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Seismotectonics and seismic hazard in the Roer Valley Graben; with emphasis on the Roermond earthquake of April 13, 1992

Workshop, January 20–22, 1993, Veldhoven, the Netherlands

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Preface

In the early morning 03:20 local time, April 13, 1992, an earthquake ($M_L = 5.8 \pm 0.1$) with its epicenter near the Dutch city of Roermond frightened many people in the Netherlands, Germany and Belgium and caused damage exceeding 100 million ECU. This medium-size intra-plate normal dip-slip earthquake occurred near the trace of the northeastern boundary fault of the Roer Valley Graben, the so-called Peel Boundary Fault. It reminded geoscientists, engineers and others that tectonic movements within the Rhine Graben system and its surrounding areas and especially the Roer Valley Graben are still ongoing.

An interdisciplinary workshop at Veldhoven, the Netherlands, on January 20–22, 1993, gathered together more than 140 participants, mostly geoscientists and engineers, but also representatives from the industry and governmental institutions. This workshop provided the first full perspective on the earthquake. The geological, geophysical, tectonic and geotechnical knowledge about the Roer Valley Graben and the Roermond earthquake was gathered and summarized. Seismic hazard (and risk) and ground behaviour aspects were discussed in the context of areas of low to moderate seismic activity such as, for example, northwestern Europe.

Most of the presentations have been prepared for publication in this special issue of Geologie en Mijnbouw. The articles cover an unusually broad scope of subjects, ranging from studies relevant to our understanding of the dynamics of the Roer Valley Graben, through from analysis of the Roermond earthquake to practical considerations with respect to existing and future European building codes. They are organised into six broad areas: Geology and tectonics; Roermond earthquake and its aftershocks; Macroseismic observations and earthquake engineering aspects; Geotechnical and hydrogeological aspects; Ground motion and site response; Seismic hazard and seismic risk.

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