

# Cooperative program

## Seismic Hazard Assessment for Next Generation Map

Coordinator: Ken X-S. Hao (郝 憲生)

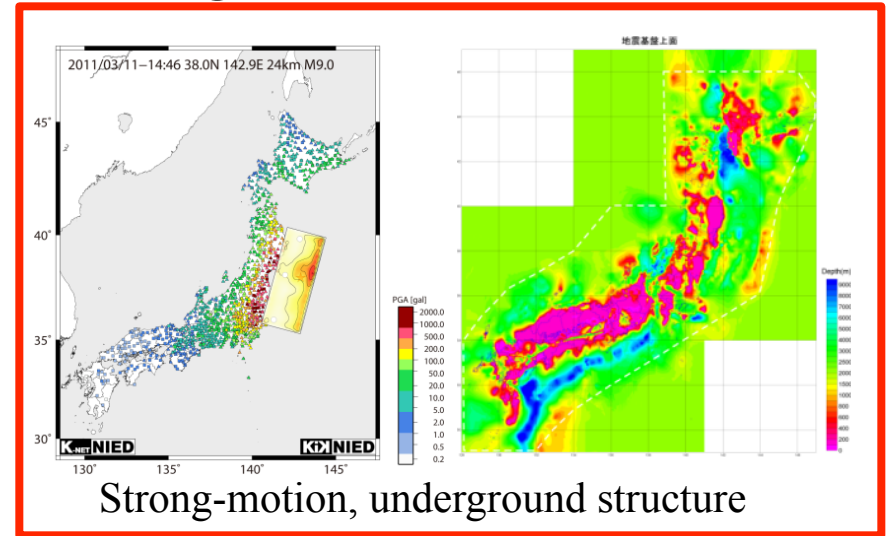
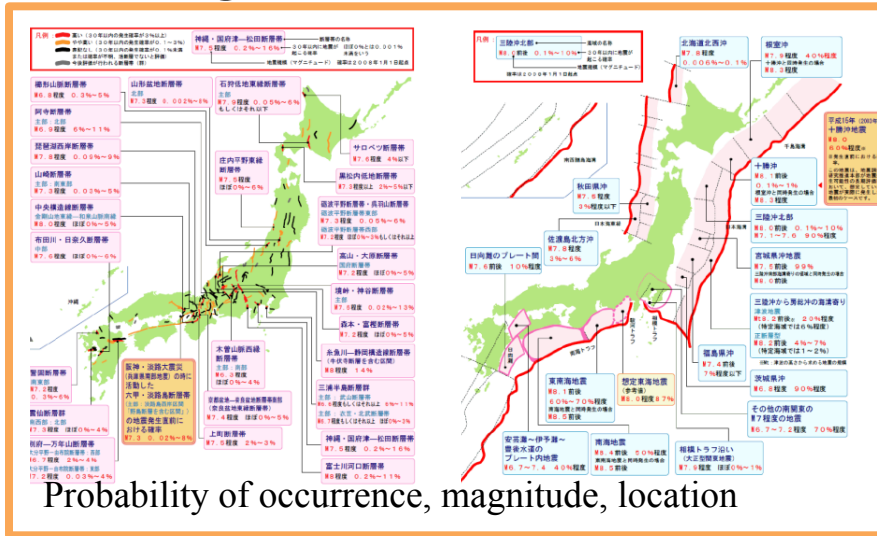
Representative: Hiroyuki Fujiwara (藤原広行)



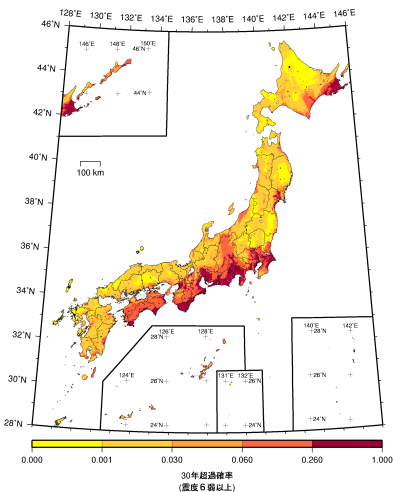
# National seismic hazard maps for Japan

## Long term evaluation

## Strong-motion evaluation

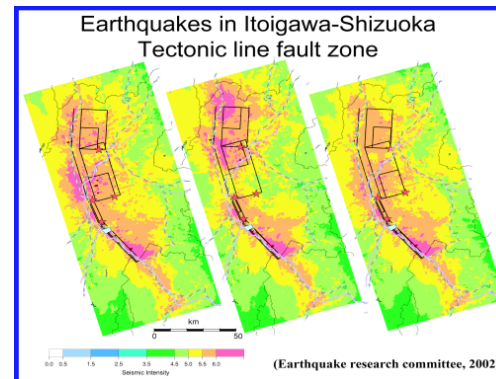


## Probabilistic Seismic Hazard Maps



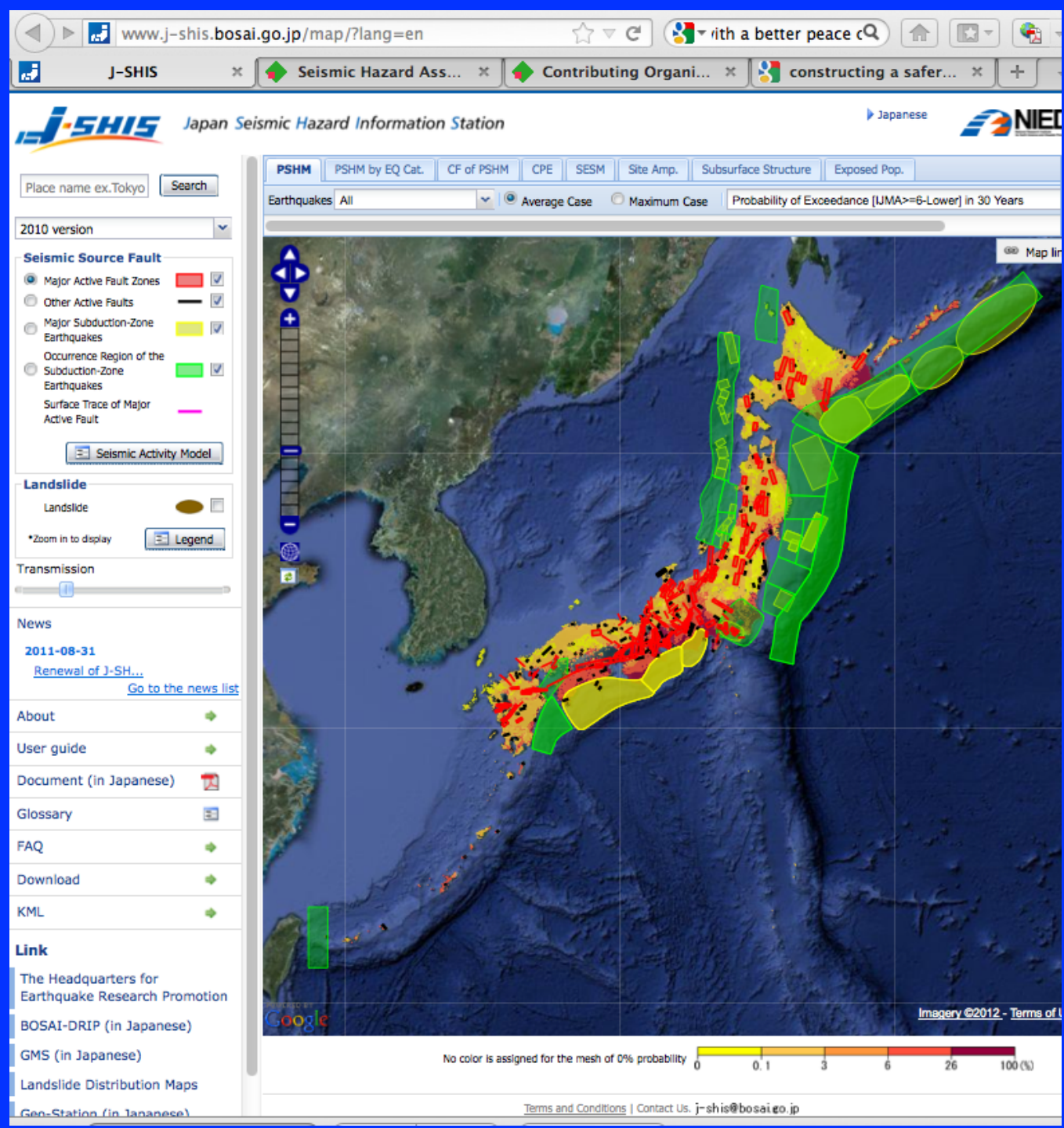
- Showing the strong-motion intensity with a given probability, or the probability with a given intensity.
- Considering all possible earthquakes.

## Scenario Earthquake Shaking Maps



- Showing the strong-motion intensity around the fault for a specified earthquake.

“The borderless world of Science” → enabling knowledge data exchange



New Release →

[www.j-shis.bosai.go.jp/intl/cjk](http://www.j-shis.bosai.go.jp/intl/cjk)

Practice →

Trilateral cooperative program  
enabling knowledge data exchange

Win from Competition →  
Approved and supported by their  
domestic financing



**J-SHIS** Seismic Hazard Asses... Seismic Hazard Asses...

# SEISMIC HAZARD ASSESSMENT FOR THE NEXT GENERATION MAP

Japan-China-Korea Cooperative Research Projects supported by JST-MOST-NRF

Over 90% of natural disasters have occurred in Asia and millions of people have lost their lives and homes by the recent earthquakes, tsunami and natural disasters. Earthquake prediction is not available in short-term, however, Probabilistic Seismic Hazard Assessment (PSHA) in long-term is considered as a scientific way to define earthquake area/zones and to guide urban planning and engineering management.

...

A strategic cooperative program (2010-2013) of "Seismic Hazard Assessment for the Next Generation Map" was finally selected after individual examinations by committees of MOST, NRF and JST, in China, Korea and Japan, respectively. The goal of this strategic project is to improve the PSHA methodology for the next generation maps in the three countries. To achieve this goal, the following approaches are planned:

- 1 to review the data and the methodologies adopted in the current PSHA maps of the three countries and evaluate if there is anything to be improved or added in each of the countries;
- 2 to compare the data and the methodologies with the state of the art technology and see if anything could be accepted for the next generation maps;
- 3 to develop a procedure to establish ground motion attenuation relationships for the maps;
- 4 to combine the probabilistic seismic hazard assessment and the deterministic approach of scenario earthquake for potential large earthquake and to prepare an example map for each country.

...

This site is a communication forum to deal with theories, methodologies, data and related issues. We encourage people from all of over world to exchange their own experiences and individual methods.

**Activities**

- 1st Annual meeting**  
Hosted by HIT in Harbin, China on Nov 25-30, 2011.
- 2nd Annual meeting**  
Will be hosted by KIGAM in Korea, 2012.
- 3rd Annual meeting**  
Will be hosted by NIED in Japan, 2013.

**Links**

Japan Seismic Hazard Information Station **J-SHIS**

哈尔滨工业大学 HARBIN INSTITUTE OF TECHNOLOGY NIED KIGAM



# SEISMIC HAZARD ASSESSMENT FOR THE NEXT GENERATION MAP

Japan-China-Korea Cooperative Research Projects supported by JST-MOST-NRF

## The 1st Annual Meeting



The 1st Annual Meeting of the Strategic Chinese-Korean-Japanese Cooperative Program: Seismic Hazard Assessment for the Next Generation Map, November 25-30, 2011, Harbin, China

The First annual meeting of the strategic project was hosted in Harbin, China from Nov 25-30, 2011. Not only the researchers from China, Korea, and Japan gathered, but also the guests from Taiwan, USA, Russia, Italy and Canada were invited. The opening speech was given by Dr. Tao Xiaxin, and over 27 presentations were made in the perspectives of PSHA, Seismic observation, Strong ground motion attenuation, Scenario earthquake simulation, Earthquake Early Warning, Geological structures, Earthquake damage, Site amplification, Smart phone application, and other related fields.

### The Opening Speech

It is my great honor, as the principal of the Chinese team of this joint project and the host of the first annual meeting of the project, to warmly welcome all of you.

( Read more [PDF/ 39KB] )



The presentations have been placed on this site through the courtesy of the presenters; as the copyrights fully belong to the authors, it is advised that you contact them directly in case of having any inquiries or wishing to

### Photos



Tao Xiaxin

### Keynote Presentations

#### Seismic Hazard Assessment in China

**Seismic Hazard Assessment in China**  
Introduction of Seismic Zonation Map of China  
Xiaoqi Li  
Institute of Geophysics, China Earthquake Administration  
Harbin 150111

Li Xiaojun

PDF / 3.5MB

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#### Seismic Hazard Assessment in Japan

**Seismic Hazard Assessment in Japan**

Hiroyuki Fujiwara

PDF / 6.9MB

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#### Seismic Hazard Assessment in Korea

**Seismic Hazard Analysis in Korea**

Myung-Soon Jun

PDF / 743KB

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#### Recent testing of the Global Seismic Hazard Assessment Maps

**Recent testing of the Global Seismic Hazard Assessment Program (GSHAP) maps**

Anastasia Nekrasova

PDF / 7.8MB

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### Chinese Session

#### Some issues in seismic hazard assessment

**Some issues in Seismic Hazard Assessment for the Next Generation Map**

Tao Xiaxin

PDF / 869KB

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#### Seismic zoning map of Lanzhou region, China

Not available

Wang Lanmin

#### Seismology based strong ground motion attenuation relationship for national zoning map

**Seismology based strong ground motion attenuation relationship for national zoning map**

Tao Zhengru

PDF / 1.9MB

[Download](#)

#### Seismic hazard assessment in low seismicity province

**Seismic hazard assessment in low seismicity province**

Tang Aiping

PDF / 1.9MB

[Download](#)

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### Japanese Session

#### Scenario earthquake shaking maps in Japan

**Scenario Earthquake Shaking Maps in Japan**

Nobuyuki Morikawa

PDF / 1.0MB

[Download](#)

#### Method of using Geological data for PSHMs in Japan

**Method of using Geological data for PSHMs in Japan**

H.Matsuyama and N.Toyama

PDF / 19MB

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#### Strong motion attenuation for PSHMs in Japan

**Strong Motion Attenuation**

#### A new PSHM Application in Smart phone

**A new PSHM Application of a-APP**

New Release →  
www.j-shis.bosai.go.jp/intl/cjk

Sharing →  
Methodologies, data exchange



# SEISMIC HAZARD ASSESSMENT FOR THE NEXT GENERATION MAP

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## Contributing Organizations

### Main Participants



China



> [HIT : Harbin Institute of Technology](#)



Korea



> [KIGAM : Korea Institute of Geoscience and Mineral Resources](#)



Japan



> [NIED : National Research Institute for Earth Science and Disaster Prevention](#)

### Associate Participants



China

- > [CEA : China Earthquake Administration \(in Chinese\)](#)
- > [Institute of Geophysics, CEA \(IRPCEA\)](#)
- > [Institute of Engineering Mechanics, CEA \(in Chinese\)](#)



USA

- > [USGS : U.S. Geological Survey](#)



Russia

- > [International Institute of Earthquake Prediction Theory and Mathematical Geophysics, Russian Academy of Sciences](#)



TEM

- > [TEM : Taiwan Earthquake Model](#)
- > [National Central University](#)
- > [Institute of Geophysics, National Central University](#)



GEM

- > [GEM : Global Earthquake Model](#)

### Sponsors



Japan

- > [JST : Japan Science and Technology Agency](#)



China

- > [MOST : Department of International Cooperation](#)



Korea

- > [NRF : National Research Foundation](#)

# Constructing a safer and more secure society with a better peace of mind

People **forget** earthquake disasters after generations.

Tangshan Eq → 32 yr → Wenchuan Eq, in China, 2008  
Jogan (869) Eq. → 1200 yr → Tohoku Eq, in Japan, 2011

Action:

Evacuate Immediately or Not?

Our Mission:

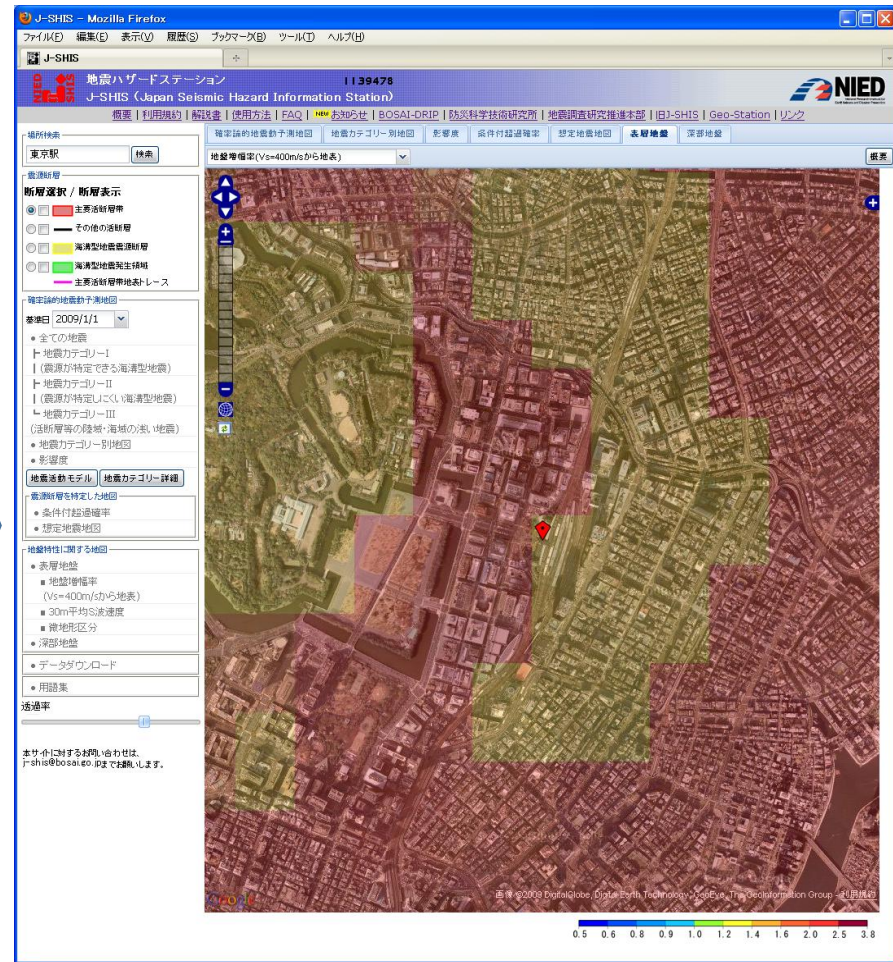
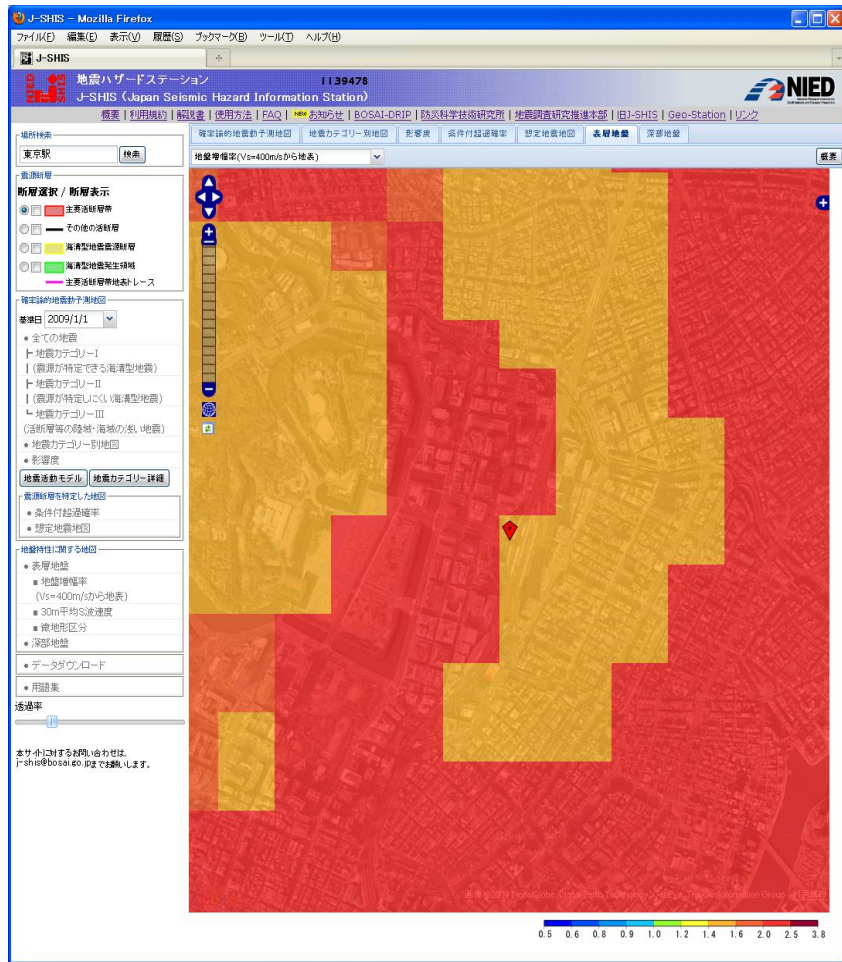
**PSHM** → Social Disaster Awareness,  
Education in long term.



郝 憲生 (Hao, Ken Xiansheng)

# Example of display of site amplification factor

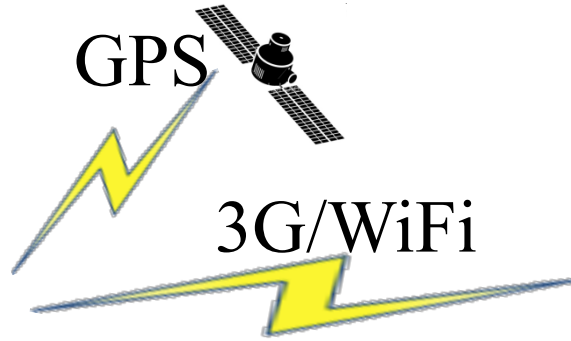
(Tokyo station, 250m<sup>2</sup>)



By changing the transmission rate, background map can be emphasized.

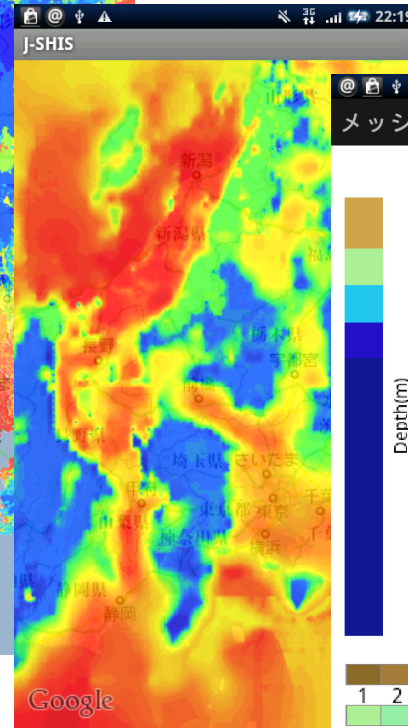
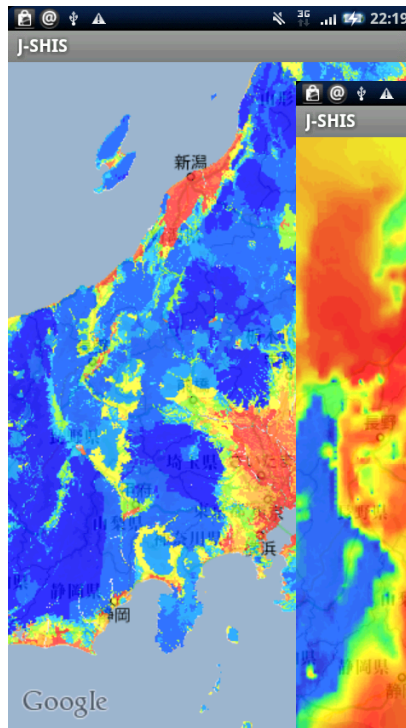


# J-SHIS application for smart phone



WMSサービス

RestfulAPI



メッシュコード : 54400099N

