QZSS Application and the earthquake

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The Great East Japan Earthquake

Date：11 March at 2:46 pm, 2011

Seismic center ： Sanriku coast

（ About 130km ESE off Ojika Peninsula）

Magnitude : 9.0

Tsunami ： Maximum wave, up to 37.9m （Miyako City）

Damage：About 15,000 people were dead

Over 10,000 people are missing

Over 100,000 houses completely or partially destroyed.

Over 120,000 evacuees

Fukushima Nuclear Power Plant :

Emergency Core Cooling System : Operated,

but damaged by TSUNAMI.

Evacuation : 20km in radius range

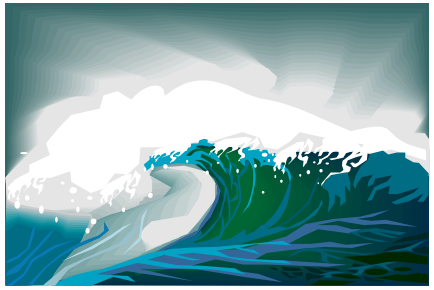
Rolling Blackout : kannto Region etc.

×：Sendai Airport，
Miyagi Pref.

The use of satellite navigation in the earthquake

GPS Wave Meter

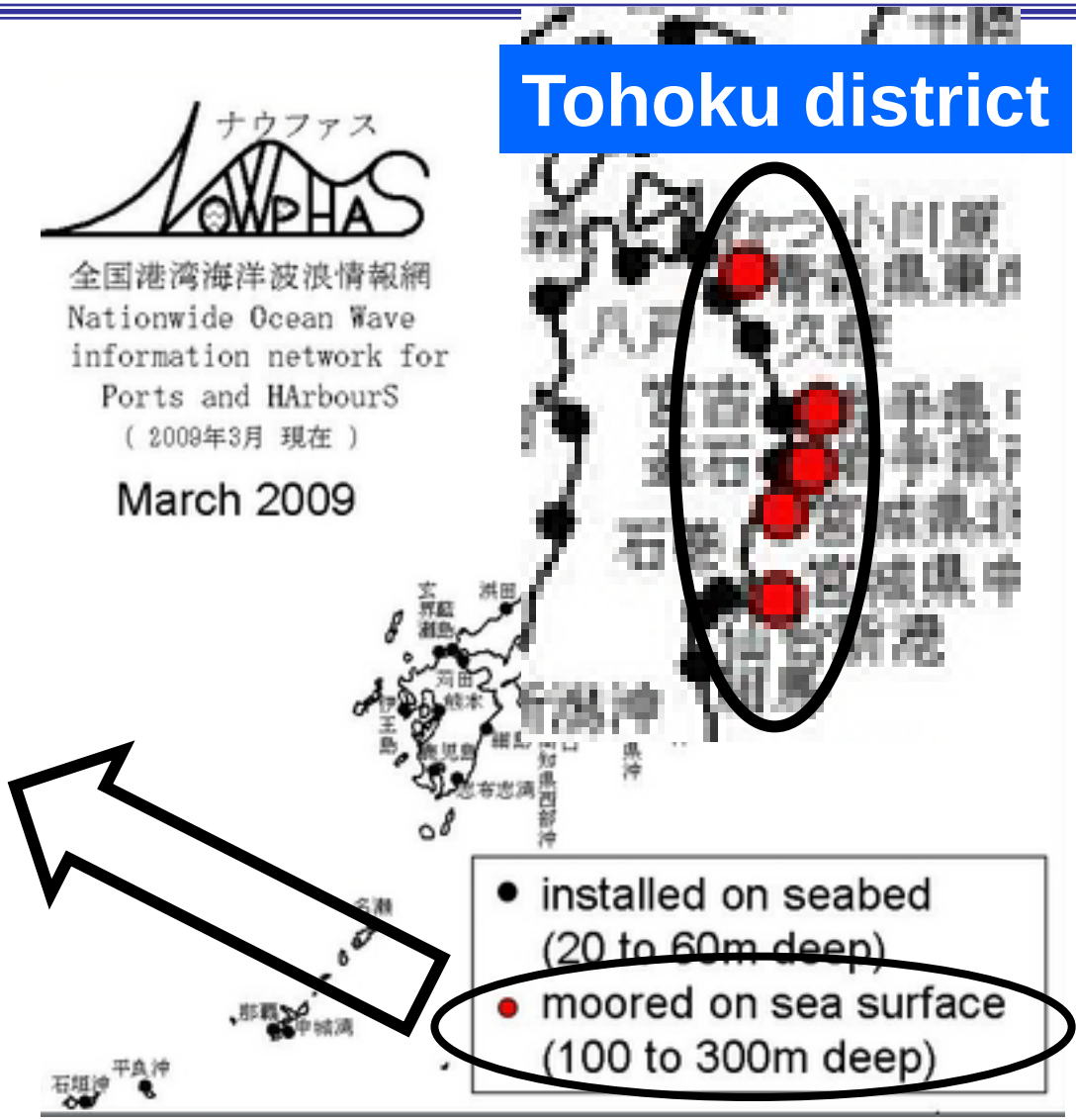
NOWPHAS



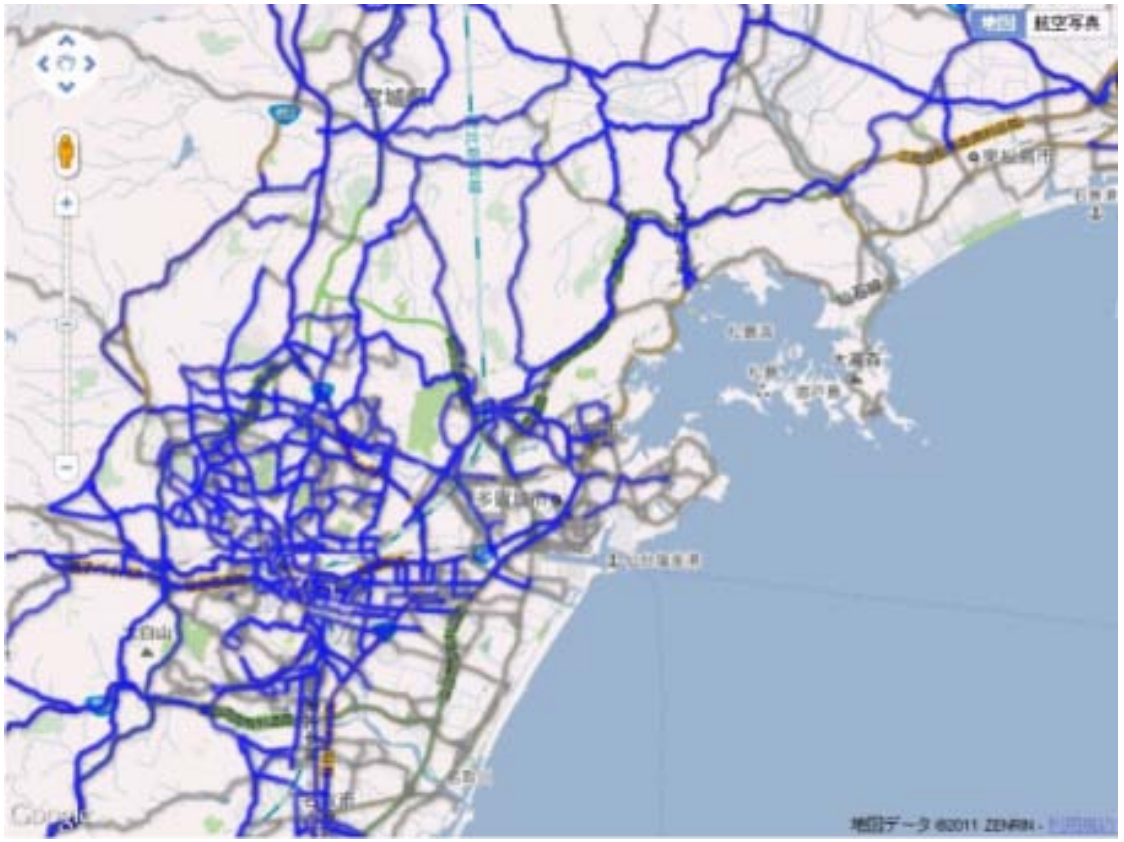
GPS-mounted buoy

ナウファス
NOWPHAS
全国港湾海洋波浪情報網
Nationwide Ocean Wave information network for Ports and HArbourS
(2009年3月 現在)
March 2009

Tohoku district

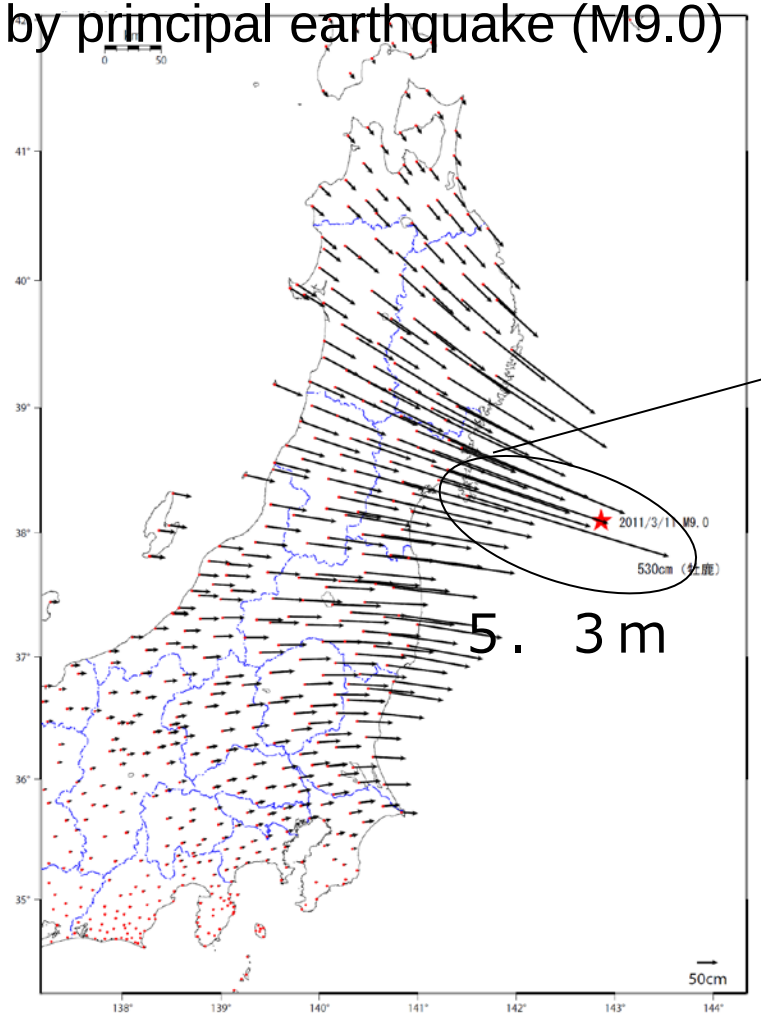


Traffic Jam Information in the disaster area



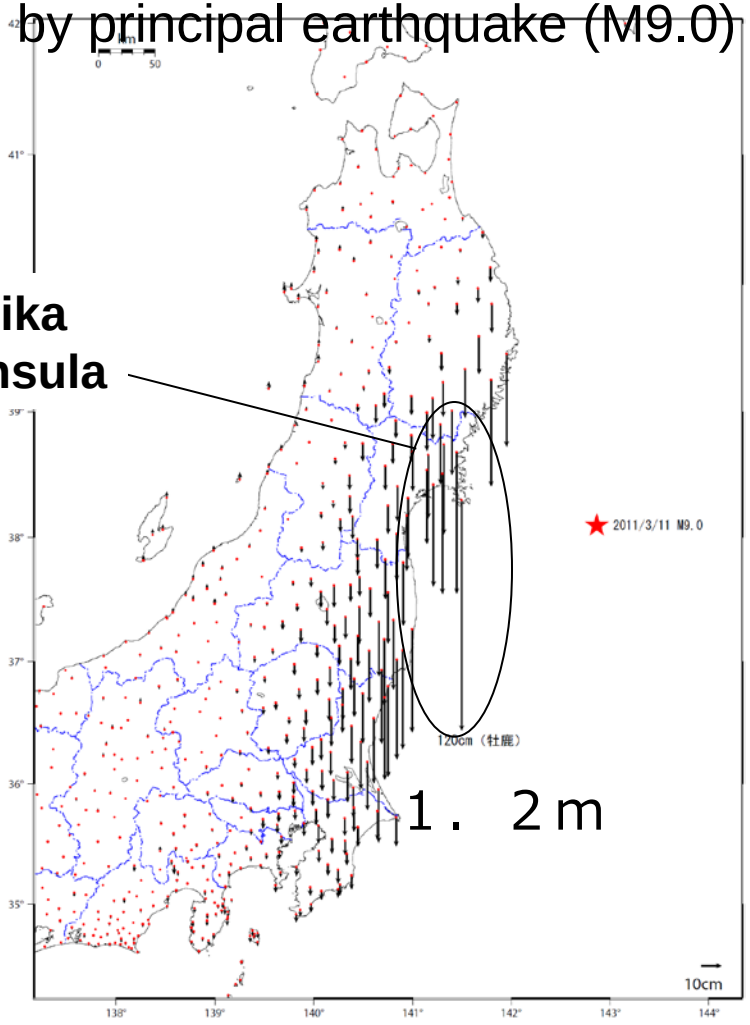
GPS Surveying

Horizontal crustal movement by principal earthquake (M9.0)



Vertical crustal movement by principal earthquake (M9.0)

Oshika Peninsula

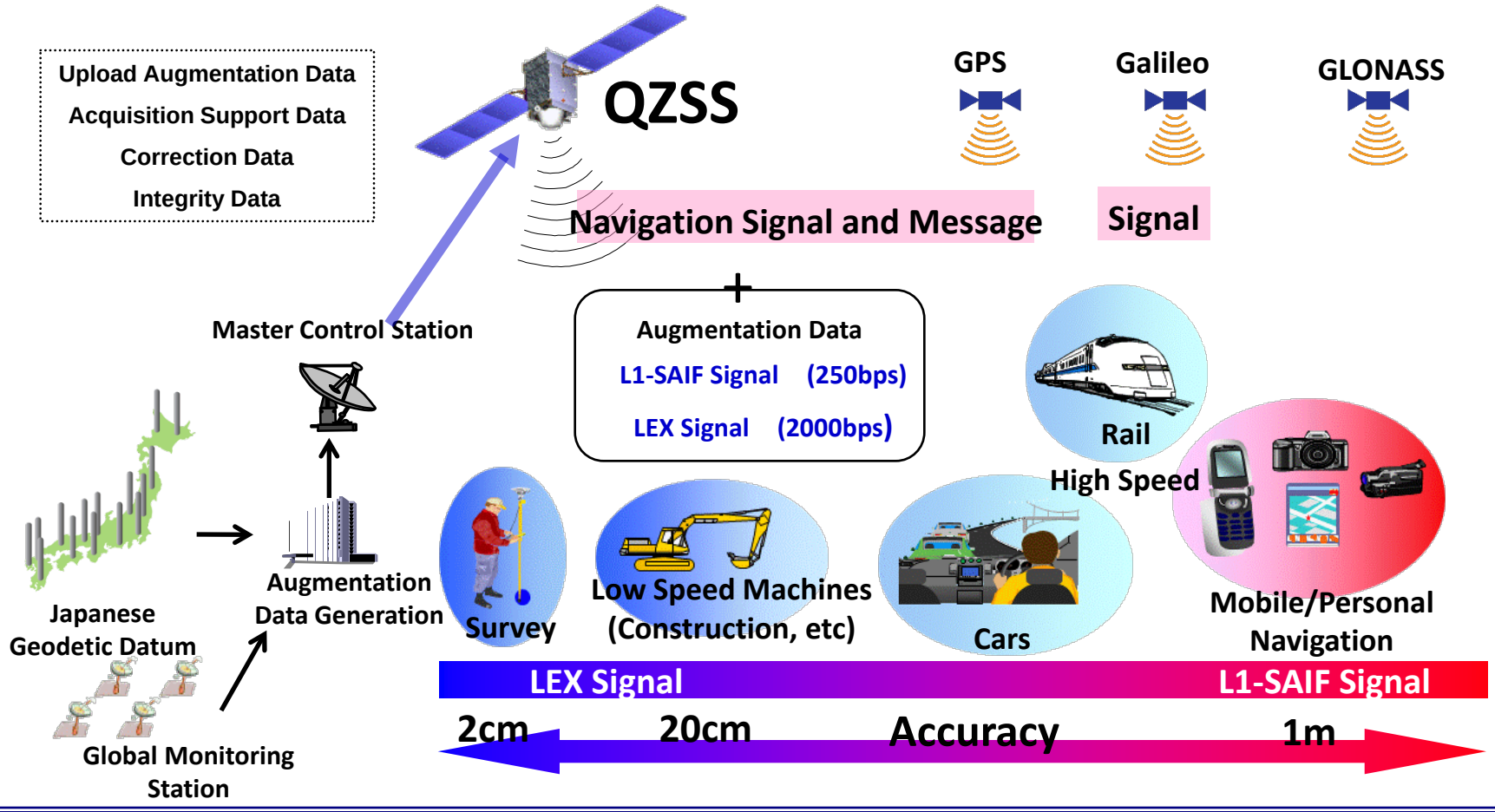


The future plan of QZSS application in the disasters

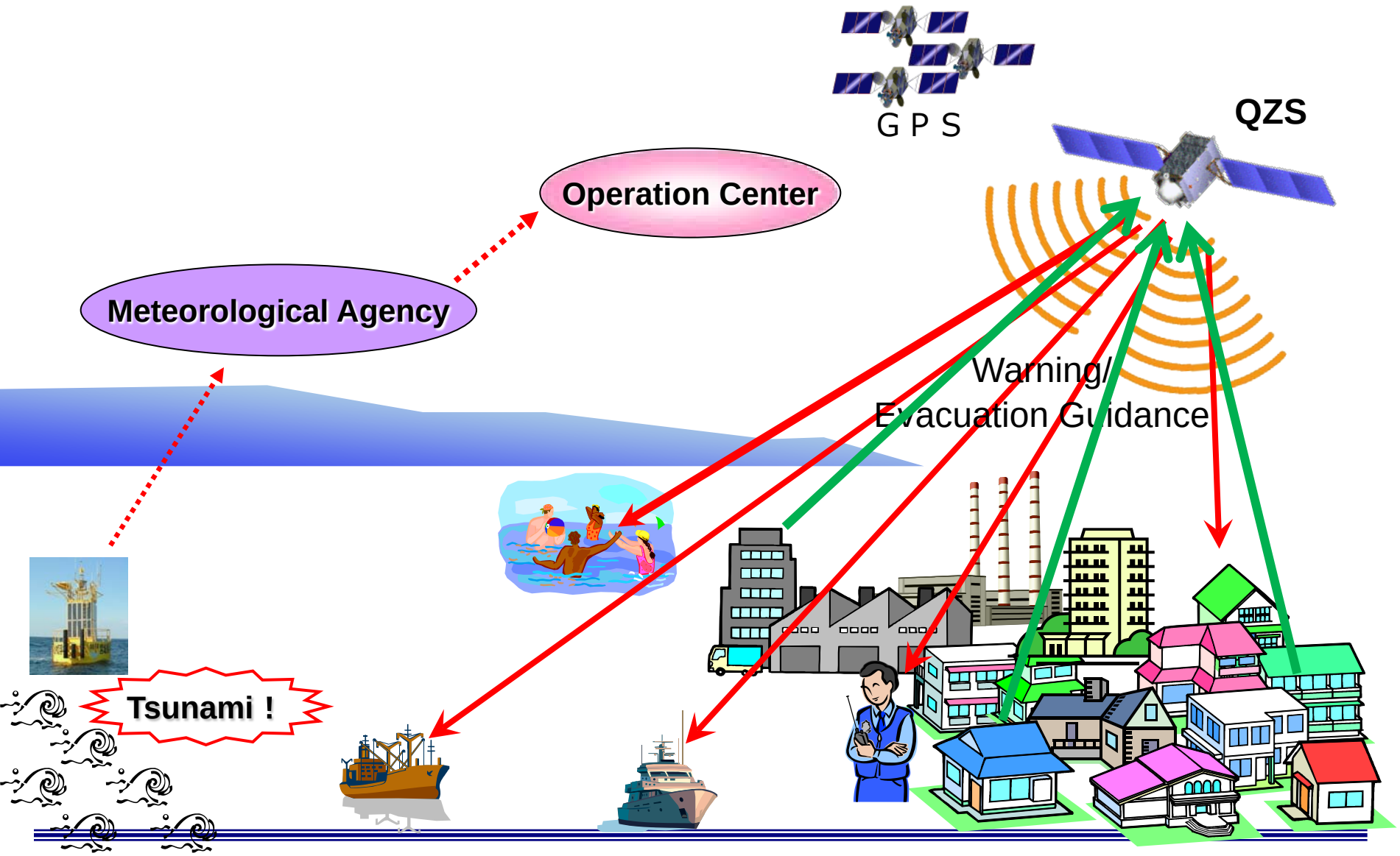
GPS Reinforcement by QZSS

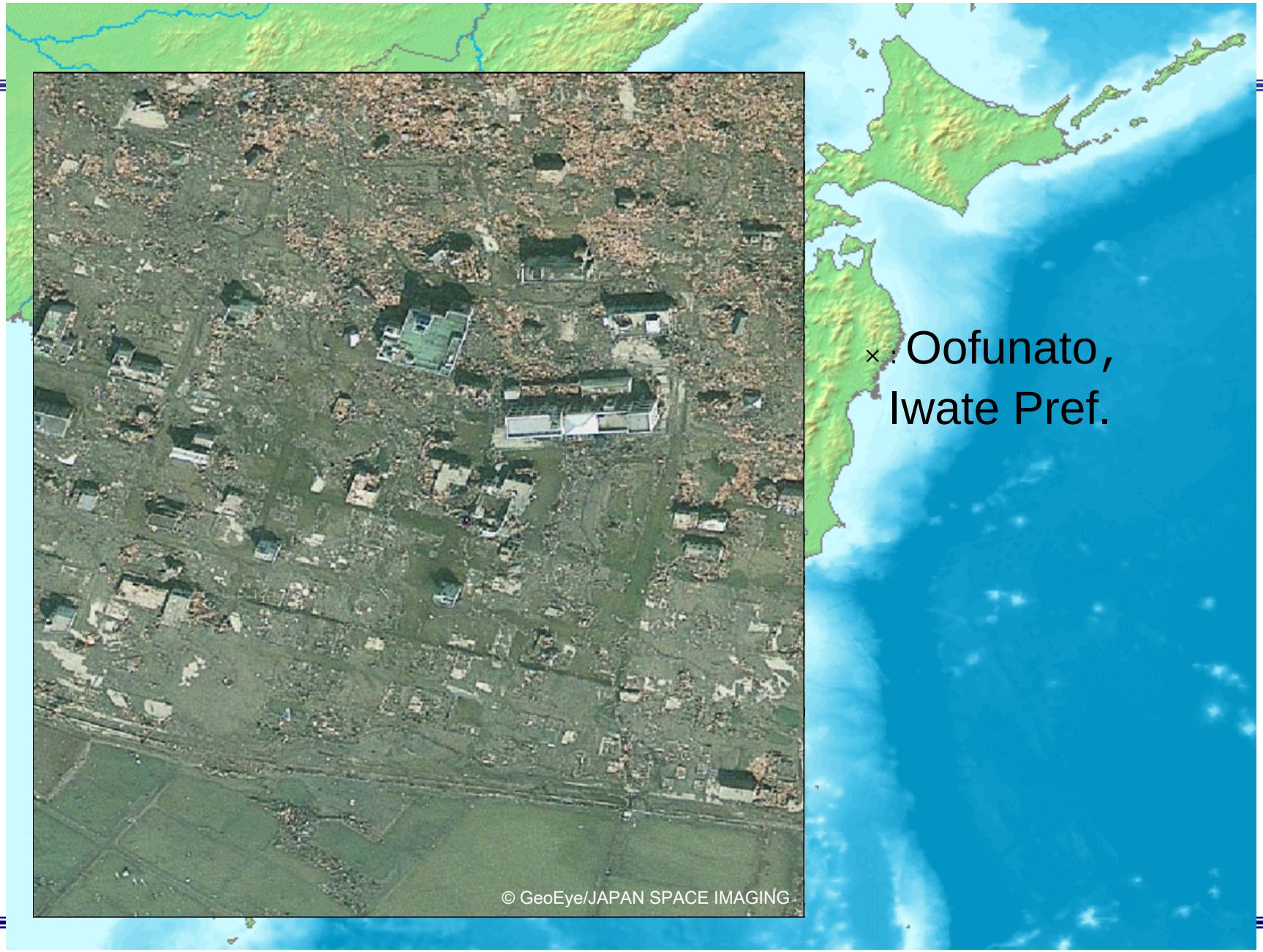
QZSS improves positioning accuracy

QZSS upgrades the positioning accuracy to one meter or even a centimeter level.



Short Message Service




× : Oofunato,
Iwate Pref.
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Application implemented by the QZS System

Construction based on IT Automatic Driving

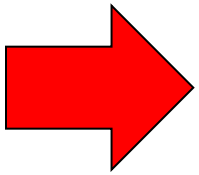
Using a reinforcement signal from the QZSS, accurate positioning of about +/- 10 cm (target) will be possible without ground network.

Free from Ground Network

Conclusion

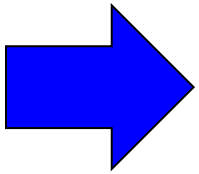
1. Robustness of Space based Systems

- Base Station for Cellphone
- Wire and fiber cable System



Damaged

- Satellite Communication System



Operational

Implication for SMS

2. Usefulness of GNSS in natural disasters

Conclusion

3. ICG-6

We will introduce more detailed information of this field in ICG-6 this September.

Thank you very much
for your attention.