Geophysical Research Abstracts
Vol. 12, EGU2010-9686-1, 2010
EGU General Assembly 2010

From science into practice: modelling hot spots for corporate flood risk and emergency management with high-resolution digital terrain data

Clemens Pfurtscheller (1), Michael Vetter (2,3), and Markus Werthmann (4)

(1) Austrian Academy of Sciences, Institute for mountain research: man and environment (IGF), Innsbruck, Austria, clemens.pfurtscheller@oeaw.ac.at, (2) Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, Austria, mv@ipf.tuwien.ac.at , (3) Centre for Water Resources, Vienna University of Technology, Austria, (4) Department of Geography, University of Innsbruck, Austria, markus.werthmann@uibk.ac.at

In times of increasing scarcity of private or public resources and uncertain changes in natural environment caused by climate variations, prevention and risk management against floods and coherent processes in mountainous regions, like debris flows or log jams, should be faced as a main challenge for globalised enterprises whose production facilities are located in flood-prone areas.
From an entrepreneurial perspective, vulnerability of production facilities which causes restrictions or a total termination of production processes has to be optimised by means of cost-benefit-principles. Modern production enterprises are subject to globalisation and accompanying aspects, like short order and delivery periods, interlinking production processes and just-in-time manufacturing, so a breakdown of production provokes substantial financial impacts, unemployment and a decline of gross regional product. The aim of the presented project is to identify weak and critical points of the corporate emergency planning ("hot spots") and to assess possible losses triggered by mountainous flood processes using high-resolution digital terrain models (DTM) from airborne LiDAR (ALS). We derive flood-hot spots and model critical locations where the risk of natural hazards is very high. To model those hot spots a flood simulation based on an ALS-DTM has to be calculated. Based on that flood simulation, the flood heights of the overflowed locations which are lower than a threshold are mapped as flood-hot-spots. Then the corporate critical infrastructure, e.g. production facilities or lifelines, which are affected by the flooding, can be figured out. After the identification of hot spots and possible damage potential, the implementation of the results into corporate risk and emergency management guarantees the transdisciplinary approach involving stakeholders, risk and safety management officers and corporate fire brigade.
Thus, the interdisciplinary analysis, including remote sensing techniques, like LiDAR, and economic assessment of natural hazards, combining with corporate acting secures production, guarantees income and helps to stabilise region's wealth after major flood events. Beyond that, the assessment of hot spots could be raised as locational issue for greenfield strategy or company foundation.