

# The NIED 2012 Seismic Hazard Model for Japan

The Japan national model is well described in the online report prepared by the [National Research Institute for Earth Science and Disaster Prevention \(NIED\)](#), downloadable from the Japan Seismic Hazard Information Station [website](#)

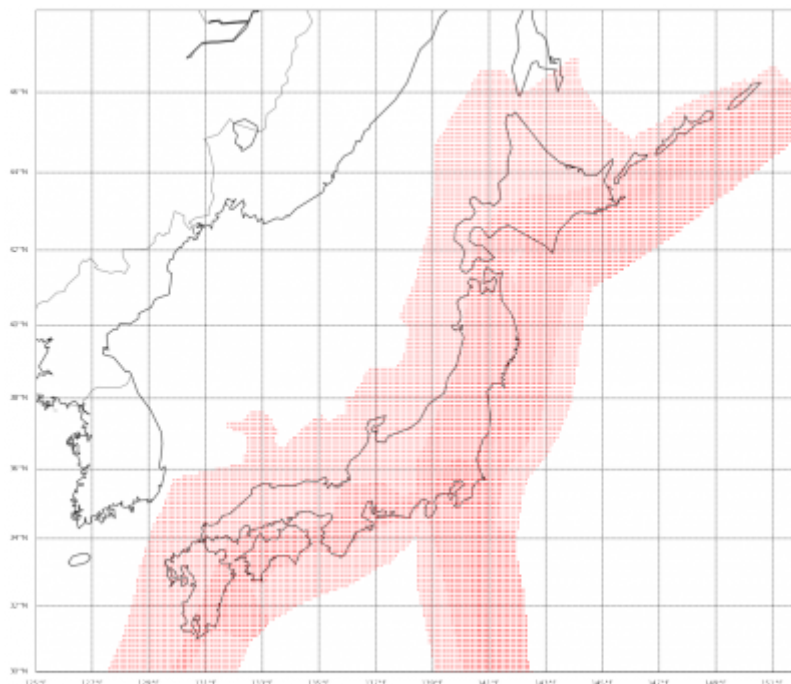
The files describing this model are accessible at this link whereas the .pdf describing their format can be downloaded [here](#).

## The seismic source model

The NIED 2012 seismic source model consists of a single model containing different source typologies:

- Gridded seismicity
- Characteristic faults
- Discretized faults
- Discretized sources

The figure below shows gridded seismicity, containing about 32000 point sources uniformly distributed over the Japanese territory and its surroundings. It is used to model interface earthquakes, intra-slab seismicity and seismicity in active shallow crust.



## The ground motion model

The NIED 2012 ground motion model includes a single ground motion prediction equation, the [Si and](#)

[Midorikawa \(1999, 2000\)](#) ground motion prediction equation. This ground motion model computes the ground produced by earthquake sources included in three distinct tectonic environments: earthquakes in active shallow crust, subduction interface events and intraslab events.

## References

- Fujiwara, H., Kawai, S., Aoi, S., Morikawa, N., Senna, S., Kudo, N., Ooi, M., Hao, K. X., Wakamatsu, K., Ishikawa, Y., Okumura, T., Ishii, T., Matsushima, S., Hayakawa, Y., Toyama, N. and Narita, A. (2009). "Technical reports on national seismic hazard maps for Japan." Technical note of the National Research Institute for Earth Science and Disaster Prevention, Vol. 336.
- Si, H. and Midorikawa, S. (1999). New attenuation relationships for peak ground acceleration and velocity considering effects of fault type and site condition. J. Struct. Constr. Eng. AIJ 523, 63–70 (in Japanese with English abstract)
- Si, H. and Midorikawa, S. (2000). New attenuation relationships for peak ground acceleration and velocity considering effects of fault type and site condition. In Proceedings of the 12th World Conference on Earthquake Engineering [Online version](#)

## Model summary table

This table summarises the main characteristics of the original implementation of this model

<b>1</b>	<b>Datasets availability</b>	
1.1	Earthquake catalogue	This model is built using many catalogues most of them available (e.g. Utsu catalogue, JMA catalogue)
1.2	Geological database	Information about fault is distributed though the <a href="#">J-SHIS Website</a>
1.3	Strong-motion database	
1.4	Site characterization database	
<i>Notes</i>		
<b>2</b>	<b>Methodology for model development</b>	
2.1	Scientific participation (SSHAC levels) and review process	
2.2	Documentation describing model preparation	
2.3	Codes used for model preparation	Not available
<i>Notes</i>		
<b>3</b>	<b>PSHA input model</b>	
<b>3.1</b>	<b>Seismic Source Model</b>	
3.1.1	Area sources	Not included
3.1.2	Grid sources	Included
3.1.3	Crustal faults	Included
3.1.4	Subduction faults	Included
3.1.5	In-slab seismicity	Modelled as XXX
3.1.6	Non-parametric ruptures	Included
3.1.7	Magnitude-area scaling relationships	

3.2	<b>Ground Motion Model</b>	
3.2.0	Tectonic regionalisation	Not included
3.2.1	Models for active shallow seismicity	Included
3.2.2	Models for subduction interface	Included
3.2.3	Models for subduction intraslab	Included
3.2.4	Models for stable continental regions	Not included
3.2.6	Models for volcanic areas	Not included
3.3	<b>Site Response Model</b>	
3.2.5	Models for deep non-subduction sources	Not included
3.3.1	Based on GMPEs	Yes
3.3.2	Based on site-response analysis	No
3.4	<b>Epistemic uncertainties</b>	
3.4.1	Seismic Source Model	Not included
3.4.2	Ground Motion Model	Not included
3.4.3	Site Response Model	Not included
Notes		
4	<b>Hazard Input Description</b>	
4.1	Hazard input document	
4.2	Input files	Available
Notes	Information describing the input can be downloaded from this website: <a href="http://www.j-shis.bosai.go.jp/">http://www.j-shis.bosai.go.jp/</a>	
5	<b>Calculation</b>	
5.1	Software	Not available
5.2	<b>Results</b>	
5.2.1	Hazard curves	Available
5.2.2	Hazard maps	Available
5.2.3	Uniform hazard spectra	Not available
5.2.4	Disaggregation	Not available
5.2.5	Stochastic event sets	Not available
5.2.6	Ground motion fields	Not available
Notes	The results of the calculation can be downloaded from this website: <a href="http://www.j-shis.bosai.go.jp/">http://www.j-shis.bosai.go.jp/</a>	

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