

## Visualizations of crustal deformation of Japan using GSI GEONET data

Tadayoshi Kato<sup>1\*</sup>, Yasushi Harada<sup>1</sup>, Toshiyasu Nagao<sup>2</sup>, Teruyuki Kato<sup>3</sup>

<sup>1</sup>School of Marine Science and Technology, Tokai University, <sup>2</sup>Earthquake Prediction Research Center, Tokai University, <sup>3</sup>Earthquake Prediction Research Center, Earthquake Research Institute, The University of Tokyo

The Geographical Survey Institute of Japan(GSI) has about 1300 GPS station(GEONET) in Japan for more than 18 years observing Japanese inland crustal deformation, and the GEONET has enable us to watch how Japan is continuously deforming at a rate of a few cm/year. By utilizing the GEONET data, we succeed in visualizing how Japanese islands move, deform, elevate with time, with no limitations such as types of data, time intervals, area, and types of visualization methods.

From the animation, we can easily understand the deformations in Japan before and after the March 11, 2011 earthquake. However, it is difficult to understand the rates of accumulation for the deformations. In this study, the displacements of GPS stations and the strain distributions using Delaunay triangulation method are used for the visualization. In addition, an animations of Japanese crustal deformation with time series of epicenters are also created.

It is important to create animations of Japan using various data sets such as topography, gravity anomaly, seismicity, displacement velocity, and strain distribution to detect anomalous events. Prompt recognition of these events may help the Japanese people to prepare for natural disaster such as big earthquakes and tsunamis. Finally, it is also important to utilizing this kind of animations in school education for kids to recognize Japanese crustal activities.

All animations created in this study is downloadable at  
<http://kutty.og.u-tokai.ac.jp/~harada/>

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