

Building a Resilient Geodetic System: a New Zealand Case Study

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SUMMARY

Modern economies are increasingly reliant on high-fidelity, high-accuracy geospatial data and positioning to support day-to-day activities. It is therefore increasingly important that a nation's geodetic system has high levels of resilience to both natural disasters and human-induced interference.

In New Zealand, several major earthquakes in the past decade have highlighted both the strengths and weaknesses of the geodetic system. As a result, a number of improvements have been implemented to increase its resilience. These changes have included more targeted data collection in areas of high seismic risk, better data management practices, improved deformation modelling and use of more responsive publication channels.

One of the keys to resilience is having multiple means of quickly re-establishing geodetic-level accuracies after an event. To this end, Land Information New Zealand (LINZ), has developed processes to rapidly update both active and passive control in an affected region. This means that accurate post-earthquake positions can be calculated, whenever and wherever a user needs them to assist with the recovery effort.

The 2016 Kaikoura Earthquake provided the first significant test of these improvements. This paper discusses the efficacy of the approaches taken, comparing them with the approaches taken for the 2010 Darfield earthquake. It then suggests additional improvements that could be made to the geodetic system to further increase its resilience.