

# A Seamless Interface Between Land and Sea – The Role of the Geodetic System

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## SUMMARY

Traditionally, the geodetic system has focussed on supporting national-scale mapping and data management activities on land, with little or no direct support for the marine domain. Increasingly, however, there are important decisions to be made that require consistent marine and land-based data. For example, many coastal communities face increasing inundation from sea level rise and storm surges and will need to make difficult decisions about how to manage these risks. Often, these decisions are made even more difficult through spatial data being in different datums depending on whether it is collected over land or at sea.

There are several ways in which the geodetic system can support reliable spatial analysis across the land/sea interface. For example, reliable connections between geodetic control and tide gauges are essential to defining the relationship between land-based and hydrographic datums at points around the coast. With enough of these points, a transformation model can be calculated to bring land and marine data into a common frame for analysis.

Another key role for the geodetic system is the quantification of vertical movement of the land in coastal areas. The co-location of GNSS CORS and tide gauge sites enables any vertical movement to be accounted for in analysis of sea level changes. More generally, an accurate understanding of vertical motion at all points around the coast will enable resources to be focussed where they are most needed, such as where a coastal area is subsiding. In a phenomenon measured in millimetres per year, even small vertical movements can make a big difference.

This presentation outlines some of the work underway in New Zealand to improve the geodetic system to support better integration of land and marine data and products.