



Statement by the British Geological Survey on its response to the Indian Ocean earthquake and tsunami Update - Issued 7 January 2005

CONTEXT

The British Geological Survey (BGS) expresses its sincere condolences to the victims and their families and friends. BGS recognises that the priority response is humanitarian rescue and relief, but believes that it is important to offer scientific input for the dual purposes of achieving greater understanding of what has happened and assisting towards the recovery effort.

CAPABILITIES AND INFORMATION

In addition to (near) real-time monitoring of seismic events (earthquakes) worldwide from its Edinburgh office, BGS has, by virtue of its long history of working overseas, considerable data and expertise in the region affected. This includes rare data from engineering geology mapping and boreholes of the alluvial plain of the Aceh region that could be useful in the rebuilding phase in that area. BGS is currently updating its relevant data holdings and will make these available as required. BGS has extensive international expertise in earthquakes and tsunamis, and world-wide experience in disciplines related to geohazard assessment, recovery and reconstruction (including groundwater protection, engineering geology, sea-bed imaging and hazard mapping). Many of its staff have been involved in explaining the events to the media since the 26th December and are already contributing to international initiatives.

BGS is a component institute of the UK's Natural Environment Research Council (NERC), which includes other organisations with relevant expertise (principally the Southampton Oceanographic Centre, the Proudman Oceanographic Laboratory and the Centre for Ecology and Hydrology). Scientists in these institutes have also been considering how best to respond and stand ready to offer their expertise to the international efforts.

ROLE OF GEOSCIENCES IN MITIGATION AND RECOVERY

Although the risk of tsunami generation from aftershocks is low, there remains the possibility of other seismic events in the region. In addition to continued monitoring of seismic activity, we feel that the role of geo-scientists in the aftermath of the tragedy is likely to fall into four broad categories as follows:

- Immediate help related to remediation of groundwater supplies contaminated by seawater and control of the risk of contamination from mass burial sites.

- Understanding the event from ‘source to impact’ to provide a sound scientific basis for the development of warning and risk reduction strategies, and subsequent redevelopment. This would entail a multi-disciplinary, multi-national effort to understand: (i) the earthquake itself; (ii) the associated distortion of the sea floor and wave generation mechanisms; (iii) wave propagation characteristics and the influence of the ocean floor and coastal/shelf geomorphology on wave height; and (iv) the onshore impact including inland run-up, type of damage, influence of local geology, redistribution of sediments, effect on groundwater aquifers, relationship between earthquake damage and tsunami damage, effect on the local ecology and agricultural capacity, etc. One of the outputs of such a study should be the production of ‘vulnerability’ maps and GIS-based ‘decision support systems’ for use in later reconstruction. Although much of the initial assessment could be carried out using ‘before and after’ satellite images, there is also a need to deploy teams on the ground and to carry out detailed sea-bed imaging of the source area. Marine surveys in particular are likely to require a large multi-national effort that brings together geoscientists and oceanographers from the UK, Japan, USA, Australia and elsewhere.
- Development of effective monitoring and warning systems. The technology for this is fairly well established and the expertise lies mainly with the Pacific countries. The challenges are unlikely to be geoscientific as such, but associated more with the technical deployment and maintenance of the systems and the logistics of getting timely warnings to populations over a wide area.
- Input into the reconstruction and redevelopment effort including: identification of lower risk areas (based on the previous study); provision of safe drinking water, engineering geological advice on foundation conditions; availability of construction material; and remediation of agricultural capacity.

CONTRIBUTION TO THE INTERNATIONAL SCIENCE EFFORT

BGS recognises that many individual scientists, scientific institutions, aid agencies and private sector companies around the world are already working on various aspects of the post-disaster science response. However, we are not aware that these efforts are, at present, being strongly co-ordinated and there seems to be a danger that their value might be lessened as a result. BGS has close links with many of the organisations likely to be involved and also has a strong track record in aid-related geoscience.

BGS therefore proposes to facilitate a preliminary meeting of international scientists with the purpose of pooling data, knowledge and activity plans being developed by the international and regional scientific communities, and co-ordinating these efforts to best effect. The meeting will be under the auspices of CCOP and in close collaboration with the geoscientific organisations in the countries most affected by the earthquake and tsunami. Provisional dates for the meeting are 28-31 January (in Bangkok) and the possibility of including field excursions to affected areas is being explored. We are currently working closely with CCOP and liaising with our colleagues around the world to discuss the arrangements.

In the meantime, BGS and other NERC Research Centres will continue to provide scientific advice to the UK Government, including the FCO and DFID, aid organisations, the media and the public. BGS will also work on a bilateral basis with public and private sector bodies with responsibility for designing and implementing tsunami warning systems, and with national geological surveys in the affected region.

FURTHER INFORMATION

For information related to the earthquake itself, see www.earthquakes.bgs.ac.uk or contact Dr David Kerridge by e-mail to djk@bgs.ac.uk or by telephone to +44 (0)131 667 1000

General enquiries on the BGS response and coordination of international efforts should be directed to David Ovadia by e-mail to dco@bgs.ac.uk or by telephone to +44 (0)115 936 3465

In addition, BGS will post on its web site (www.bgs.ac.uk) a series of information papers on various aspects of the earthquake and tsunami events. Each paper will contain the contact details of an expert scientist in the subject.

Dr Michael Lee (Director of Lands and Resources, BGS)
Mr David Ovadia (Head of BGS International)

On behalf of Dr David Falvey, Executive Director, BGS