Cartography and Emergency

We live in a world in which both natural and manmade disasters, including those triggered by terrorism, tend to occur with increased frequency. Politicians, decision-makers and the general public are becoming more and more aware of the importance of Early Warning (EW) and Emergency Management (EM). Good maps are proven to be fundamental prerequisites for tackling disorder after tragedies such as hurricane ‘Katrine’, the Christmas 2004 tsunami, and the Sichuan earthquake of 2008.

Cartography deals with the delivering of true, understandable, attractive and user-friendly visual information in the form of a great variety of maps. Ongoing developments in methodology and cartographical techniques are intertwined with advances in geoinformatics, to which discipline cartography is closely related. Initiatives in EW and EM approaches deeply affecting cartography are undertaken by the European Union (EU) within the framework of GMES (Global Monitoring of Environment and Security), connected to GEOSS (Global Earth Observation System of Systems). GMES aims at creating core services and downstream services in support of emergency situations.

Core services provide standardised, multi-purpose information capacity for Europe. Downstream services should be tailored for specific applications at local, regional and national level, and should operate either under public supervision or as private initiatives. All services should deal with Civil Protection (National Civil Protection Services of Europe), Humanitarian Aid and Security crises.

Proper functioning of services will rely on good maps for situational analysis, and visualisation, modelling and interpretation of processes. These processes may concern emergency situations already on the ground, or simulations of what might happen (scenarios) in the short, medium and long term. Decision-makers involved in humanitarian crises, natural disaster or manmade emergencies want maps tailored to the situation, on-demand and delivered within a certain timeframe. This is a new paradigm everywhere in the world and requires new cartographical knowledge based on the use of the newest technologies. Given these wishes and developments, the GMES initiative should culminate in four main types of map: early warning maps and images, reference maps, damage assessment maps, and thematic maps. Reference maps should be available within six hours of an emergency occurring, and damage-assessment maps within 24 hours, to be updated daily. Forecasting of how the situation in the distressed zone might progress over the coming days and weeks must also be communicated by means of maps.

Maps are a means of communication and must be easily and quickly read and unambiguous to people operating in an emergency situation. Not only should rescue workers and their managers be skilled in the use of maps, but the design of such should be adapted to strain, wear and tear. Cartographers are thus challenged to bring into line new symbols, visualisations and convincing simulations. Co-operation within the field of geoinformatics is indispensable for the achievement of these goals.

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