Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SSS27-P01 Room:Convention Hall Time:May 24 18:15-19:30

The stress distribution in the whole area of the slab changed completely after the 2004 off Kii Peninsula earthquake

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[1]none

(Please refer to the figure. Names of the slab, topography of seabed, etc are naming only of here.)

In (1), the relation between the 2004 off Kii Peninsula earthquake and the 1944 Tonankai earthquake was researched. Mantle that heads eastward in the Chugoku region pushes the edge of the Nankai slab. The slab is placed between the right-turning force and the reaction from the south of the Trough. There are two Seamounts that resist in the south of the Trough and the reaction-stresses concentrate in those. After the north side of the Seamounts was destroyed by the earthquake in 2004, the route that power is transmitted to the Seamounts converted from ”from North” to ”from Northwest”.

In (2), I searched for the evidence of the right-turn-force by using the focal mechanisms of earthquakes occurred on the surface of the Nankai slab and in it.

Because earthquakes that those compression axises and tangent of (circular arc)ar1-ar5 of which center of gyration is the south of Kii Suido harmonize are widely distributed, it turned out that power to induce the overall right-turn of the Nankai slab exists widely in each place.

I want to report on the result achieved by integrating (1) and (2).

The block arrows in Fig. 2 are average compression axial directions of the earthquakes that occurred in each area of the Nankai Slab obtained by (2). The compression powers to push the edge are transmitted in the slab and get to the Seamounts in which stress concentrate and to others. I expressed the typical transmission routes by A2,B2,C2,D2(arrows of short dashed line) following the block arrows. All except A2 are ”from North” compression routes connected directly with the Seamounts (Fig. 2). These routes converted those directions in 2004 in dramatic form. A2 and B2 were changed into A1 and B1 respectively and ”from Northwest” compression routes were formed (Fig. 1). Because the hypocenter of 1944 and 3 aftershocks were in a row and it was connected with WM Seamount (Fig. 1), it was able to be judged to be the compression route before 1944. The above is grounds of A1.

The outer of the right-rotation in 1944 traced the Crack(b) on inside from ar5 (4). Lateral-slip and collapse were generated because the transmission route until 1944 might have been C1,E1 (Fig. 1). Then, how did the transmission route after 1944 become? C1 curved to the west and changed into ”from North” compression route C2,D2. And, E1 changed into the compression power that turns eastward like E2 (Fig. 2). I think certainly so.

Observation facts of (6) do not contradict the existence of the compression power shown by E2 before the earthquake in 2004. And they harmonize with the hypothesis that E2 was changed into the compression power shown by E1 after the earthquake.

Expectation in the future is as follows. After ”from Northwest” compression continues for a while, the earthquake occurs and it returns to ”from North” compression. This is the next Tonankai earthquake. The earthquake in 2004 was a halfway mark. If it was a literal midway point, this cycle is 120 years, and the remaining time is 50 years.

(1)MASE/Two seamounts in the near south of Nankai Trough concentrate stress like stake/JpGU2015/S-SS30/abstract submission

(2)MASE/Focal mechanisms prove the right-turn of slab beneath Kii Peninsula/JpGU2015/S-SS31/abstract submission

(4)MASE(2014)/JpGU2014/SSS29-P10

(6)Suito,Ozawa(2006)/http://cais.gsi.go.jp/KAIHOU/report/kaihou77/12-1.pdf

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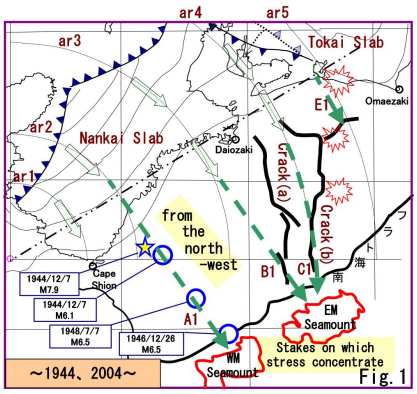

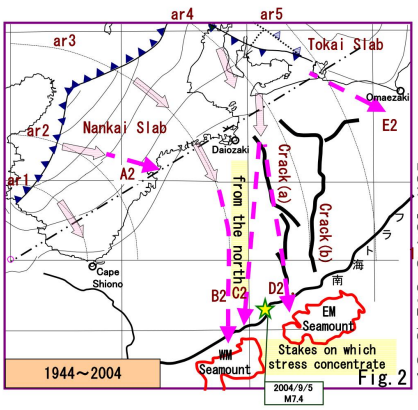

/About sea bottom
(shape line)
extracted from (7)/
/About "Nankai Slab"
(shape line, contour)
referable to (8)/
/About "Tokai Slab"
(shape line, contour)
referable to (9)/
/About information on earthquake
referable to (10)/

Reference literature
(5)木股・鷺谷(2005)/水準測量データの再検討による1994年東南海地震プレスリップ/名大
http://www.seis.nagoya-u.ac.jp/INTRO/report/jishinyochiren/162_kakegawa.pdf
(6)水藤・小沢(2006)/12-1GPS連続観測から見た東海スロースリップ/GSI
http://cais.gsi.go.jp/KAIHOU/report/kaihou77/12-1.pdf
(7)JHOD,JCG/Seafloor Topography of the Plate Boundaries
http://www1.kaiho.mlit.go.jp/jishin/sokuryo_E/sokuryo_E.html
(8)木村昌三(2001)/1946年南海地震に関係する四国における地震活動の特徴/(図2)
https://www.jstage.jst.go.jp/article/jgeography1889/110/4/110_4_581/_article/-char/ja/
(9)Nagoya Univ./Structure of the Subducting Philippine Sea Slab
http://www.seis.nagoya-u.ac.jp/SEIS/slab/slab-j.html
(10)JMA/Monthly Report on Earthquakes and Volcanoes in Japan/September 2004/特集2/図7-1(P65)
http://www.seisvol.kishou.go.jp/eq/gaikyo/index.html#monthly