44'46.0"	137°13'05.3"	13:13 18 January	Visual observation from a moving car because the sea-level gauge station is within a restricted area.
109		Kusajima, Toyama	Toyama tide gauge station	36°45'43.7"	137°13'28.6"	11:05, 15 March	Visual observation only around the tide gauge station because the observation point is within a restricted area.

*1 Japan Standard Time, 2024.

表 3. 現地調査データのまとめ（ライブカメラ及びその被写体の高さ）

調査地点・測定点番号	現地調査								
	測定場所					測定日時 *1	測定値 (m)	測定対象	備考
	都道府県	市町村	地点名	北緯	東経				
2a	石川県	輪島市河井町	輪島港	37°23'55.8"	136°54'13.3"	3/14 11:31	2.16	防波堤の上部を構成するブロックの高さ	
102a	富山県	高岡市太田	雨晴海岸	36°48'53.8"	137°02'31.2"	1/17 16:23	2.00	義経岩の下部の石柱の高さ	
102b				36°48'55.6"	137°02'28.1"	1/17 16:55	2.52	遊歩道から護岸の上面までの高さ	
102c				36°48'58.0"	137°02'21.5"	1/17 16:48	6.3	ライブカメラ本体の設置高	基準：本体直下の地面
110a		富山市岩瀬古志町	岩瀬浜	36°45'57.3"	137°14'19.0"	3/15 10:30	3.99	海上の消波ブロック群の高さ	
110b				36°45'50.5"	137°14'19.8"	3/13 14:06	10.24	ライブカメラ本体の設置高	基準：T.P.*2

*1 日本標準時で示した (2024 年).
*2 T.P.は東京湾平均海水面.

Table 3. Summary of field survey data (heights of live cameras and objects captured on videos)

Site No., Measurement point No.	Field survey								
	Measurement sites					Date and time of measurement *1	Measured height (m)	Target of measurement	Remarks
	Prefecture	Municipality	Site name	Latitude (N)	Longitude (E)				
2a	Ishikawa	Kawaimachi, Wajima	Wajima Port	37°23'55.8"	136°54'13.3"	11:31, 14 March	2.16	The height of a block making up the top of the coastal levee	
102a	Toyama	Ota, Takaoka	Amaharashi Coast	36°48'53.8"	137°02'31.2"	16:23, 17 January	2.00	The height of a stone pillar comprising Yoshitsune rock	
102b				36°48'55.6"	137°02'28.1"	16:55, 17 January	2.52	The height from the promenade to the top of the seawall	
102c				36°48'58.0"	137°02'21.5"	16:48, 17 January	6.3	The height of a live camera	Reference height: ground surface just below the camera
110a		Iwasekoshimachi, Toyama	Iwasehama	36°45'57.3"	137°14'19.0"	10:30, 15 March	3.99	The height of a wave-dissipating block group nearshore	
110b				36°45'50.5"	137°14'19.8"	14:06, 13 March	10.24	The height of a live camera	Reference height: T.P.*2

*1 Japan Standard Time, 2024.
*2 T.P.: Tokyo Peil Datum.

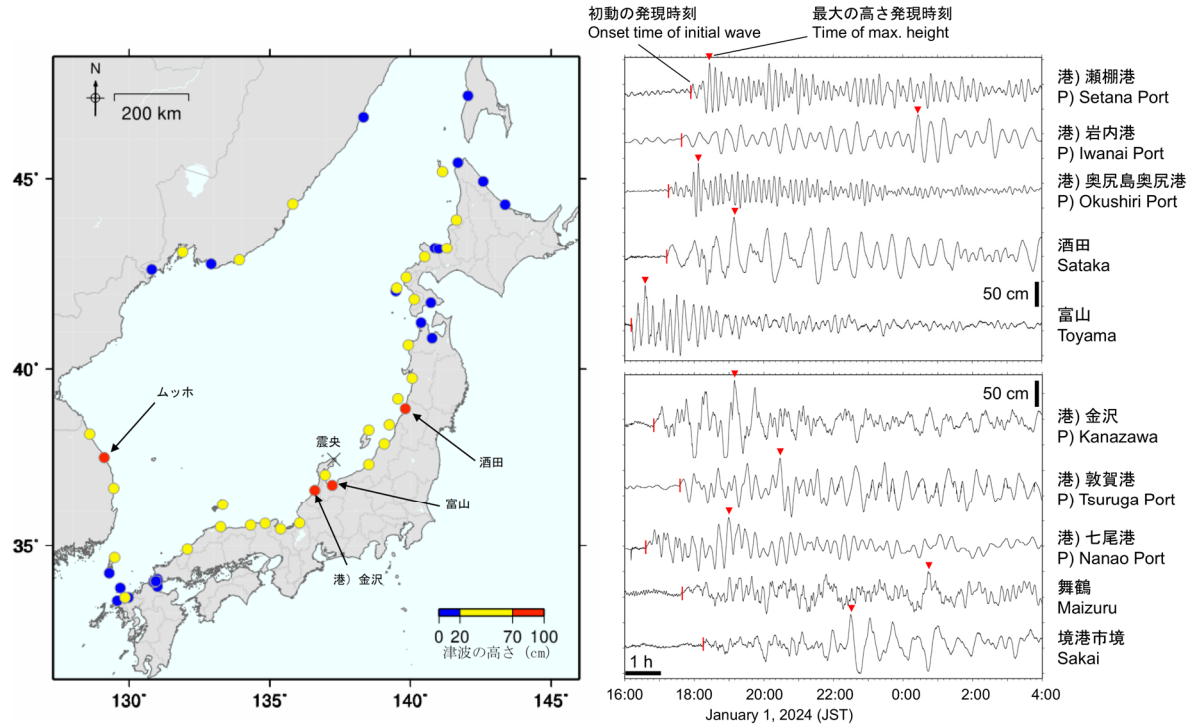

図 1.　潮位観測点で観測した最大津波高の分布（左）及び観測点の波形例（右）（気象庁, 2024f に加筆）.

Fig. 1.　Spatial distribution of the maximum tsunami heights recorded by tide gauge stations (left) and the tsunami waveforms observed at some of the stations (right) (based on JMA, 2024f).

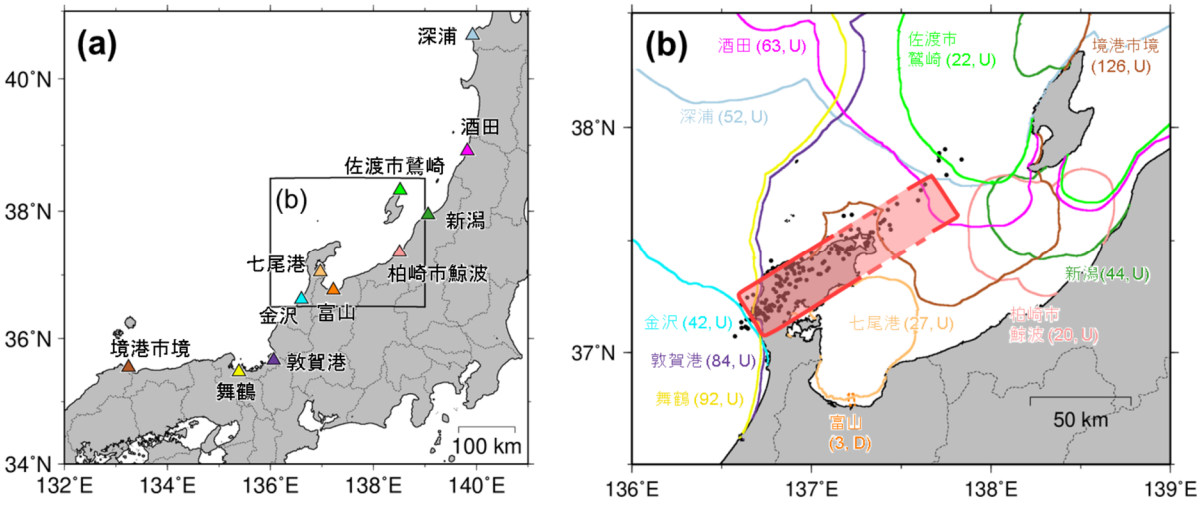

図 2.　津波逆伝播による 2024 年 1 月 1 日能登半島地震の津波波源域（気象庁, 2024d）. (a) 津波観測点の位置図. (b) 逆伝播線及び推定波源域（赤い矩形領域）. 各逆伝播線には，観測点名，地震発生から津波到達までの時間（単位：分），及び津波第一波の極性（押しは U; 引きは D）を併記した.

Fig. 2.　The tsunami source area of the 2024 Noto Peninsula earthquake estimated by tsunami back-propagation (JMA, 2024d). (a) Location map of sea-level stations. (b) Back-propagation lines and the estimated source area (red rectangle). Each line is shown with the name of the station, the time in minutes between the earthquake occurrence and the tsunami arrival, and the phase of the initial wave of the tsunami (up, U; down, D).

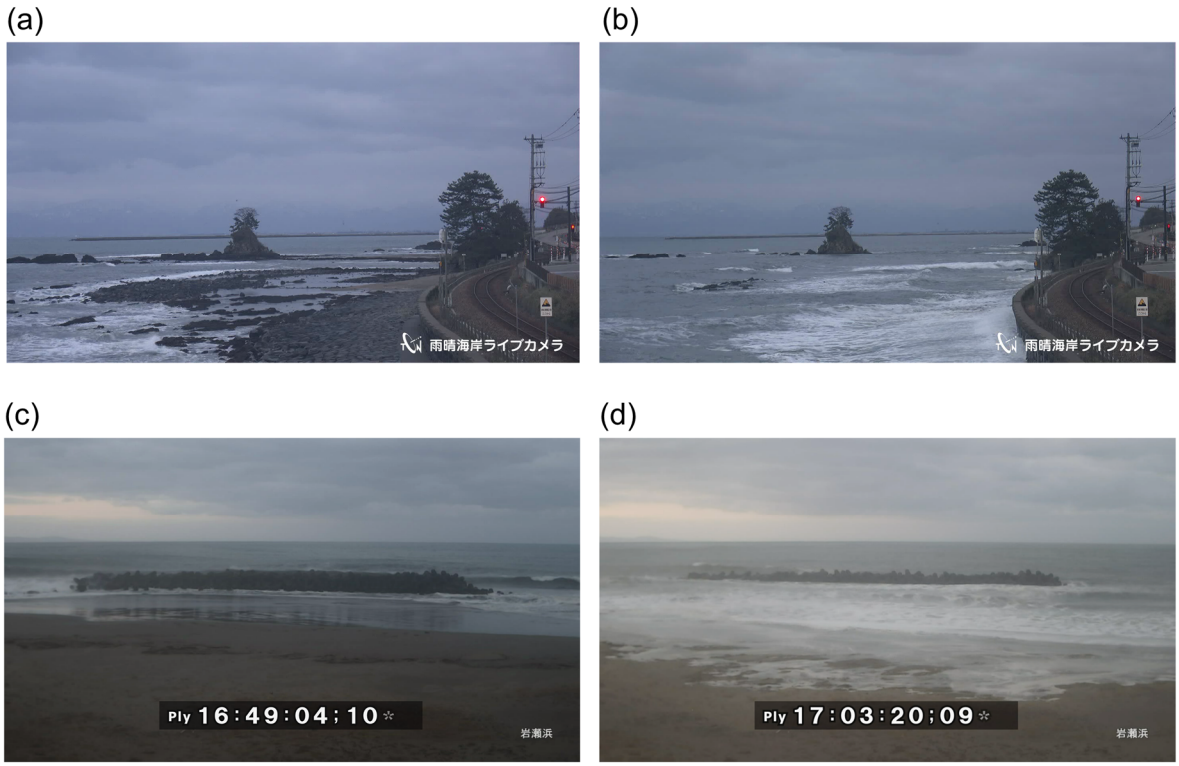

図 3.　富山県のライブカメラで捉えられた津波の様子．(a)と(b)は雨晴海岸の画像で，(a)は波高最小時，(b)は波高最大時のものをそれぞれ示す．(c)と(d)は岩瀬浜の画像で，(c)は波高最小時，(d)は最大遡上時のものをそれぞれ示す．

Fig. 3.　Tsunami images taken by live cameras in Toyama Prefecture. (a, b) Images of the Amaharashi Coast at the time of (a) the minimum tsunami height, and (b) the maximum tsunami height. (c, d) Images of the Iwasehama at the time of (c) the minimum tsunami height, and (d) the maximum runup.

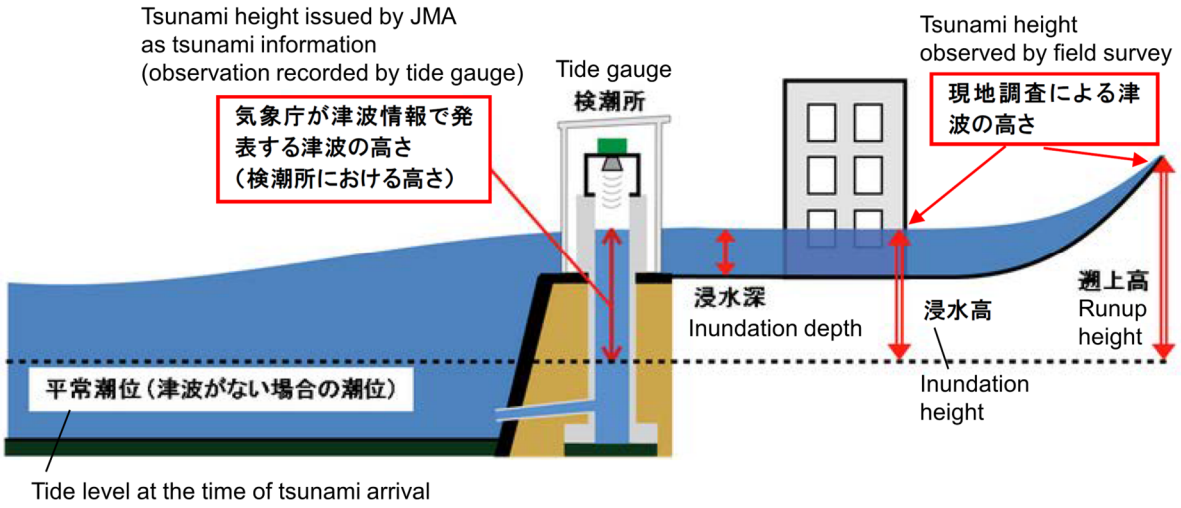

図 4.　浸水高及び遡上高の定義（気象庁，2024d に加筆）．

Fig. 4.　Definitions of tsunami inundation height and runup height (based on JMA, 2024d).

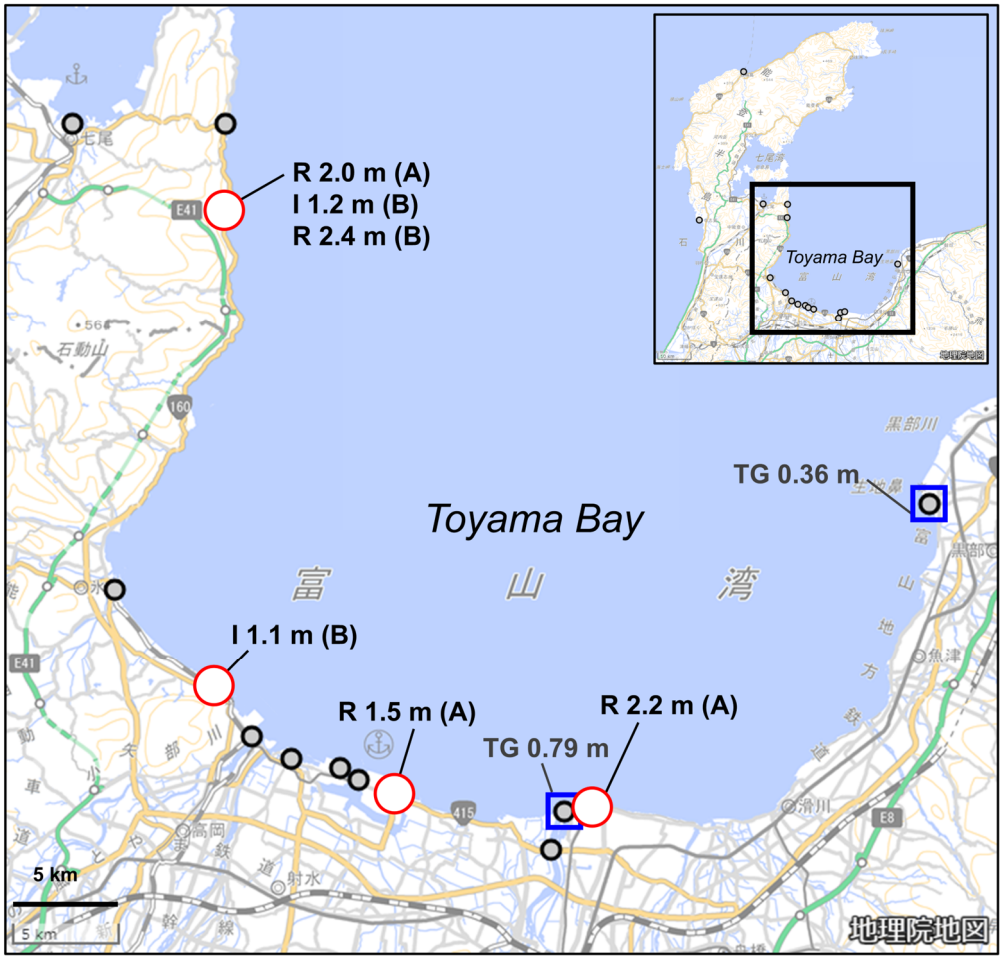

図 5.　気象研究所による調査地点の位置及び富山湾沿岸で観測された津波高の分布．赤丸印は高い信頼度（A 又は B で，括弧内に表記）の測定結果を得た地点，灰丸印はそれ以外の地点，青四角印は潮位計をそれぞれ示す．数値の前の I は浸水高，R は遡上高をそれぞれ示す．また，TG は潮位計で観測した最大津波高（気象庁，2024d; 北陸地方整備局，2024b）を示す．

Fig. 5.　Location map of our survey sites along the coast of Toyama Bay and observed tsunami heights. Red circles indicate sites where we obtained reliable measurements (reliability level A or B, shown in parentheses), gray circles indicate the other sites, and blue squares indicate tide gauge stations. "I" and "R" indicate measurements of inundation height and runup height, respectively. "TG" indicates the maximum tsunami height (or the maximum positive amplitude) recorded by the tide gauge (JMA, 2024d; Hokuriku Regional Development Bureau, 2024b).