Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SSS31-01 Room:104 Time:May 22 15:30-15:45

Thin- skinned tectonics holds in the back-arc region of Northeast Japan?

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In the back-arc region of Northeast Japan, large contractive deformation occurred since Pliocene time (e.g., Sato, 1989). Recently, Okada and Ikeda (2011) compiled seismic reflection, gravity, and surface geologic data and estimate the mechanism of this contractive deformation. They claim that the thin-skinned tectonics holds for the back-arc region of Northeast Japan, but several observations appear to be inconsistent with this model.

Keywords: thin-skinned, intraplate earthquake, detachment fault, tectonic inversion, lower crust, NKTZ

SSS31-02 Room:104 Time:May 22 15:45-16:00

Fault slip around the initiation point of the 2005 Fukukoka earthquake inferred from focal mechanism data

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Fault slip was found at deeper part of the earthquake fault of the 2005 Fukuoka earthquake by Matsumoto et al. (2012). The slip was estimated by the focal mechanism data of the aftershock, implying post-seismic stress field still has strong heterogeneity at the deeper part. According to studies that estimated fault slip based of GPS data, the co- and post-seismic fault slip only occurred at the shallow part of the fault. These results suggest a possibility that the fault at the deeper part slipped prior to the main shock occurrence and stress accumulated at the initiation point of the earthquake. Based on the GPS data around the area before the earthquake occurrence, No large slip within short term variation less than a day are found, suggesting very slow slip occurred at the deeper part of the fault.

Keywords: Inland earthquake, focal mechanism, fault slip, GPS, 2005 Fukuoka earthquake, stress field

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SSS31-03 Room:104 Time:May 22 16:00-16:15

Relationship between crustal stress field and fault slickenlines due to the 2011 Iwaki earthquake

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After the occurrence of the 2011 Mw 9.0 off the Pacific coast of Tohoku Earthquake (March 11, 2011), a Mw 6.8 (Mj 7.0) aftershock occurred on April 11, 2011 in Iwaki-city, Fukushima Prefecture, NE Honshu, Japan. The earthquake on April 11, 2011 (hereafter, 2011 Iwaki earthquake) occurred in temporal seismicity gaps and it was one of the major aftershocks after the 2011 Tohoku earthquake. To investigate the stress field before the 2011 Iwaki earthquake, we applied the multiple inverse method to the focal mechanisms during one month before the earthquake. Using 12 focal mechanisms during the one month, the multiple inverse method (Otsubo et al., 2008) revealed normal-faulting stress state with the NE-SW trending Sigma3-axis. The small angular misfits (7 degrees) between the slip direction predicted from the stress and that observed for fault plane of the 2011 Iwaki earthquake shows that the NW-SE trending extension is concordant with the slip motion of the 2011 Iwaki earthquake (Otsubo et al., 2011). We then succeeded measured co-seismic slip directions during the rupture of the 2011 Iwaki earthquake. Slickelines caused by the 2011 Iwaki earthquake are observed extensively over a wide range of the fault ruptures along the Itozawa Fault (Active Fault and Earthquake Research Center, 2011; Ishiyama et al., 2011; Otsubo et al., in press). Especially, the curved or cross-cutting fault slickenslins are observed at 8 localities along the Itozawa fault. The co-seismic slip have the curved slickenlines that the direction of fault motion during the rupture of the 2011 Iwaki earthquake shifted from a normal faulting with a left-lateral component to that with a right-lateral component. The angular misfits between the slip direction predicted from the NW-SE trending extensional stress and that predicted from the each component of the curved slickenlines on the fault scarps are ˜33 to 65 degrees and ˜2 to 17 degrees, respectively. Misfit changes show that the co-seismic slip direction shifted to normal faulting explained by the regional stress in the process of the faulting. These results suggest that co-seismic rupture processes near surface is a key to understand the gradual stress accumulations in the overlying plate associated with the huge trench type earthquake.

Acknowledgements:
Thanks are also due to the National Research Institute for Earth Science and Disaster Prevention (NIED) for making available the focal mechanism data in the study area.

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Keywords: Stress, Surface rupture, Fault striation, 2011 off the Pacific coast of Tohoku Earthquake, Fore arc, NE Japan

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SSS31-04 Room:104 Time:May 22 16:15-16:30

Stress change due to the great 2011 Tohoku earthquake (Mw 9.0) and induced earthquake activity in the inland areas of

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The 2011 Tohoku earthquake (Mw 9.0) triggered very high seismicity not only in the source region but also in the inland of eastern Japan (e.g. Hirose et al., 2011). Hasegawa et al. (2011, SSJ) and Yoshida et al. (2011, SSJ) estimated the stress field using these focal mechanisms, and suggested that the 2011 Tohoku earthquake changed the stress-field in the wide range from the source region to the inland area. This means that the stress magnitude (the important but unknown parameter) in Japan has been very small. In this study, to know the general value of the stress-magnitude in Japan, we examined in detail the boundary line between the two regions where the stress-fields have changed and unchanged due to the 2011 Tohoku earthquake. Thus, we analyzed the earthquakes near the Iwaki city and the northern part of the Ibaraki prefecture where the change in the stress-direction is reported by Yoshida et al. (2011).

We used the focal mechanism data estimated by 1) Asano et al. (2011) based on centroid moment tensor inversions of F-net and Hi-net data of NIED, 2) NIED applying moment tensor inversions to F-net data of with variance reductions better than 70% and 3) JMA based on P-wave polarity. Because there are few mechanism solutions at the shallow ($<$ 30 km in depth) portion in Iwaki and the northern part of the Ibaraki prefecture, 4) we presently picked the P-wave polarities for the earthquakes with the magnitude $>$ 1.0 and estimated the focal mechanisms of them. We only used the focal mechanisms which occurred in the hanging-wall. The classifying method is similar to Asano et al. (2011).

We performed the damped stress tensor inversion (Hardebeck and Michael, 2006). The region is gridded with 0.25 degree spacing, and each focal mechanism is assigned to the nearest grid node. These focal mechanisms are also divided with depth in two by the different way in the inland and offshore. In the inland part, the focal mechanisms in the shallower part have the depth 0 - 12.5 km, and the focal mechanisms in the deeper part have the depth 12.5 - 30km. This threshold is determined by considering the earthquake distribution. In the offshore part, we divided the focal mechanisms using the distance from the plate-boundary. The focal mechanisms in the deeper part occurred with the distance 0 - 25 km from the plate-boundary, and those in the shallower part with the distance 25 km- 50 km.

We compared the stress results in the region where stress-tensor is estimated both before and after the earthquake. In the shallower part of the inland, normal-faulting stress regime were estimated both before and after the earthquake. The directions of the maximum extension are NNW-SSE before the mainshock but E-W after the earthquake (E-W extension consists with the static stress change by the dislocation model). However, the confidence regions are overlapped. In the deeper part of the inland, different stress-regime are estimated. Before the earthquake, the reverse-faulting regime with the E-W maximum compression is estimated. But, after the earthquake the normal-faulting regime with the E-W minimum compression is estimated.

In the shallower part of the offshore, stress-fields are estimated near the coast both before and after the earthquake. Stress-field there changed from the E-W compressive strike-slip faulting regime to E-W extensional normal-faulting. In the deeper part of the offshore, stress-fields are estimated in wide range both before and after the earthquake. Generally, before the earthquake, E-W compressive reverse-faulting and strike-slip faulting regimes are estimated. But after the earthquake, E-W extensional normal faulting regimes are estimated.

These directions after the earthquake are consistent with the directions of the static stress-change by the 2011 Tohoku earthquake. The regions where the stress field changed before and after the earthquake are found in the area where the differential stress change is larger than about 1 MPa.

Keywords: 2011 Tohoku earthquake, focal mechanisms, stress tensor inversion, static stress change, stress magnitude

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SSS31-05 Room:104 Time:May 22 16:30-16:45

Diversity in Triggering Mechanism for Seismic Events Following the 2011 off the Pacific Coast of Tohoku Earthquake

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Extensive aftershocks and triggered seismic events are ubiquitous following large earthquakes, but the controlling mechanisms are not yet understood. Focal mechanisms of these events can provide insight into physical triggering mechanisms because they reflect friction coefficient and pore fluid pressure on the fault as well as the tectonic stress pattern. In the present study we examined physical processes triggering seismic events following the 2011 off the Pacific Coast of Tohoku earthquake (Mw = 9.0) by examining focal mechanisms through CMT data inversion and changes in the Coulomb failure function (DCFF). In the shallow part (< 20 km) of the source region the tectonic stress pattern drastically changed from reverse-type with east-west compression to normal-type with east-west tension, while it doesn't change in the remaining region. We evaluated DCFF in the direction of resolved shear traction on the maximum shear plane of the present tectonic stress field. The direct causes triggering aftershocks of the 2011 Tohoku earthquake are increase of the magnitude of deviatoric stresses and decrease of the fault strength, which directly correspond to the two factors of the Coulomb failure function. The increase of seismicity rate in the region east to the Japan trench and central Honshu was mainly controlled by the former, which is caused by the static stress change due to the mainshock. The latter is more complicated, but one of the plausible physical processes is fluid diffusion excited by the mainshock. The temporal (apparent) stress rotation observed in the northernmost part of Nagano prefecture reflected temporal changes of statistical characteristics of focal mechanisms, caused by decrease of fault strength through increase of pore fluid pressures. The local excitation of seismicity rate in the northern Honshu also indicates that aftershocks in the region with negative DCFF may have been triggered by the same process.

Keywords: Aftershock/triggered seismic events, Stress, Pore fluid pressure, Change in Coulomb failure function

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SSS31-06 Room:104 Time:May 22 16:45-17:00

Temporal decays of induced inland earthquakes associated with the 2011 M=9.0 Tohoku-oki, Japan, earthquake

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To reveal the status of regional stress loading and frictional properties, we take advantage of seismic responses due to static Coulomb stress transfer associated with a large earthquake. Here we examine spatio-temporal changes of inland seismicity after the Tohoku-oki shock, and find that there are two distinct temporal behaviors of induced seismicity: One is a short-lived triggered activity within a few months, and the other shows continuous high seismicity lasting more than a year. Induced seismicity in the later type can be mostly fit by the Omori-Utsu law with a p-value lower than 0.8. Together with their lower background rate of seismicity, extremely longer aftershock durations can be estimated, which is consistent with the rate and state dependent friction of Dieterich (1994). In contrast, the Izu Peninsula and Izu islands, which locate highly strained northern edge of the Philippine Sea plate, is typical to the short-lived induced seismicity. Seismicity beneath Tokyo metropolitan area, underlying multiple plate interfaces, has been moderated by the acceleration of loading rate associated with post-seismic deformation, and is estimated to be lasting its higher rate about 4 years since the main shock.

Keywords: Tohoku-oki earthquake, induced earthquake, Coulomb stress change, aftershocks

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SSS31-P01 Room:Convention Hall Time:May 22 17:15-18:30

Seismic changes beneath the Nikkou-Ashio area associated with the 2011 Tohoku-Oki earthquake

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The 11 March 2011 Mw9.0 Tohoku-Oki megathrust earthquake induced many in-land earthquakes in Japan. Obvious changes in seismic activity are observed in the Nikkou-Ashio area located in the southern Tohoku. The seismicity rate was three to four times more active than usual. I have investigated the behavior of seismicity before and after the megathrust from 2000 to 2012, observed by Earthquake Research institute, University of Tokyo and report its changes, the relationship between hypocenters and the velocity structures and the b-value changes.

1) Seismicity.

After three hours later from the Tohoku-Oki earthquake, shallow micro earthquakes began to occur in the region. The induced earthquakes are characterized by locating very shallow depths of 1-2 km. They located at two different places in character. The one is near and around volcanic bodies such as Mt. Nantai-san and Mt. Shirane-san, where usual earthquakes seldom occur. The other is along the Uchinokomori faults. The place is the most seismically active zone in Ashio, where the local earthquakes always occur at depths of 7-8 km. The seismic activity around volcanoes is rapidly decreasing from June 2011, while the shallow earthquakes along the Uchinokomori faults still continue with usual activity.

2) Relationship between the seismicity and the velocity structure

Beneath the volcanoes, anomalous low velocity zones at depths of 5-8 km widely spread, which indicates the existence of magma or fluid. The induced shallow earthquakes are locating just above the low velocity zones. The shakes and the stress changes due to the significant earthquakes and fluid derived from under low velocity zones result in shallow earthquakes. The decreasing of normal stress for the Uchinokomori faults and the upwelling flow of fluid also may result in very shallow earthquakes along the faults.

3) Change in b-value

B-value in the Nikkou-Ashio region changed immediately concerned to the 2011 Tohoku-Oki earthquake. Before eight months b-value was 0.8, then gradually it increased up to 0.98 until just before the earthquake and after the Tohoku-Oki earthquake, it decreased down to 0.75. Until now the fluctuation of the b-value is related to the occurrence of low-frequency earthquakes. Low-frequency earthquakes in the Ashio region have occurred with a recurrence interval of about three years at the point of b-value reversal. When the b-value is relatively low, low-frequency earthquakes occur and after that b-value become high with promoted seismic activity. In this time, low-frequency earthquakes occur almost the same period associated with the reversal of b-value. The change of b-value is also caused by the 2011 Tohoku-Oki earthquake. We need a more study to understand the relation between them.

Keywords: seismicity change, b-value, low velocity zone, Nikkou-Ashio

SSS31-P02 Room:Convention Hall Time:May 22 17:15-18:30

Index for simultaneous rupture assessment of active faults based on seismic velocity structure

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[1]CRIEPI

Tomographic inversion was carried out in the northern source region of the 1891 Nobi earthquake, the largest inland earthquake (M8.0) in Japan to detect subsurface structure which controls simultaneous rupture of active fault system. In the step-over between the two ruptured fault segments in 1891, a remarkable low velocity zone is found between the Nukumi and Ibigawa faults at the depth shallower than 3-5 km. The low velocity zone forms a prism-like body narrowing down in the deeper. Hypocenters below the low velocity zone connecting the two ruptured segments indicate the possibility of their convergence in the seismogenic zone. Northern tip of the Neodani fault locates in the low velocity zone. The results show that fault rupture is easy to propagate in the low velocity zone between two parallel faults. In contrast an E-W cross-structure is found in the seismogenic depth between the Nobi earthquake and the 1948 Fukui earthquake (M7.1) source regions. It runs parallel to the Hida gaien belt, a major geologic structure in the district at the northern margin. P-wave velocity is lower and the hypocenter depths are obviously shallower in the northern part. Since a few faults lie in E-W direction just above it, a cross-structure zone including the Hida gaien belt might terminate the fault rupture. The results indicate fault rupture is difficult to propagate beyond major cross-structure. The length ratio of cross-structure to fault segment (PL/FL) is proposed to use for simultaneous rupture assessment. Some examples show that fault ruptures never (PL/FL>3-4), sometimes (~1), and always (<1) cut through such cross-structures.

Keywords: Active fault system, Simultaneous rupture, The 1891 Nobi Earthquake, Seismic velocity structure, Cross-structure

SSS31-P03 Room:Convention Hall Time:May 22 17:15-18:30

Focal Mechanisms and Regional Stress Field in the Northern Kinki District using the Dense Seismic Array

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In the northern Kinki district, we have done seismic observations using the dense seismic array stations since 2008. Total 150 temporal and permanent stations are used, and the average interval between the stations is about 5km. We get numerous mechanism data in a short time period, and the space and time resolution of the focal mechanism analyses are improved. Based on these data, we'll discuss about the feature of focal mechanisms, space and time variation of the regional stress field, and the detail mechanism distribution within aftershock sequence following the M4 class earthquakes.

Keywords: Focal mechanism, Stress field, Micro-earthquake, Dense Array Observation, Tamba plateau

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SSS31-P04 Room:Convention Hall Time:May 22 17:15-18:30

Focal mechanisms of the small earthquakes in and around the Atotsugawa fault and stress accumulation process

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To understand the stress accumulation process in and around the Atotsugawa fault system with higher spatial resolution than previous reports (Katsumata et al., 2010; Imanishi et al., 2011), we examined the focal mechanisms for very small earthquakes in this region using the data observed from January 2005 to December 2008 with temporary deployed seismometers and permanent stations. We determined the focal mechanisms from P-wave first-motion polarities by the method of Maeda (1992). The P and S-wave arrival times, and P-wave polarities were automatically determined by the algorithm recently developed by Horiuchi et al. (2011). In most depth ranges, the obtained focal mechanisms correspond to various types of faulting (normal, reverse, and right-lateral strike slip). At the deepest part, on the other hand, the right-lateral strike slip seems to be dominant, which is consistent with Imanishi et al. (2011). We have checked the automatically picked P-wave arrivals by WIN system (Urabe and Tsukada, 1991) just in case. Finally, we estimated the stress field in and around the Atotsugawa fault system from the focal mechanisms by a conventional stress inversion technique (Gephart and Forsyth, 1984). The earthquakes less than 15 focal solutions were adopted as input data for the stress inversion.

Keywords: Atotsugawa Fault, focal mechanism, small earthquake, crustal heterogeneity, stress accumulation process

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SSS31-P05 Room:Convention Hall Time:May 22 17:15-18:30

Stress field in the western part of Tottori Prefecture inferred from focal mechanisms inversion

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Stress tensor inversions using focal mechanisms data are important in understanding the stress fields in the seismogenic region. In this study, we performed a stress tensor inversion using the data from the Joint Group for the Dense Aftershock Observations of the 2000 Western Tottori Prefecture earthquake. Kawanishi et al., (2009) could not estimate the stress field in the region where the main shock slip was large since the stress fields in the region is not homogeneous. Thus, in this study we divided the region into smaller subregions where stress fields can be regarded to be homogenuous. Furthermore we tried to improve the standard stress inversion method using focal mechanisms (ex. Gephart and Forsyth (1984)) to accurately estimate stress fields using less data.

If the shear stress on the fault plane is relatively low, theoretical slip vectors can change significantly by small changes of a strike and/or dip of the fault plane, therefore in such a case, misfit angles on the fault plane can inherently include large error. Since we could not accurately estimate stress fields in such a case, we tried to improve the accuracy of stress field analysis by reducing a weight for misfit angles when the shear stress normalized by S1-S3 is small. Simulations using test data show that the improved method estimates stress tensor more accurately than standard methods.

In this study, we used high-quality 1536 earthquake focal mechanisms data. We divided the aftershock area into 9 subregions along the axis of the aftershock distribution and 3 subregions along depth. In addition, to estimate stress fields in large sip area estimated by Iwata and Sekiguchi (2002), we further divided the subregions based on the spatial distribution of the static stress changes generated by the main shock and estimated stress field in each region. We inferred that the strength of fault planes in the large slip area is strong because directions of the maximum principal stress axis obtained by the stress inversion do not coincide with those of the static stress changes. On the other hand, we inferred that the strength of fault planes at either end of the large slip area is weak since directions of the maximum principal stress coincide with those of the static stress changes. From these results, we inferred that stress relaxation occurred prior to the main shock in the area where strength of fault planes is weak, but that stress concentration occurred prior to the main shock in the area where strength of fault planes is strong. This may be the reason why the large slip by the main shock occurred in this area.

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SSS31-P06 Room:Convention Hall Time:May 22 17:15-18:30

Distribution of crustal deformation around the Echigo plain, the Niigata-Kobe Tectonic Zone

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We examined the GEONET GPS data to clarify the contemporary deformation in and around the Echigo plain, Niigata prefecture where located in the Niigata-Kobe tectonic zone and the deformation zone of the eastern margin of the Japan Sea. Compressional strain in a direction of ESE-WNW is concentrated in a narrow zone where strain rate is about 0.2 ppm/yr along the coast of the Japan Sea. This strain concentration zone which is about 25 km wide accommodates more than 5 mm/yr of compression and geographically corresponds to the Echigo plain. The zone significantly subsided whereas surrounding regions was uplifted. These characteristics of the deformation are concordant with that measured by conventional geodetic surveys spanned more than several decades. The strain rate observed by GPS does not change significantly during more than a decade in the strain concentration zone, which is contrast with a large temporal change of a strain rate in the eastern region affected by a subduction of the Pacific plate. We proposed a simple model to explain the characteristics of the deformation. The model consists of aseismic slip on reverse faults which are extended to the east and west rims of the Echigo plain. Modeling with gravitational viscoelastic medium is essential to reproduce the observed subsidence in the strain concentration zone.

We started campaign GPS measurements across the Echigo plain in 2010. The distribution of the observed crustal deformation suggests a broad extension caused by the 2011 Tohoku-oki earthquake in a direction of east-west. The extension in the Echigo plain is larger than that of the surrounding region. The area where the larger extension was observed approximately corresponds to the strain concentration zone before the earthquake.

Keywords: crustal deformation, GPS, geodetic survey, deep slip, strain concentration zone

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SSS31-P07 Room:Convention Hall Time:May 22 17:15-18:30

Strain concentration zone in quaternary caldera, eastern Hokkaido, detected by GPS data

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We estimated spatiotemporal strain field using GPS data in eastern Hokkaido. There is a high shallow seismicity around Kussharo caldera. In addition, according to JMA hypocenter catalogue, there are four middle size earthquakes in the last 100 years (e.g., M6.1 Kussharo earthquake in 1938, Mj 6.5 Teshikaga earthquake in 1967). Therefore, it is important to understand the strain accumulation and release processes in this area.

In this study, we used GEONET daily coordinates (F3 solutions), which has been organized by GSI. In order to figure out steady state strain field, we treated two periods, November 1998 to October 2001 and July 2007 to November 2009, and estimated site velocities by fitting linear trend and seasonal variation (annual and semi-annual trend) to the daily coordinates. Strain rate was calculated from these site velocities using method of Shen et al. (1996). For comparison, we also estimated strain field at the coseismic period of two large earthquakes (Mj 8.0 Tokachi-oki earthquake in 2003 and Mj 9.0 Tohoku-oki earthquake in 2011) and their early postseismic period (a half-year after those earthquakes) from each displacement field.

In the steady state period, large contractional dilatation strain rate (~0.2ppm/yr) and NW-SE shortening were detected around Kussharo caldera in both periods. Although the maximum shear strain rate (0.1-0.2ppm/yr) was not remarkable with respect to dilatation strain rate, relatively large area was recognized around this area. The extent of large strain rate region is slightly different between these two periods. However, their both centers are located near Kussharo caldera. This distribution pattern is probably not explained by possible shallow magmatic contraction of active volcanoes.

There was no large difference in strain rate between two periods. The strain rate was almost constant even the 2003 Tokachi-oki earthquake occurred between two periods. At the postseismic period after the 2011 Tohoku-oki earthquake, we also recognized large strain field around Kussharo caldera. On the other hand, we did not detect those strain anomalies at the coseismic period of two large earthquakes and the postseismic period after the 2003 Tokachi-oki earthquake. This strain concentration area probably has a viscoelastic characteristic feature, which gradually deforms following the instant stress change such as earthquake. Meanwhile, this area is deformable with respect to the long-term stress change. The case of early postseismic period of 2003 Tokachi-oki earthquake, it is possibly buried the strain anomaly in the large postseismic deformation signal due to the closeness from the focal area.

It is thought that the origin of strain concentration zone in Japan, such as Niigata-Kobe tectonic zone (Sagiya et al., 2000) and Ou-backbone range (Miura et al., 2004), is weakening of the lower crust due to the upwelling flow from subducting plate or mantle wedge. This phenomenon induces inelastic behavior in the lower crust (e.g., Iio et al., 2004). As well as those strain concentration zones, several studies suggest the possibility of the lower crust weakening beneath Kussharo caldera region. For example, low seismic velocity (e.g., Wang and Zhao, 2009), and low electric resistivity (Satoh et al., 2001) is detected in the lower crust. High geothermal gradient (Geological Survey of Hokkaido, 1995) is also reported.

To specify detailed extent and amount of this strain concentration area, it is necessary to reveal detailed crustal deformation from denser GPS network, and to compare several solutions from different estimation methods. Based on these results, we have to consider the strain accumulation and release process in this area.

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SSS31-P08 Room:Convention Hall Time:May 22 17:15-18:30

Earthquake and stress around the inland active faults - in-situ stress measurements at Gofukuji and Hagiwara fault -

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Earthquakes occur when the shear stress accumulated and exceeds the shear strength on the fault plane. We think the distribution of stress around the fault is important for the earthquake forecasting. We reports results of in-situ stress measurements at Gofukuji and Hagiwara fault. As for the Gofukuji fault, more the 1000 years have passed and the forthcoming earthquake is regarded to be impending. After The 2011 off the Pacific coast of Tohoku Earthquake, a large earthquake occurred near the Gofukuji fault. The Hagiwara fault also does not generate earthquake for more than 1000 years. In addition, due to effects of the 2011 off the Pacific coast of Tohoku Earthquake, the long term probability of earthquake occurrence on this fault might become to be higher than that before the earthquake (Headquarters for Earthquake Research Promotion 2012). It is considered the stress states around the inland active faults are significant to forecast the forthcoming earthquake.

Keywords: In-situ stress measurement, Earthquake occurrence, Inland active fault, Gofukuji fault, Hagiwara fault

SSS31-P09 Room:Convention Hall Time:May 22 17:15-18:30

AMT observations over the remotely triggered seismicity in Hakone volcano

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Seismicity around the Hakone volcano was activated just after the arrival of surface waves caused by the 2011 off the Pacific coast of Tohoku Earthquake. Most of these triggered earthquakes had similar distribution to prior occasional swarm activities. In order to image electrical properties around such seismic events, we carried out audio-frequency magnetotelluric (AMT) measurements at 39 sites in December 2011. These AMT sites were arranged in an area of approximately 15km by 20km covering the caldera of Hakone volcano. On each site, electromagnetic data were recorded for up to 20 hours. As the result of remote-reference processing using local and far sites for shorter and longer periods, respectively, we obtained fair sounding curves at most sites for frequencies higher than 1Hz. In this presentation, we will show the outlines of our research project, an overview about the AMT data, and report preliminary results of three-dimensional inversions compared with seismicity.

Keywords: resistivity, magnetotellurics, Hakone volcano, triggered earthquake

Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

SSS31-P10 Room:Convention Hall Time:May 22 17:15-18:30

On the Network-MT survey in the vicinity of the 1891 Noubi Earthquake seismic fault

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Network-MT survey has started since Jun, 2011 in the western part of Chubu district, where one of the largest inland earthquakes in Japan, the 1891 Noubi Earthquake, took place. We aims at investigating static shift free fine structure in the vicinity of the fault, and at obtaining wide and deep resistivity structure beneath whole Chubu district to investigate dehydration process on the subducting Philippine Sea Plate and generation mechanism of the Niigata-Kobe Teconic Zone.

In this presentaton, we introduce the on-going Network-MT survey and results from its data processing and preliminary 3-D structural analysis.

Keywords: noubi earthquake seismic fault, resistivity structure, network-MT