Geophysical Research Abstracts, Vol. 7, 08292, 2005
SRef-ID: 1607-7962/gra/EGU05-A-08292

Seismic hazard and ground motion due to small, shallow earthquakes

T van Eck (1), B. Dost (1), F Goutbeek (1), H Haak (1)
(1) KNMI, P.O.Box 201, 3730 AE De Bilt, the Netherlands (vaneck@knmi.nl)

Induced seismicity due to hydrocarbon exploitation involves small earthquakes ($M < 3.9$), which occur at shallow depth ($h < 4$ km). However, they cause significant annoyance and relatively high peak ground accelerations up to 0.3g. Much of the seismicity occurs currently in the Groningen field, one of the world largest gas reservoirs. A new Dutch mining legislation requires both a risk analysis and a monitoring plan for each concession since January 1, 2003. This has motivated an improved quantification of the expected ground motion in terms of peak ground velocity. For this purpose we developed an attenuation relation and estimated the seismic hazard specifically for small, shallow earthquakes in the region. This includes a statistical analysis of the induced seismicity monitored during the last 15 years indicates. We further elaborate on the uncertainties involved in the analysis.