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**Time-Dimension in a Web-Based Disaster Management Solution;
Implementing a Multi-Dimensional GIS Project
for Flooding in Ammer Basin.**

Developed or developing countries all over the world have been facing high water events and their negative effects. Especially, river flooding has been a major natural hazard worldwide among the recent natural hazards.

In this research, there has been total awareness on the motto of “there are things people can do to lessen the loss of life and infrastructural damage”. Accordingly long or short time flood prevention measures can be taken based on hydrologic and meteorological models, forecasts and simulations that are managed by specialists. Hydrologic and meteorological models and tools are touched in detail within this research.

For a convenient disaster management system, “where to get data” is one issue, but how to manage this data is still a more challenging task. This research focuses on this issue, especially, on temporal GIS (TGIS). Spatio-temporal data has been considered as the key data needed for the disaster management system within the research, which comes up with the issue of structuring, storing, querying and displaying this data.

This thesis mainly addresses two issues – development of a new conceptual framework for a “time” integrated disaster management system using data models and theoretical background and software implementation of spatio-temporal data formats for both desktop and web solutions. To solve these issues, ArcGIS 9.2 Multidimension Tools have been used for NetCDF data management whereas ArcHydro 9 tools have been used for solving out a time-stamp model. Finally, tests were made in ArcGIS Explorer to come up with a web-based solution.

To realize the ideas and models an investigation area was selected which is located in the northern part of the pre-alpine river Ammer catchment, surrounded with the small towns Peißenberg and Weilheim. What makes the Pre-Alpine areas unique in the case of the Ammer Basin is that “there is

relative short space of time between precipitation and runoff due to the steep terrain". In this context, the Ammer Basin is considered as one of the most flood affected areas in the central Europe.

Key words: Disaster management, temporal GIS, hydrology, NetCDF, ArcHydro, object-orientation, Ammer basin.