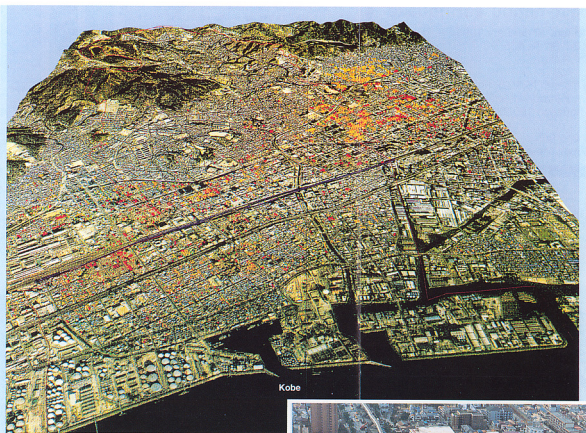


兵庫県南部地震英文リーフレット

本年1月に生じた上記地震は国際的にも大きな関心を集めております。地質調査所ではその調査・研究成果とあわせ広く地震の状況を平易に解説した英文パンフレットを作成しましたのでその一部を紹介いたします。

口絵1ページには、コンピュータグラフィックスによる鳥瞰図に犠牲者（赤色）、倒壊家屋（黄色）および瓦礫等（茶色）の分布が示され、また有名な阪神高速道路の倒壊、港の棧橋の被害も掲載されています。2ページには地震の余震や最大加速度および地下水の変化、3ページには震央地域周辺の地質・テクトニクスが衛星画像データの上に重ねて示されています。4ページには淡路島における地震断層や周辺地域の活断層の様子が示されています（なお紙面の都合で一部省略およびレイアウト変更、問い合わせは広報係まで）。

〈編集委員長 加藤碩一〉



Damaged situation in the Kobe region (by Asia Air Survey)
(red : victims, yellow : completely destroyed houses, brown : collapsed materials)



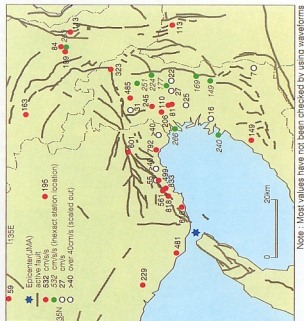
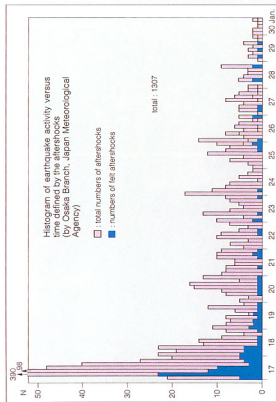
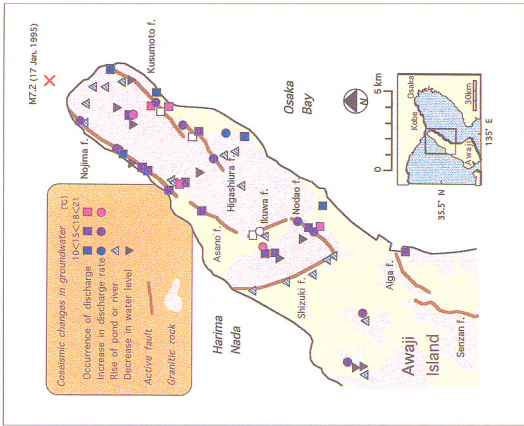
Collapsed Hanshin Expressway, Kobe region (by Asia Air Survey)



Damaged pier in Kobe Harbor (by Asia Air Survey)

Coseismic changes in ground water in Awaji Island (by Sato)

The distribution of the coseismic changes in ground water seems to be closely related to the active faults and granitic rocks. The temperature is higher than that of the surface water. The concentration of bicarbonate ion in the discharged water at the two points increased after the earthquake.

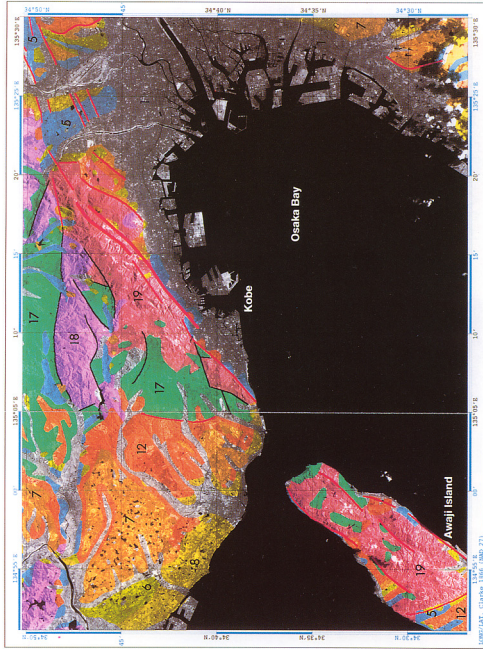


Maximum accelerations and velocities of the Hyogoken-nanbu earthquake (by Kogaketsu, K. 1995)

Geologic and tectonic settings

The epicentral area is situated in the central part of Southwest Japan. The Median Tectonic Line (MTL), nearly E-W trending large fault whose western half is active runs through Southwest Japan. MTL passes through southern margin of Awaji Island.

From the central area of Awaji Island to Rokko Mountains, NE-SW trending uplift zone extends across the Akashi Strait. These areas mainly consist of late Cretaceous granitic rocks, Cretaceous acidic pyroclastic rocks distribute in the mountainous region to the north of Rokko Mountains. The Kobe and Iwaya Formations of Paleogene to Miocene sedimentary rocks cover those basement rocks. In the Osaka Bay, Osaka Plain and their adjoining area, unconsolidated deposits of the Pliocene and Quaternary are widely distributed. The Osaka Group of the Pliocene to middle Pleistocene is typical one of soft cover sediments in these areas. The Osaka Group thickens between off the coast of Kobe and to the east of Awaji Island. The total thickness exceeds 2,000 meters. On land, The Osaka Group was highly deformed by active faulting around Kobe and Awaji Island. Topographic features such as arrangement of uplifting and subsiding zones, and active faulting are caused by plate tectonic setting around Southwest Japan.



Compiled image of JERS-1 data and Neotectonic maps around epicentral area

(by Geological Survey of Japan and Earth Remote Sensing Data Analysis Center, 1995)

- 1: Holocene deposits, 5: Uppermost Pleistocene, or lower terrace deposits, 6: Upper Pleistocene, or middle terrace deposits, 7: Middle Pleistocene, or higher terrace deposits, 8: Unclassified Pleistocene deposits, 12: Pliocene to Lower Pleistocene sedimentary rocks, 17: Lower to Middle Miocene sedimentary rocks, 18: Pre-Neogene volcanic rocks, 19: Neogene intrusive rocks

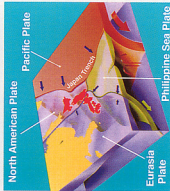


Plate tectonic setting around Japan
(by Geological Survey of Japan)

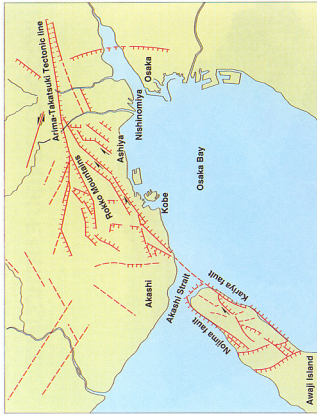
Active faults and earthquake (surface) fault

It is well known that active faults densely distribute around Kobe (especially along the southern margin of Rokko Mountains) and Awaji Island region, to the north of the Median Tectonic Line in Southwest Japan. In other words, this region is an assembly of faulted blocks such as Rokko Mountains. Most active faults are reverse ones and some NE-SW trending faults have also right strike-slip sense. Some of active faults are estimated that their recurrence intervals of faulting are several hundreds or thousands years. However, there is little historical records of earthquakes associated with these active faults.

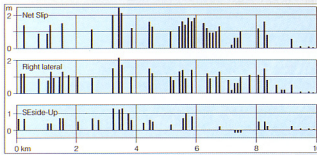
On the northwest coast of Awaji Island, an earthquake (surface) fault appeared along the Nojima (active) fault, associated with the Hyogoken-nanbu earthquake. The total length of observed surface rupture on the ground is about 10.5 km.

The average slip rate in horizontal of the Nojima fault is $0.9\text{--}1.0\text{ m} / 10^4\text{ years}$, and that in vertical is $0.4\text{--}0.5\text{ m} / 10^4\text{ years}$. The recurrence interval of the Nojima fault is estimated to be about 2,000 years.

This earthquake fault trending NE-SW is right-lateral fault with reverse component (SE side up). The maximum horizontal displacement is about 2.1 meters and vertical one is about 1.2 m. The total maximum displacement is 2.4 m. This earthquake fault is doesn't always show a single fault trace. It branches and disappear rapidly toward the end of fault segments. No distinctive surface faults appeared in Kobe.



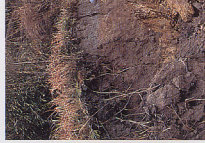
Fault system of Rokko Mountains and northern Awaji Island, and their neighbouring areas (Iizuta and Maeda, 1994)



Coseismic slip along the surface fault in Awaji Island (by Awata et al., 1995)



Earthquake surface fault along the Nojima fault (Awaji Island) (by Asia Air Survey)



Surface rupture along the Nojima fault at Hirabayashi, Awaji Island (by Tsukuda, E.)



Dislocated house by the earthquake fault (Awaji Island) (by Asia Air Survey)

