

2024.1.7(6 days after the event)

Quick report of preliminary reconnaissance of the 2024 Noto- hanto Earthquake in Japan

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Outline of Reconnaissance Work

Team member (ICGdR team):

Masakatsu Miyajima (Director-General of ICGdR)

Masaho Yoshida (Vice President of ICGdR)

Yuko Serikawa (Assistant of Director-General of ICGdR)

(ICGdR: NPO International Consortium on Geo-disaster Reduction)

Survey Period: 2024.1.4-1.5

Survey area: Wajima City and Anamizu Town

Outline of Earthquake

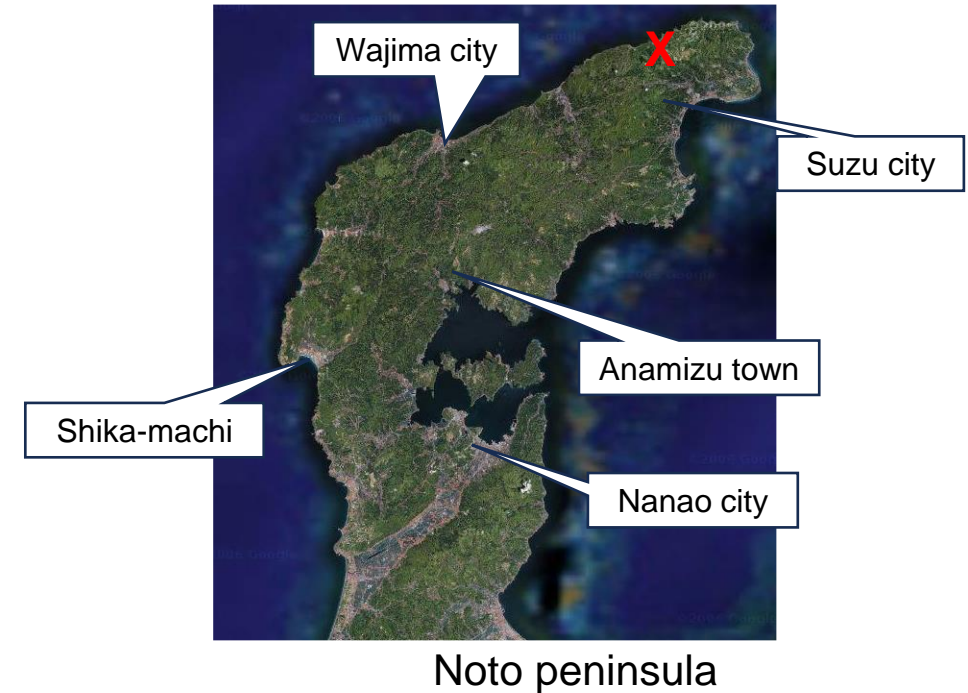
- Time of Main Shock: 2024.1.1 16:10 (Local time)
- Location of Epicenter: 137.2° E, 37.5° N
- Depth of Hypocenter: very shallow
- Magnitude of Main Shock: M_{JMA} 7.6
- JMA Seismic Intensity of Main Shock:

7: Shika-machi (Kanou)

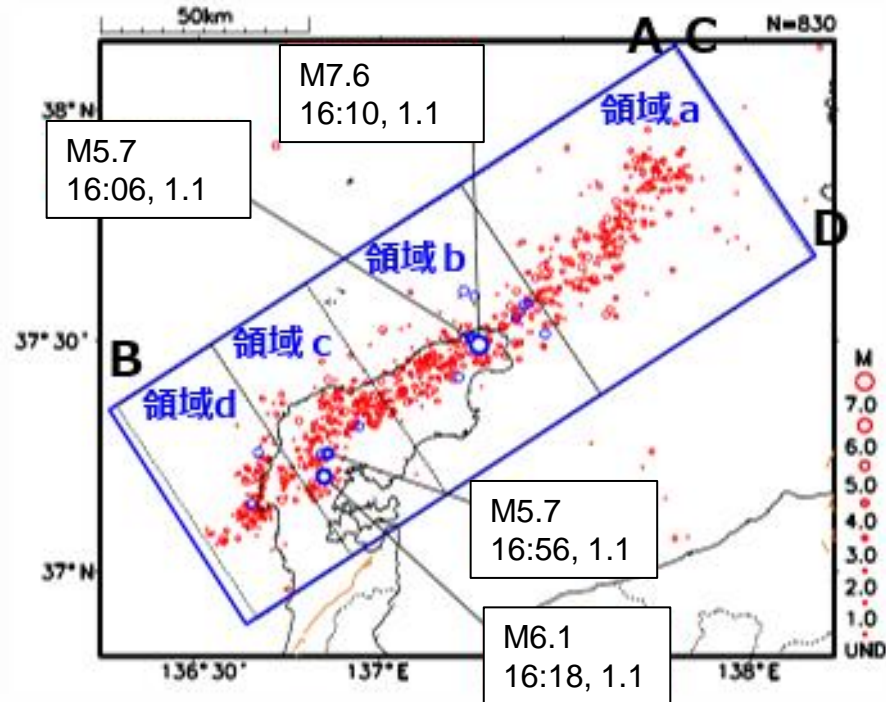
6+: Wajima (Fugeshi), Suzu (Misaki), Nanao (notojimamukoda)

6-: Nanao (Honfuchumachi), Noto-machi (Ushutsu), Shika-machi (Togiryokenmachi)

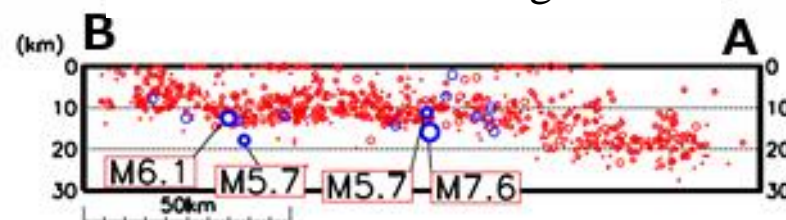
5+: Hakui (Yanaida), Kanazawa (Sainen), Komatsu (Komade)



After Shock Distribution (2024 1.1 10:00AM – 1.2 8:00AM)



Cross-section diagram



by Japan Meteorological Agency

<https://www.jma.go.jp/jma/press/2401/01c/kaisetsu202401012130.pdf>

K-NET Observatory Record

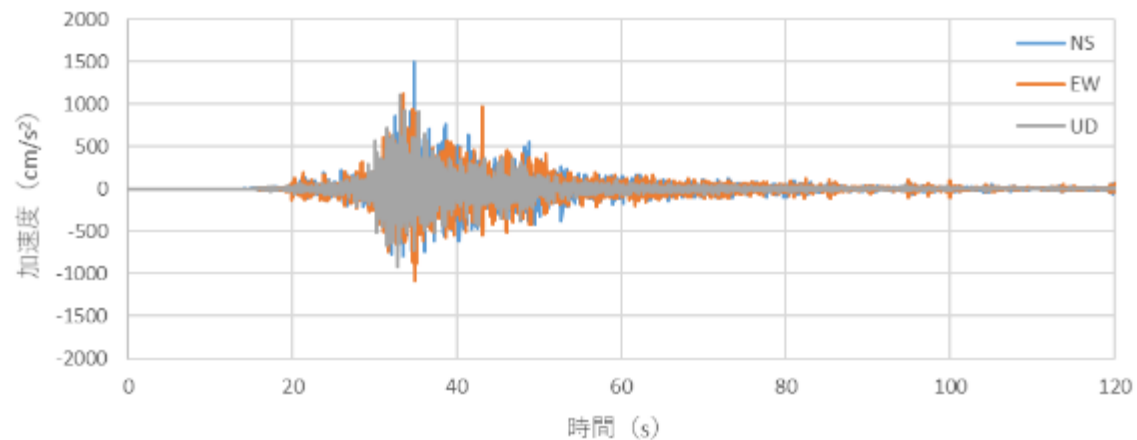
Site name	Site code	Latitude	Longitude	PGA (NS)	PGA (EW)	PGA (UD)	PGV (NS)	PGV (EW)	PGV (UD)	JMA SI*
Ootani	ISK001	37.5	137.1767	904	1429	674	73	91	75	6+(6.26)
Shouin	ISK002	37.4473	137.2877	686	707	775	104	117	50	6+(6.29)
Wajima	ISK003	37.3924	136.9078	1496	1120	1110	96	65	59	6+(6.22)
Anamizu	ISK005	37.2309	136.9041	1023	1146	1044	95	145	42	7 (6.58)
Togi	ISK006	37.1603	136.6896	1479	2678	1142	65	66	43	7 (6.69)
Nanao	ISK007	37.0426	136.968	374	359	283	39	52	14	6- (5.82)
Hakui	ISK008	36.8937	136.7784	374	483	354	41	52	24	5+ (5.44)
Nanatsuka	ISK009	36.7334	136.7025	251	219	195	17	19	9	5+ (5.18)
Kanazawa	ISK010	36.5421	136.6435	215	163	101	11	13	6	5- (4.68)
Komatsu	ISK011	36.3976	136.4409	138	161	50	15	21	4	5+ (5.04)
						* : Calculated by Prof. Nishikawa (Professor of Fukui College of Technology)				

by National Research Institute for Earth Science and Disaster Resilience

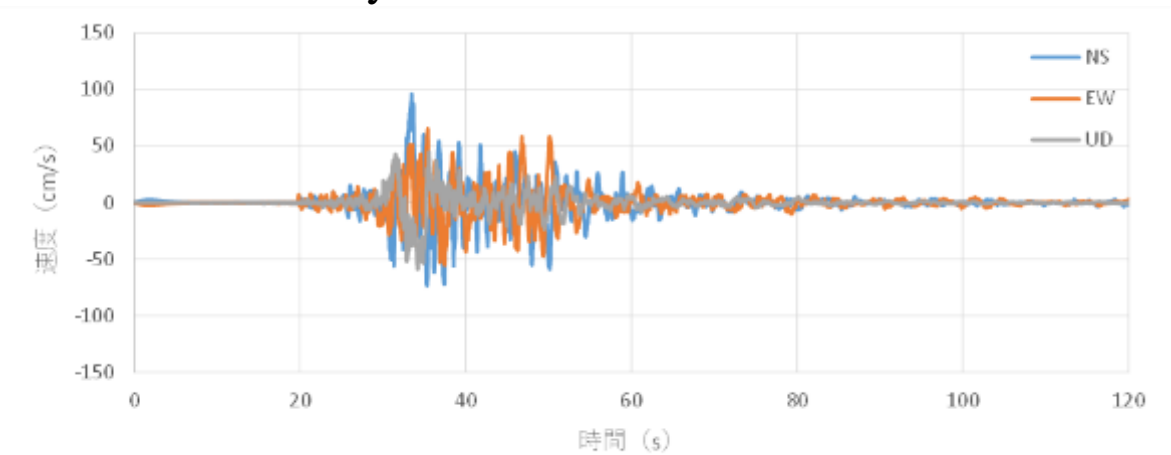
<https://www.kyoshin.bosai.go.jp/kyoshin/quake/>

https://www.google.com/maps/d/u/0/edit?mid=1GdLXhVgKoGaWYdqRlayXEZTFnsirv_0&usp=sharing

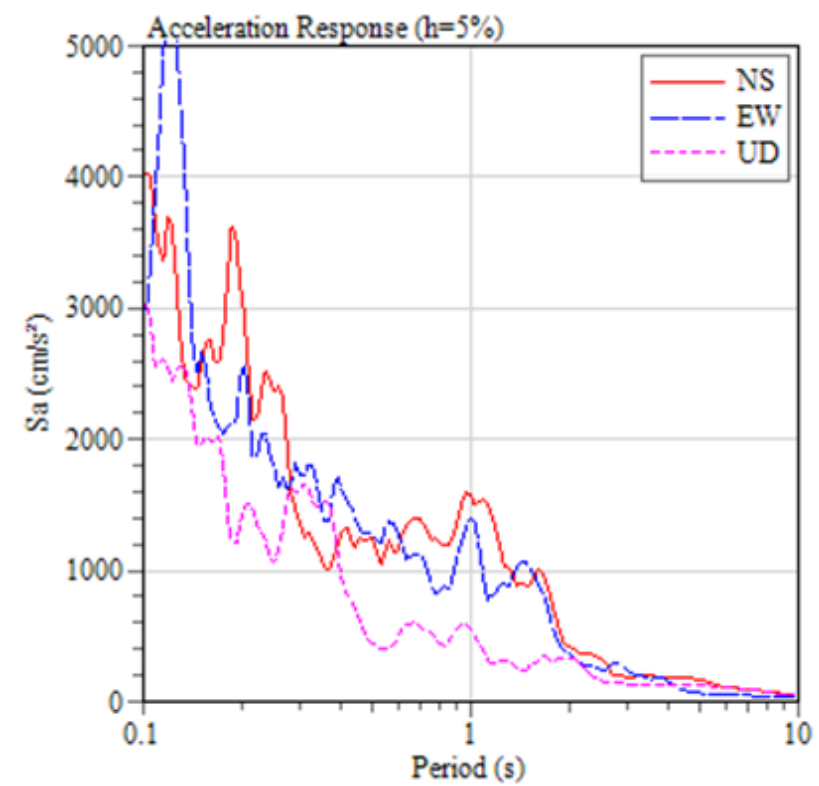
Time Histories and Acceleration Response Spectra (K-NET Wajima)



Time history of acceleration

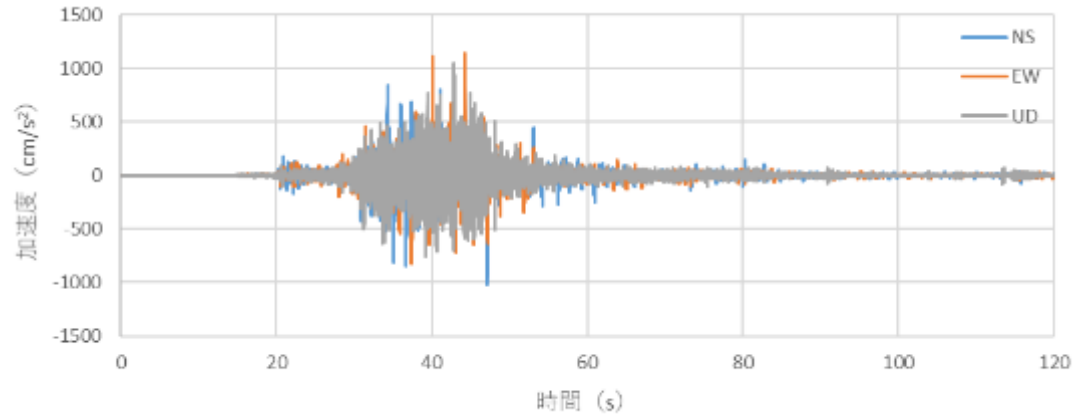


Time history of velocity

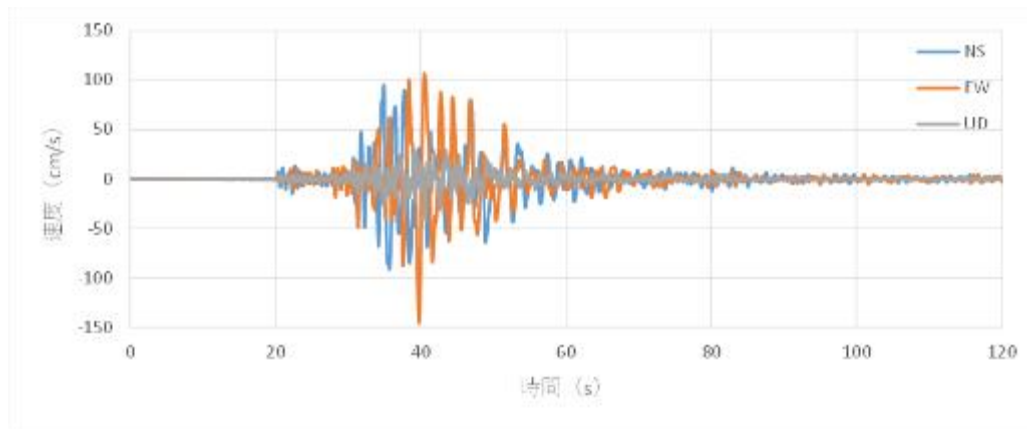


Acceleration response spectra

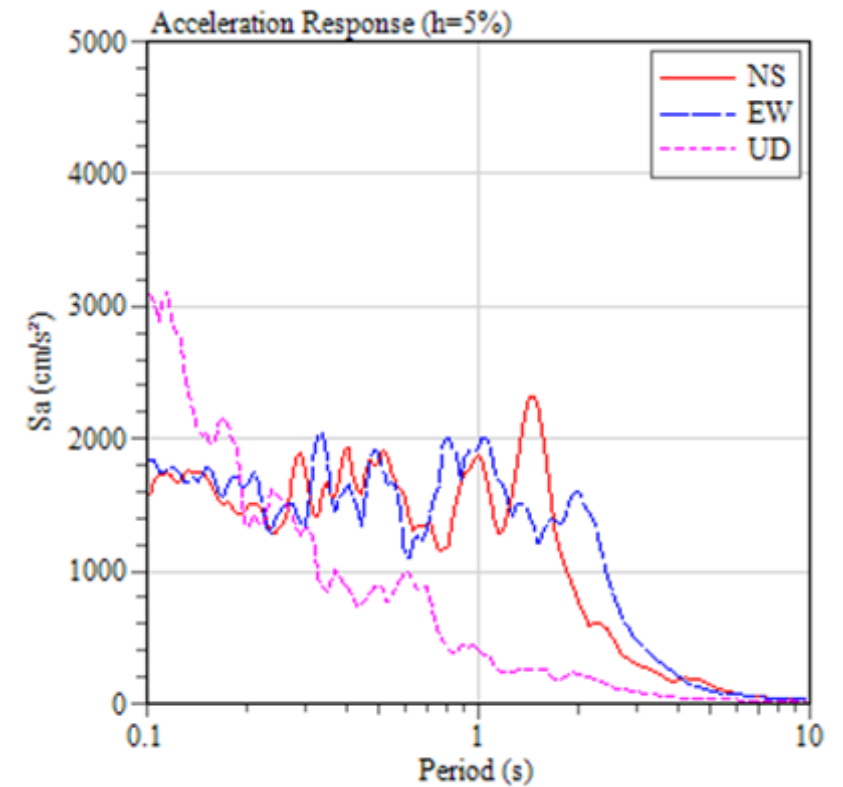
Time Histories and Acceleration Response Spectra (K-NET Anamizu)



Time history of acceleration

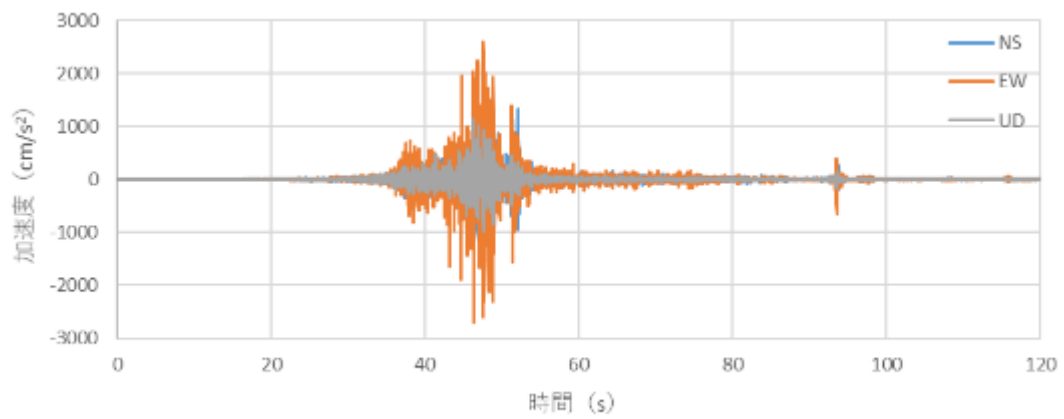


Time history of velocity

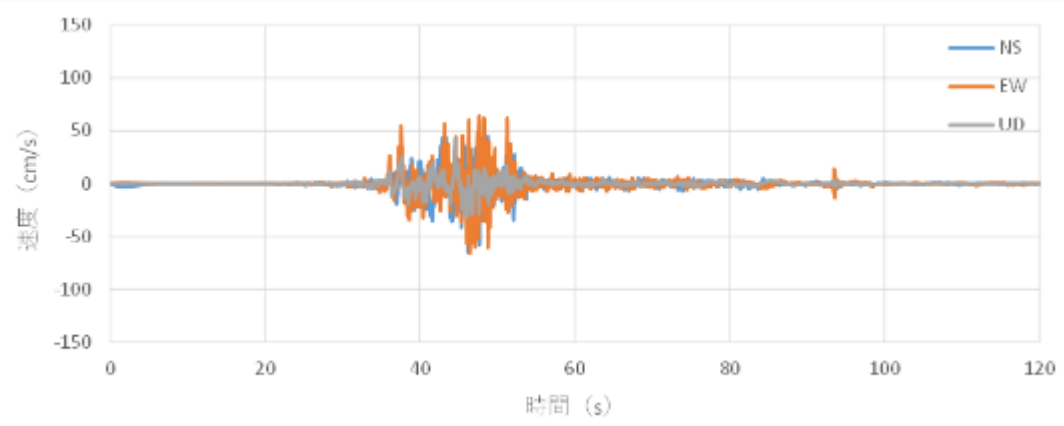


Acceleration response spectra

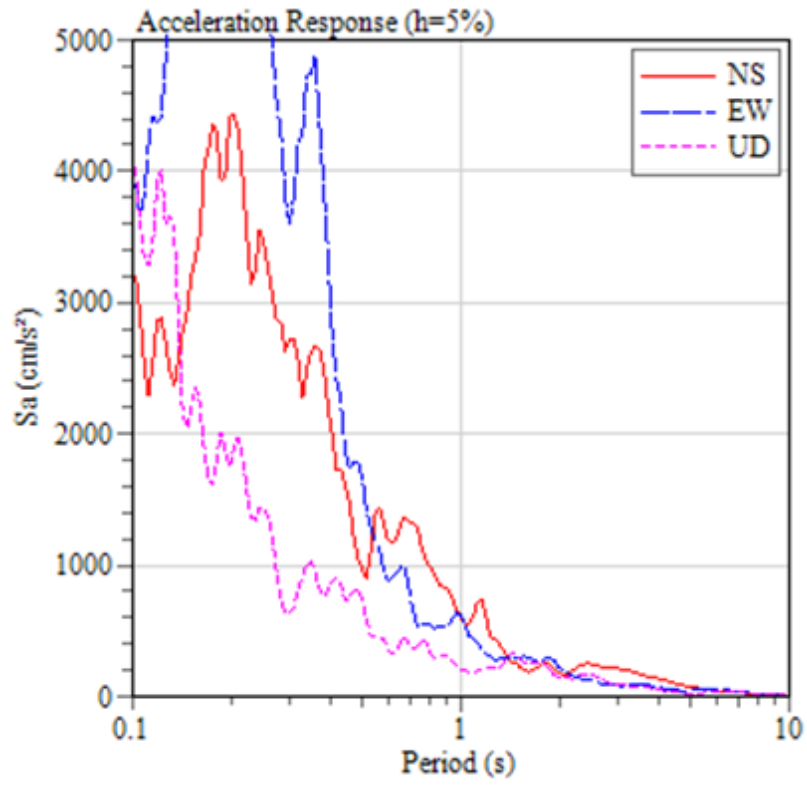
Time Histories and Acceleration Response Spectra (K-NET Togi)



Time history of acceleration



Time history of velocity



Acceleration response spectra

Outline of Personal Damage

(As of 17:00, 6th of Jan. (5 days after the event))

	Place	Dead	Missing	Injured	Refugee	Safety is unknown
①	Suzu city	38	1	145	7,122	39
②	Wajima city	69	-	51	12,506	140
③	Noto town	2	0	35	4,170	10
④	Anamizu town	9	0	185	2,693	12
⑤	Shika town	2	0	75	1,096	0
⑥	Nanao city	5	0	3	2,466	4
⑦	Nakanoto town	0	0	1	242	0
⑧	Hakui city	1	0	7	138	0
⑨	Hodatsushimizu town	0	0	0	59	0



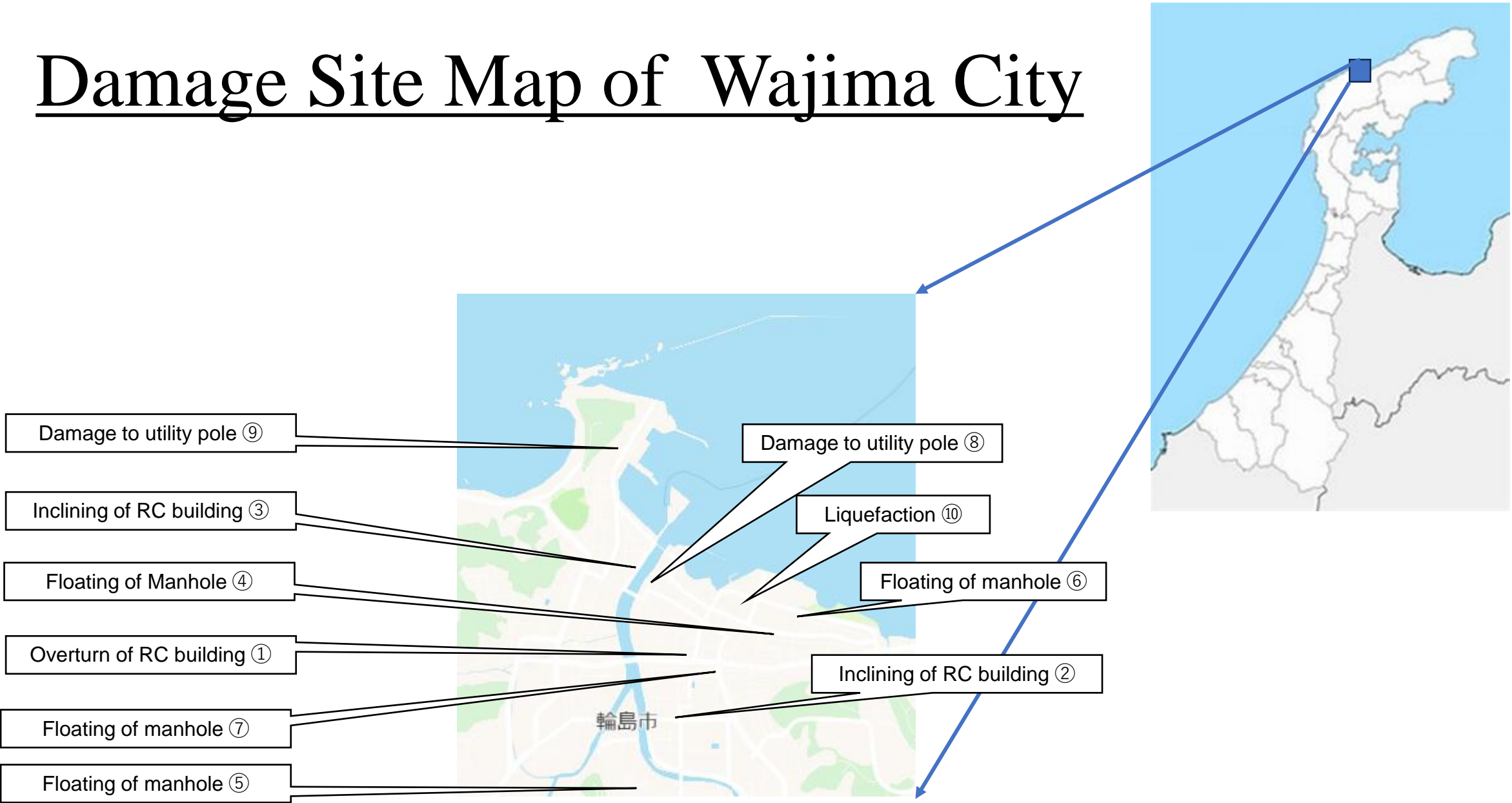
Damage Site Map of Anamizu Town



Floating of Manhole

Liquefaction

Damage Site Map of Wajima City



Damage to Wooden House



Japanese building code was upgraded in 1981. The many old wooden houses built before 1981 were collapsed. But some houses built after 1981 were also collapsed. Many persons died in a stampede of the old houses. Collapsed houses are blocking roads, causing traffic problems.

Damage to Wooden House



Wajima city



Wajima city

Damage to Wooden House



Wajima city



Wajima city

Damage to RC Building



Wajima city (Map ①)



Damage to RC Building



Damage to RC Building



Wajima city (Map ②)

Damage to RC Building



Wajima city (Map ③)



Damage by Fire



Downtown of Wajima city



Damage by Fire



A fire broke out immediately after the earthquake. The fire spread due to the fact that the road was blocked by collapsed houses and it was not possible to go to the waterproof sink, and the number of fire engines was small, and about 200 houses were burned down.

Floating of Manhole



Anamizu town (Map ①)



Wajima city (Map ④)

In the center of the city, there were some manholes floating up, which was a traffic obstacle.

Floating of Manhole



Wajima city (Map ⑤)



Wajima city (Map ⑥)

Floating of Manhole



Wajima city (Map ⑦)



Wajima city (Map ⑦)

Damage to Utility Pole



Wajima city (Map ⑧)



Wajima city (Map ⑧)

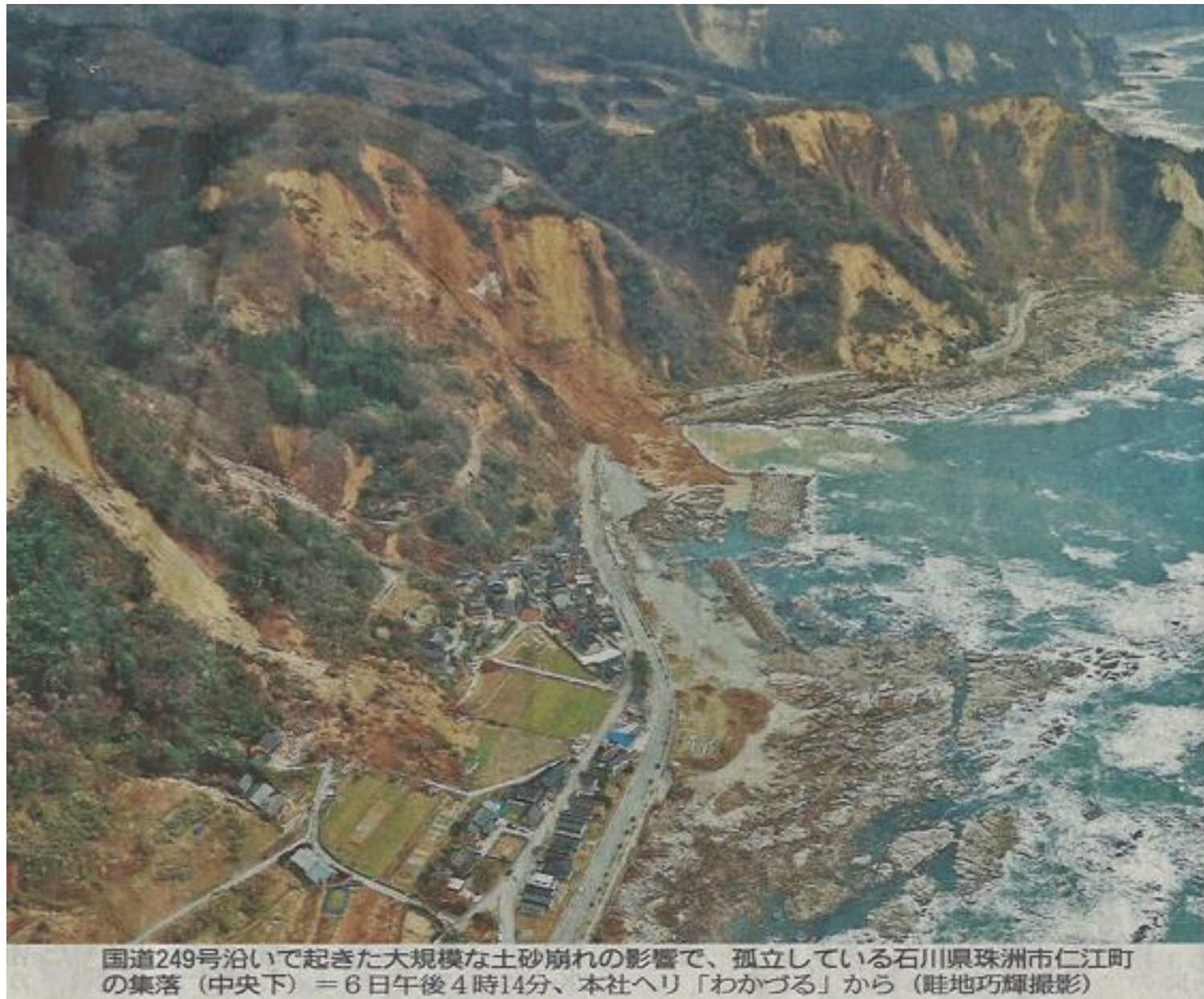
Sloping utility poles block the road, causing traffic problems in the town.

Damage to Utility Pole



Wajima city (Map ⑨)

Landslide



国道249号沿いで起きた大規模な土砂崩れの影響で、孤立している石川県珠洲市仁江町の集落（中央下）＝6日午後4時14分、本社ヘリ「わかづる」から（畦地巧輝撮影）

Copy of the Hokuriku-chuunichi Newspaper
Morning edition of 2024.1.6.

Landslide



The affected area has many mountain areas and hilly areas, and many slope failures have occurred. It swept away houses, blocked roads, and had a major impact on the affected areas. It seems that many people were buried alive due to slope failure. Moreover, they have led to the creation of many isolated villages and loss of communication

Landslide



Liquefaction



Anamizu town (Map ②)



Wajima city (Map ⑩)

Liquefaction occurred in the port area, but not on a large scale. It seems that the ground deformation due to liquefaction was not large.

Liquefaction



Wajima city (Map ⑤)



Wajima city (Map ⑦)

There were manhole floating in the city, thought to be due to liquefaction.

Concluding remarks

- The massive earthquake that struck a depopulated and aging area is revealing a variety of issues.
- Many slope failures have disrupted the road network, created many isolated villages. Due to the disruption of the road network, relief efforts have been delayed and relief supplies have also been delayed.
- Many casualties have occurred due to the collapse of the houses. Houses built before 1981, when the Japanese Building Code was revised, have been severely damaged. The relatively old houses built after that time were also damaged.
- Water and power outages are still on going in the affected areas, and relief efforts are expected as soon as possible.

Information related to earthquake ground motion was provided by Prof. Hayato Nishikawa of Fukui Institute of Technology. We express sincere appreciation.

We would like to express our deepest sympathies to those affected by the disaster and pray for the repose of the souls of those who lost their lives. We pray for the earliest possible recovery of the affected areas.