2011.3.12

Modeling of the Tohoku—Pacific earthquake tsunami

TEPSCO
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1. Tohoku-Pacific Earthquake

1.1 USGS

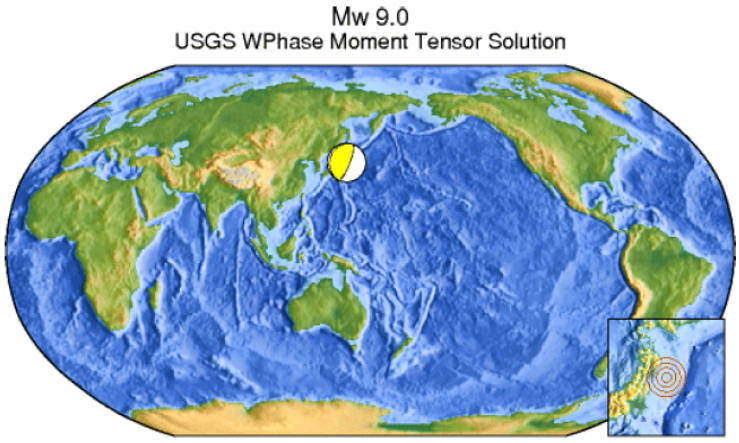
NEAR EAST COAST OF HONSHU, JAPAN

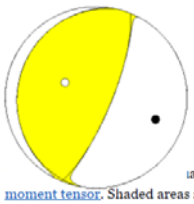
11/03/11 5:46:23

Epicenter: 38.321 142.369
MW 9.0

USGS/WPHASE CENTROID MOMENT TENSOR
11/03/11 05:46:23.00
Centroid: 38.321 142.969
Depth 24 No. of sta:256
Moment Tensor; Scale 10**22 Nm
Mrr= 1.82 Mtt=-0.13
Mpp=-1.69 Mrt= 1.34
Mrp= 3.17 Mtp=-0.56
Principal axes:
T Val= 3.88 Plg=59 Azm=295
N = 0.03 2 201
P = -3.92 30 110

Best Double Couple:Mo=3.9*10**22
NP1:Strike=193 Dip=14 Slip= 81
NP2: 22 76 92





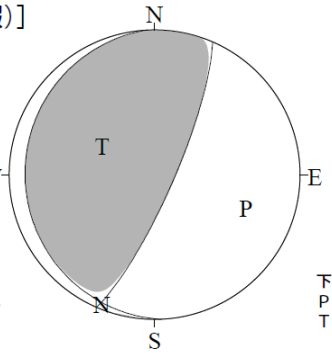
al representation of the style of faulting (focal mechanism) derived from the estimated moment tensor. Shaded areas show quadrants of the focal sphere in which the P-wave first-motions are away form the source, and unshaded areas show quadrants in which the P-wave first-motions are toward the source. The dots represent

1.2 Japan Meteorological Agency

2011年03月11日14時46分頃の地震の発震機構解 CMT解(速報)
西北西－東南東方向に圧力軸を持つ逆断層型

[ＣＭＴ解(速報)]

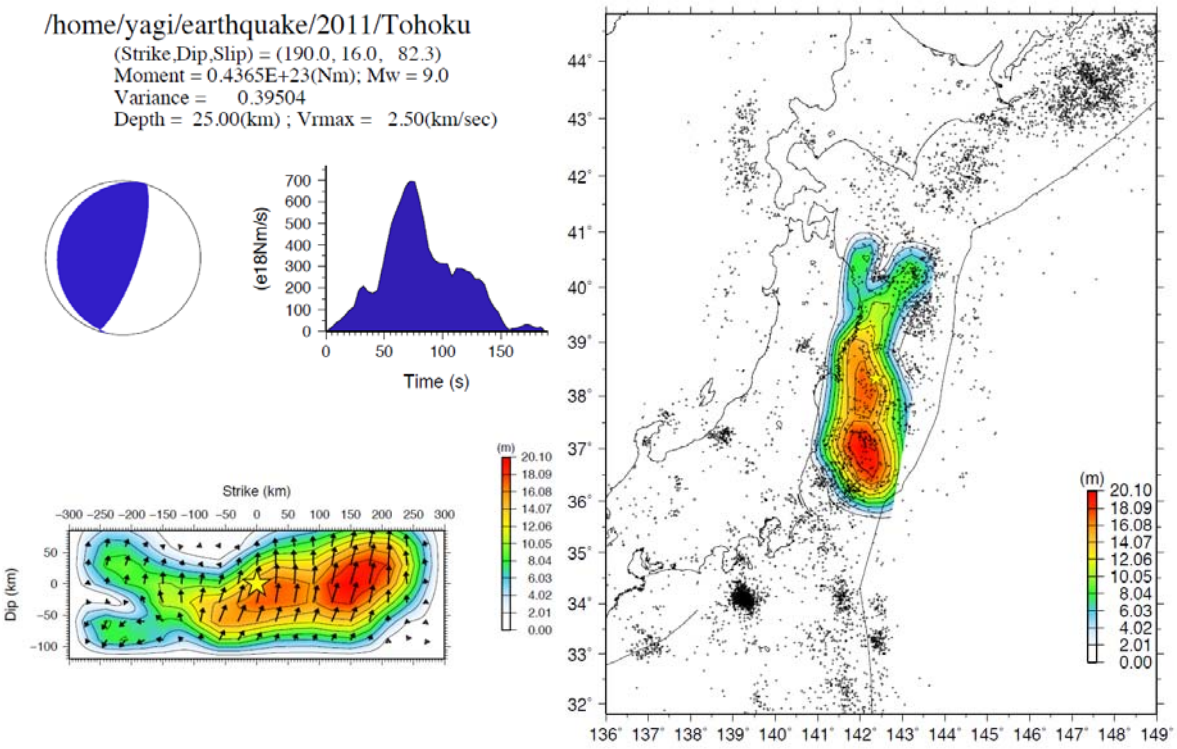
Mw=8.8



震源（セントロイド）
北緯 38度2分
東経 143度9分
深さ 約10km
※セントロイドとは、
地震を起こした断層面の中で
地震動を最も放出した部分。

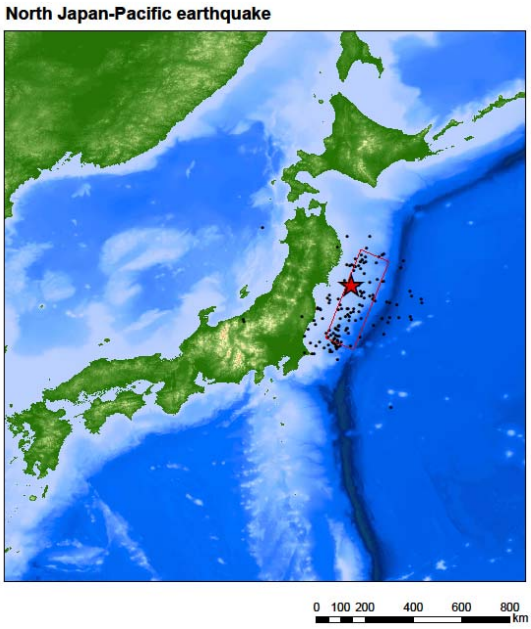
下半球等積投影法で描画
P：圧力軸の方向
T：張力軸の方向

1.3 Dr. Yagi's Model

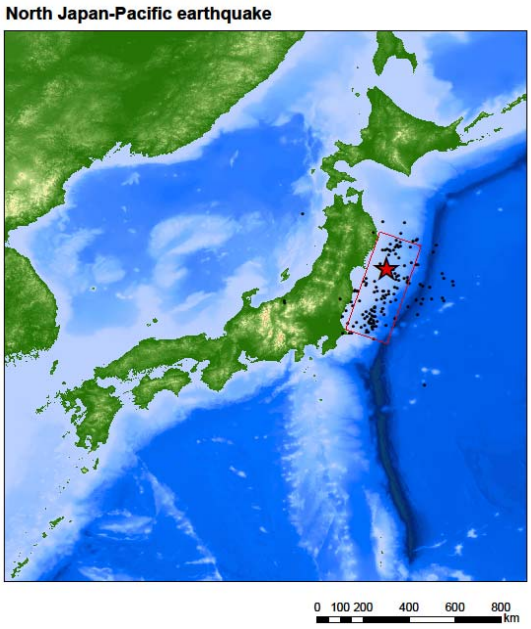


2. Fault parameter for the tsunami model

【Model 1, 2】



【Model3】



	Mw	Latitude	Longitude	D	L	W	strike	dip	slip	depth
Model 1	8.8	39.10	143.80	15	380	100	200	20	90	10
Model 2	8.9	39.10	143.80	23	380	100	193	14	90	10
Model 3	9.0	39.10	143.70	18	450	150	195	16	82.3	10

3. Tsunami model

- Non-linear shallow water equation
- Δt = 1.0 sec, Δx= 240 ― 4320 m

4. Numerical Results

4.1 Model 1

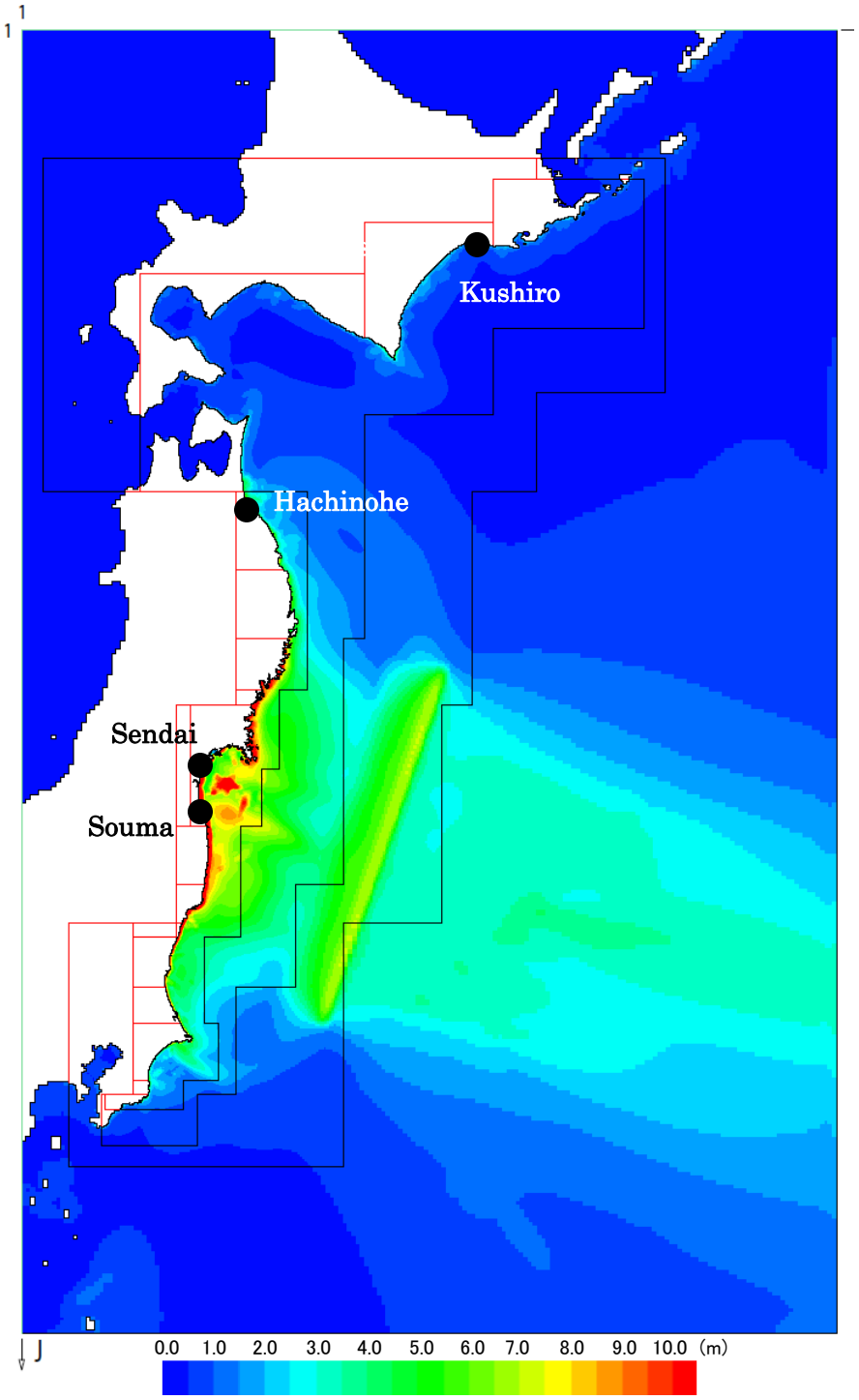
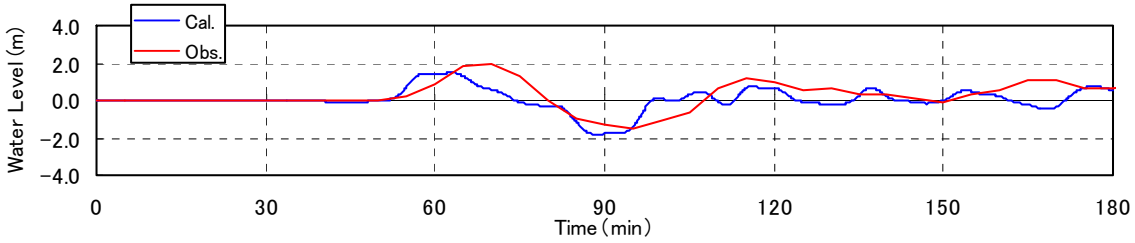
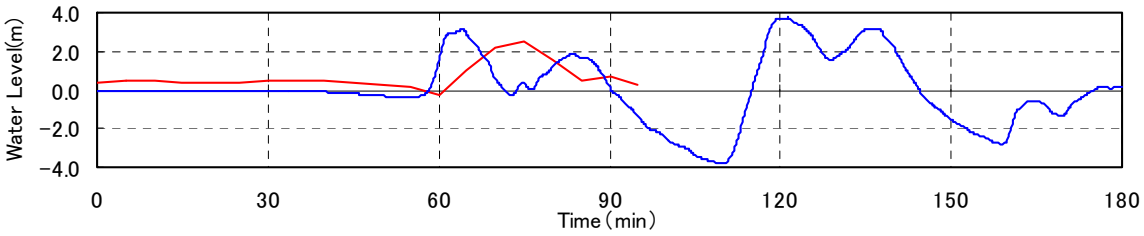


Fig. Maximum tsunami height

Kushiro



Hachinohe



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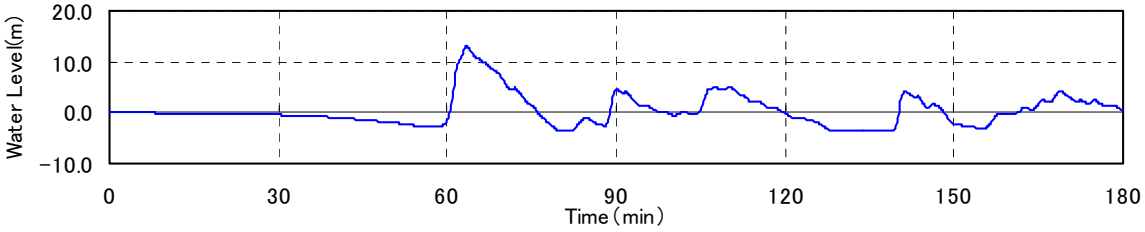
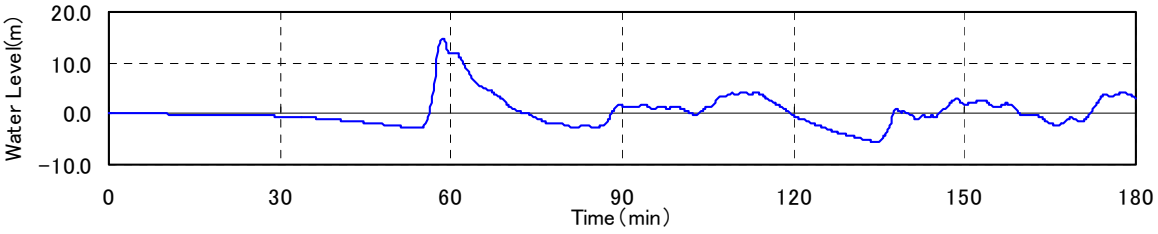
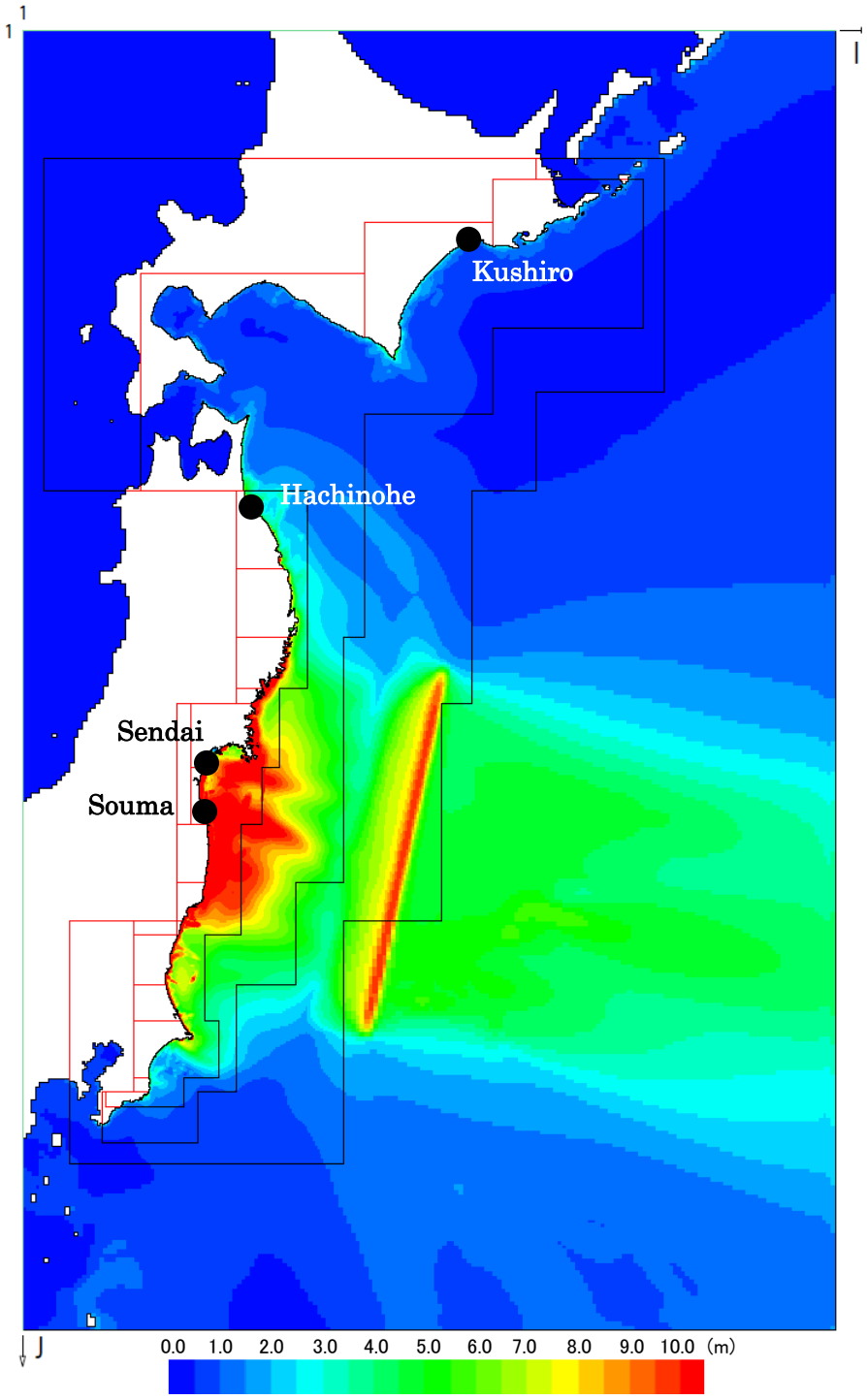


Souma



4.2 Model 2



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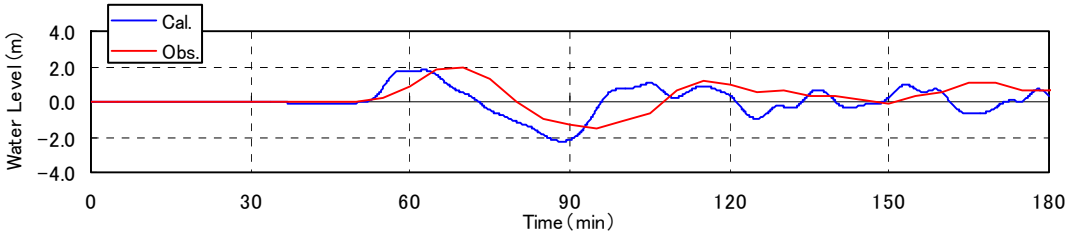
Kushiro



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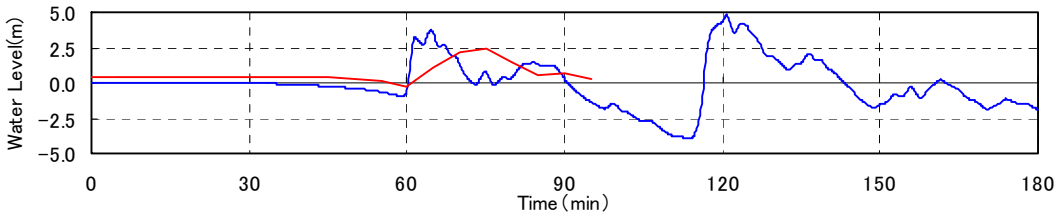

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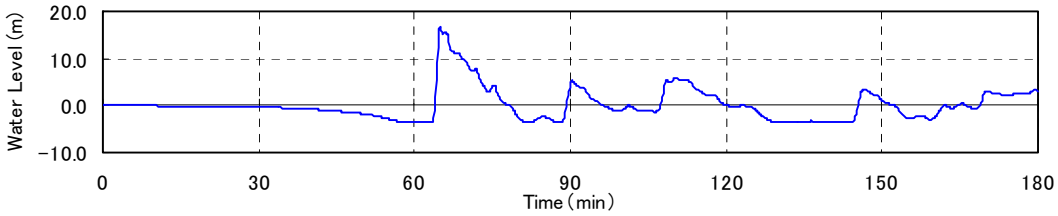

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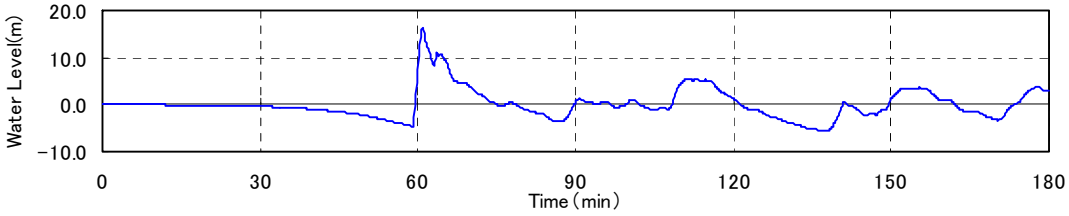


Fig. 2 Maximum tsunami height

4.3 Model 3

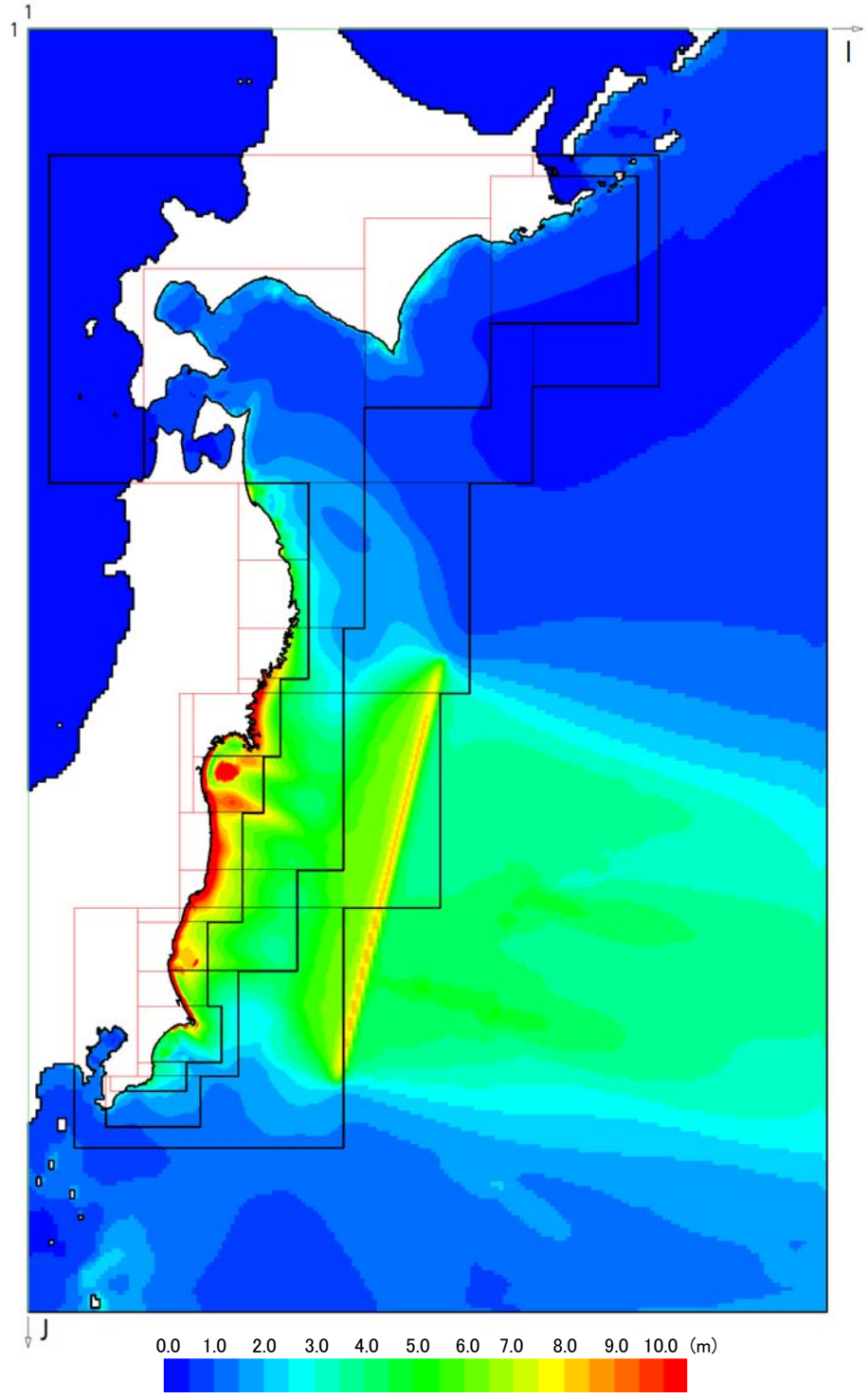
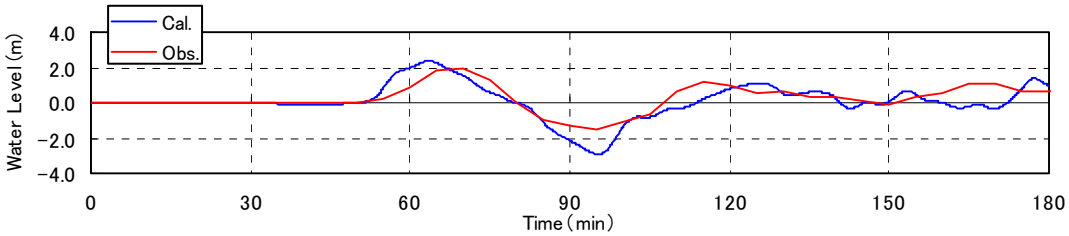


Fig. Maximum tsunami height

Kushiro



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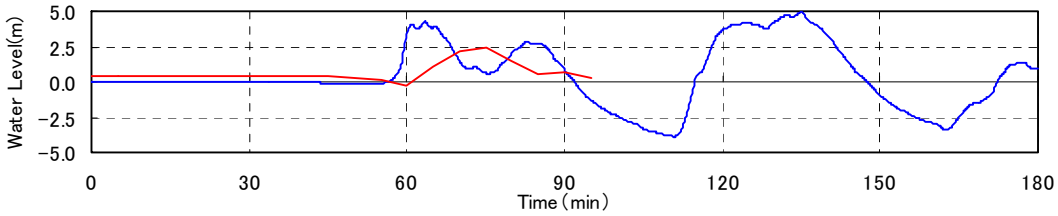

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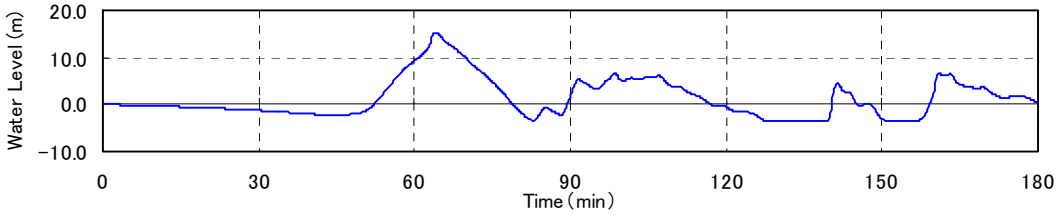

Souma