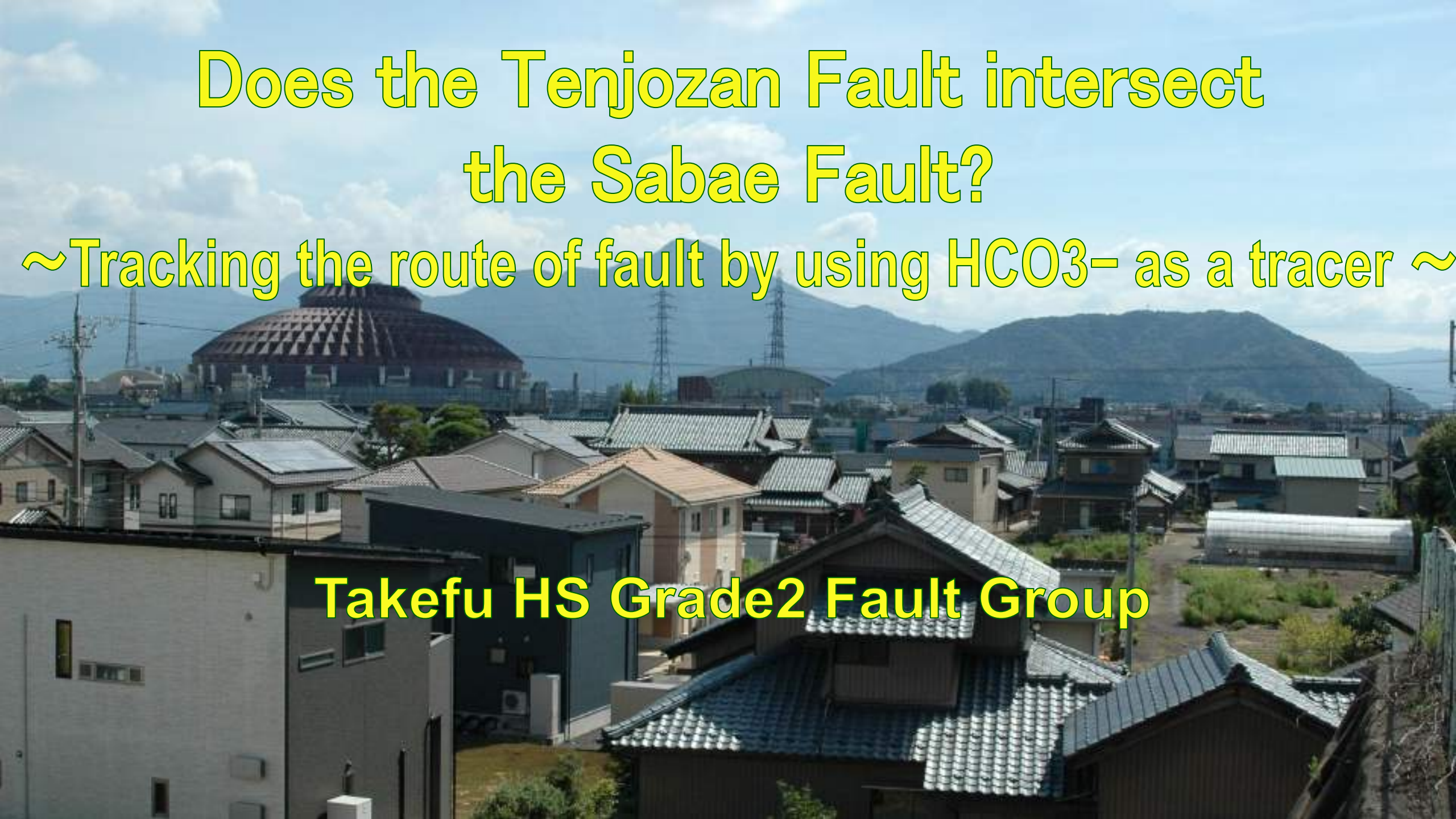
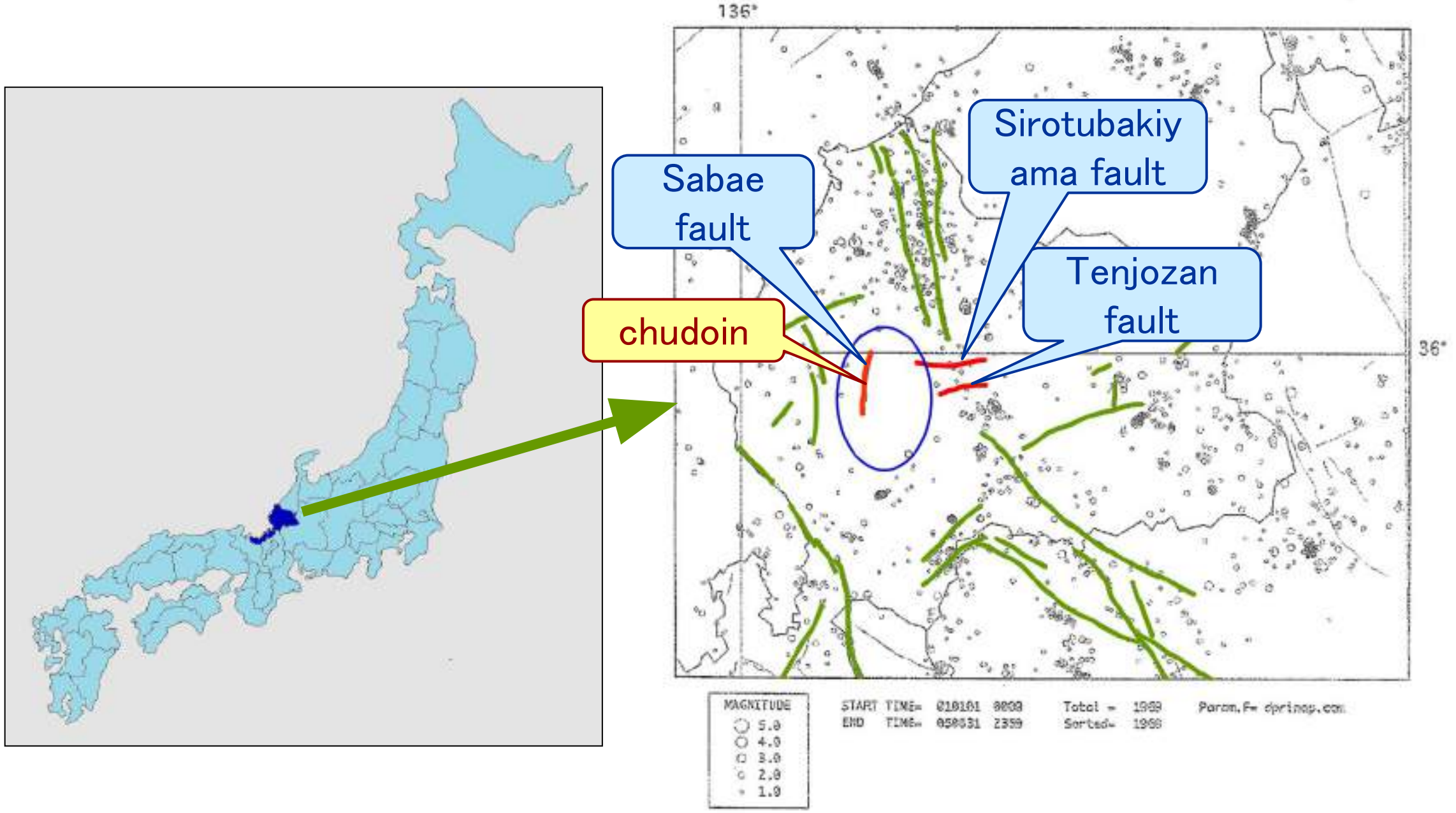


Does the Tenjozan Fault intersect the Sabae Fault?

～Tracking the route of fault by using HCO_3^- as a tracer～

Takefu HS Grade2 Fault Group



Quoted from Okamoto(2007)

Fig. 6 Distribution of earthquakes with M≧1.0, h ≦30km after Okamoto et al.,2007

The relationship between the Tonoueyama Fault and the Sabae Fault is unknown

important information for disaster prevention measures

We would like to clarify the relationship between the two faults and help with disaster prevention measures around the Sabae Fault.

Method

tracer ・・・ Material that traces the route of the fault

Tracer of the Sabae Fault

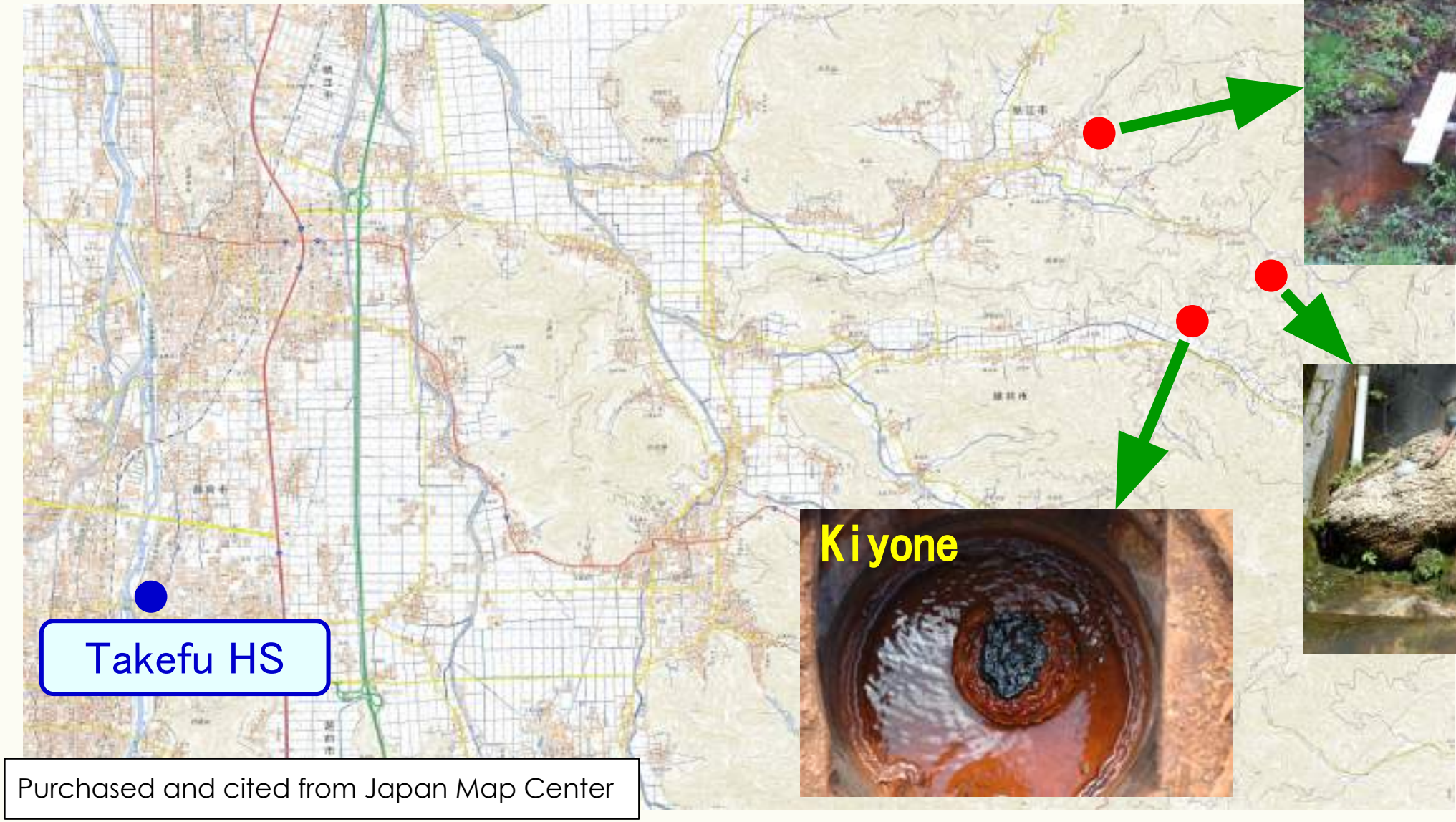
In a previous study conducted at Takefu High School,the tracer is ffluoride ion.

⇩

Sabae Fault Route Clarification

What about tracers on the Tonjozan Fault? ⇨ oda spring

soda spring ・・・ High concentrations of carbon dioxide dissolved in groundwater



Purchased and cited from Japan Map Center

High concentrations of carbon dioxide dissolved in groundwater

- bicarbonate ion （HCO_3^-）

  Neutralization titration with 0.1mol/L hydrochloric acid

  reasent：Bromocresol green/methyl red ethanol solution

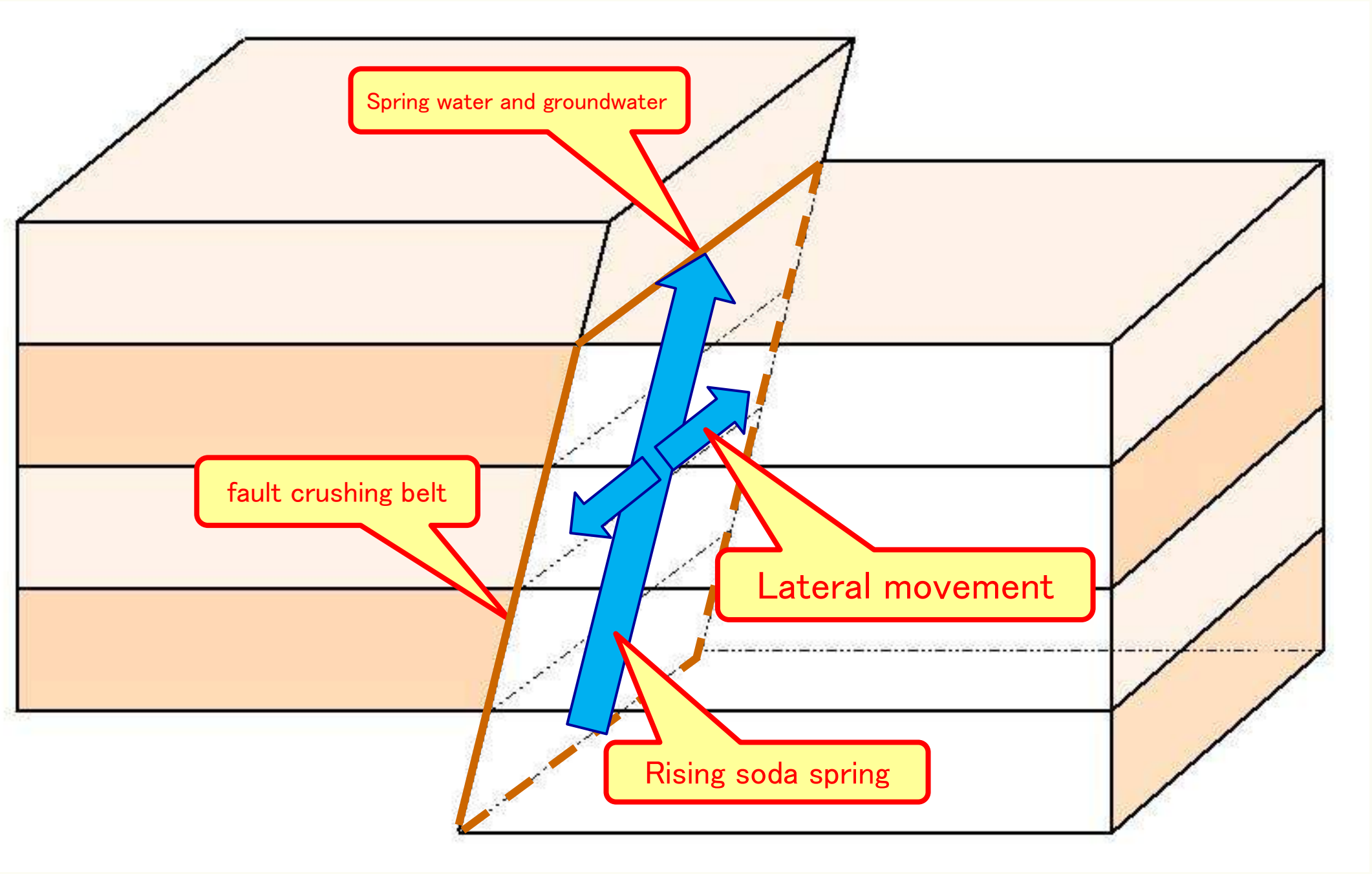
- Other ions （F^-、Cl^-、NO_3^-、SO_4^{2-} etc）

  ion chromatography

(unit：mg/L)

point	F-	Cl-	NO3-	SO4(2-)	HCO3-
kamikouchi	-	too much	-	122.07	2977.8
teranaka	-	47.85	-	171.9	1751.3
kiyone	0.02	53	-	8.38	1587.7
chudoin	0.51	14.48	2.16	7.45	81.2
Takefu HS	0.03	8.3	2.06	7.23	33.6

The water quality of the soda spring and the spring water at Chudoin is distinctly different.


Spring water and groundwater
fault crushing belt
Lateral movement
Rising soda spring

Previous research（Adachi,2022）

Sites of high fluoride ion concentrations in springs and groundwater are arranged in rows along the fault

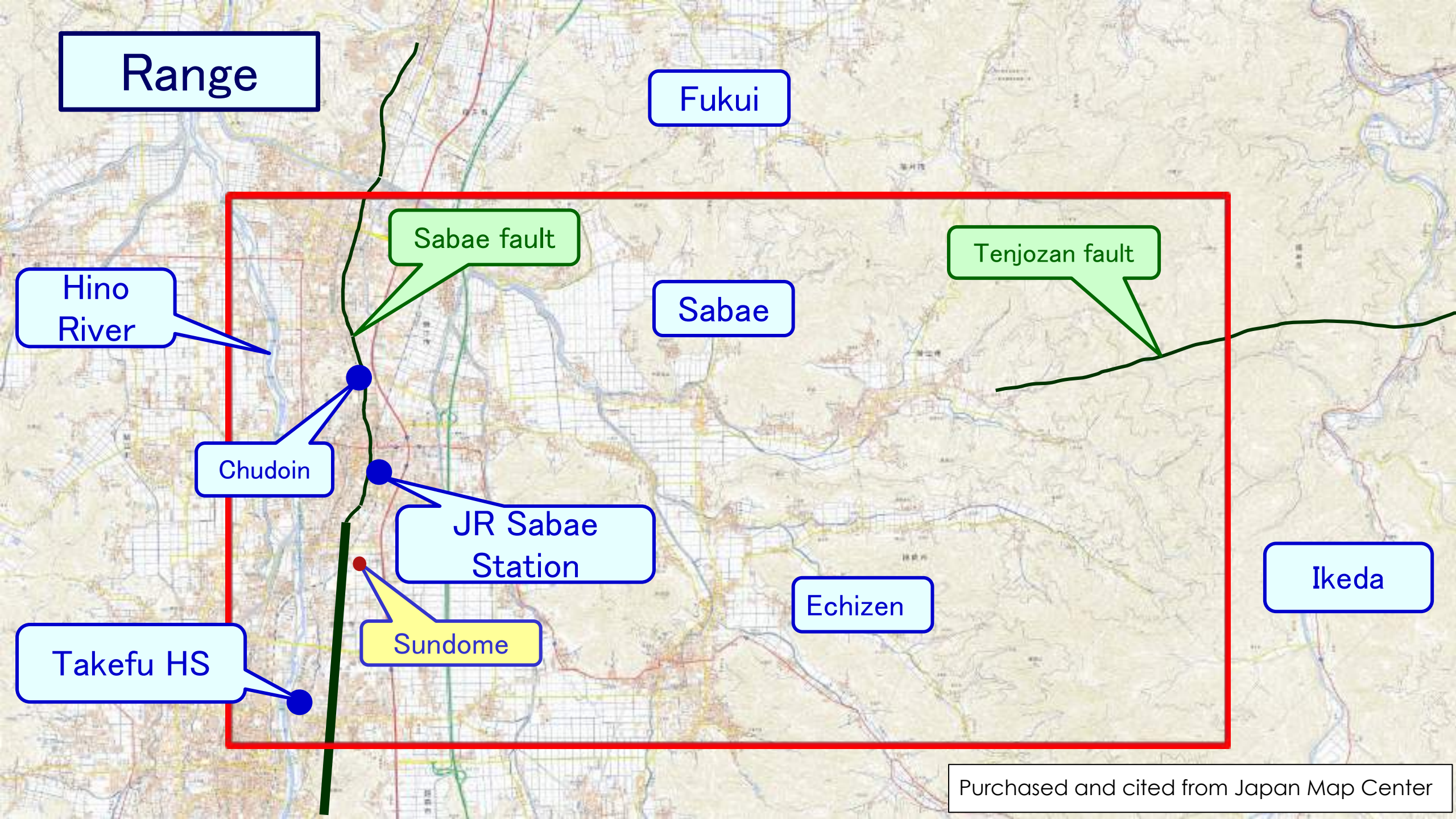
Bicarbonate ions are effective tracers of the Tenjozan fault

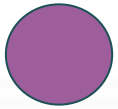
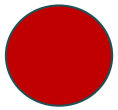
Measuring the concentration of bicarbonate ions, fluoride ions, etc. in spring water and groundwater

・Tracking the route of the Tonakamiyama Fault

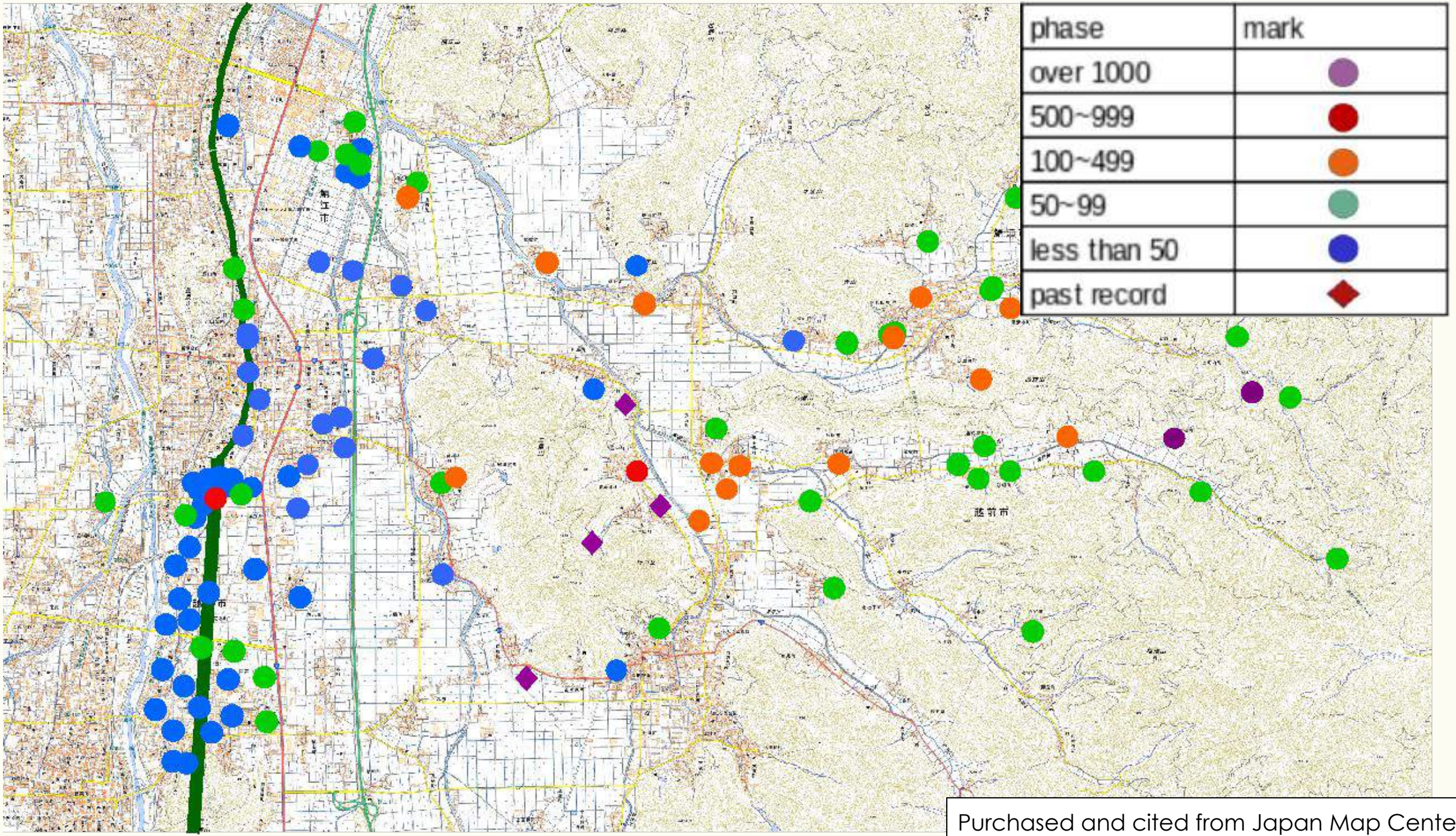
・Clarification of the relationship between the Tenjozan Fault and the Sabae Fault

Result


Range
Fukui
Sabae fault
Tenjozan fault
Hino River
Sabae
Chudoin
JR Sabae Station
Ikeda
Echizen
Sundome
Takefu HS
Purchased and cited from Japan Map Center

phase	mark
over 1000	
500~999	
100~499	
50~99	
less than 50	
past record	

unit(mg/L)



Purchased and cited from Japan Map Center

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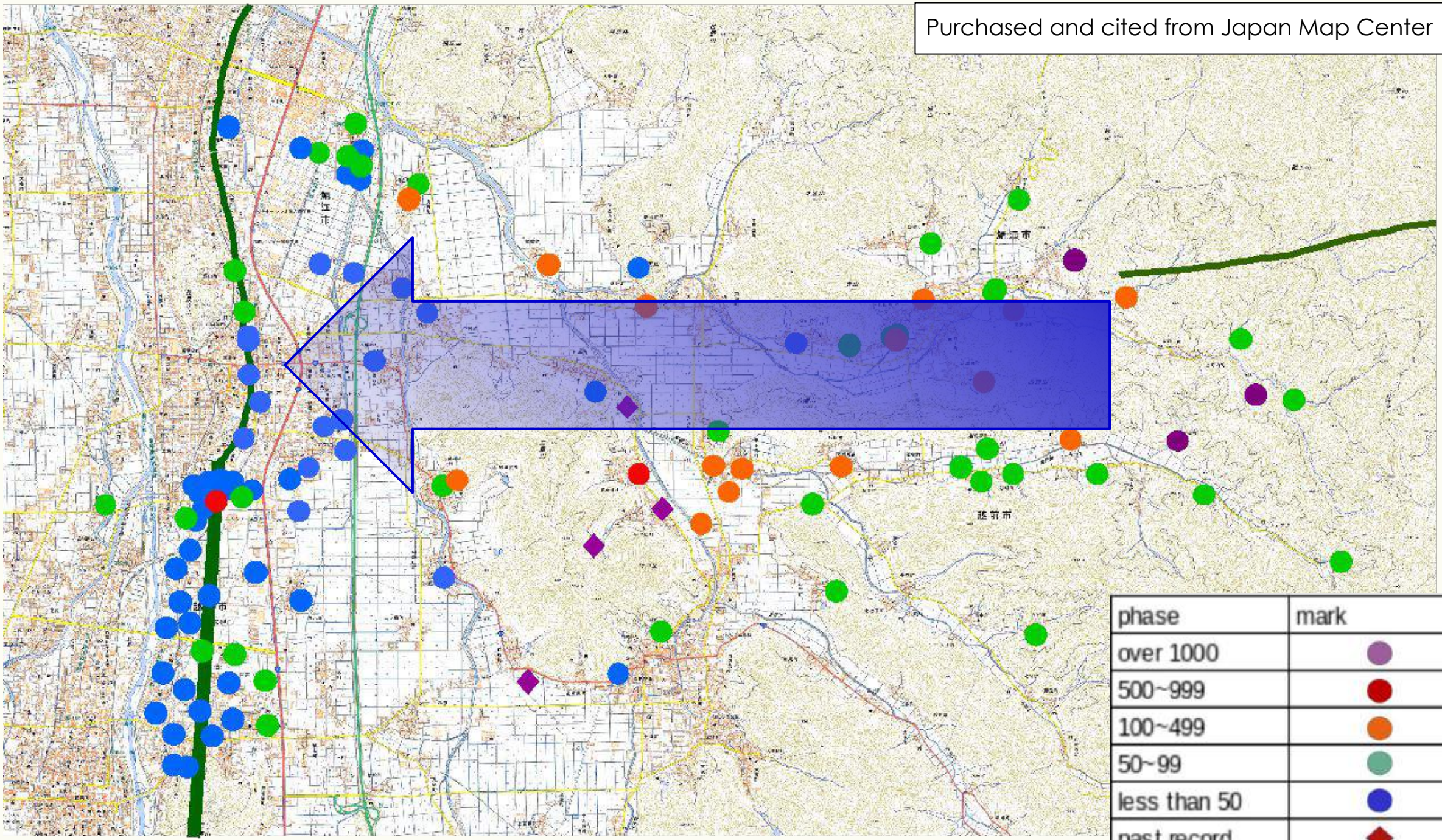

phase	mark
over 1000	
500~999	
100~499	
50~99	
less than 50	
past record	

（unit：mg/L）

point	F-	Cl-	NO3-	SO4(2-)	HCO3-
kamikouchi	-	too much	-	122.07	2977.8
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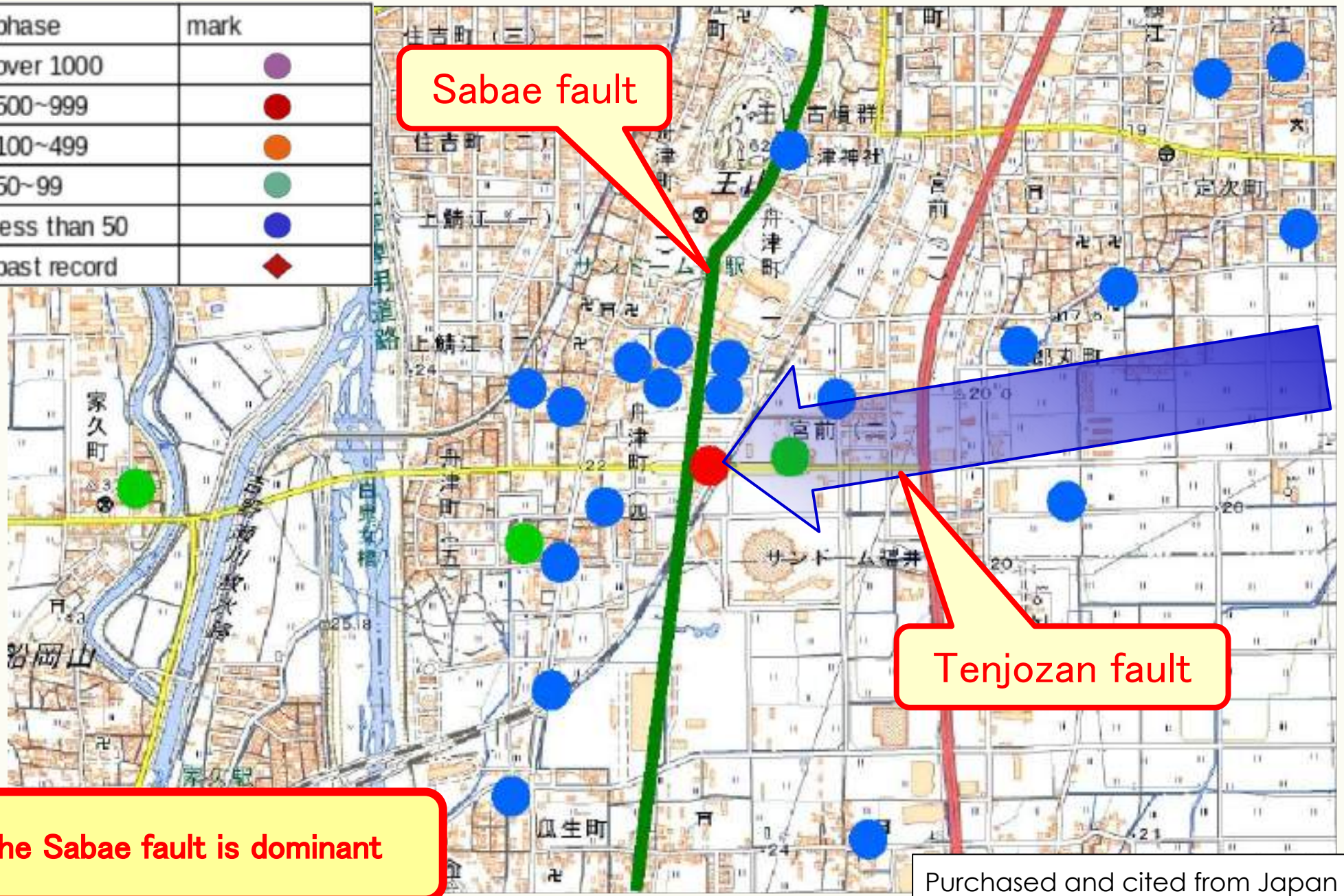
kiyone	0.02	53	-	8.38	1587.7
chudoin	0.51	14.48	2.16	7.45	81.2
Takefu HS	0.03	8.3	2.06	7.23	33.6
underpass	0.21	21.82	35.66	71.38	648

groundwater

Includes groundwater quality associated with both the Tenjozan Fault and the Sabae Fault

Groundwater associated with two faults mixing near underground passage

phase	mark
over 1000	●
500~999	●
100~499	●
50~99	●
less than 50	●
past record	◆



Purchased and cited from Japan Map Center

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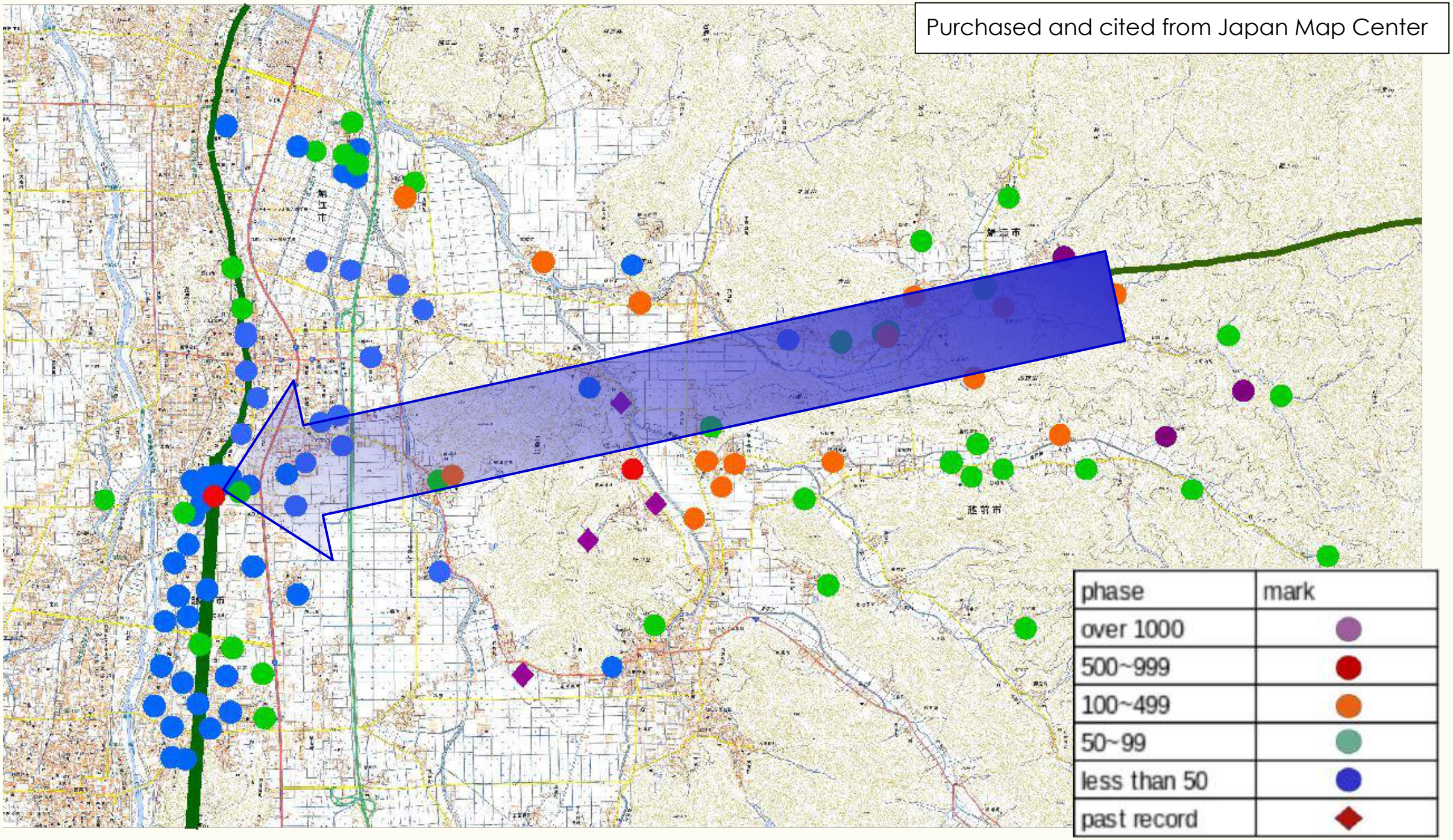
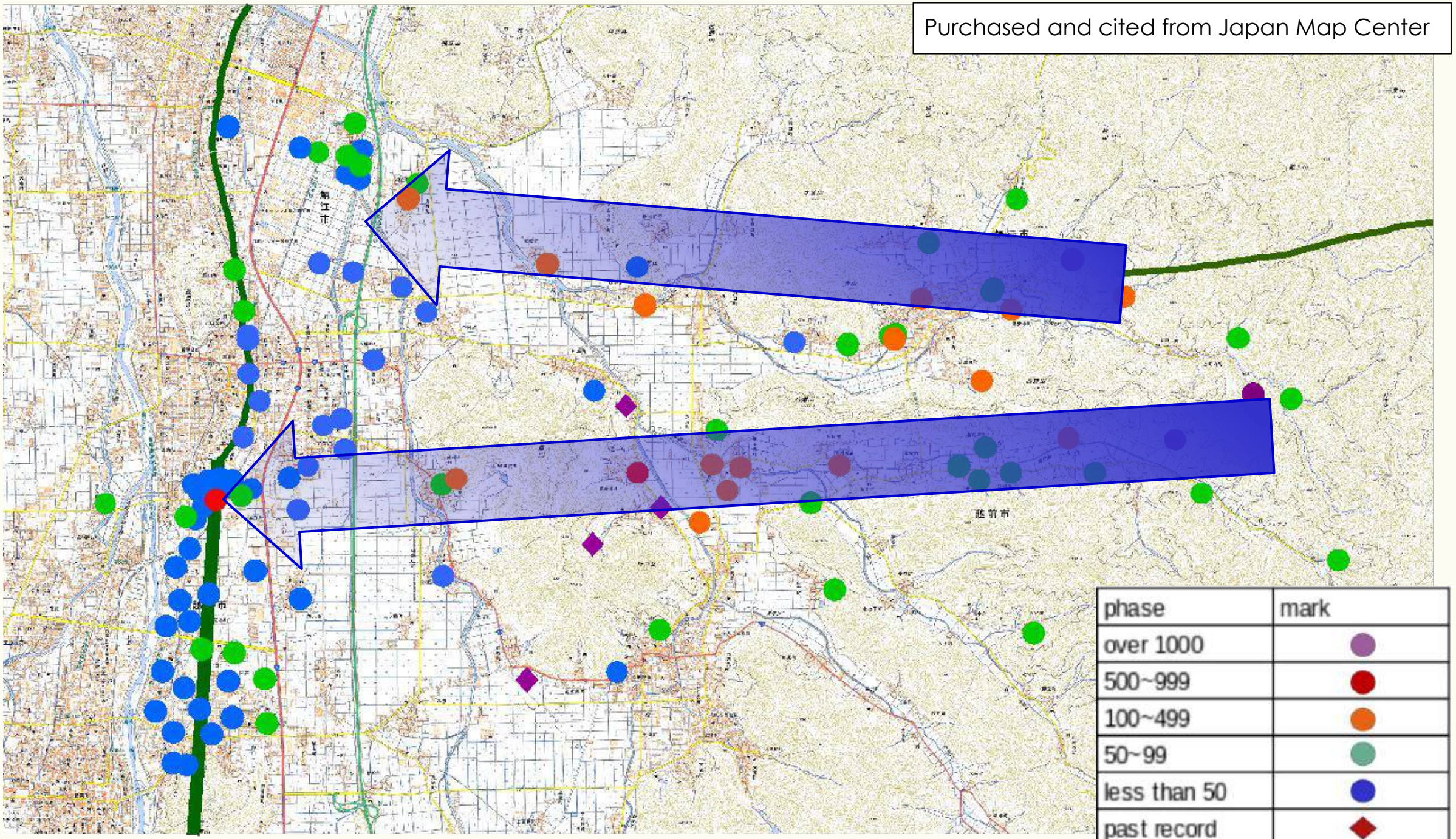
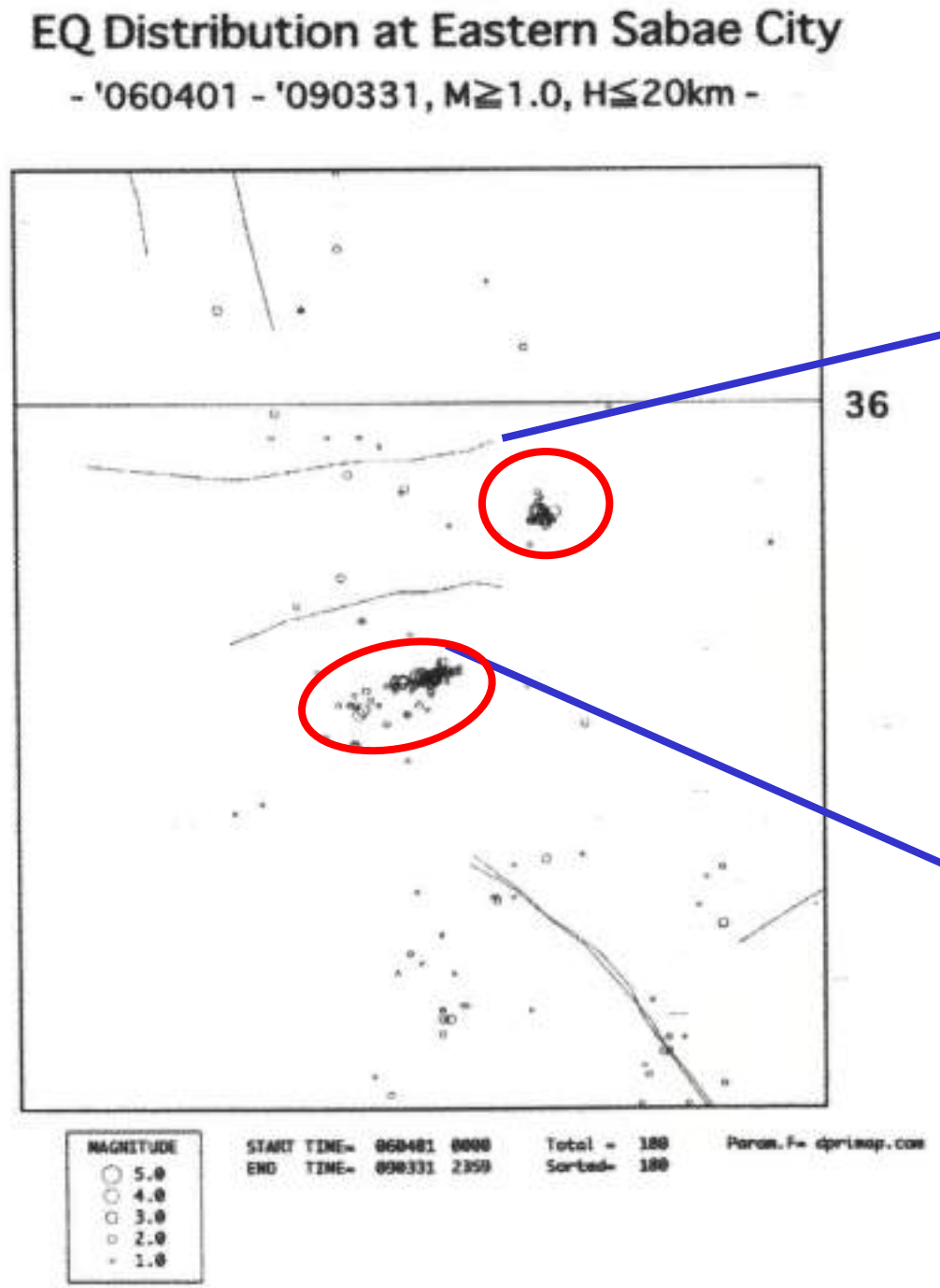


Purchased and cited from Japan Map Center



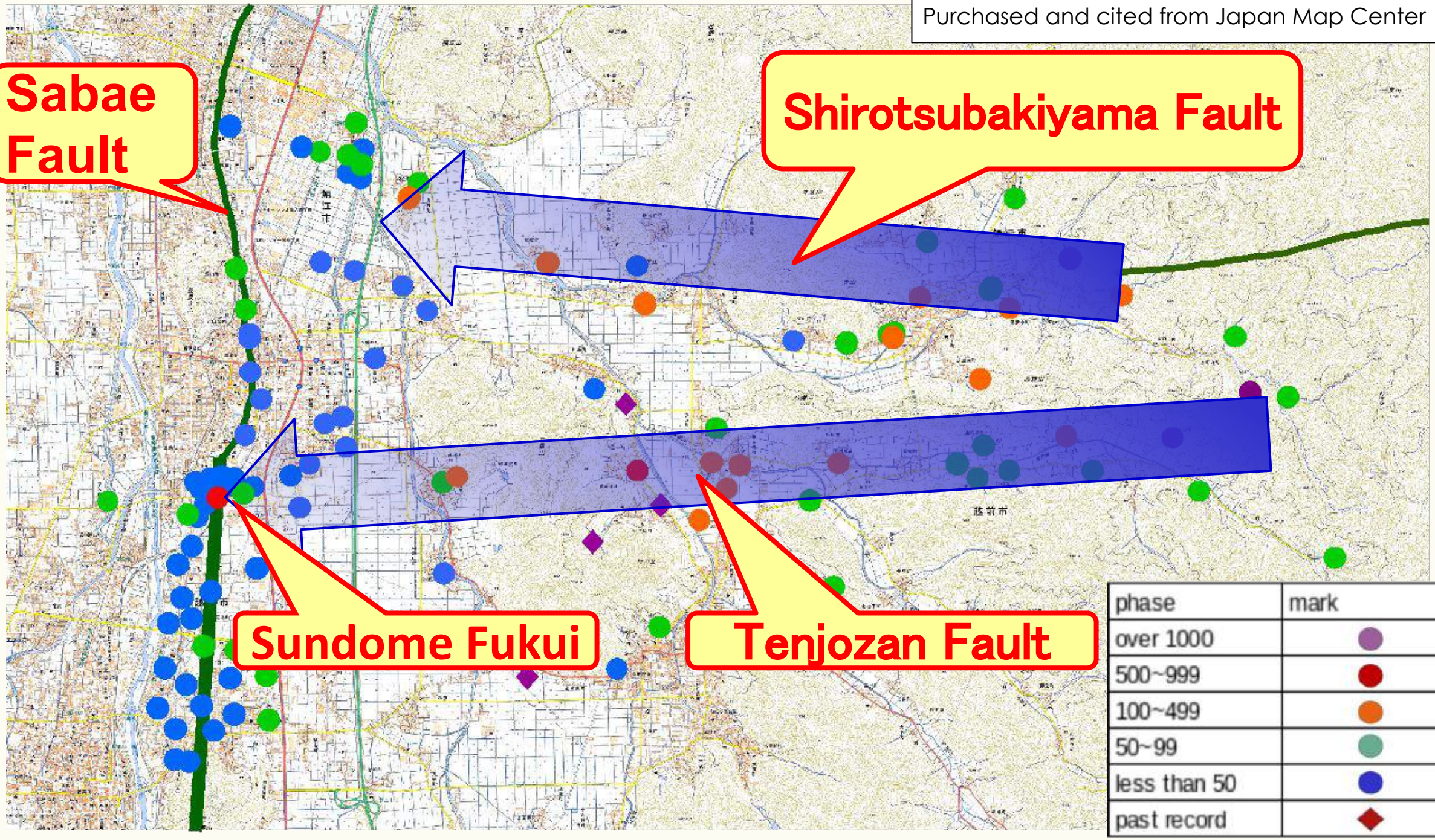


Shirotubakiyama Fault

Tenjozan Fault

Quoted from Okamoto(2014)

Purchased and cited from Japan Map Center



Conclusion

1. Bicarbonate ions as tracers of the Tenjozan Fault are effective.

2. That the Tenjozan Fault extends further west than the route considered.

3. That the Tenjozan Fault extends further west than the route considered The Tenjozan Fault stops just before the Sabae Fault near the Sundome and does not intersect, indicating that the Sabae Fault is dominant.

Future Tasks

Clarification of the situation including the actual location of the Tenjozan Fault and the Shirotsubakiyama Fault

thanks

We would like to thank all the professors who have helped us in the course of our research.

- Teaching about faults, ions in spring water, etc.

Fukui technical HS　Dr.Takuo Okamoto

- Analysis of ions in spring water and groundwater

Research Institute of Education　Science Education Section Section chief Taishu Imazawa

- Teaching about the carbon dioxide spring in Sanriyama

simosinjotyo in Sabae city　osamu　kimizu

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Thank you for your listening