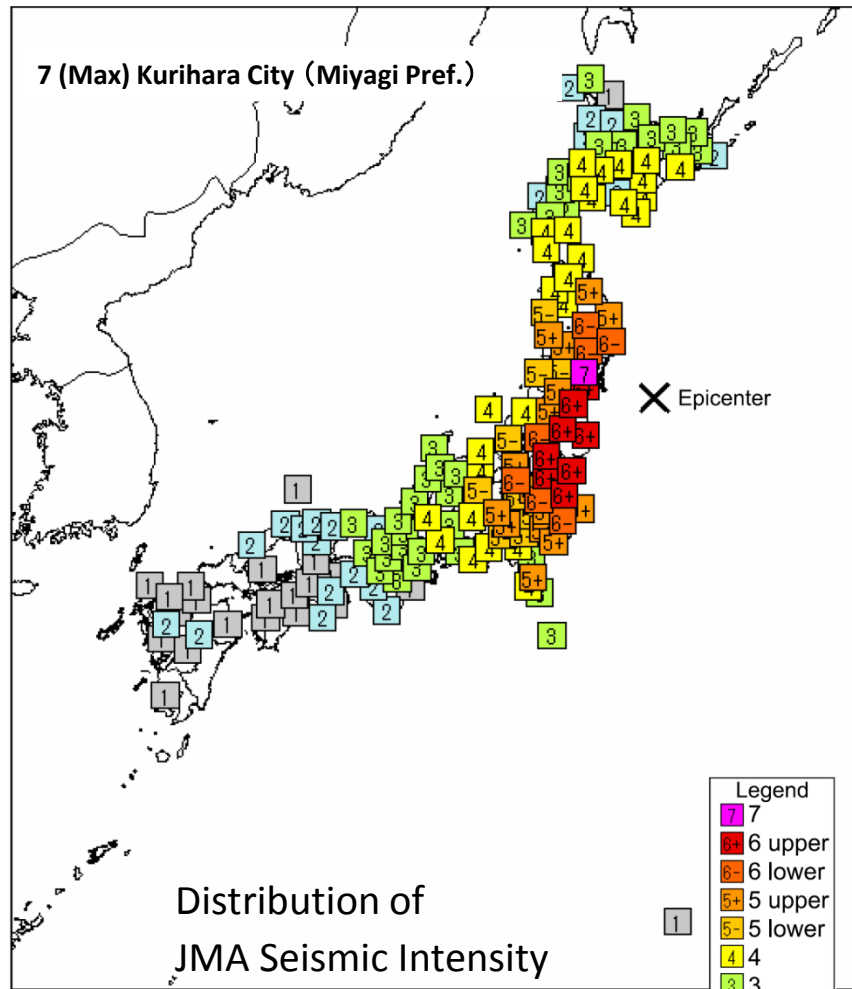
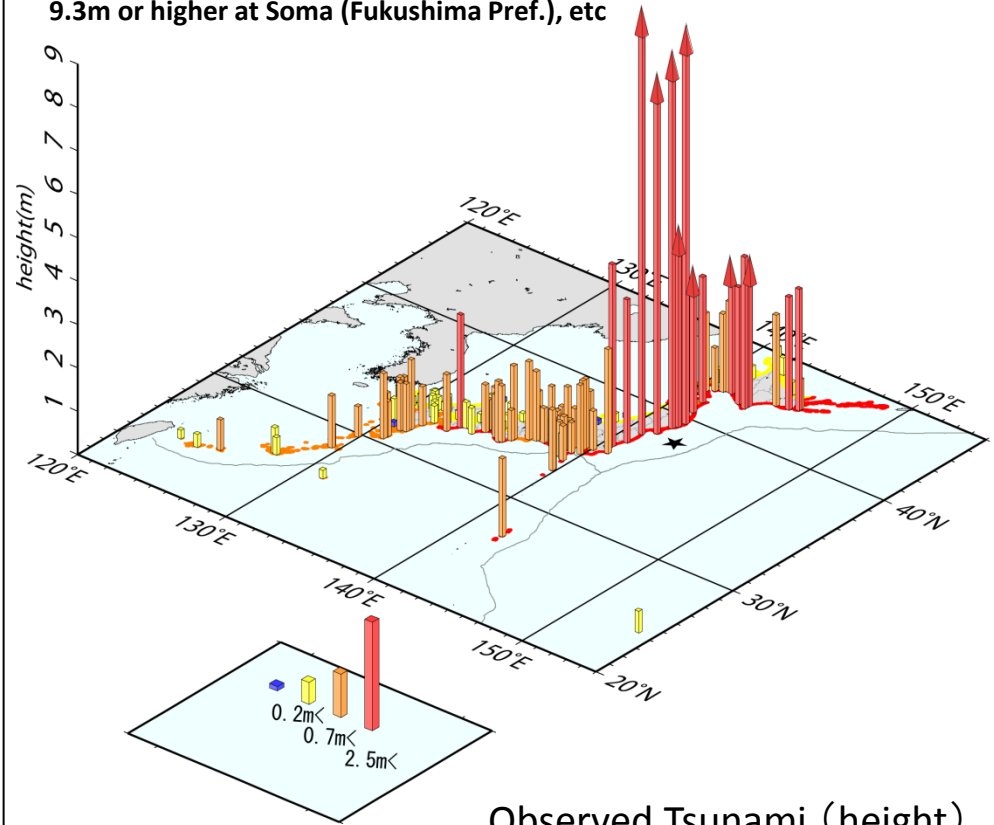


The 2011 off the Pacific coast of Tohoku Earthquake



8.5m or higher at Miyako (Iwate Pref.),
 8.0m or higher at Ofunato (Iwate Pref.)
 9.3m or higher at Soma (Fukushima Pref.), etc

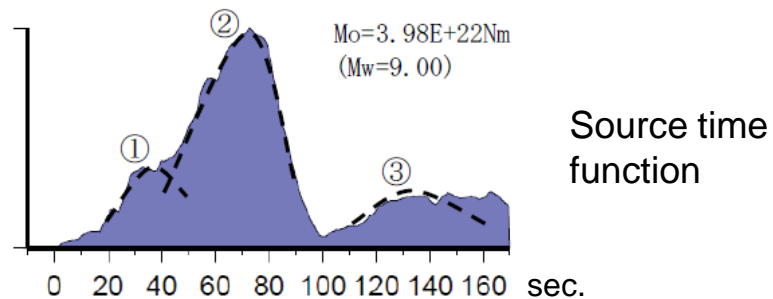
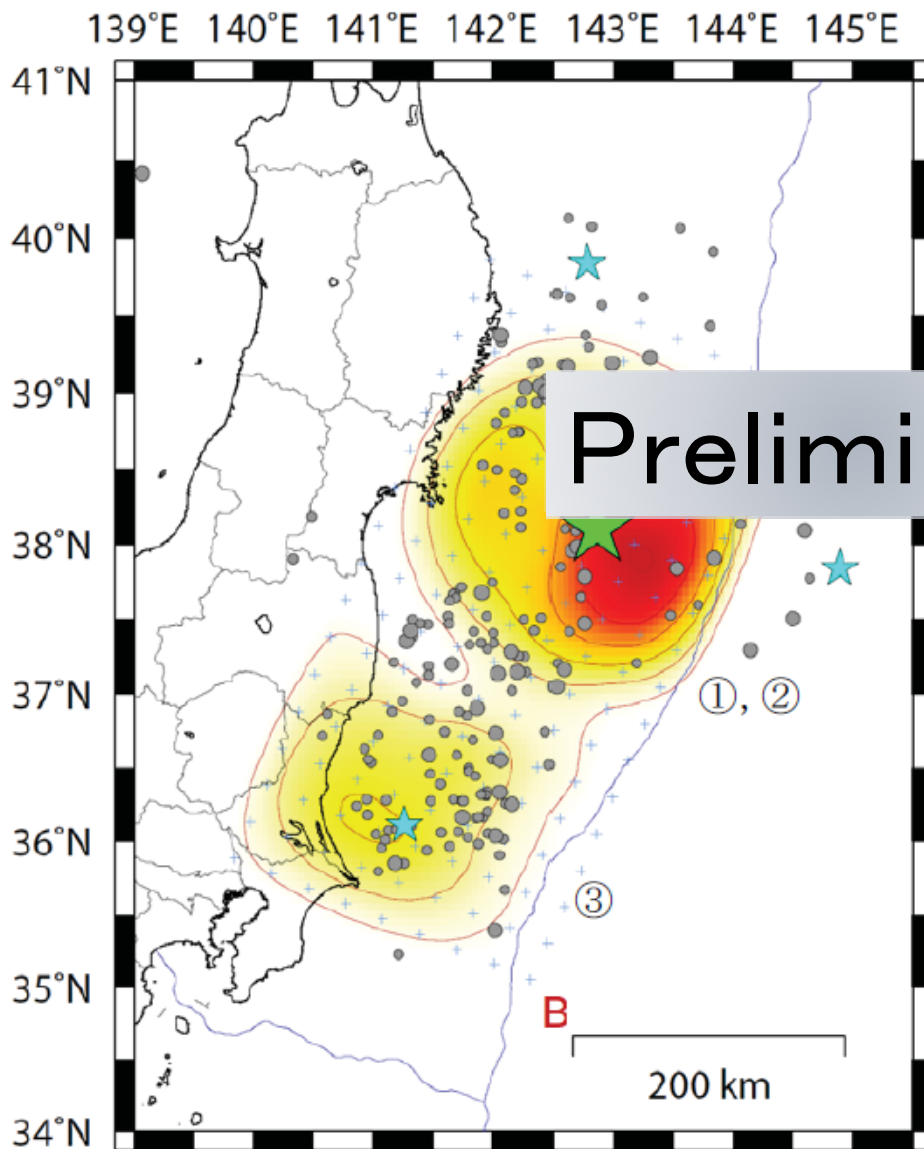


Date and Time: 11 March 2011 14:46 JST (05:46 UTC)

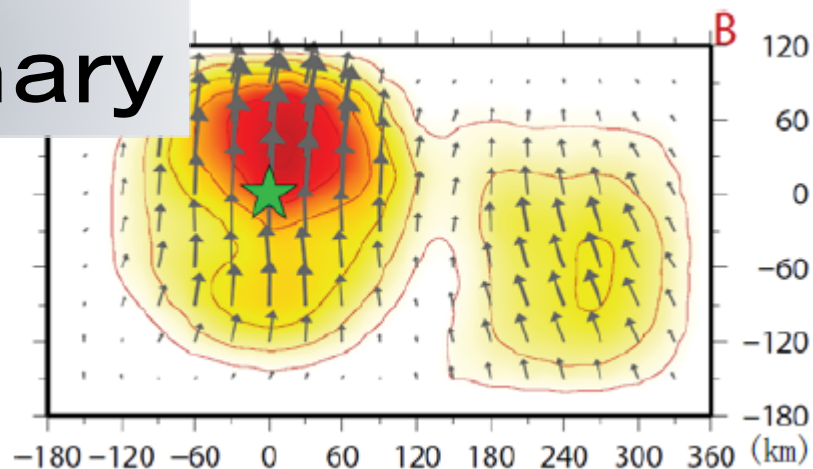
Magnitude: 9.0 (the largest earthquake recorded in Japan)

Hypocenter: N38.1, E142.9 Depth 24km (interim value)
 (130km ESE off Ojika Peninsula)

Rupture process analysis using far field body waves



Preliminary



Rupture distribution on the fault plane

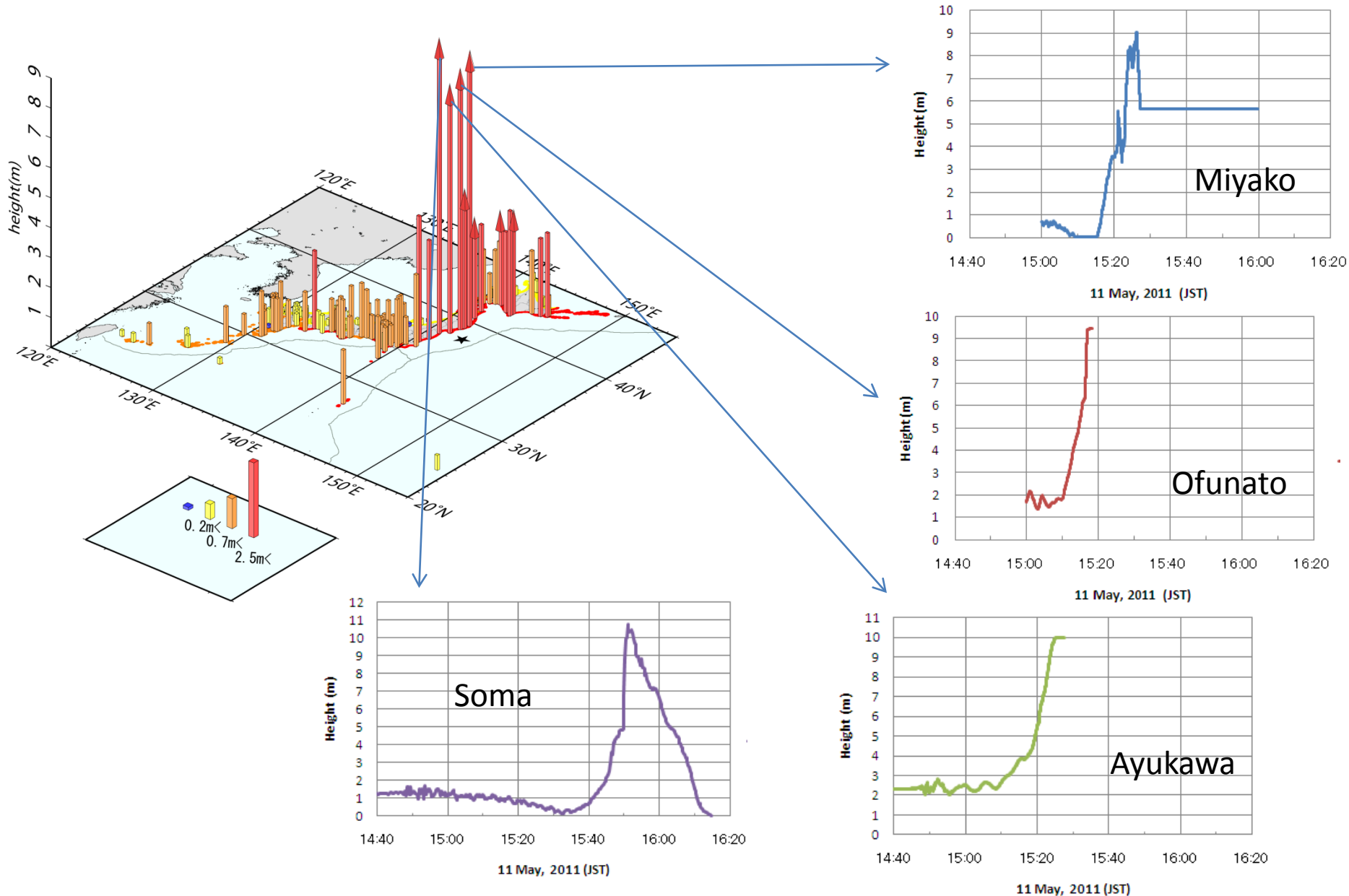
- ★ : The hypocenter
- ★ : Foreshocks $M \geq 7.0$
- : Aftershocks $M \geq 5.0$
- : Displacement contour by 5 m



Preliminary

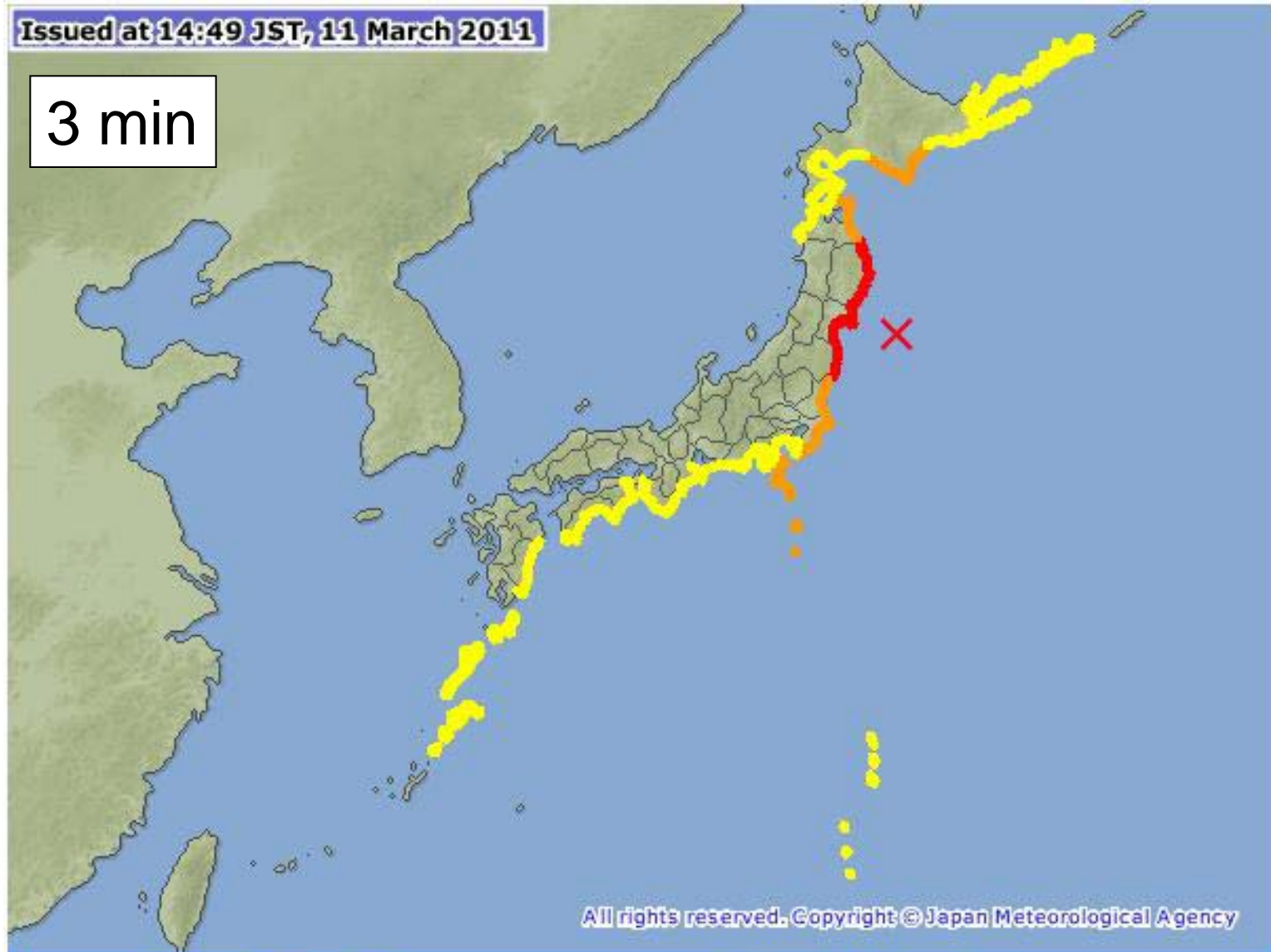
The 2011 off the Pacific coast of Tohoku Earthquake

- Coastal Tide Gauges (pressure sensor type)



Issued at 14:49 JST, 11 March 2011

3 min



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Tsunami Warning

Major Tsunami

Tsunami height is estimated to be 3 meters or more

Tsunami

Tsunami height is estimated to be up to 2 meters

Tsunami Advisory

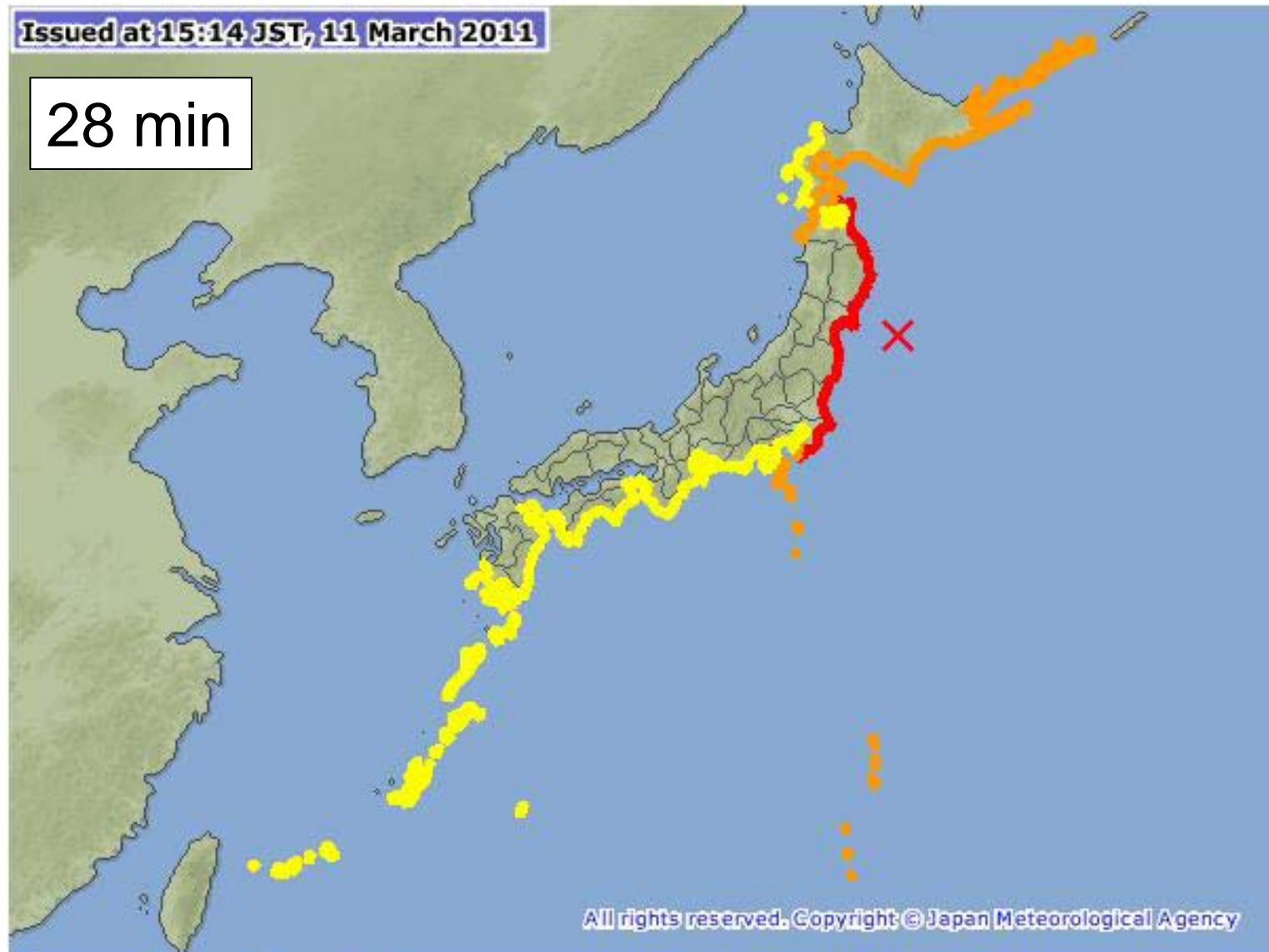
Tsunami height is estimated to be about 0.5 meter

× Epicenter

Notes

Issued at 15:14 JST, 11 March 2011

28 min



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Tsunami Warning

Major Tsunami

Tsunami height is estimated to be 3 meters or more

Tsunami

Tsunami height is estimated to be up to 2 meters

Tsunami Advisory

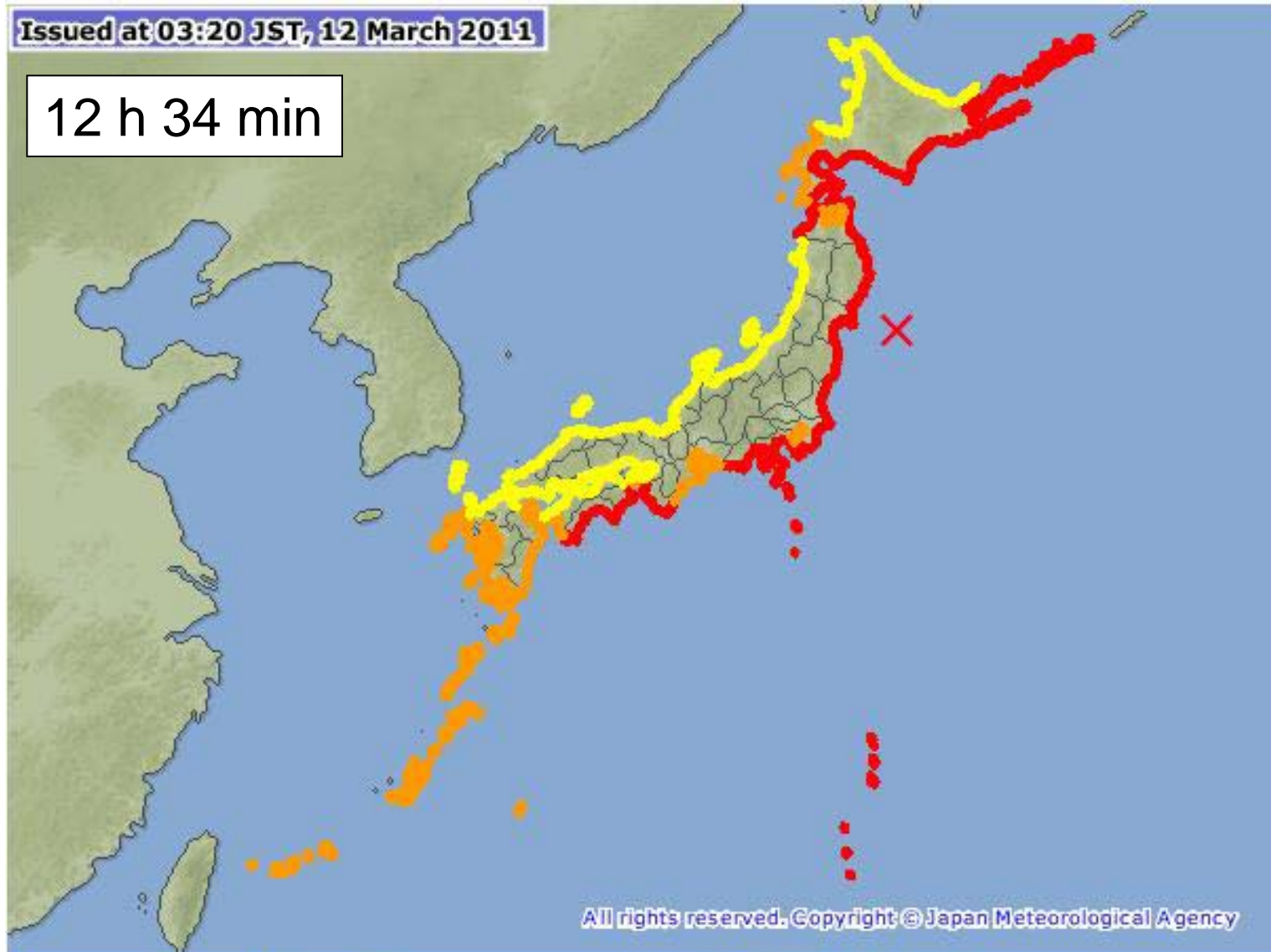
Tsunami Advisory

× Epicenter

Notes

Issued at 03:20 JST, 12 March 2011

12 h 34 min

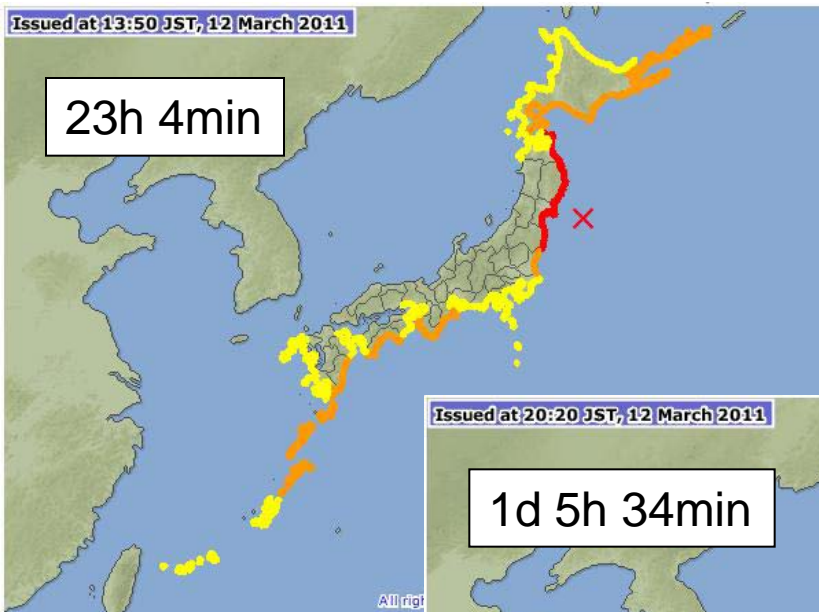


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	Tsunami Warning		Tsunami Advisory
Notes	Major Tsunami	Tsunami height is estimated to be 3 meters or more	Tsunami height is estimated to be about 0.5 meter
	Tsunami	Tsunami height is estimated to be up to 2 meters	Epicenter

Issued at 13:50 JST, 12 March 2011

23h 4min



Tsunami Warning

Notes

■ Major Tsunami	Tsunami height is estimated to be 3 meters or more
■ Tsunami	Tsunami height is estimated to be up to 2 meters

Issued at 20:20 JST, 12 March 2011

1d 5h 34min



Tsunami Warning

Notes

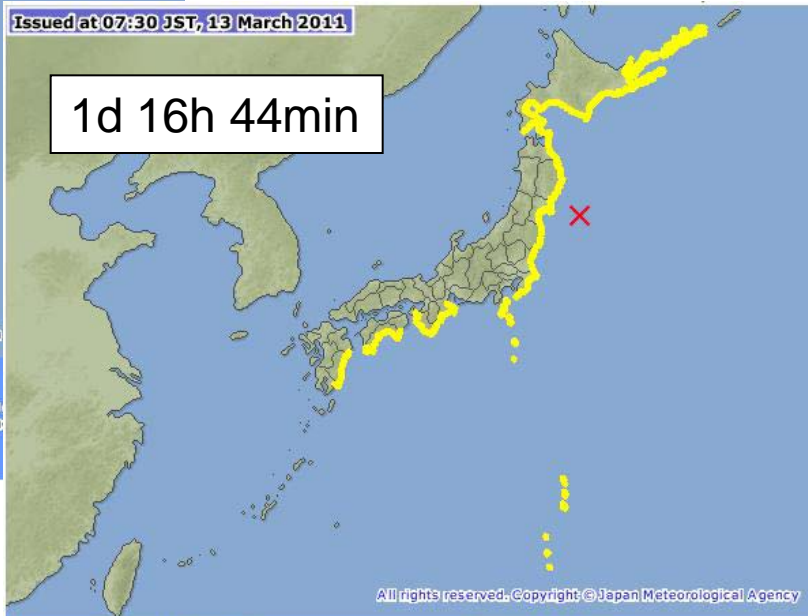
■ Major Tsunami	Tsunami height is estimated to be 3 meters or more
■ Tsunami	Tsunami height is estimated to be up to 2 meters

Tsunami Advisory

■ Tsunami height is to be about 0.5 m
X Epicenter

Issued at 07:30 JST, 13 March 2011

1d 16h 44min




Tsunami Warning

Notes

■ Major Tsunami	Tsunami height is estimated to be 3 meters or more
■ Tsunami	Tsunami height is estimated to be up to 2 meters

Tsunami Advisory

■ Tsunami height is estimated to be about 0.5 meter
X Epicenter

A map showing the East Asian region, including the Korean Peninsula, Japan, and the Philippines, with the surrounding Pacific Ocean. The map is overlaid with a blue semi-transparent box containing text.

2d 3h 12min

**All tsunami warnings and advisories
have been cancelled
Please see Tsunami Information**

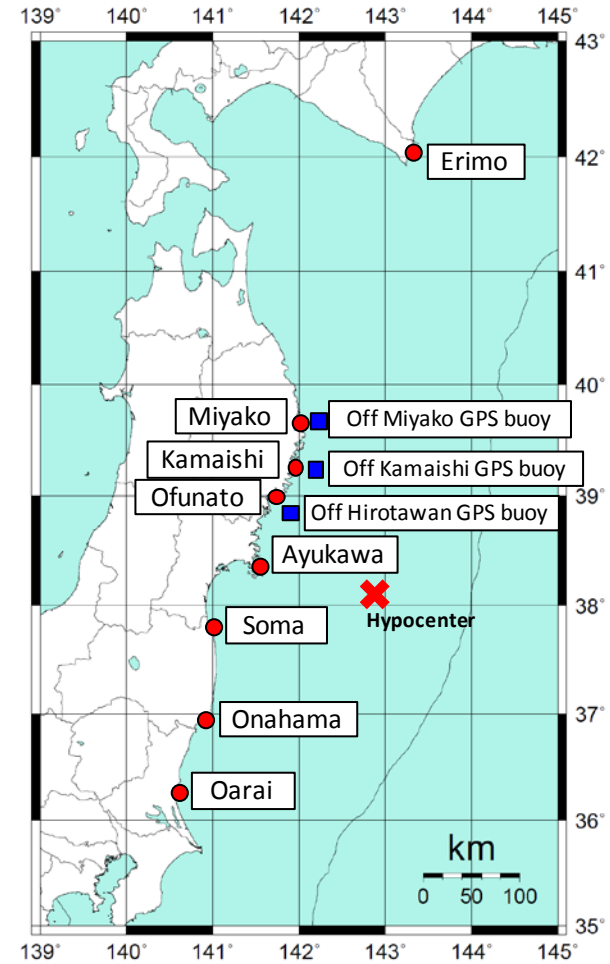
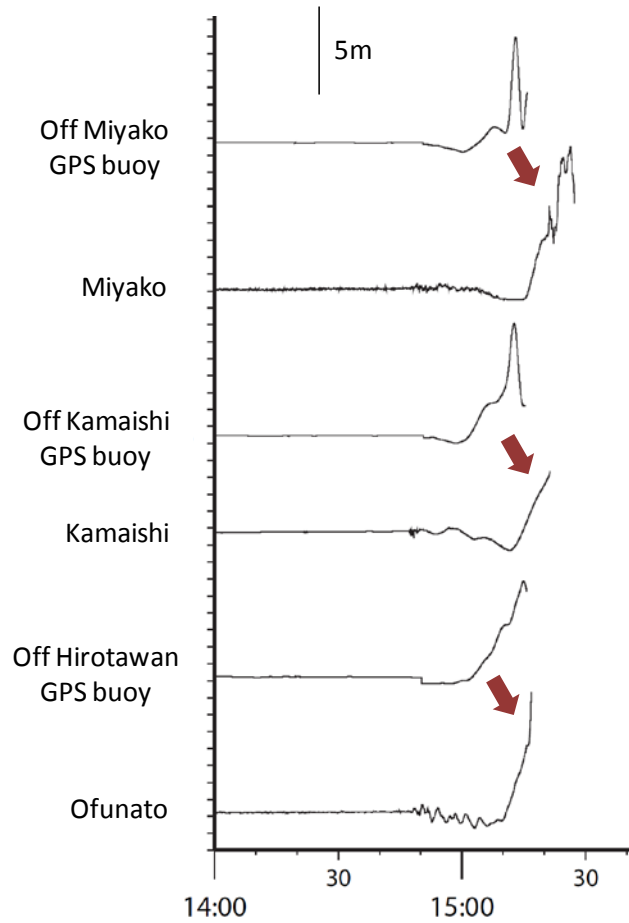
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Dissemination of Information (Time Line)

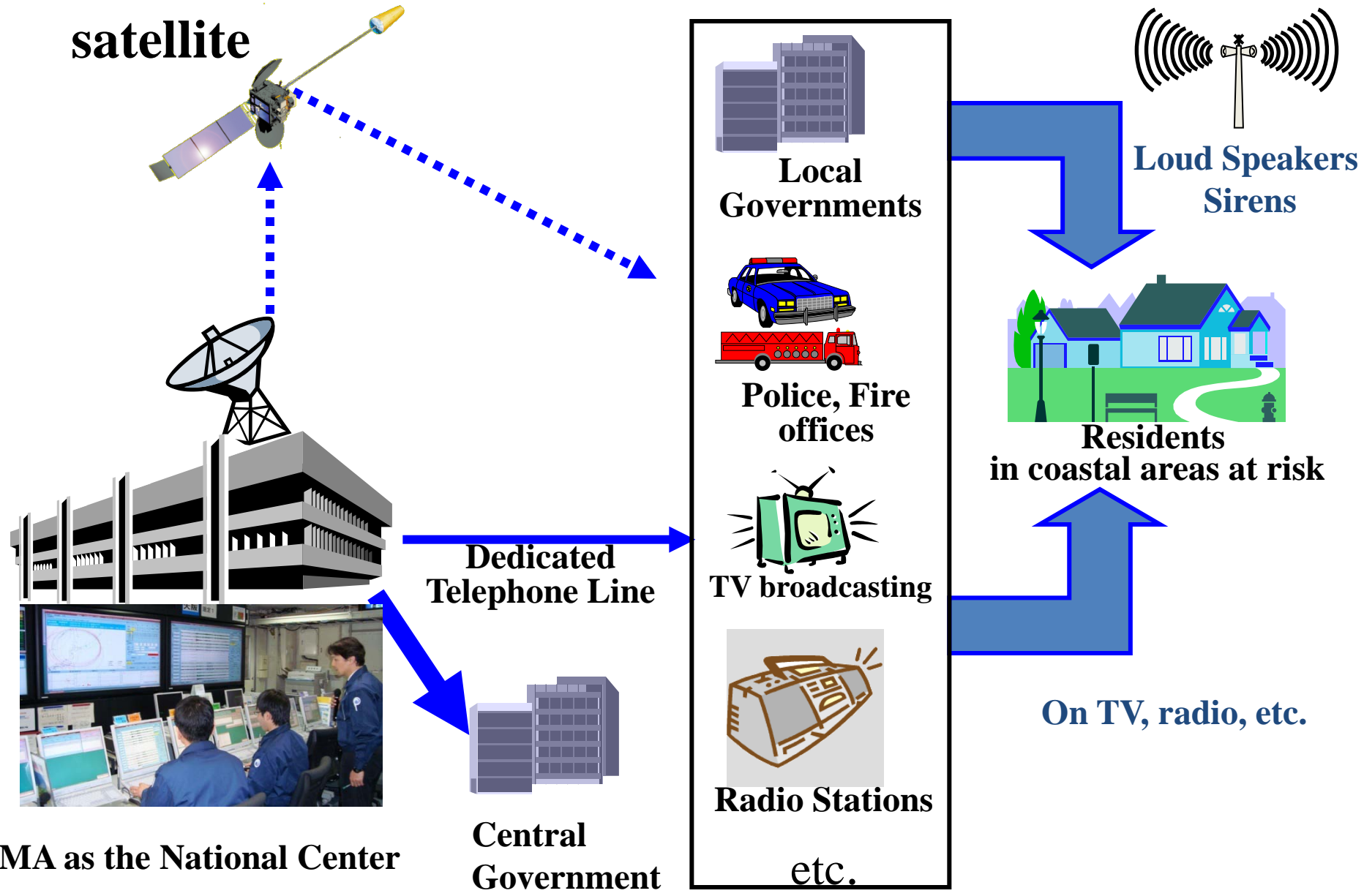
UTC	Event	Information
05:46	Earthquake	
05:49	M _{jma} = 7.9	Major Tsunami Warning - Iwate, Miyagi and Fukushima
05:50		Tsunami Information - Iwate: 3m, Miyagi: 6m, Fukushima: 3m, etc.
06:10	GPS buoys > 3m	
06:14		Tsunami Warnings/Advisories extended
06:14		Tsunami Information - Iwate: 6m, Miyagi: over 10m, Fukushima: 6m, etc.
	Tsunami hit the nearest coast	
06:21	Tide gauges at Kamaishi (Iwate) > 4.1m (scale out)	
06:30		Tsunami Warning extended
06:31		Tsunami Information- Iwate, Miyagi, Fukushima: over 10m, etc.

M_w (JMA) = 8.8

Tide gauge and GPS buoy data



Dissemination of Tsunami Warning and Earthquake Information



satellite



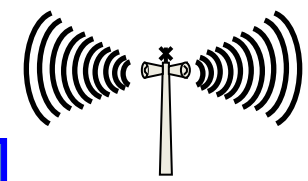
JMA as the National Center

Local Governments

Police, Fire offices

TV broadcasting

Radio Stations etc.



Loud Speakers Sirens



Residents in coastal areas at risk

On TV, radio, etc.

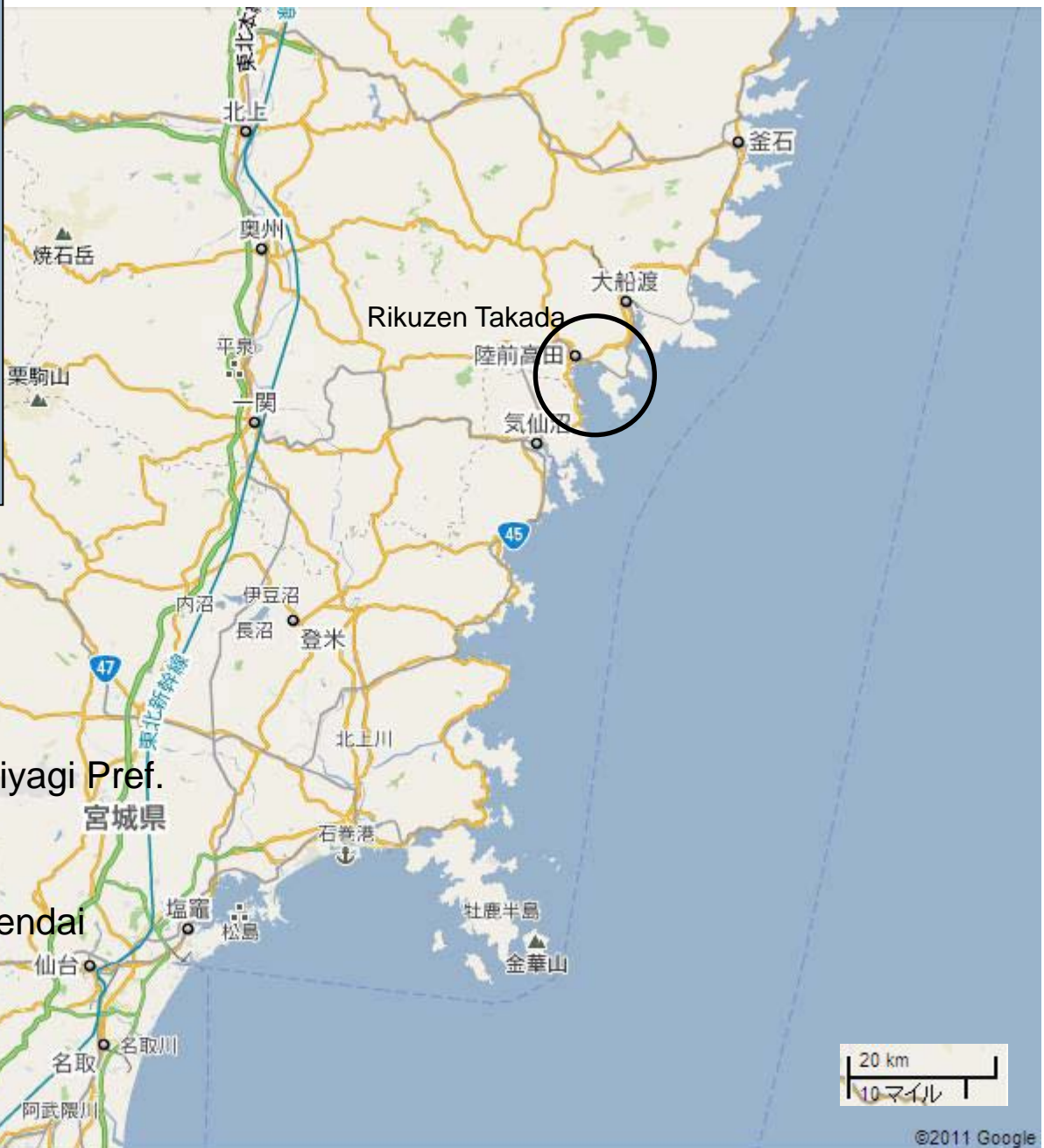




Photo by JMA from the helicopter of JSDF




Photo by JMA from the helicopter of JSDF



Photo by JMA from the helicopter of JSDF

Dissemination of Information (Possible Time Line)

UTC	Event	Information
05:46	Earthquake	
05:49	$M_{jma} = 7.9$	Major Tsunami Warning - Iwate, Miyagi and Fukushima
05:50		Tsunami Information - Iwate: 3m, Miyagi: 6m, Fukushima: 3m, etc.
??:??	M_w (JMA) = 8.8	Tsunami Warnings/Advisories extended - Iwate, Miyagi, Fukushima: over 10m, etc.
06:10	GPS buoys > 3m	
06:14		Tsunami Warnings/Advisories extended
06:14		Tsunami Information - Iwate: 6m, Miyagi: over 10m, Fukushima: 6m, etc.
	Tsunami hit the nearest cosat	
06:21	Tide gauges at Kamaishi (Iwate) > 4.1m (scale out)	
06:30		Tsunami Warning extended
06:31		Tsunami Information- Iwate, Miyagi, Fukushima: over 10m, etc.



M_w (JMA) = 8.8