The Mw 6.3 Christchurch earthquake of 22 February 2011 triggered land movement, collapse of cliffs, and many rockfalls in the Port Hills area beside Christchurch. The Port Hills are the flanks of an eroded extinct basalt volcano. Coastal erosion and the quarrying of rock have produced steep cliffs at the base of the hills. At least five people were killed by falling rocks, and several hundred homes were evacuated because they were close to the foot or top of dangerous cliffs or on cracked and unstable steep slopes.

In conjunction with local engineering consultants, the GeoNet team assessed ground damage, set up monitoring stations to determine if land was still moving, and carried out aerial reconnaissance to provide advice on hazards to authorities.

Four main types of earthquake-triggered mass movements were identified: 1) Localised shallow landslides and failure of retaining walls and fill slopes; 2) Rockfalls and collapse of rock slopes and cliffs; 3) Cracks and rents (tension cracks with no obvious landslide mechanisms apparent); and 4) Deep-seated landsliding. Deep-seated landslides, together with tension cracks, caused the most damage to the ground and therefore to houses, roads etc on the hills. These features tended to be on or very close to cliff tops and convex breaks in slope. The largest number of mass movements were rockfalls.