Senate Environment and Communications References Committee
Inquiry on
The capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters

ANSWERS TO QUESTIONS ON NOTICE

Geoscience Australia
9 August 2011

Answers to Written Questions on Notice: from Senator Fisher

1. **How accurately can Geoscience Australia determine the likely impact of an earthquake that may have its centre thousands of kilometres offshore? In relation to the Japanese earthquakes, were your predicted impacts for Australia, in terms of seismic activity levels and ocean levels relatively accurate?**

   Geoscience Australia computes an approximate impact from earthquakes by providing an estimated damage and felt radius from the analysed earthquake epicentre based on the earthquakes computed magnitude.

   The damage radius is the average distance from the earthquake epicentre that describes the extent where masonry buildings might begin to take some damage depending on the construction and local soil conditions. The felt radius is based on the average distance from the epicentre that describes the extent at which the earthquake is felt quite noticeably by people indoors, especially on the upper floors of buildings.

   In terms of the seismic activity, Geoscience Australia expected no damage to Australia from ground shaking caused by the earthquake in Japan on 11 March 2011. To date, Geoscience Australia has not received any reports of damage in Australia for this earthquake.

   Geoscience Australia cannot comment on ocean levels, as the sea level monitoring and recording aspects of the Joint Australian Tsunami Warning Centre is within the responsibility of the Bureau of Meteorology.

2. **What is the approximate timeframe between the receipt of satellite images in Alice Springs and the issuing of such data by Canberra to the relevant agencies?**

   The timeframe is a function of the data volume being transmitted. The data volume is dependant on the resolution of the satellite sensor and the area of interest (e.g. a whole satellite pass may be needed for a large scale event like the 2011 Queensland floods, a more localised event may only need part of a satellite pass to be transmitted). The Landsat 7 satellite is particularly useful for emergency management. One Landsat 7 pass is approximately 9.5Gb of data. Transition of this from Alice Springs to Canberra would take approximately 15 hours. Currently this data is transcribed to tape in Alice Springs and posted to Canberra.

Do you consider that this time delay is a critical issue?

Yes. Timeliness is critical to the utility of the data for emergency management purposes. For example, Geoscience Australia often receives images of floods from the Landsat satellites as they pass over at about 9.30 am. This information could be used to inform planning of the response for that day, however in general we can't get those images to the authorities until at least late in the day, and sometimes not until the following day, due to communication delays. By that time, it is generally too late to make a difference to the response. The same is true for satellite imagery of bushfires, where timing is even more important. Although there are more and more satellites in space, our ability to actually use them in emergencies is limited by these communication issues.

Will access to the Australian Academic Research Network improve this aspect?

Yes. Our current link between Alice Springs and Canberra is a dedicated 2Mbps link. The Australian Academic Research Network (AARNet) has a 155Mbps link between Alice Springs and Adelaide and then a 2Gbps + link between Adelaide and Canberra. Although AARNet bandwidth would not be dedicated to Geoscience Australia, it is considerably in excess of the currently bandwidth and would significantly reduce data transmission times.

Answers to Questions on Notice: **from Senator Fisher**

1. **Dr Barnicoat: There is an additional facet to the spectrum competition issue that I think should be highlighted here. That is that the satellite downlink stations receive very weak radio signals from satellites and as there is increasing competition for bandwidth there is increasing pressure from other users to get closer and closer to the frequencies that are used by the satellites. The satellite down stations have been located in places, for example south of Alice Springs, away from normal or expected sources of interference, but with increasing development of technology there is additional pressure. So we certainly have to retain vigilance around potential developments and we also remain in frequent communication with the Australian Communications and Media Authority to ensure that the appropriate parts of the spectrum are protected to protect those downlinks. The bureau will certainly have the same sort of concerns around satellite downlinks that we do. Indeed, we use many of the same down stations.**

   Senator BOYCE: Are you able to give us some examples why you have had to be vigilant?

   Dr Barnicoat: There are proposed developments, for instance, indeed of some mobile telephony towers that people want to put in, and there is at least the risk that there will be interference from those. If you want more detail I need to take that on notice.

   Senator BOYCE: That would be useful to have on notice.

   ANSWER: Geoscience Australia licences its ground station in Alice Springs with the Australian Communications and Media Authority (ACMA). ACMA has been approached by others interested in installing mobile phone telephony towers close to Geoscience Australia's facilities in Alice Springs. ACMA have been proactive in approaching Geoscience Australia to understand the possible impact of these proposed installations on our operations. We have an ongoing dialog with ACMA to ensure that these issues are resolved satisfactorily. Also, urban spread from Hobart is leading to a build-up of housing around the shared downlink facility at Droughty Hill, and ultimately that facility will need to be re-located due to the fundamental incompatibility. Requirements to relocate these facilities can have significant cost and other implications.

2. **Senator HUMPHRIES: Excellent. I will have a look at that. Finally, can you advise us as to the nature and progress of the Common Alerting Protocol system, which is being developed at the moment?**

   Dr Barnicoat: Geoscience Australia now have available a Common Alerting Protocol on earthquakes, which is obviously, as you rightly pointed out just now, Senator, after the event. Rather than a warning service, it is a notification service, if you like, through the Common Alerting Protocol. It is now available through our website.

   Senator HUMPHRIES: Is it fully developed as far as you are concerned, or is there more work to be done on it?

   Mr Cheyne: The short answer is I would have to take that on notice but we have been working closely with the Attorney-General's Department, who have been running a pilot on the development and implementation of the Common Alerting Protocol. We have used that pilot to develop the earthquake related component of that. We have developed that to the extent where we can provide that as a service on our website, as Dr Barnicoat said.

   ANSWER: There is no further work required for Geoscience Australia to implement the use of the Common Alerting Protocol (CAP) for earthquakes. A CAP feed of Geoscience Australia's earthquake information can be subscribed to at www.ga.gov.au/earthquakes/staticPageController.do?page=eq-notification-service.