Book Review

Natural Perils in Australia and New Zealand

by Russell Blong, David Sinai and Colin Packham

Published by Swiss Re Australia Ltd 2000
ISBN: 0 646 40547 0

Reviewed by Ken Granger
Geographer
RiskScience, Qld
Email: riskscience@bigpond.com.au

The major reinsurance company Swiss Re have, for many years now, published some of the best written and illustrated manuals and discussion papers on natural hazards and the risks that they pose. For example, Herb Tiedermann's massive *Earthquakes and Volcanic Eruptions: a Handbook on Risk Assessment* (published in 1992), and its accompanying *Catalogue of Earthquakes and Volcanic Eruptions* (revised in 1993), is widely regarded as a standard text, whilst Christian Brauner's *Global Warming: Elements at Risk* (published in 1994) is certainly one of the more insightful documents on the subject. This tradition of excellence has been well and truly preserved with the issue, by Swiss Re late in 2000, of *Natural Perils in Australia and New Zealand*, written by Russell Blong, David Sinai and Colin Packham.

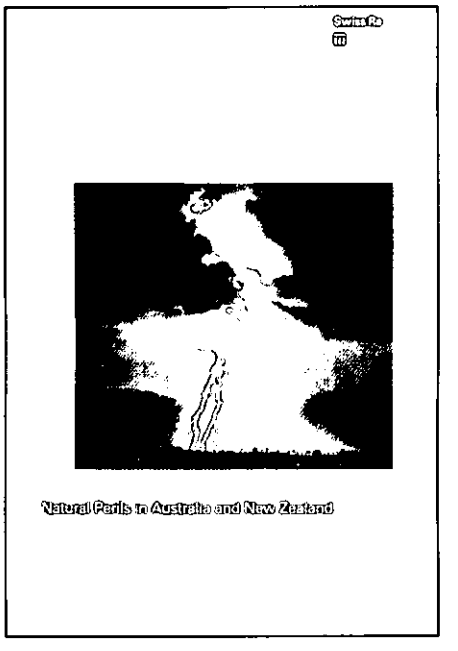
The authors pack into this work's 120 pages a wealth of information on the hazards that pose a risk mainly to the domestic property portfolios of the insurance and reinsurance industries. In spite of its somewhat targeted audience, *Natural Perils in Australia and New Zealand* is an outstanding resource book for anyone with an interest in the hazard phenomena, their history of impact and their potential for future impact, in this part of the world. It is clearly written with a minimum of technical language and, as is the hallmark of Swiss Re publications, exceptionally well illustrated.

The hazards covered are grouped into two categories: tectonic perils (earthquakes, volcanic perils, tsunamis and landslides); and meteorological and associated perils (cyclones, thunderstorms, floods and bushfires). Each section begins with a broad introduction and an explanation of some of the key concepts and terminology. For example, early in the tectonic perils section the differences between earthquake 'magnitude' and 'intensity', and the meaning of the Richter Magnitude scale are explained in supplementary texts, whilst the El Nino—Southern Oscillation (ENSO) phenomenon and its significance is described in some detail at the beginning of the meteorological perils section.

The various perils are illustrated by contemporary descriptions of significant historic events such as the great 1885 Wairarapa (Wellington) earthquake (M 8.0–8.1); the impact of the tsunami generated by the 1868 Chile earthquake (M 8.5) in Newcastle (NSW) harbour; the 1979 Abbotsford (NZ) landslide which involved 5.4 million cubic metres of material and destroyed 69 houses; Cyclone *Tracy* and the 1918 Mackay cyclone; and the 1999 Sydney hail storm. Scenarios are also presented to illustrate the potential for future major events such as a M 5.5 earthquake with its epicenter under Botany Bay; and, a volcanic outburst in the centre of Auckland.

Some interesting and useful comparisons are made between the risk environments of Australia and New Zealand and some of the responses developed. Perhaps the most significant of these differences is the publicly funded New Zealand Earthquake Commission (EQC) which came into being in the early 1940's. EQC provides insurance cover for homes, contents and the land the home is on against earthquakes, landslides, volcanic eruptions, hydrothermal activity and tsunamis automatically when home or contents fire insurance is purchased from a private insurance company. It also provides cover against storm and flood damage to residential land, but this cover does not include the house or its contents. This is in clear contrast with the insurance situation in Australia which is entirely in the private sector and, for the most part, does not include cover for landslide, tsunami, storm tide or riverine flood.

The work concludes with an interesting section on 'catastrophe modelling and PML (probable maximum loss) estimation'. This provides a very helpful insight into the way the insurance industry establishes its risk exposure to natural hazards. The methodology employed by Swiss Re 'four box model' is very similar to the approach adopted by the standard AS/NZS 4360-1999 *Risk management*.



A number of observations are made throughout the work that clearly resonate with many of us who have been working in the risk management field for some time. For example, in relation to flood risk, the authors observe:

Australian expertise is the equal of world best standards in all aspects of floodplain management, from hydrology to emergency planning. The challenge is how to translate that knowledge into best practice floodplain management. Regrettably, many of the barriers to successful urban flood risk reduction are institutional.

Observations of similar candor are made about the nature of the information used by the insurance industry to assess portfolio exposure, for example, after drawing attention to the desirability of differentiating construction types in assessing earthquake risk, they state:

Likewise, different subsoil conditions generate marked variations in the intensity of ground shaking, and hence damage, indicating that insurers need to identify specific construction types on particular soils if they are to manage risk successfully. The clear implication is that insurers need to know the location of insured risks to within tens of metres rather than just within postcodes.

It is clear that many emergency managers would also like such a high resolution understanding of the risks they may have to cope with.