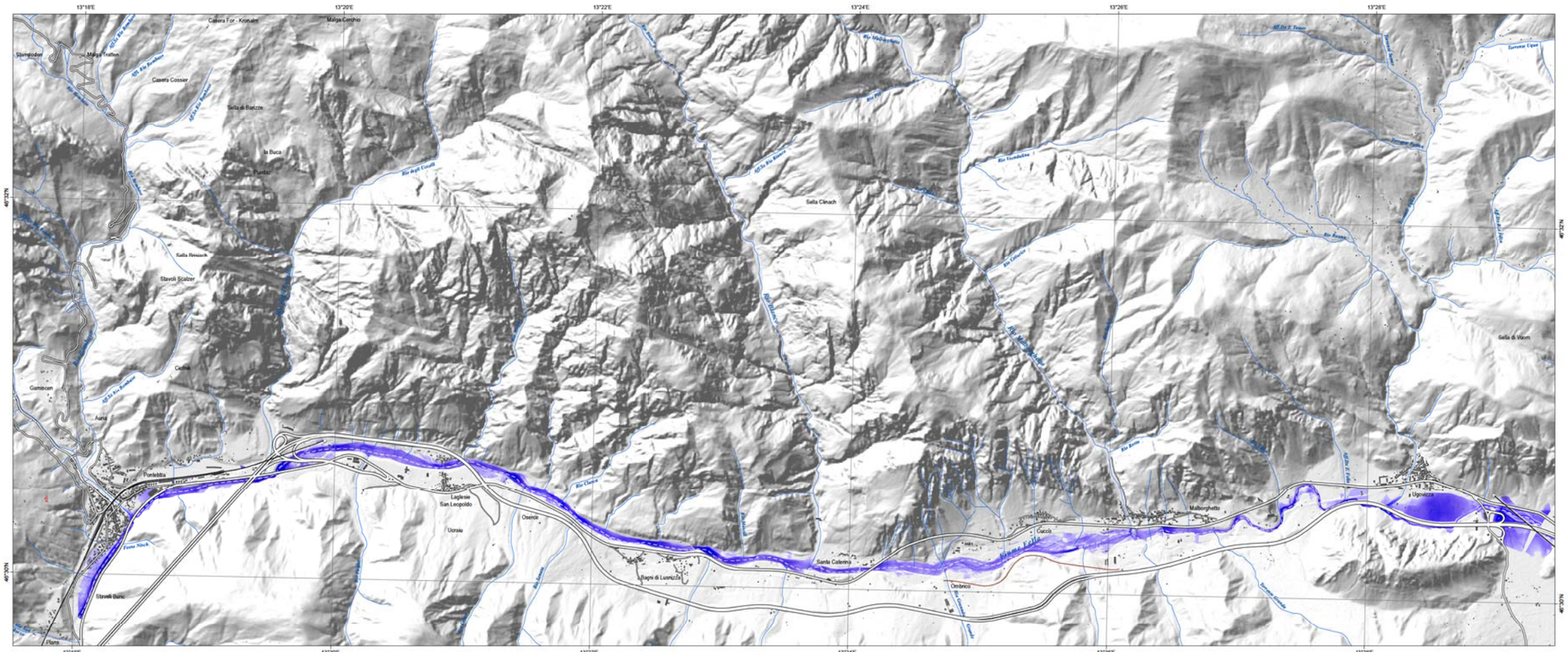
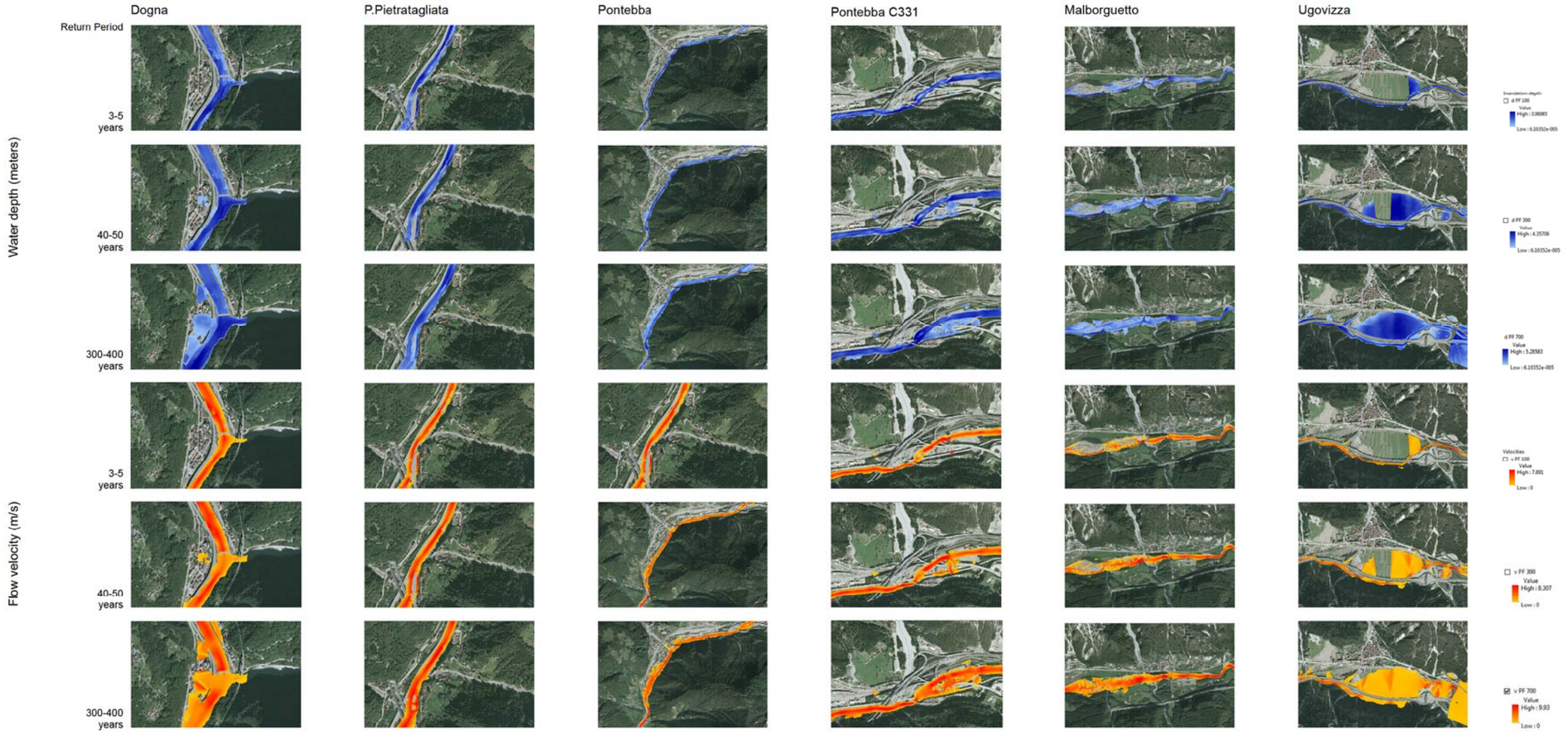
Flood depth (meters)



Water depth (meters)

Flow velocity (m/s)

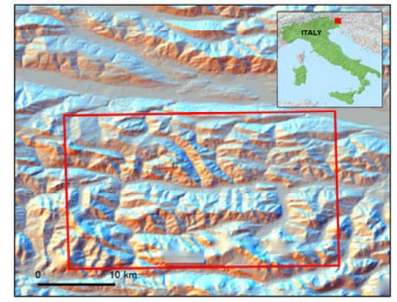


Flood hazard map

Based on hydrologic and hydraulic modelling

Fella River/ Italy

Overview map



Legend

Population
- Settlement

Hydrology
- River
- Stream

Water depth
- High (6 m)
- Moderate
- Low (0)

Infrastructure / Transport
- Motorway
- Primary road
- Secondary road
- Residential road
- Railway
- Railway tunnel

Elevation
- Normal Contourline
- Index Contourline

Contour interval 20 meter

Interpretation

Flood mapping methodology

The procedure was divided in two main tasks:
1- a hydrological study of the area and
2-a hydraulic modeling of the floods for different possible discharges.
In both cases the analyses were concentrated on the Fella subcatchment with outlet at the hydrometric station C400 – Dogna (340 Km2).
For the hydrological study, a rainfall characterization was implemented using the long-term historical series of the stations at Pontebba and Marborgetto. A Rainfall-Runoff model was not possible to implement due to the poor records of discharges available in the main stream and the tributaries. A frequency analysis of discharges could only be performed at the catchment outlet (C400 station) given the available 3-years of hourly discharges (2006-2008) provided by the Regione FVG.
An attempt to implement the HVB model was made but resulted in poor calibration due to short data series of discharges. In order to determine the return period of modeling discharges, the storms ecorded at the Dogna catchment that resulted in quick flow at the main channel were correlated with the peak discharges during the 3-year data on hourly bases. The lack of available rating curves or direct measurements of discharges introduced high uncertainty
to the frequency analysis of the floods and therefore the results should be considered with caution.
he hydraulic modeling for flood mapping was performed using HecRAS 4.1 and its GIS-assisted version GeoHecRAS (ArcGIS 10.1). The batimetry of the river and correspondent topography of the flood plain was obtained from Lidar data at 1m resolution.
Model outputs include flood boundaries, inundation depths, and velocity and stream power maps for discharges ranging from 100 to 700 m3/sec (at Pontebba, C331).

Cartographic Information

Geographic Coordinate System: GCS_WGS_1984
Datum: D_WGS_1984

Scale 1:25,000

0 0.5 1 2 3

Kilometers

Data Sources

Historical series of rainfall data from stations C304 – Malborgetto and C333 Pontebba, Meteorological recrds from C301, C304, C361 and C362.
Land Cover map (2000, Corine system), Fella/Tagliamento river basin map with sub catchments from Hydrate Project, Lidar data at 1m resolution,
Rating curves and discharge records at C400 (Alberto Deana Regione FVG).
Reports, pictures, ortophotos and videos provided by FVG.
Data collection was coordinated by Simone Frigerio and Alessandro Pasuto (CNR-IRPI)

Framework

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Work package partners:

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General supervision by Cees van Westen (UT-ITC)
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