

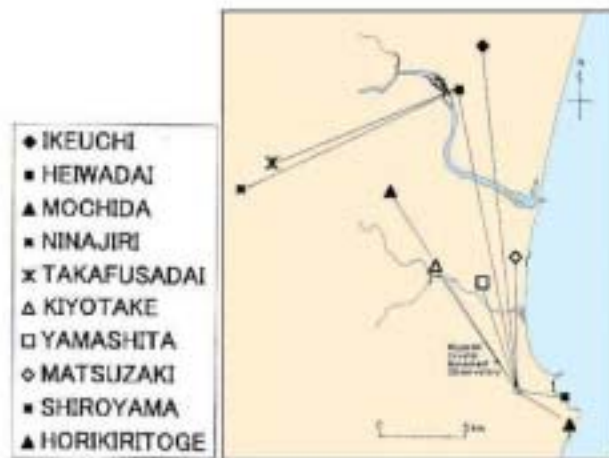
Observations of crustal deformation by electro-optical means at the coastal region of Hyuga-nada

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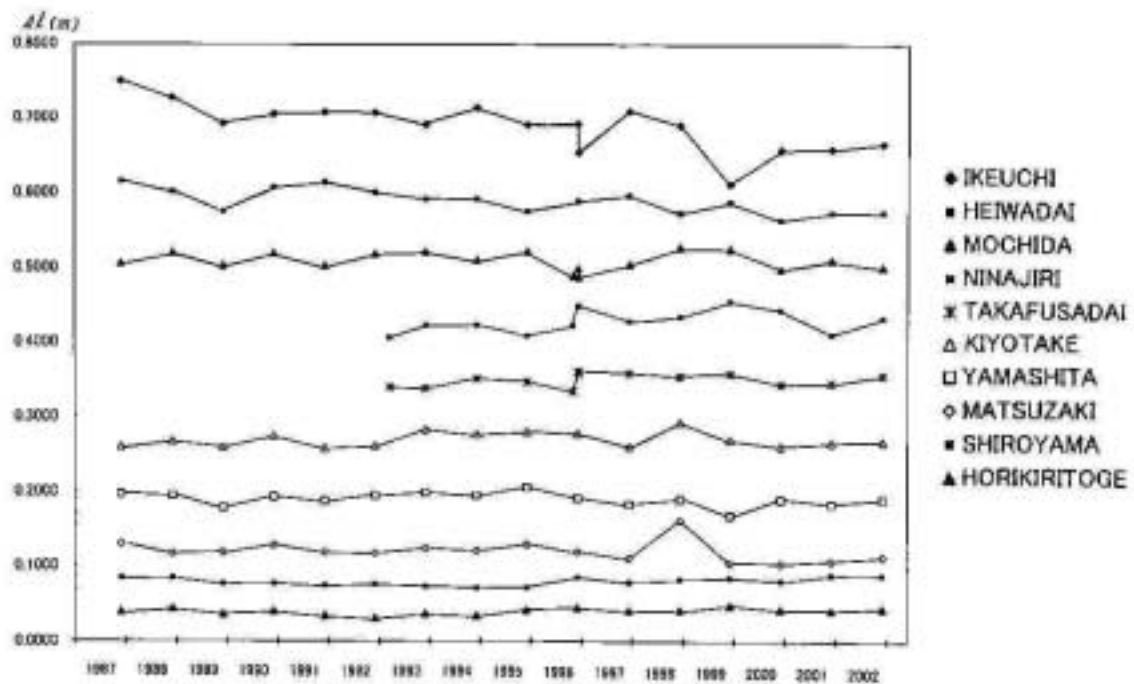
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We had constructed distance measurement base-line networks at Miyazaki district and Nobeoka district on the coastal region of Hyuga-nada, east side of Kyushu, Japan. The measurements of these networks have repeated once a year since 1981 to detect the crustal deformation in the area by electro-optical means. All base-lines in a network has a common end as a operation site of measuring instrument and reflector prisms are settled at the other ends. At Miyazaki network, additional base-lines were constructed to supplement measurement in the direction that lack in the main base-line network. Fig. 1 is the map of the Miyazaki base-line network. The longest line is 19909m long and shortest is 2671m. GEODIMETER was used in the beginning but now we operate DISTOMAT DI3000 with infrared laser diode.

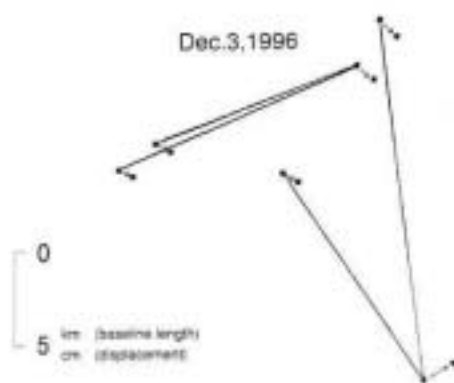
In Fig. 2, base-line length changes in time at Miyazaki network since 1987, when DI3000 start to be operated, are represented. We mention these data briefly. The mean strain rate at each line is about 10^{-7} - 10^{-8} and principal strain axes calculated by least squares method are contraction of 1.61×10^{-7} in N 5(degree) E direction and extension of 2.00×10^{-7} in the perpendicular direction with all 10 base-lines data. We can find similar results from the calculation with only 5 base-lines data in northern part or the rest 5 base-lines data in southern part. On Dec. 3, 1996, an earthquake with M6.6 occurred in Hyuga-nada. We surveyed all base-lines in regular schedule by the day and could re-surveyed long base-lines just after the occurrence of the earthquake. Therefore co-seismic steps in base-line length can be distinguished. The amount of the step in each length tends to be larger than theoretically calculated one based on the dislocation theory but the sense of the change is reasonable.



← Fig.1 Miyazaki electro-optical distance measurement base-line network.



↑ Fig.2 Length change of each base-line in Miyazaki network.



← Fig.3 Co-seismic displacement at M6.6 Hyuga-nada earthquake (Dec.3, 1996) by the dislocation theory.