Geophysical Research Abstracts
Vol. 14, EGU2012-7533, 2012
EGU General Assembly 2012

Global scale flood exposure assessment - Methodologies and results

B. Jongman (1,2), P.J. Ward (1,2), J.C.J.H. Aerts (1,2)

(1) Institute for Environmental Studies, VU University Amsterdam, Netherlands, (2) Amsterdam Global Change Institute (AGCI), VU University Amsterdam, Netherlands

Flood damage modelling has traditionally been limited to the local, regional or national scale. Recent flood events, population growth and climate change concerns have increased the need for global methods with both spatial and temporal dynamics. In this study we present a first estimate of economic exposure to both river and coastal flooding on a global scale from 1970 – 2050, using two different methods for economic exposure calculation. One methodology is based on population densities and GDP, while the other method uses land-use and maximum damage figures to calculate economic exposure. Both methods show very similar upward trends in economic exposure over the period 1970-2050. However, the absolute exposure values resulting from the two methods show different magnitudes, reflecting variation in urbanisation and income. Furthermore we found that growth of population and economic assets in flood prone areas is higher than average national growth, especially in developing countries. As a next step, we propose a methodology for assessing total flood vulnerability that goes beyond economic impact, using a welfare-based approach based on a broad range of development indicators. The results are interesting for academics and practitioners working on international environmental, economic and development issues at the regional and global scales.