

# 2019年山形沖の地震の 被害調査報告

Damage survey report  
for the 2019 Yamagata earthquake

京都大学防災研究所  
山田真澄、Jim Mori、加茂正人

# Survey Schedule

7月2日 | July 2

宇治市→新潟空港 →村上市鼠ヶ関  
→村上市府屋（自治体震度計）→村上市寒川(NIG006)

7月3日 | July 3

鶴岡市小岩川→鶴岡市大岩川→鶴岡市温海(YMT004)  
→鶴岡市温海川（気象庁観測点）→鶴岡市道田町(YMT003)  
→鶴岡市大泉小学校→鶴岡市駅前

7月4日 | July 4

村上市府屋→新潟空港→宇治市

調査メンバー Jim Mori、加茂正人、山田真澄

# Intensity Map



鶴岡市温海 (YMT004)

大岩川

小岩川

鼠ヶ関

村上市府屋

村上市寒川(NIG006)

鶴岡市道田町 (YMT003)

鶴岡市道田町 (JMA)

鶴岡市上山添

鶴岡市温海川 (JMA)

鶴岡市下名川

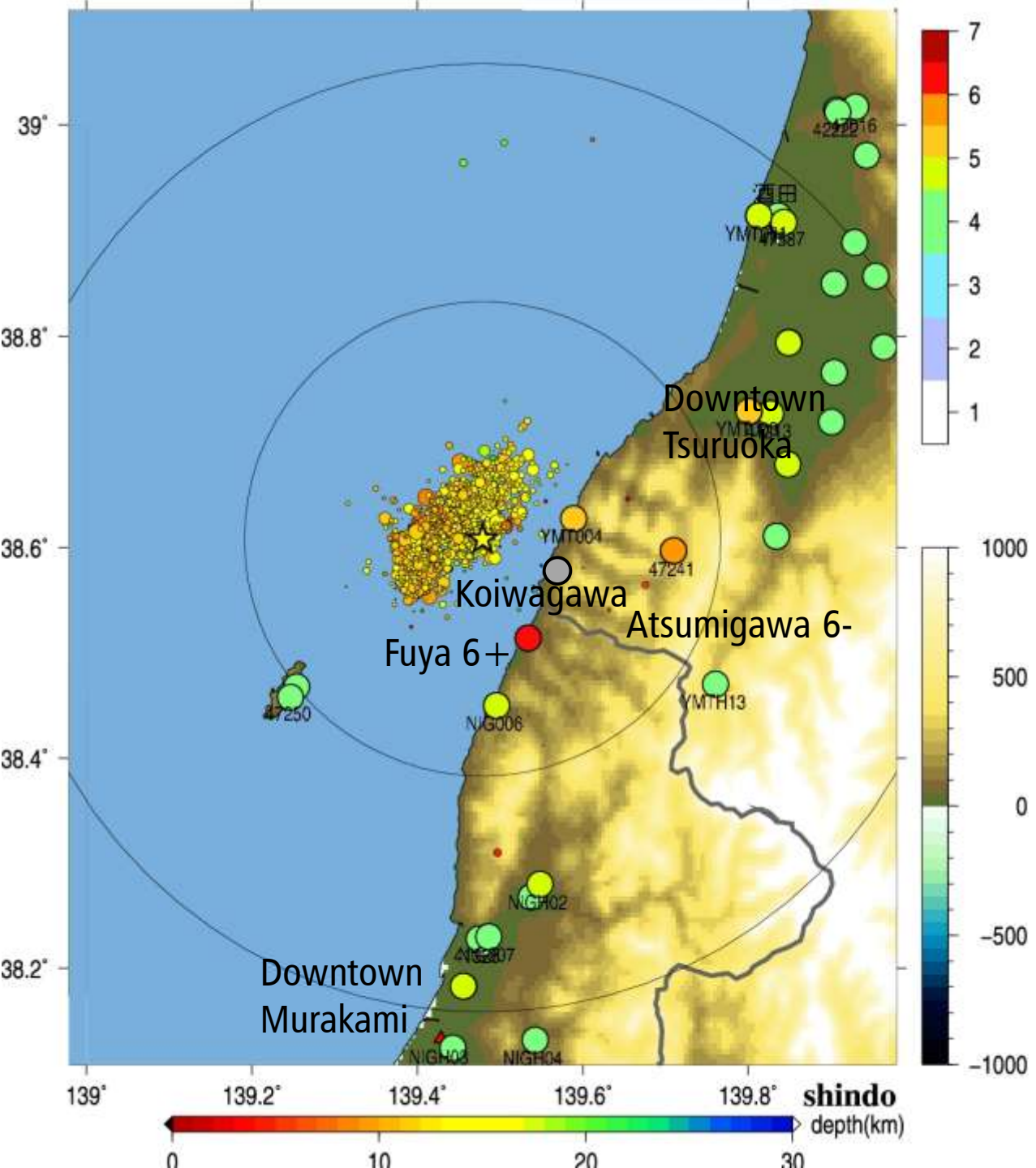
YMTH13

地理院地図(電子国土Web)

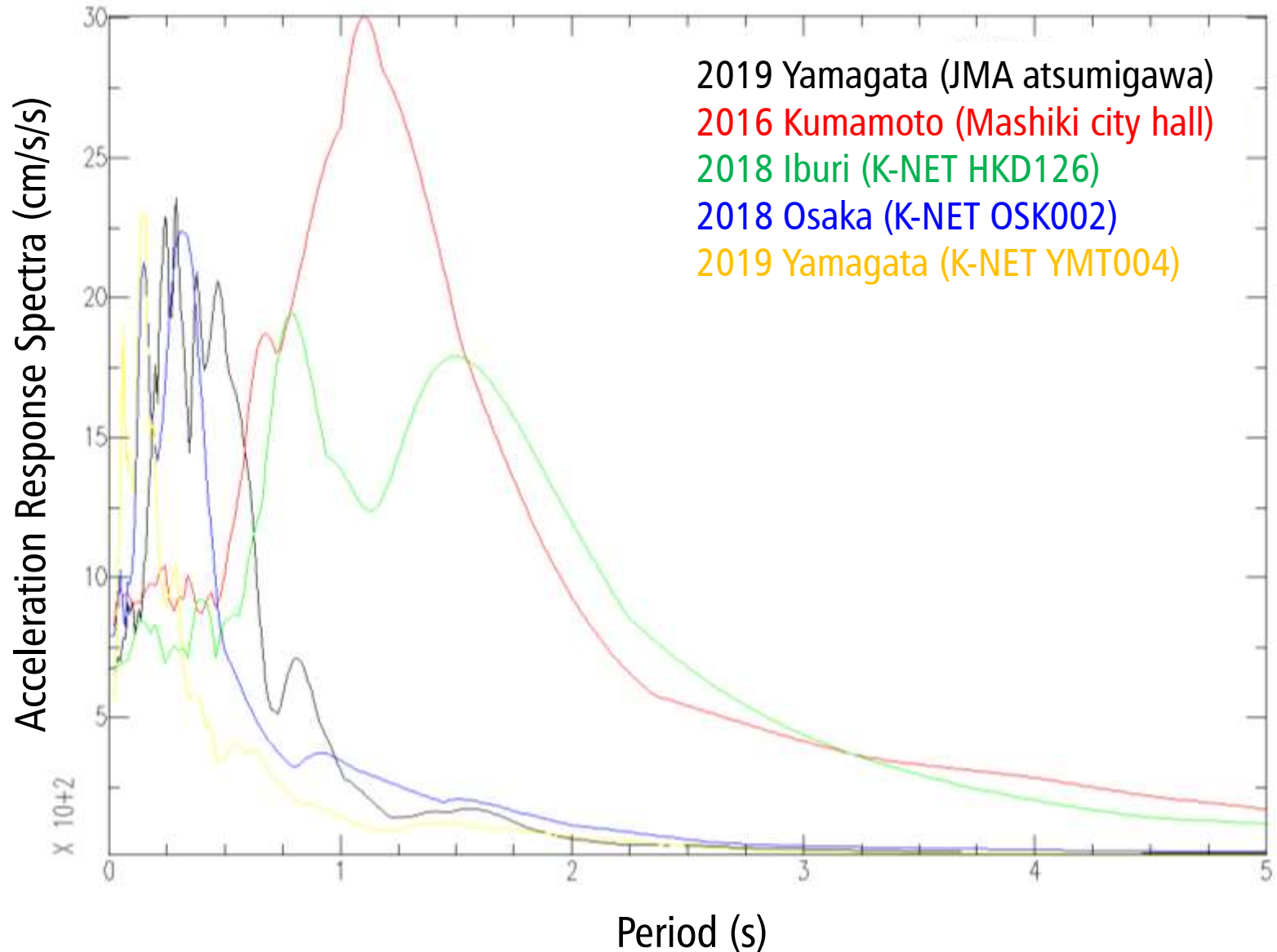




# Intensity Map



# Acc. Resp. Spectra (EW comp.)



# Damage

## 2 人的・物的被害の状況（消防庁情報：6月25日20:00現在）

### (1) 人的被害 39人

【宮城県】軽傷5人（仙台市、塩竈市、栗原市、大崎市2人）

【秋田県】重傷1人（湯沢市）

軽傷1人（美郷町）

【山形県】重傷5人（鶴岡市3人、酒田市、高畠町）

軽傷20人（鶴岡市12人、酒田市3人、新庄市2人、川西町、三川町、遊佐町）

程度不明1人（鶴岡市）

【新潟県】重傷2人（村上市、燕市）

軽傷3人（新潟市、柏崎市、村上市）

【石川県】重傷1人（七尾市）

### (2) 住家被害

【秋田県】一部破損1棟（にかほ市）

【山形県】一部破損97棟（鶴岡市）

【新潟県】半壊10棟（村上市）

一部破損368棟（長岡市3棟、柏崎市2棟、村上市362棟、五泉市）

# 温海 | Atsumi, YMT004 (JMA intensity 5+)

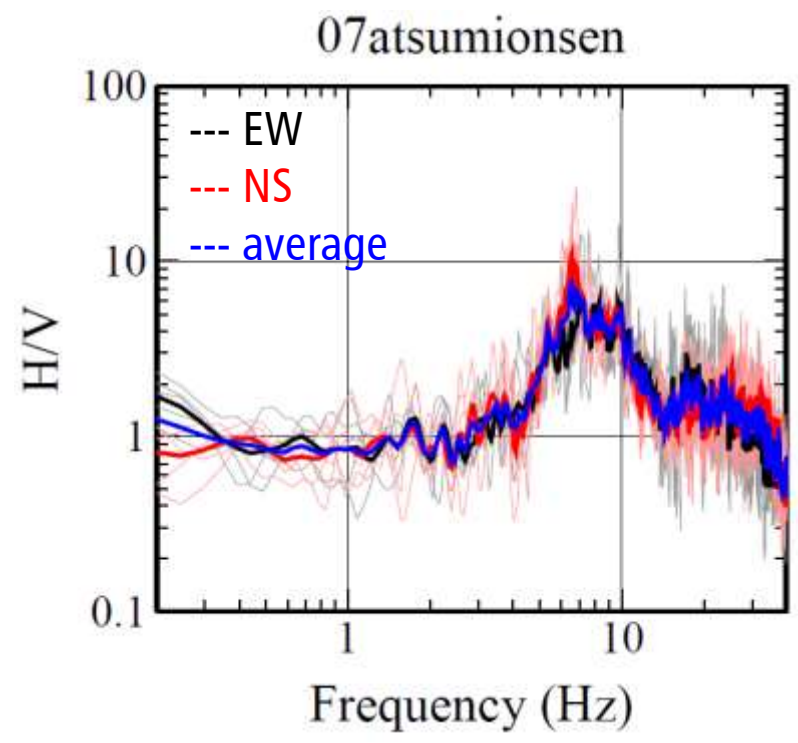
- Fall of roof tiles (<5%)
- Collapse of block wall
- Fall of mortar wall





# 温海 | Atsumi, YMT004 (JMA intensity 5+)

Ambient noise measurement at the YMT004 station





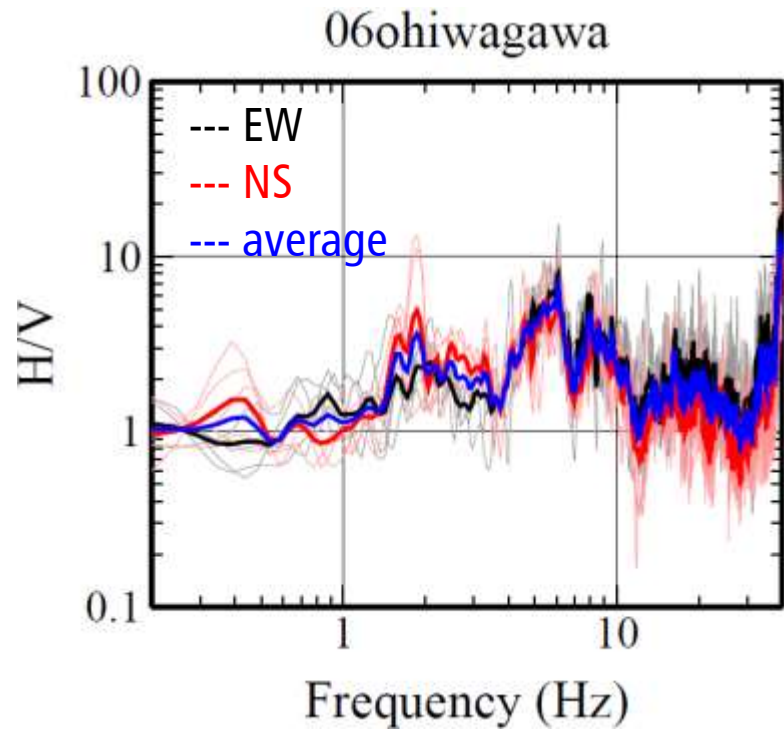
# 大岩川 | Ohiwagawa (no intensity info)

- Fall of roof tiles (<math>< 5\%</math>)
- Collapse of block wall
- Corrosion of reinforcement



# 大岩川 | Ohiwagawa (no intensity info)

Ambient noise measurement near the post office





# 小岩川 | Koiwagawa (no intensity info)

- Fall of roof tiles (30%)
- Collapse of block wall
- Fall of mortar wall
- Tilt of old storage houses
- Corrosion of reinforcement





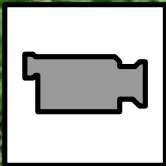
# 小岩川 | Koiwagawa (no intensity info)

- Fall of roof tiles (30%)
- Collapse of block wall
- Fall of mortar wall
- Tilt of old storage houses
- Corrosion of reinforcement





# 小岩川 | Koiwagawa (no intensity info)



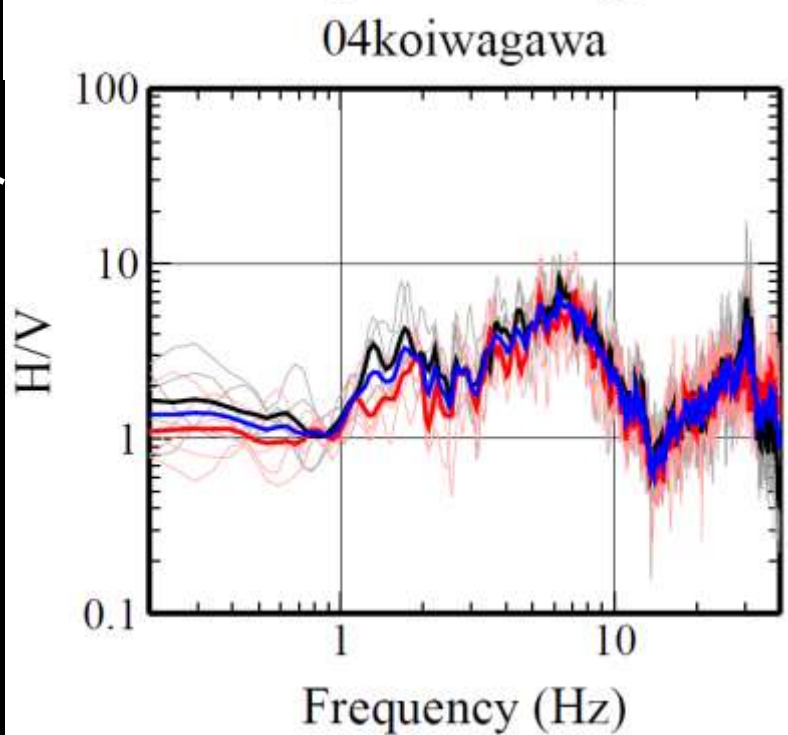
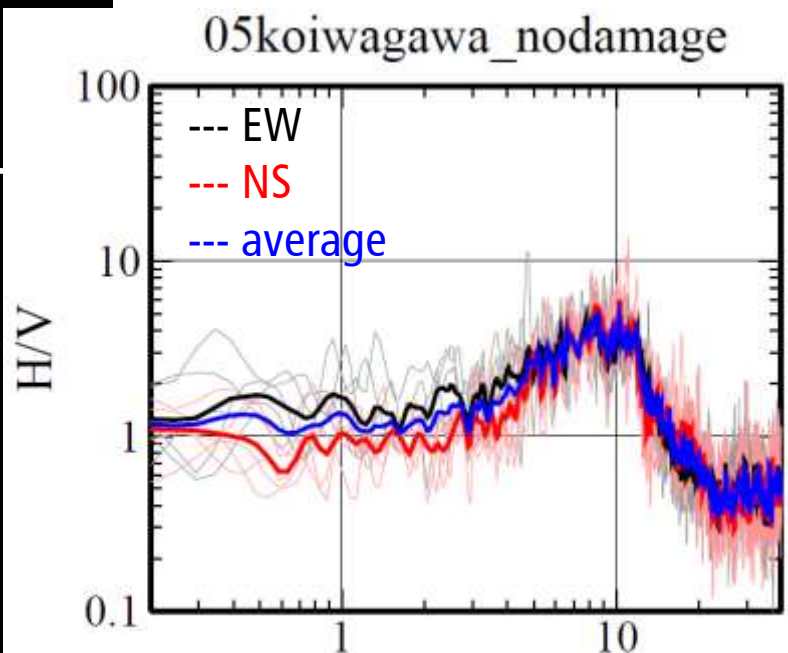


# 西光寺 | Saikoji (collapsed ratio 33%)





# 小岩川 | Koiwagawa



# 鼠ヶ関 | Nezugaseki (no intensity info)

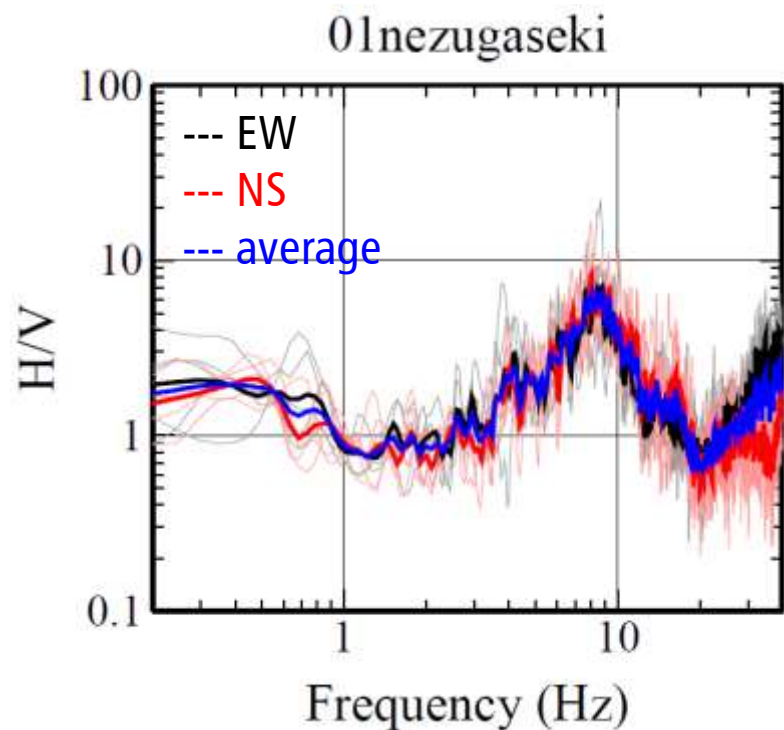
- Fall of roof tiles (10%)
- Collapse of block wall
- Hair crack on the wall
- Corrosion of reinforcement





# 鼠ヶ関 | Nezugaseki (no intensity info)

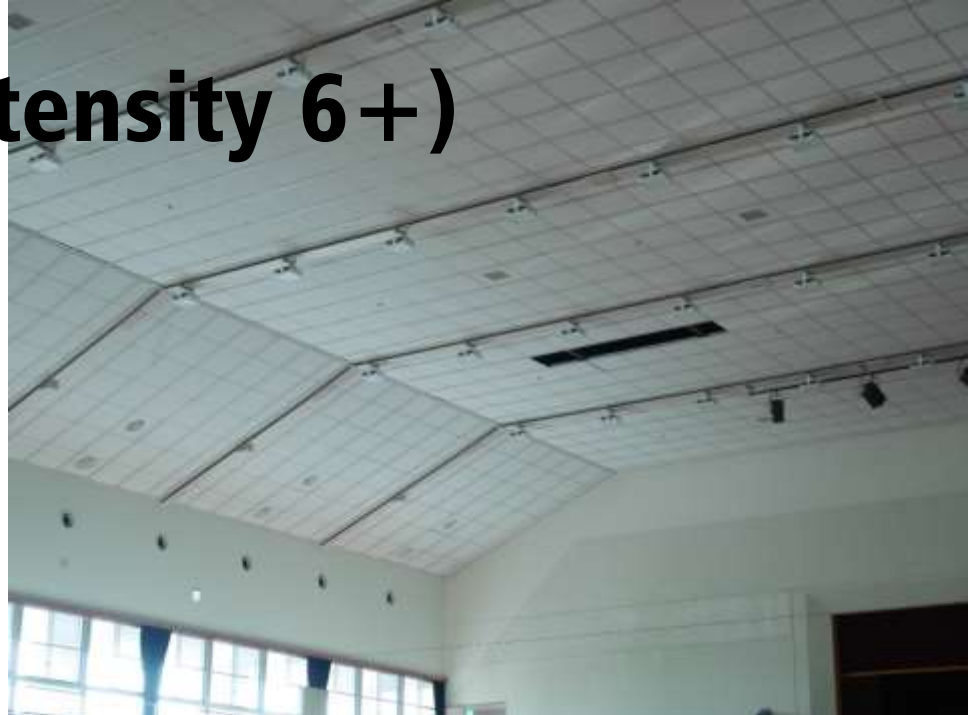
Ambient noise measurement near the JR station





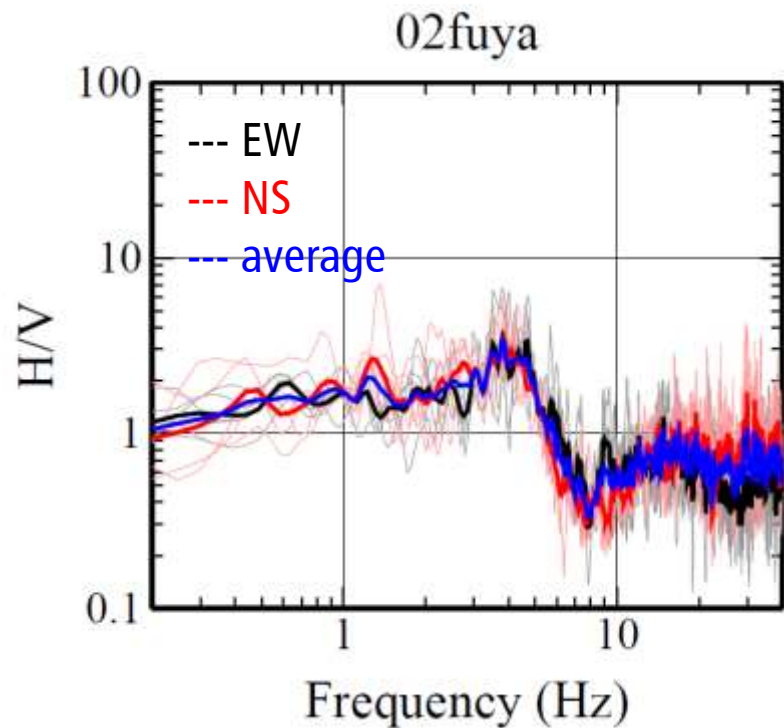
# 府屋 | Fuya (JMA intensity 6+)

- Fall of roof tiles (<5%)
- Fall of the ceiling of the gym
- Collapse of the embankment of the gym





# 府屋 | Fuya (JMA intensity 6+)





# 府屋 | Fuya (JMA intensity 6+)



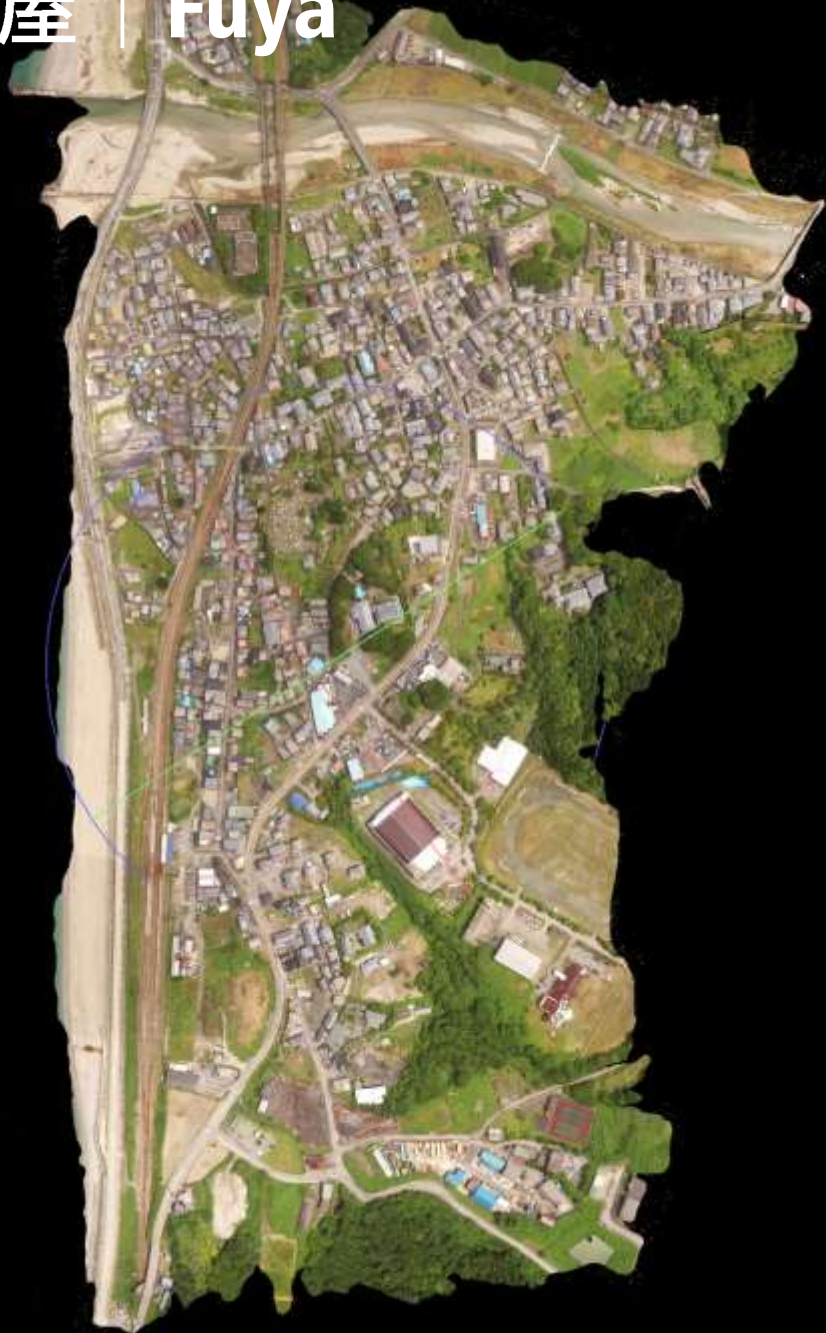
Town hall

Seismometer

Gym



府屋 | Fuya

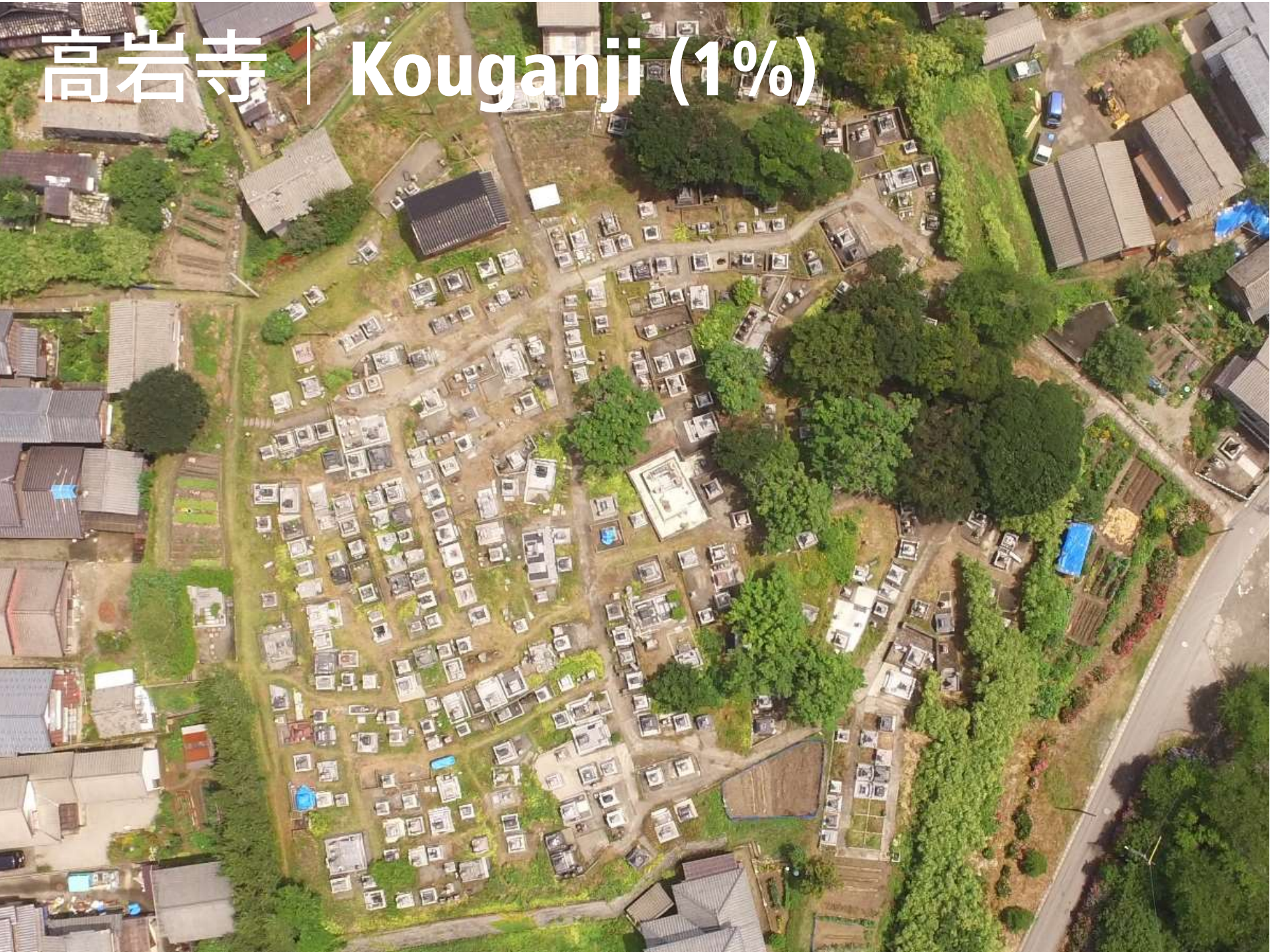


小岩川 | Koiwagawa





# 高岩寺 | Kouganji (1%)





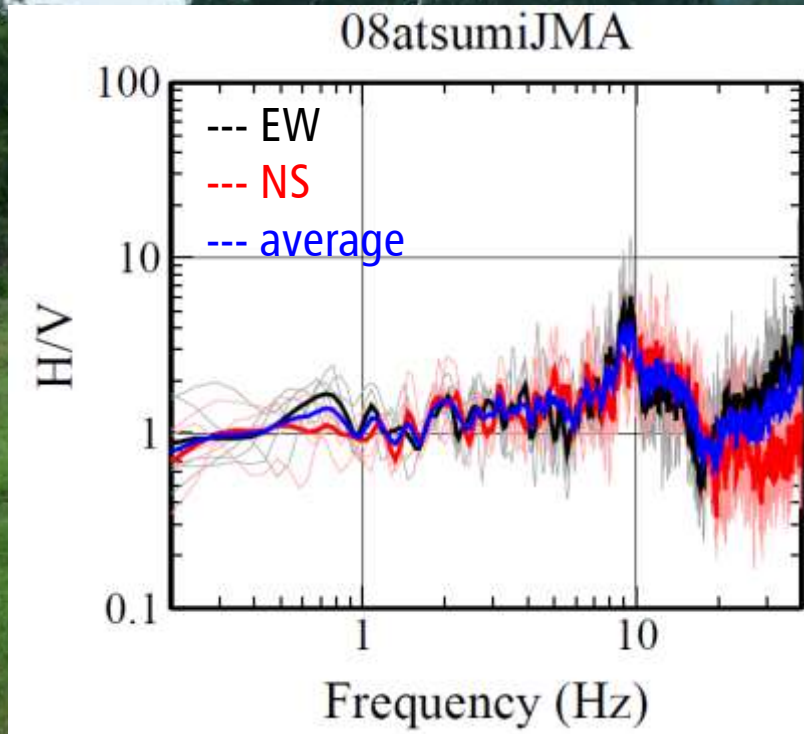
# 府屋 | Fuya (JMA intensity 6+)





# 温海川 | Atusumigawa (JMA intensity 6-)

- Middle of large field
- Small landslide nearby
- Very minor damage in nearby town



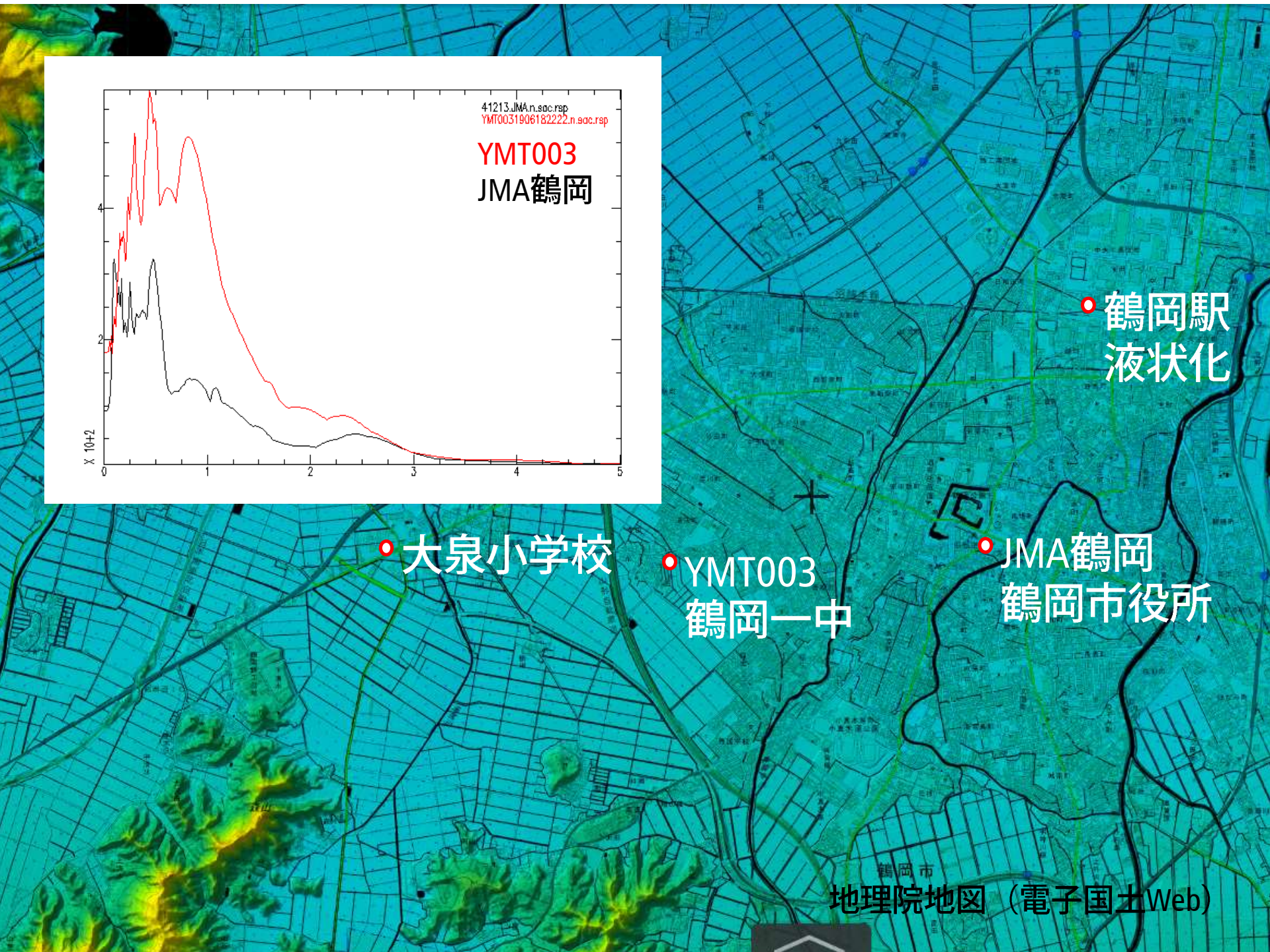
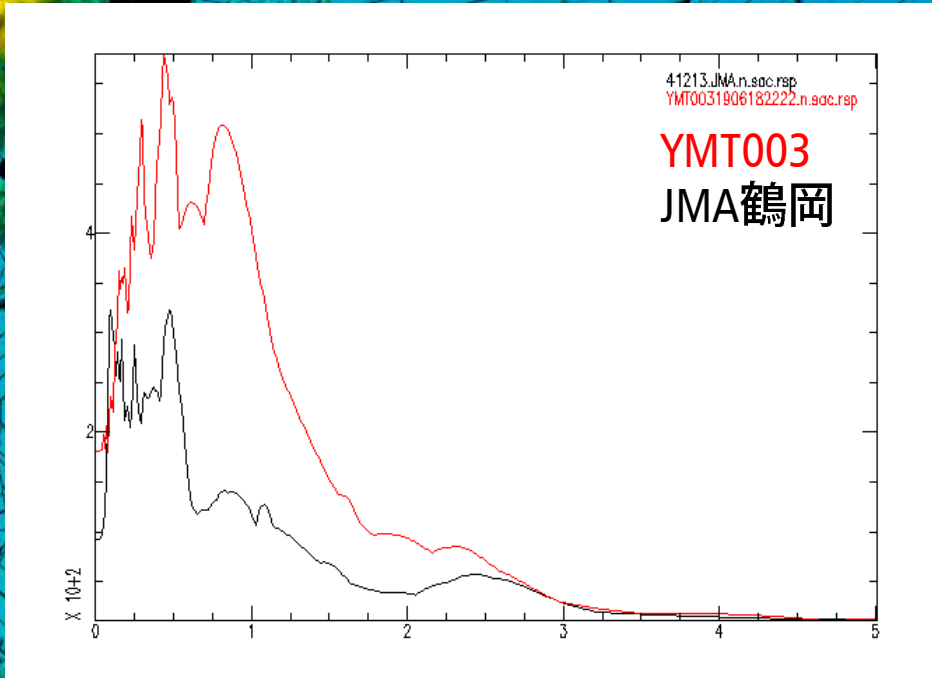
Seismic station





地理院地図（電子国土Web）





● 大泉小学校

● YMT003  
鶴岡一中

● JMA鶴岡  
鶴岡市役所

● 鶴岡駅  
液状化



# 鶴岡 | Truruoka, YMT003 (JMA intensity 5+)

- Fall of roof tiles (<1%)
- Collapse of sumo field
- Liquefaction in front of the main station



Before EQ



Google street view 2012



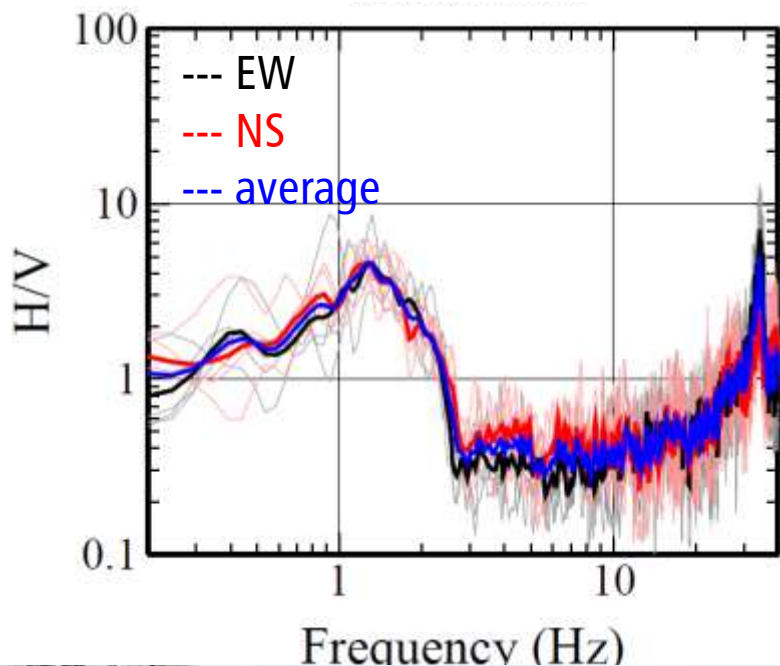
読売新聞

<https://www.yomiuri.co.jp/local/yamagata/news/20190619-OYTNT50235/>



# 鶴岡

## Truruoka, YMT003 (JMA intensity 5+)



# Conclusion

- Heavily damaged towns  
Koiwagawa > Nezugaseki > Ohiwagawa = Fuya(JMA6+)
- Liquefaction and collapse of sumo field are unusual damage in Tsuruoka city. The damage in general was less than coastal towns.
- Damage in Nezugaseki is similar to that in Ibaraki city during 2018 Osaka EQ. The disaster may be more serious if the EQ happens in a large city.



# Movie Link

Koiwagawa town

[https://youtu.be/\\_C0IYvvgHuk](https://youtu.be/_C0IYvvgHuk)



Fuya town, ver.1

<https://youtu.be/zGsRyv9x3os>



Fuya town, ver.2

<https://youtu.be/II-JvPjQqOE>



# Acknowledgement

We thank JMA and NIED for providing strong motion data.  
We acknowledge local people for supporting our survey.  
We used the topographical map provided by Geospatial Information Authority of Japan.