



Sustainable Strategies of Urban Flood Risk Management with non-structural Measures to cope with the Residual Risk

Helmut Knoblauch

Overview

- Improvement of flood risk management in case of disaster flood
- Especially in respect of non-structural measures
- Structural measures of flood protection are limited applicable
- Absolute protection is not feasible
- **Sustainable flood risk management:**
 - Advanced warning systems
 - Residual risk and vulnerability analysis
 - Risk communication: awareness raising, sensitization, public participation as well as individual precaution measures

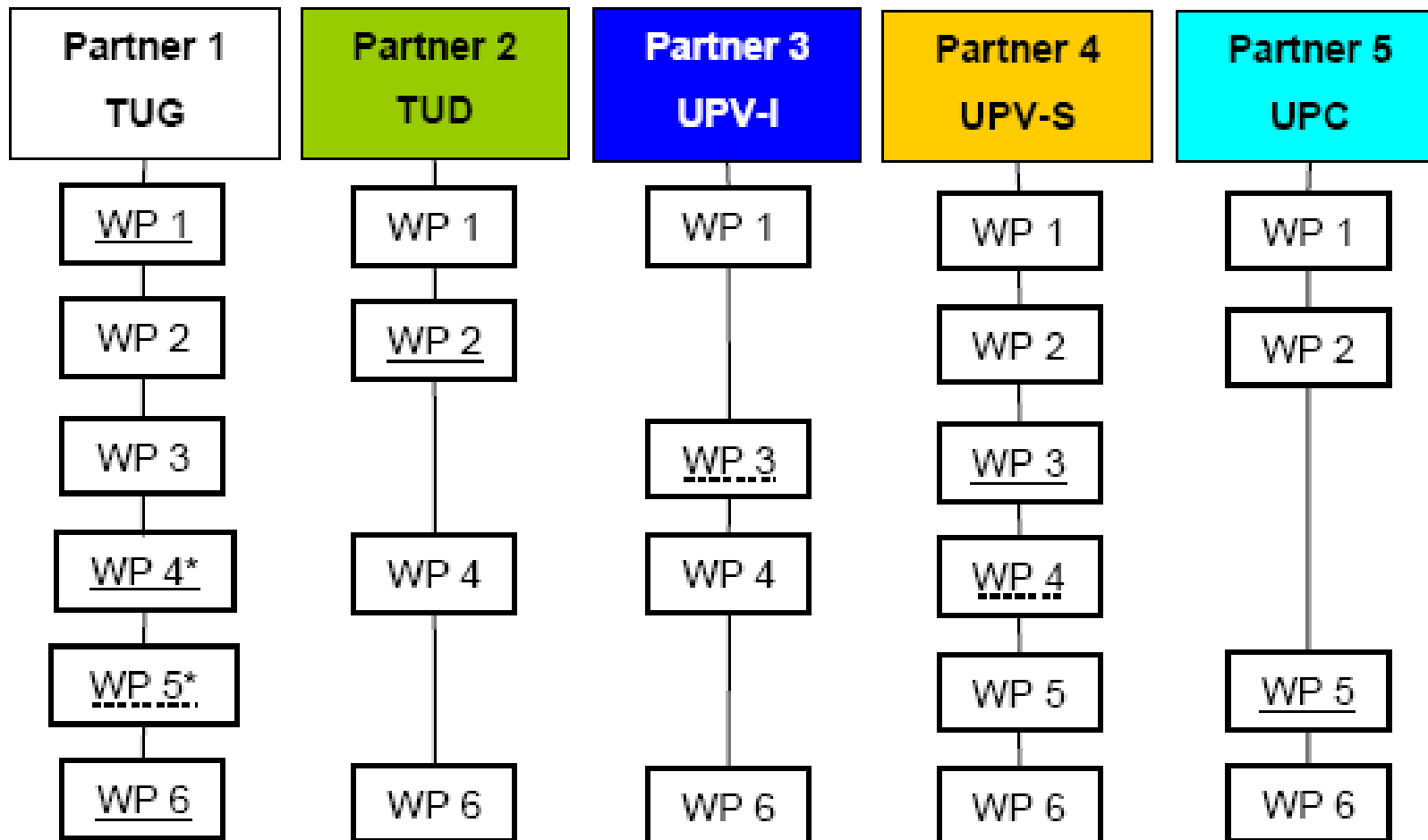
Project Partners

<p>Graz University of Technology (TUG) Institute of Hydraulic Engineering and Water Resources Management</p>	<p>Helmut Knoblauch, Simone Ortner, Cornelia Jöbstl</p>
<p>Dresden University (TUD) Institute of Hydraulic Engineering and Applied Hydromechanics of Technology</p>	<p>Reinhard Pohl, Antje Bornschein</p>
<p>University of Pavia (UPV-I) Department of Hydraulic and Environmental Engineering</p>	<p>Luigi Natale, Gabriella Petaccia</p>
<p>Polytechnical Univ. of Valencia (UPV-S) Institute of Water Engineering and Environment. Department of Hydraulic Engineering and Environment</p>	<p>Igancio Bueno Escuder</p>
<p>Polytechnical Univ. of Catalonia (UPC) Sediment Research Transport Group</p>	<p>Allen Bateman, Vicente Medina, Andrès Díaz</p>
<p><i>University Graz (KFU)</i> <i>Research Centre for Risk Assessment and Disaster Control</i></p>	<p><i>Gerhard Grossman, Alexandra Kulmhofer</i></p>

Work packages

WP 1 TUG	Project Management and Coordination
WP 2 TUD	Advanced Warning Systems of Small Urban Catchment Areas
WP 3 UPV-S	Residual Risk and Vulnerability Analysis
WP 4 TUG	Risk Communication
WP 5 UPC	Optimization of Disaster Control Management
WP 6 TUG	Use and National Comparison of Disaster Control Management, Case studies

WP - Collaborations



4 Case Studies

Germany: Dresden

Italy: Lodi

Spain: Valencia

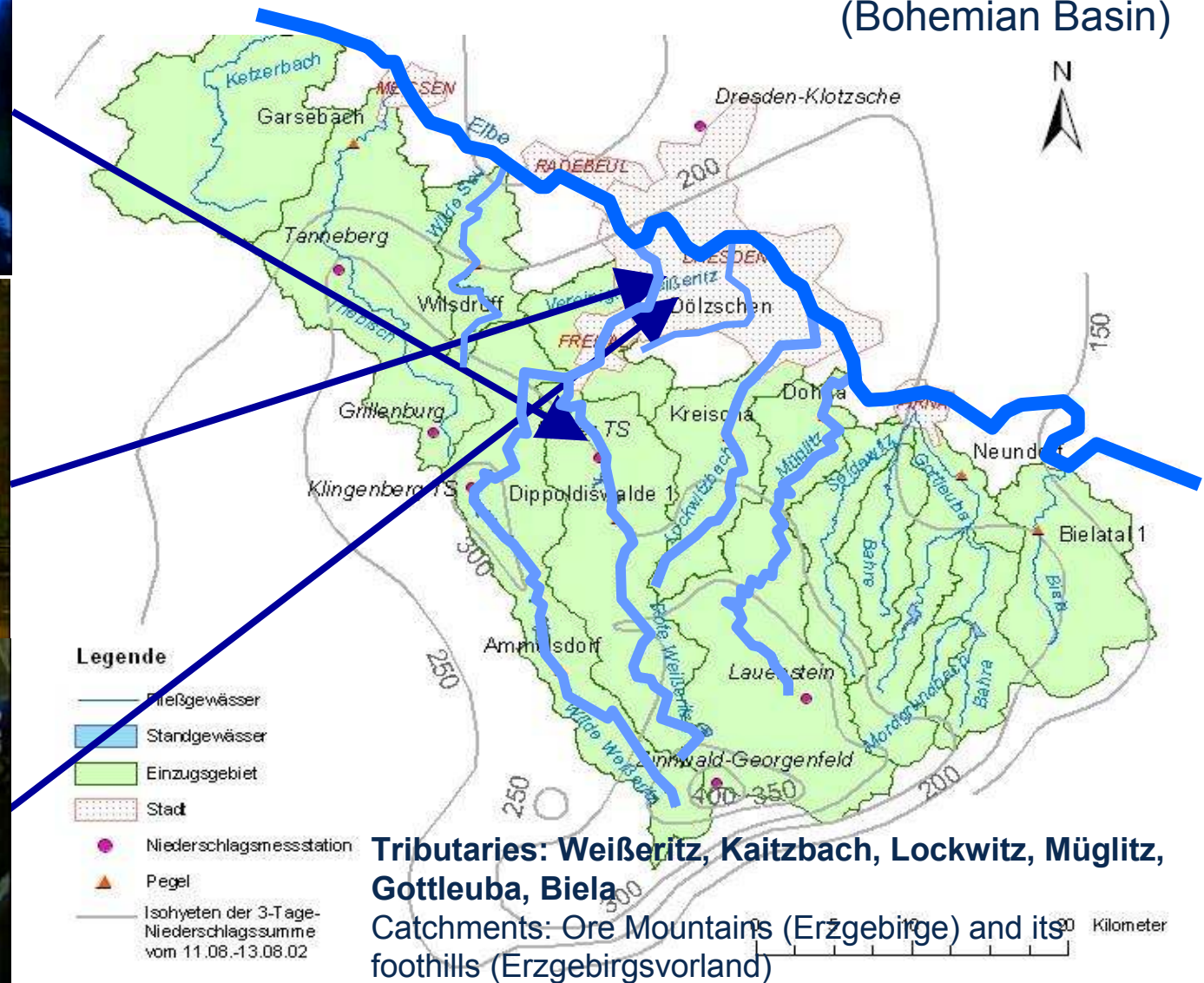
Austria: Graz

Case Study: Dresden 2002



Dresden, 17.08.2002: Inundation of the historic city centre, due to the flood of the river Elbe – 940 cm above gauge datum (normal: 200 cm)

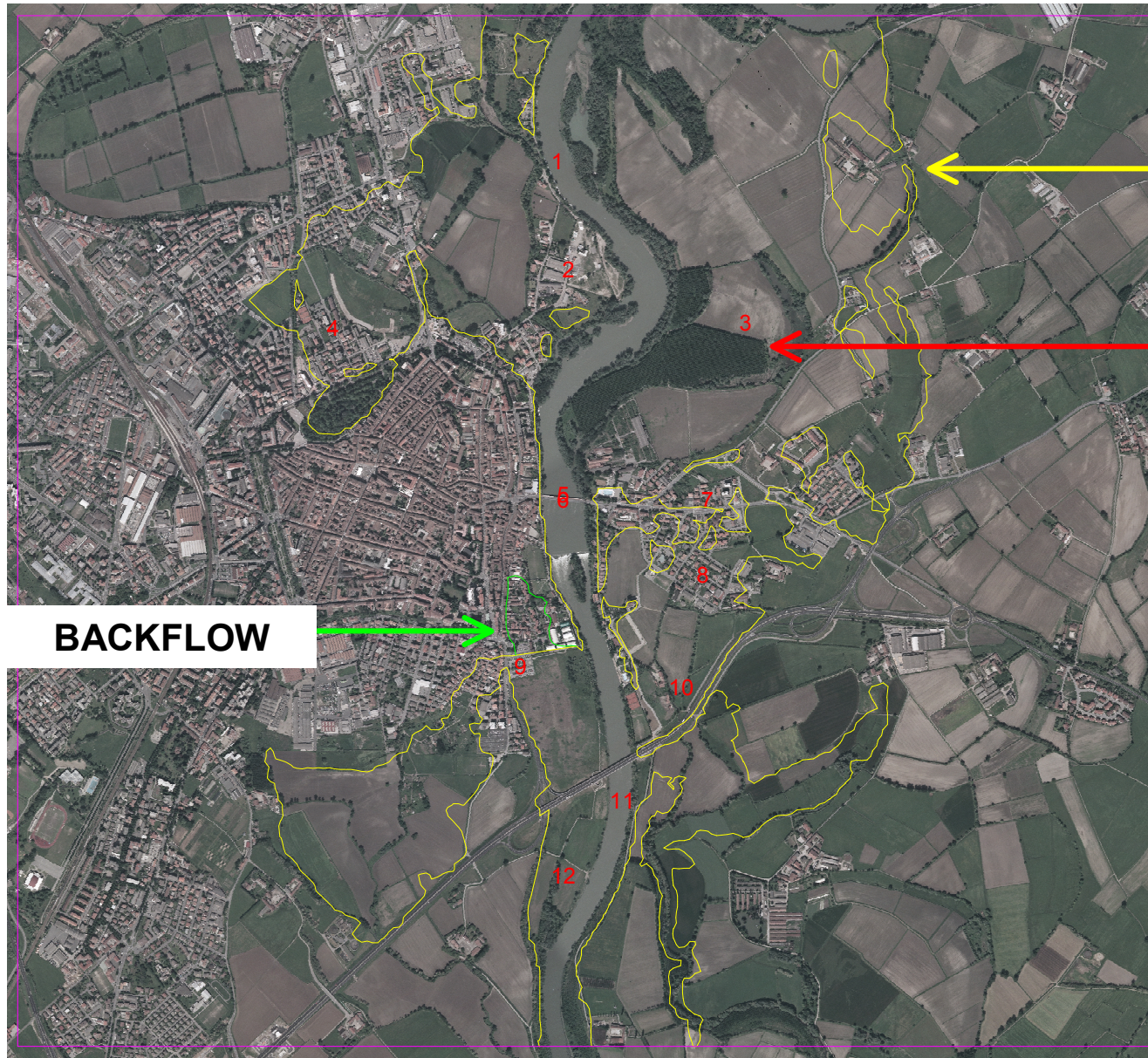
River Elbe - Dresden gauge: 53096 km² catchment area (Bohemian Basin)



Italy: Case Study LODI

Simulation 1D and 2D



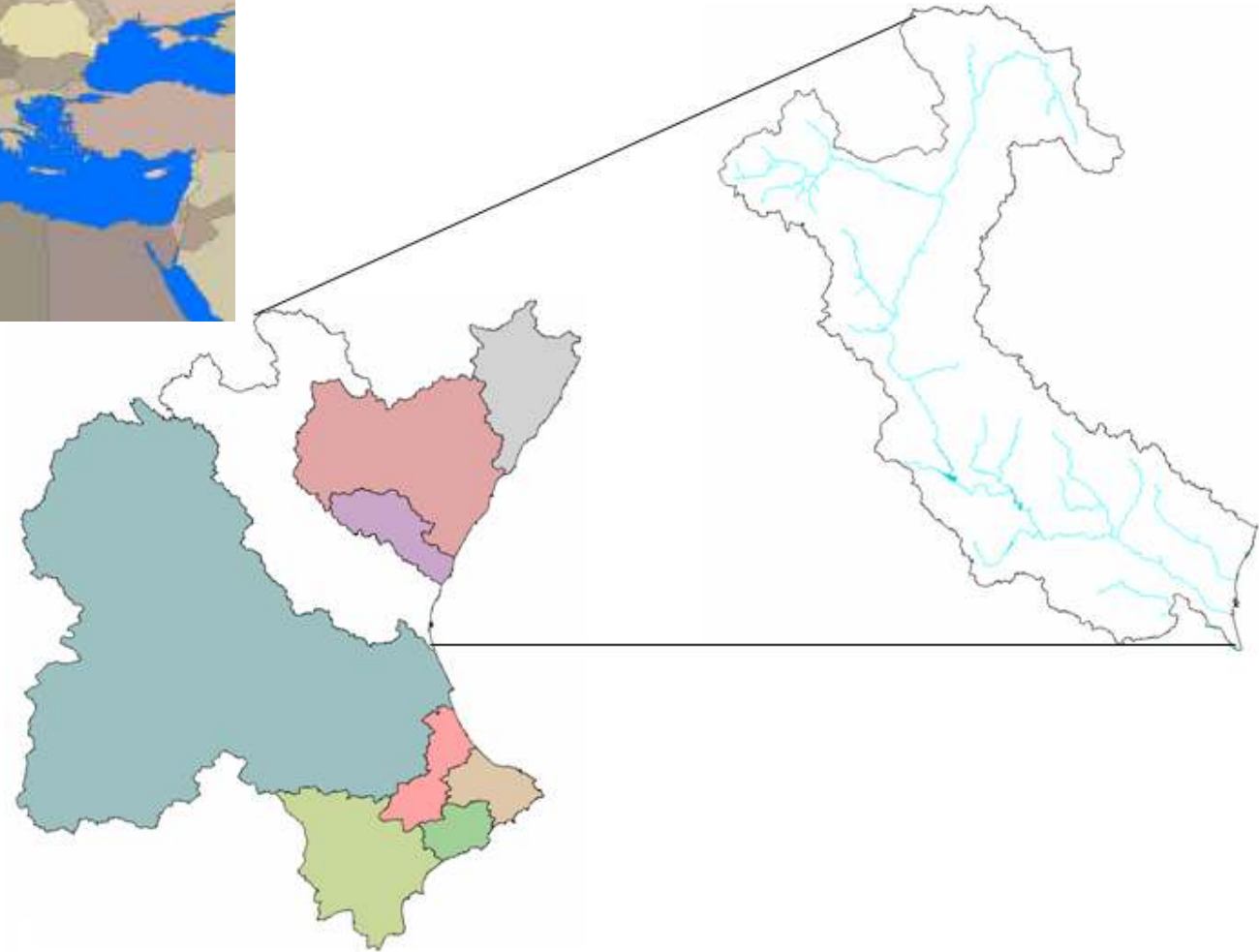


Flooded area for
a return period of
200 years

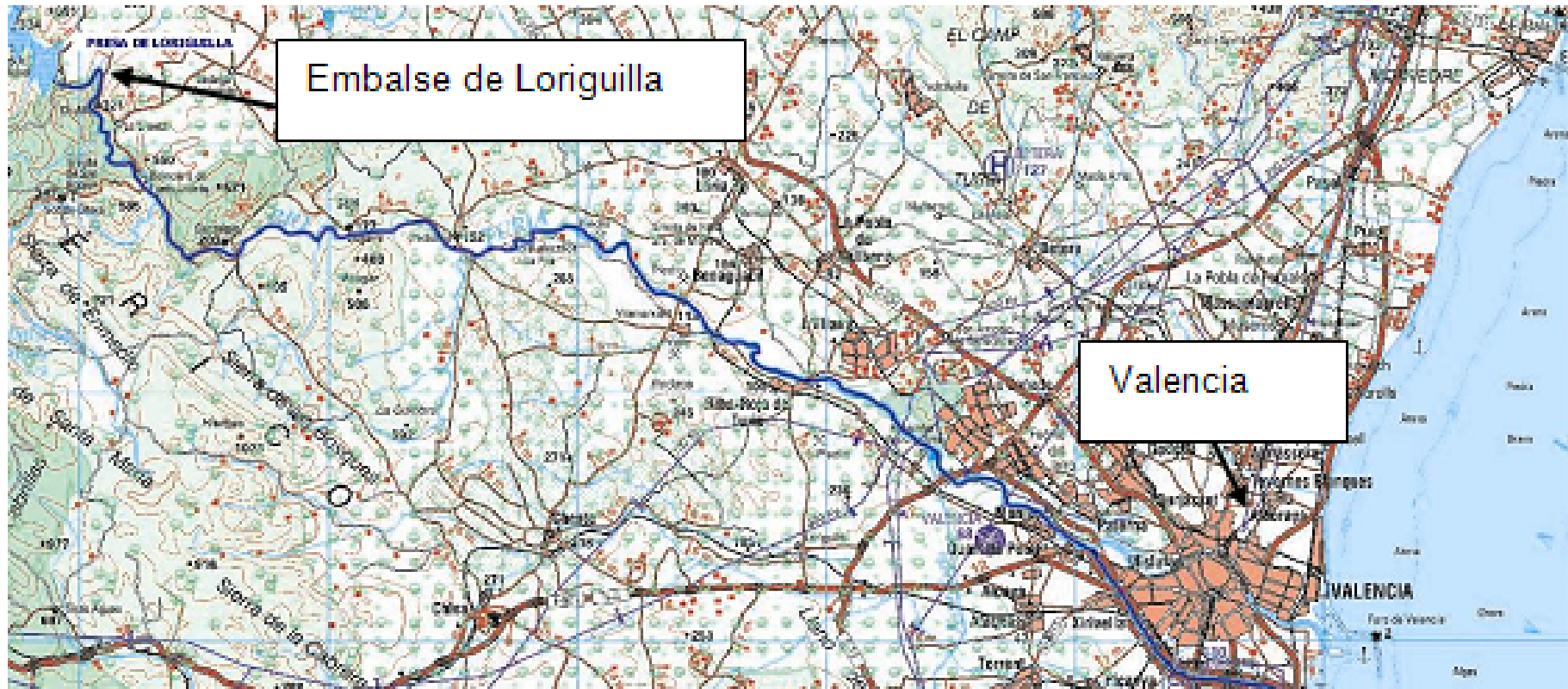
Position of water
elevation gauges

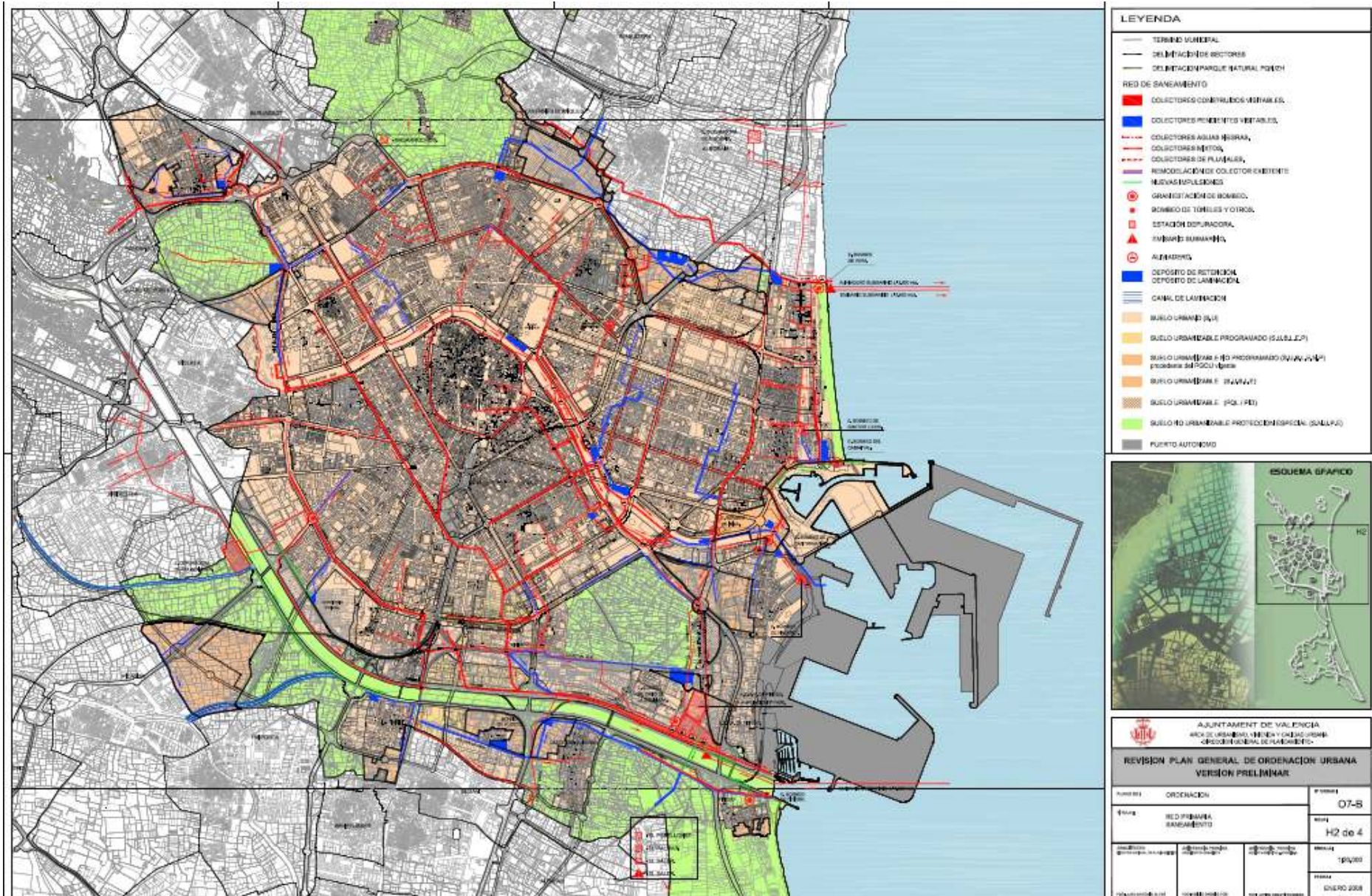
BACKFLOW

Study case VALENCIA (SPAIN)



Study case: VALENCIA (SPAIN)

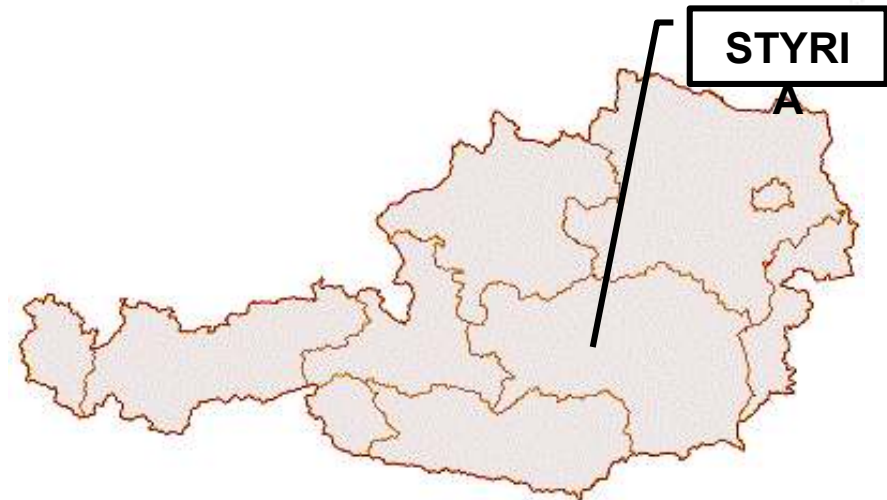




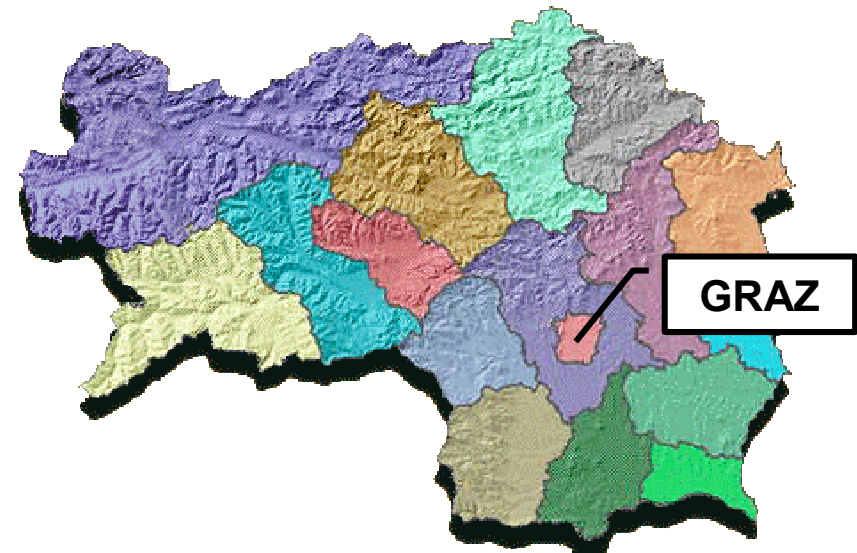
CASE STUDY AUSTRIA



[Source: http://www.geutebrueck.de/content/files/internetdateien/web/vertriebspartner/karten/europa/Karte_E_300_austria.gif]



[Source: <http://images.generali.at/image/austriagrau.gif>]

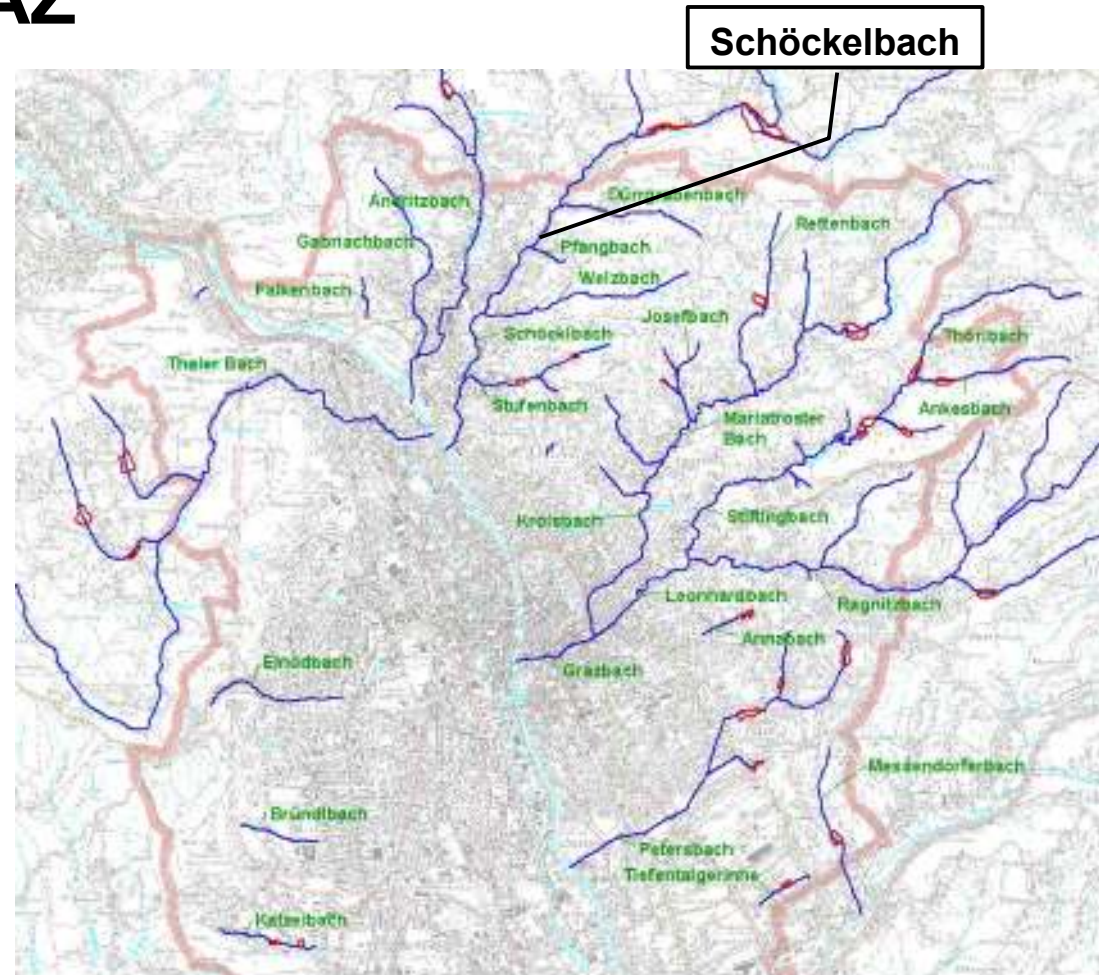


[Source: <http://www.bezirkshauptmannschaften.steiermark.at/app/g/stmk-bezirkskarte3a.gif>]

CASE STUDY GRAZ

Stream network: 270 km
in the urban area: 125 km

Catchment area: 140 km²
in the urban area : 70 km²



[Source: Freiland Umweltconsulting ,Sachprogramm Grazer Bäche Studie 2006 Freiraumplanung, Bericht Gewässerökologie', 2006]

FLOOD EVENT 18-07-2009 Schöckelbach Graz-Andritz



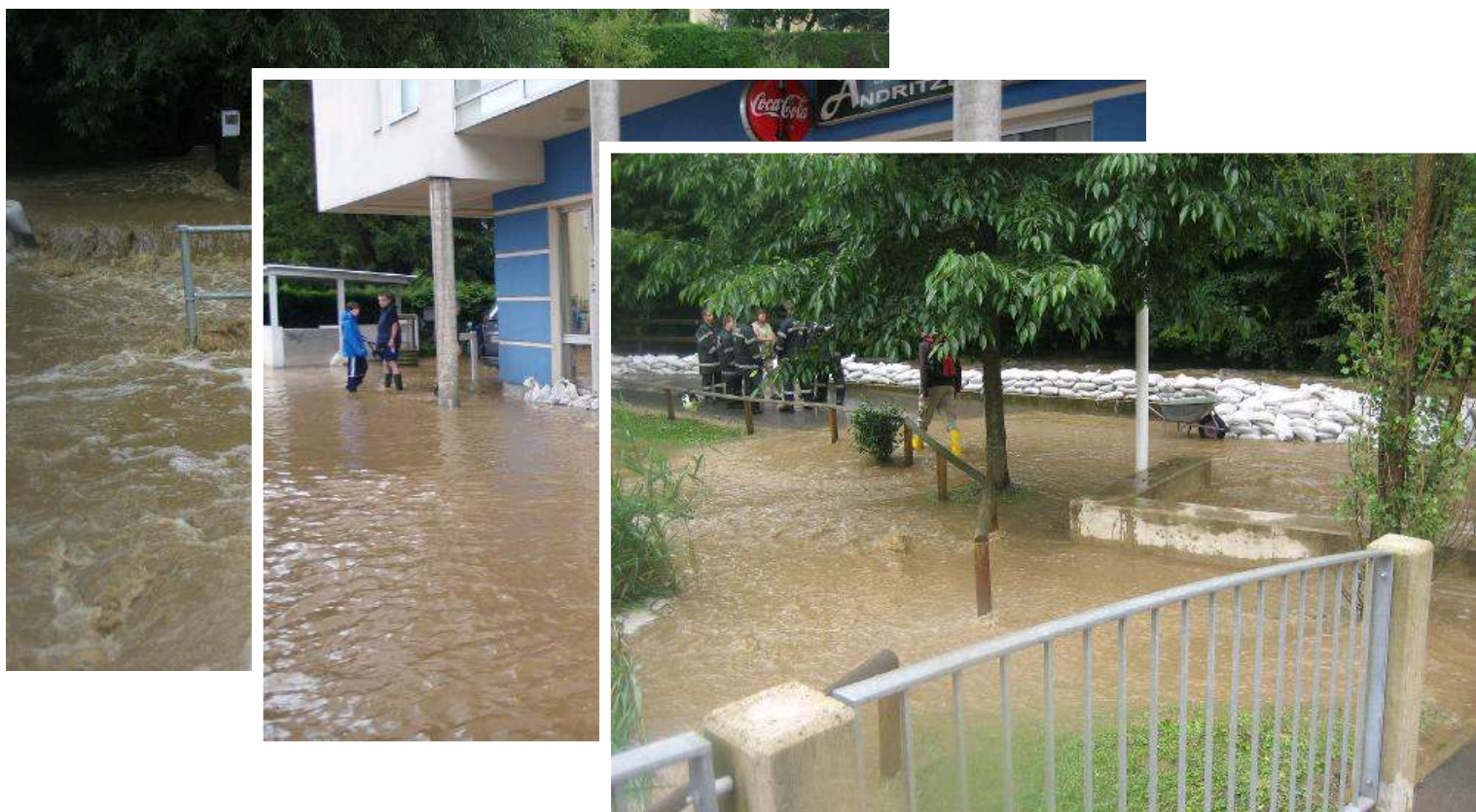
[Source: <http://gis.graz.at>]

FLOOD EVENT 18-07-2009 Schöckelbach Graz-Andritz



[Source: <http://gis.graz.at>]

FLOOD EVENT 18-07-2009 Schöckelbach Graz-Andritz



[Source: <http://gis.graz.at>]

FLOOD EVENT 18-07-2009 Schöckelbach Graz-Andritz



[Source: <http://gis.graz.at>]

Expected outputs

- Detailed knowledge about the causes of flood events
- Public opinion poll with statistical evaluation
- Best strategy of risk communication
- Checking the interaction between flood propagation and temporary measures
- Transfer of knowledge (information boards, publications, workshops)
- Improved action plan for the action forces

Homepage

<http://www.sufri.tugraz.at>



The screenshot shows the homepage of the SUFRI project. At the top, there is a navigation bar with a home icon and the text "Home welcome....". Below this, the main content area is titled "Project" and "PROJECT". The main text discusses the increasing frequency of flood events and the need for improved flood risk management strategies, particularly in urban areas. It mentions the implementation of the Floods Directive in 2007 and the challenges of structural flood protection in densely populated areas. The project aims for a risk-based management of disaster flood in flood-prone urban areas, especially in consideration of national differences. The project will lead to recommendations for good practice, including the analysis of national proceedings, infrastructure, rehabilitation efforts, and public risk perception. Case studies of vulnerable European cities (Dresden/Germany, Graz/Austria, Florence and Lodi/Italy, Valencia/Spain) will be undertaken.

On the left side, there is a "Main Menu" with links to Home, News, Project, Project Partner, Work Packages, Links, Downloads, Contact, Disclaimer, and Intranet. Below the menu is a "Latest News" section with links to Reports, Templates, News, Intranet, and Disclaimer.

On the right side, there is a "Who's Online" section and a "Random Image" section showing "No Images".