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## March 11, 2011 M9.0 Tohoku, Japan Earthquake

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[\[Image\]](#)

2011 3 11 (M9.0) 500km, 200km 5 2011 3 25 100m 2.7 151km 5 1 K-NET 273 Kik-net 112 Kik-net 75.1km

### Plain English Summary

March 11, 2011 Tohoku earthquake M=9.0 occurred on the subduction plate boundary between the Pacific and North American plates. The rupture lasted for 5 minutes along the 500 km long and 200 km wide fault which created one of the largest known earthquakes in and around Japan. The plots below use the Japanese strong motion recordings from 273 K-NET and 112 KiK-net stations (as of March 25, 2011) of NIED. KiK-net stations are located at the surface which subject to more soft soil amplification than the downhole stations (at 100 m depth) at the same location. Knet stations are located only at the surface. The strongest horizontal shaking recorded was 2.7 times larger than gravity at Miyagi prefecture located at about 75.1 km of the fault. In Tokyo, which is 151 km away from the fault, horizontal ground shaking recorded was one fifth of gravity.

### Resumen Español

El 11 de marzo de 2011 en la frontera de subducción entre la placas pacifica y norteamericana se produjo el terremoto Tohoku de magnitud 9,0. La ruptura se prolongó durante 5 minutos a lo largo de un área de 500x200 kilómetros cuadrados generando uno de los mayores terremotos conocidos dentro y alrededor de Japón. Las figuras mostradas a continuación utilizan registros japoneses de movimiento fuerte obtenidos de 273 estaciones K-net y 112 estaciones KiK-net (al 25 de marzo de 2011) de la red NIED. Las estaciones KiK-net superficiales fueron sometidas a mayores amplificaciones de suelo blando que las estaciones a 100 m de profundidad (downhole stations) en el mismo lugar. Las estaciones K-net están ubicadas solamente en la superficie. Las más fuertes aceleraciones horizontales registradas fueron 2,7 veces mayores que la aceleración de la gravedad en la prefectura de Miyagi, ubicada a unos 75,1 kilómetros de la falla. En Tokio, que esta a 151 km de la falla, las aceleraciones horizontales registradas fueron de un quinto de la aceleración de la gravedad.

### Türkçe Özet

Büyüklüğü 9 olan 11 Mart 2011 Tohoku depremi Kuzey Amerika ile Pasifik plakaları arasındaki yitim plaka sınırında meydana gelmiştir. Uzunluğu 500 genişliği 200 kilometre olan fayın 5 dakika süreyle kırılmasıyla oluşan bu deprem Japonya'nın bilinen en büyük yer sarsıntılarının birisidir. Aşağıdaki şekillerde kullanılan kuvvetli yer hareketi kayıtları, Japonya'nın 273 K-NET ve 112 KIK-net istasyonlarından elde edilmiştir. KiK-net istasyonları hem yüzeyde hem de kuyu içinde 100 m derinlikte kayıtçılara sahiptir. Yüzeyde ölçülen KiK-net değerlerinin daha yüksek olması zemin büyütmesinden kaynaklanmaktadır. Bu depremde kaydedilmiş en yüksek yatay yer hareketi, faya yaklaşık 75,1 km uzaklıktaki Miyagi vilayetinde yerçekiminin 2.7 katı olarak gerçekleşmiştir. Faydan 151 km uzaklıkta bulunan Tokyo ise yerçekiminin beşte biri kadar kuvvetle sallanmıştır.



[Top 5 Ground Motion Records \(Acceleration, Velocity, Displacement and Response Spectra Plots\) \(3.9 Mb\) \(March 25, 2011\)](#)

[\[Image\]](#)

Los 5 mejores registros sísmicos (graficas de aceleración, velocidad, desplazamiento y espectros de Respuesta

En yuksek ivmeli 5 kayıt için (ivme, hız ve deplasman eğrileri ve tepki spektrumları)



[Tohoku Earthquake Peak Ground Acceleration \(PGA\) Maps for Japan and Tokyo Metropolitan Area \(6 Mb\) \(March 17, 2011\)](#)

[\[Image\]](#) PGA

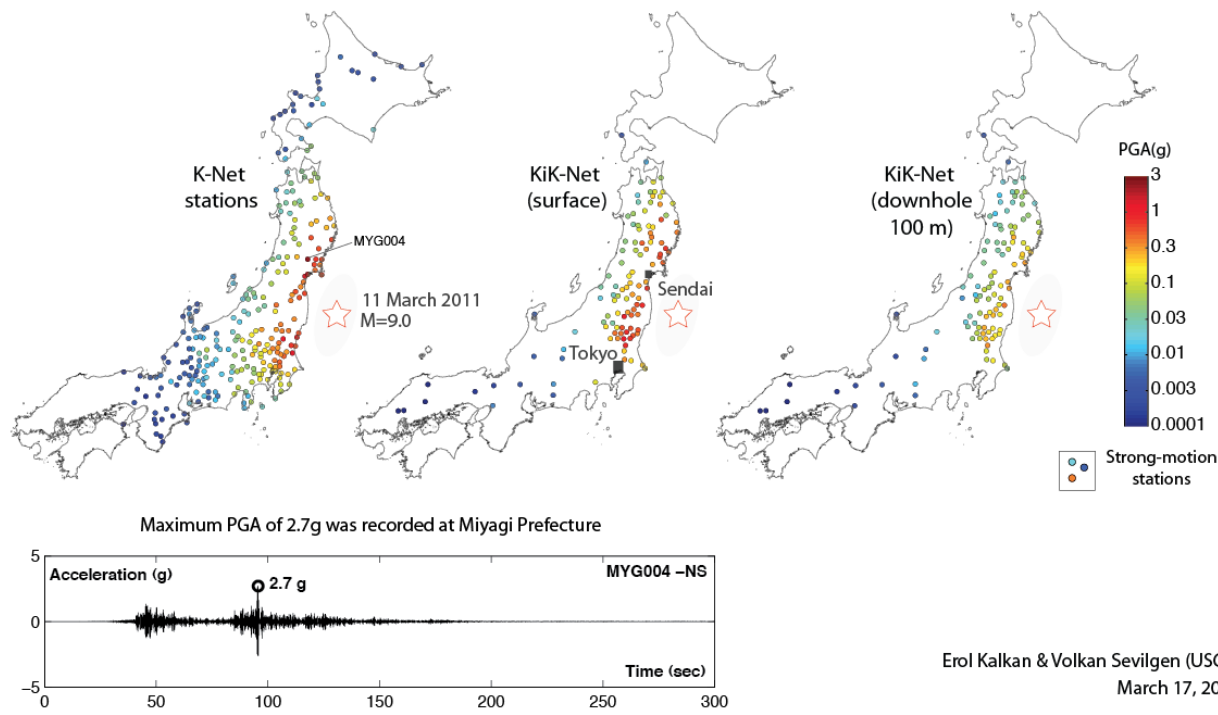
Mapas de aceleración máxima del terreno (PGA) para Japón y el área metropolitana de Tokio registradas durante el terremoto de Tohoku

Japonya ve Tokyo için Tohoku depreminin olusturdugu en yuksek ivme degerleri haritalari



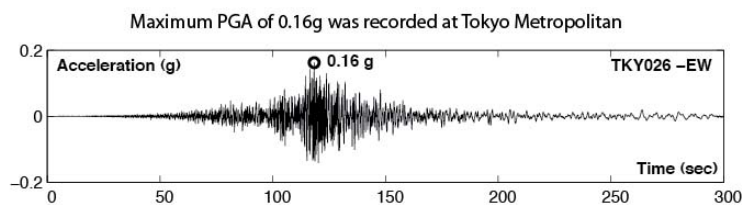
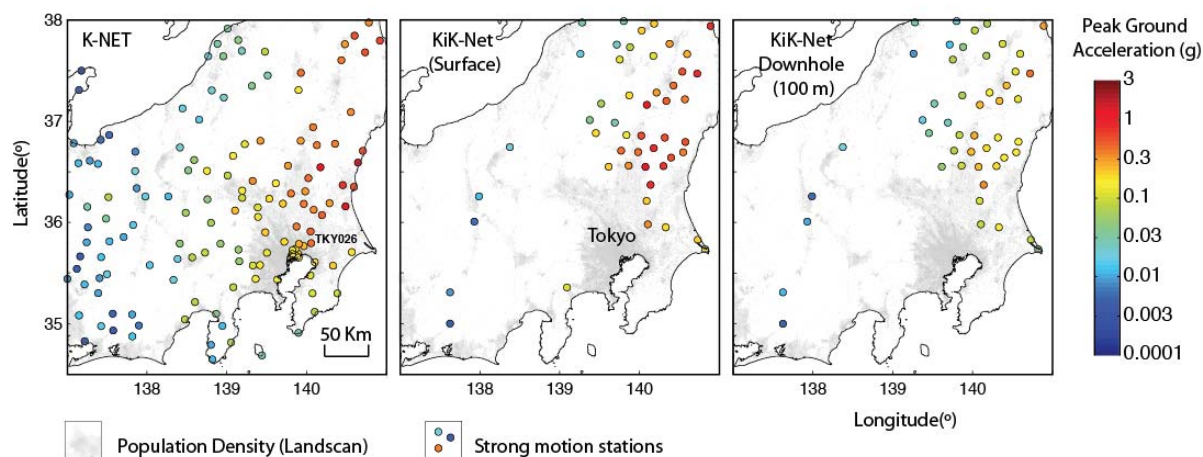
K-NET and KiK-net Data on Google-Earth (click to see processed wave-forms, PGA, PGV, PGD and Spectra Accelerations)

Peak Ground Motion Acceleration (PGA) of the 11 March 2011 Tohoku M=9.0 earthquake



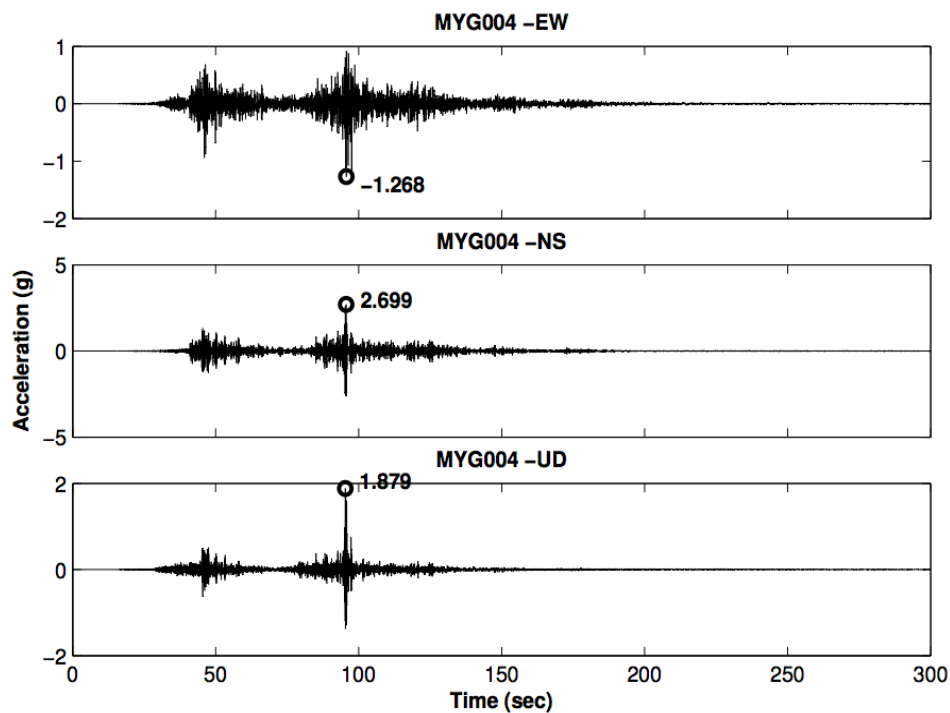
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March 17, 2011


## Peak Ground Motion Acceleration (PGA) of the 11 March 2011 Tohoku M=9.0 earthquake Tokyo Metropolitan and its surroundings

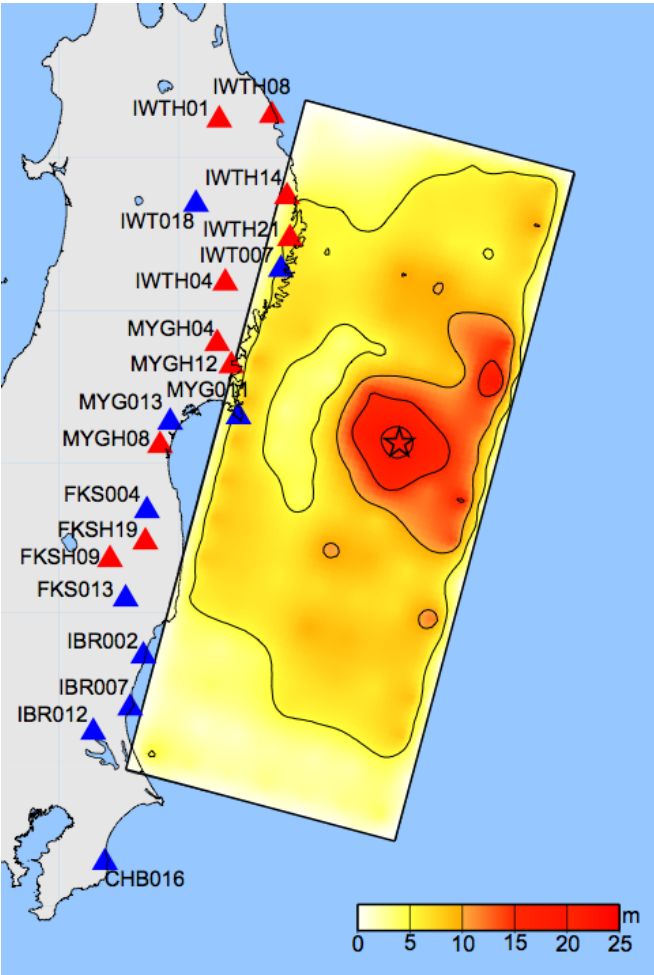


March 17, 2011  
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## STRONG MOTION RECORDINGS OF THE M9.0 TOHOKU EARTHQUAKE



The largest peak ground acceleration (PGA) of 2.7 g was recorded in the North-South direction at Miyagi prefecture - MYG04 station located at 75.1 km of the fault ( [vectorized PDF of this figure is available here, 102 Kb](#))



Location of near-source strong motion stations; shown also is the source process (Figure is taken from NIED event summary page)

Downloadable Material

K-NET Data (273 Stations)	KiK-net Data (112 Stations)
<a href="#">Peak Table of Unprocessed Records (Excel File)</a>	<a href="#">Peak Table of Unprocessed Records (Excel File)</a>

Acknowledgment

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