## Change in area strain around Toyama prefecture during the period of 2005–2018

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Change in area strain in and around Toyama prefecture during the period of 2005–2018 was examined. Final solutions F3 daily coordinate data from GNSS Earth Observation Network System (GEONET) stations in and around Toyama prefecture (25 stations; operated by Geological Information Authority of Japan) were used. Triangulation of these stations was performed by the TRIANGULATE command of GMT (Wessel and Smith, 1998). Change in area strain within each triangle during the period from October 2006–October 2018 was investigated.

The founding was as follows: (1) Extension in Toyama bay caused by Noto Hanto earthquake in 2007 was still continuing as of 2018. (2) Extension of whole Toyama was detected except around northwest area where contraction was detected in 2011 – when the Great East Japan earthquake and earthquake swarms in west Toyama was occurred in March and October, respectively. (3) After the Kamishiro fault earthquake occurred in November 2014 which caused large strain changes around east to southeast area of Toyama prefecture, contraction detected around northwest area started to proceed. (4) Inflation and the following contraction around Midagahara volcano were found when fumarole activities started in 2012.

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