

Earthquake prediction from the peak gust(2)

Takao Saruwatari[1]

[1] Environment and Safety, Takeda

1. Summary

The typhoon hit the Tokaido off earthquake and the Niigata Prefecture Chuetsu earthquake ago in 2004. Therefore, whether the low-pressure and the earthquake were related was guessed. Then, it was confirmed that a large low-pressure existed two months ago from one week of the large earthquake occurrence since it was investigated whether there was similar phenomenon about a large earthquake, and the peak gust recorded about 20m/s or more in a wide-ranging region. It has been understood to tend to agree with the pressure axis about the reverse fault type earthquake, with the axis of tension about the normal fault type, with the pressure axis or the axis of tension about the slip -shaped earthquake for the wind of the peak gust of the epicenter neighborhood. These confirmed enhancing also to usual earthquakes.

As for the size of the earthquake, the peak gust correlates to the strong wind region of about 20m/s or more. The vicinity of the place where the peak gust after an interval of several years from several months was recorded is high and the possibility of the epicenter is high. There are a lot of earthquakes that occur in about one month two months from one week from the strong wind day after. The earthquake prediction is possible though it is rough. As future tasks, it is the accuracy of the prospect of the size improvements at the place and time.

The destruction mechanism that the earthquake occurs after several days after big destructive power acts on the epicenter is presumed to be a creep fracture seen well under the high temperature high pressure. The earthquake cloud, the electromagnetic radiation, and the sign phenomenon of the change of the underground water title etc. have been observed before the earthquake occurs. However, it is said that the appearance mechanism that quantitatively explains these phenomena doesn't exist. It is thought for the problem to exist in the hypothesis with Energy is liberated when the energy of the warp accumulated by the movement of the plate exceeds a certain limit and the earthquake occurs. It might be able to explain the sign phenomenon if it is thought the creep fracture though the explanation of the sign phenomenon is difficult in the brittle fracture.

2. Investigation example

Fukuoka Prefecture west offing earthquake main shock M7.0 on March 20th 10:53 of 2005. On February 1 when the peak gust of Fukuoka goes back on March 20 There is a value of 24.8 m/s. This is the maximum since October 20th, 2004.

The peak gusts of various places February 1, 2005 are as follows.

It is Fukuoka 24.8 NNW, Ohita 25.7 NW, Saga 23.1 W, Miyazaki 25.1 W, Kagoshima 23.3 WNW, Nagasaki 27.9 WNW, Kumamoto 20.8 NW, Hirado 28.4 NW, Fukue 27.9 WNW, Shimonoseki 31.0 W, Hagi 28.0 W, Okayama 24.3 WNW, Tsuyama 18.9 NW, etc.

Focal mechanism P: WSW - ENE T: It becomes NNW - SSE and the pull axis and the wind direction of Fukuoka agrees.

Refer to the weather chart February 1 as follows.

<http://www.data.kishou.go.jp/yohou/kaisetu/hibiten/index.html>

The analysis example was shown in attached material.

Refer to the following reference literature for details.

Reference literature Earthquake prediction from the peak gust

<http://wwwsoc.nii.ac.jp/msj/hiroba/article/a002.doc>

earthquake occurring day	earthquake name	M	focal mechanism	fault type	strong wind day	epicenter neighborhood
09/26/03	Tokachi off	8.0	P: WNW-ESE(CMT)	reverse	09/14/03	Urakawa 30.9 WNW
09/05/04	Tokaido off	7.4	P: S-N(CMT)	reverse	08/30/04	Owase 39.1 S
09/01/23	Kanto daishinsai	7.9			08/05/23	storm warning
07/12/93	Hokkaidou South western off	7.8			06/03/93	Suttsu 29.2 SSE
10/04/94	Hokkaidou eastern off	8.2			09/19/94	Nemuro 31.5 NNE
01/17/95	Hyo go Prefecture South	7.3	P: E-W(CMT)	slip	12/05/94	Kobe 20.1 W, Sumoto 20.5 NW
10/06/00	Tottori Prefecture West	7.3	T: SSW-NNE(CMT)	slip	09/16/00	Matsue 23.9 SW, Yonago 20.2 SSW
03/24/01	Geiyo	6.4	T: WSW-ENE	normal	03/04/01	Omishima maximum wind speed, 13 WSW
10/23/04	Niigata Prefecture chuetu	6.8	P: NW-SE	reverse	09/07/04	Takada 33.9 SSE, Niigata 23.5 SE
10/23/04	aftershock	6.5	P: NW-SE	reverse	09/30/04	Takada 17.4 NNW, Niigata 23.5 NW
03/20/05	Fukuoka Prefecture western off	7.0	T: NNW-SSE	slip	02/01/04	Fukuoka 24.8 NNW
03/21/05	aftershock	4.7	T: S-N	slip	03/12/05	Fukuoka 17.1 N
03/22/05	aftershock	5.3	T: NW-SE	slip	03/17/05	Fukuoka 18.1 WNW
04/10/05	aftershock	5.0		slip	03/24/05	Fukuoka 22.0 W
04/20/05	aftershock	5.8	T: S-N	slip	04/03/05	Fukuoka 18.7 N
04/20/05	aftershock	5.1	T: SSW-NNE	slip	04/10/05	Fukuoka 18.4 SSW