Aftershock definition: Following a large earthquake, or *main shock*, many smaller earthquakes, or *aftershocks*, occur with a decaying pattern in time, space and magnitude relative to the main shock.

When taken as a group, aftershock behaviour tends to follow predictable patterns, and we can have a good idea of how many aftershocks of a particular magnitude range we can expect and when they may occur; however, within that group, individual aftershocks can be random and unpredictable, which makes it impossible to know when or where any single aftershock will occur.

We can estimate the average number of aftershocks we expect by looking at how aftershock sequences have behaved in the past in New Zealand. This allows us to give a rough, but not exact estimate of what we can expect to occur during the aftershock sequence. As the ongoing aftershocks are recorded by Geonet, we can get a better understanding of the behaviour of the particular sequence and improve our estimates. When a large aftershock occurs, a brief increase in the rate of aftershocks is expected and our estimates will be updated to reflect this.

How long an aftershock sequence lasts is dependent on how big the main shock was. The sequence is considered over once the rate of aftershocks drops below the rate that earthquakes were occurring prior to the main shock. Geographically, the aftershocks will happen near to the main shock. They will typically occur within a distance of a little more than one fault length (of the fault that broke during the main shock) from the main shock's epicentre; however, the shaking from the aftershocks will be felt in a wider area than this.

For the Darfield earthquake, the fault length of the main shock has been estimated to be approximately 25 km and the aftershocks recorded to date (09/09/10) are generally occurring within this distance from the main shock. You can see a map of the aftershocks and main shock here. We expect that the aftershocks may continue for some months to come; however, through the remainder of the aftershock sequence the aftershocks will occur with decreasing frequency and as of Thursday September 9th, roughly half of the anticipated aftershocks of magnitude greater than five have occurred. We have experienced ten aftershocks of magnitude greater than five so far, and we expect around five more to occur. Below is a table that shows the number of aftershocks that have occurred, and how many we expect throughout the aftershock sequence. The maximum expected magnitude is about 6.0 and with each day that the event does not occur, the probability that it will occur decreases.