

STATUS REPORT – to be presented to the Intelligence Team by 1200hrs daily.

Event: Christchurch Earthquake		Section/Function/agency:
Date: 18/03/2011	Time: 1200	Science Liaison Team
Operational Period:		Originator Record #: 020

Current situation (incidents, action taken, resource status, personnel numbers etc)

Earthquake Activity & Deformation:

- Appendix A illustrates the magnitude and frequency of aftershocks from 22 February to 18 March 2011.
- Appendix B illustrates the number of aftershocks with magnitude ≥ 3.0 since 22 February.

Offshore Survey: Yesterday NIWA scientists started a seismic survey of southern Pegasus Bay, in the Banks Peninsula area. They will survey out to 40 km east of the New Brighton Coast, up to 30 km north of Lyttelton heads. The scientists are determining what is in the area, and the likelihood of rupture occurring on an offshore fault. By merging this information with similar records from on land, scientists can learn how the different faults relate to each other and can be used to model earthquake risk.

Hot Springs:

- On 15 March a Hanmer Springs staff member noticed a sudden increase in the volume of gas being discharged from a flaring well and a drastic lowering (>6 m) of the water level in another well. On 16 March GNS scientists collected gas and water samples from the unusually gassy wells, and by the following morning the height and width of the gas flare from one of the wells had diminished by about 50-60% relative to the previous day.
- There have been anecdotal observations of the Hanmer wells responding to the 22 Feb and 5 March earthquakes, which pose some interesting questions as to the nature of these responses, and the need to characterise the time series variations in flow and chemical/isotopic compositions (if any) of the gases. Hanmer Springs will shortly be installing a mass flow meter for the flare gas line, and a research project is being planned to understand the causes of the fluctuations, and their relationship to local tectonism (if any).
- On 17 March the Ferrymead warm spring was also visited - it apparently appears and disappears depending on factors other than earthquakes.

Landslides:

- A media release is being prepared about the rockfall remediation work underway at present.
- A rapid reconnaissance-scale aerial photograph interpretation (API) of the type and location of mass movements triggered by the February 2011 aftershock was carried out using post earthquake aerial photography. Four main types of mass movement were mapped, these were: (i) Localised shallow landslides and failure of retaining walls and fill slopes over a large area, with no evidence of large scale slope/landslide instability; (ii) Rock falls and rock slope failures; their source areas, trails and end points (where possible to

identify); (iii) Renting – tension cracking co-linear to the topography; (iv) Complex large-scale deformation, possibly consistent with deep-seated landsliding; (v) Other features of note. The purpose of the mapping was to identify the greater area affected by mass movement events, and not just those in the more populated areas. Rockfalls account for 1,130 of the 1,243 mapped features. A GIS Geo database containing the results of the API contains: 25 localised shallow landslides and failure of retaining walls and fill slopes; 1,130 rockfalls, including their source areas, debris fields and individual rockfall boulders; 21 rents; and 67 areas of complex deformation (landslides).

Outstanding Issues / Challenges / Problems:

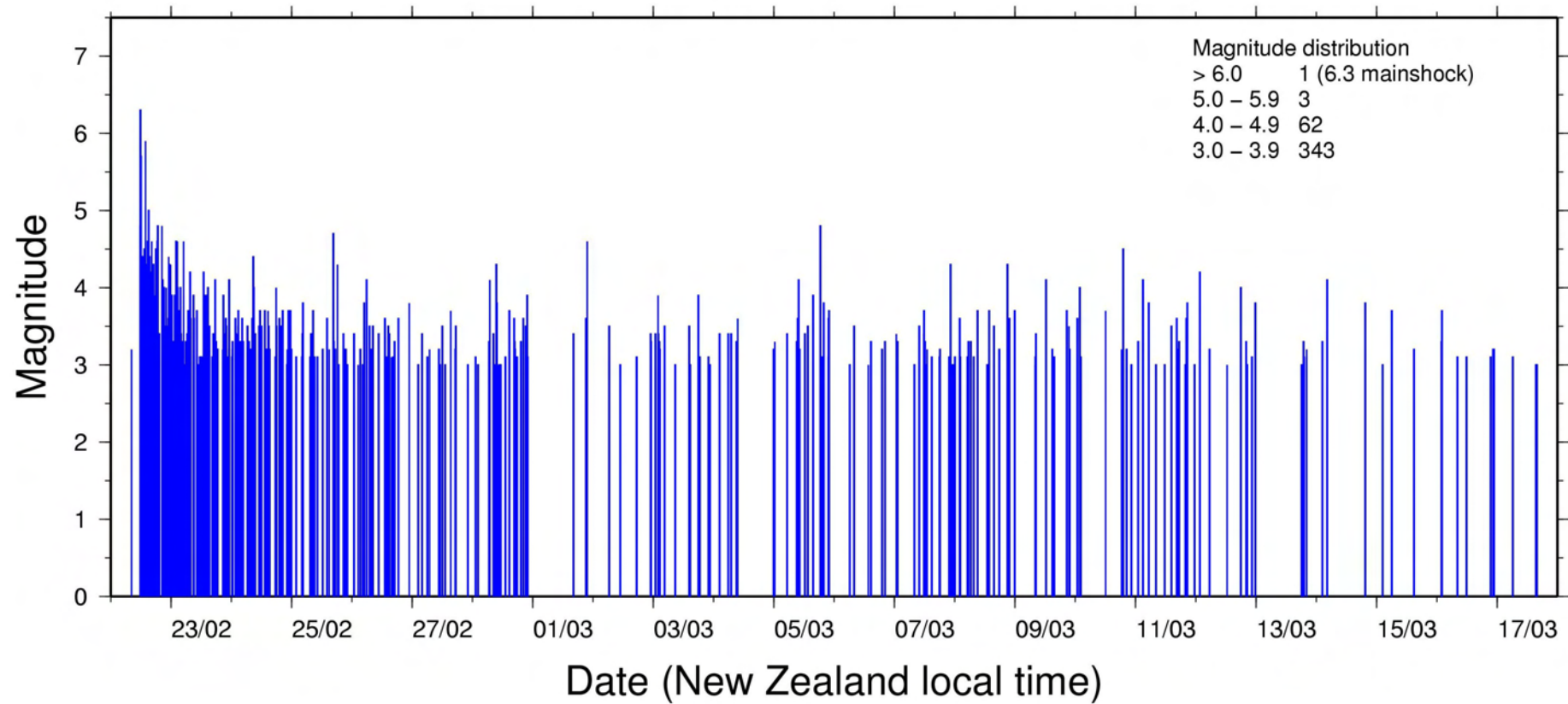
Anticipated Priorities / Activities: (For future operational periods)

Social Science: Lifelines Workshop: TCLEE, Canterbury engineering lifelines group and NZ Society for Earthquake Engineering will be hosting a five day international Lifelines visit, 5th - 9th April, and includes the Resilient Organizations Workshop on the 6th.

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APPENDIX A:

Magnitude and frequency of aftershocks from 22 February to 17 March 2011.



APPENDIX B:

Number of aftershocks per day with magnitude ≥ 3.0 since 22 February.

Number of aftershocks per day with $M \geq 3.0$

