

Relative impacts of climate and landuse changes on future flood damage along River Meuse in Wallonia

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1. Modelling the present day and future (2100) 100-year flood

IPCC wet climate scenario

Regional climate model

Future precipitations

Hydrological model

Present day and 2100 discharges (+30%)

Hydraulic model

Flooded area + water depths

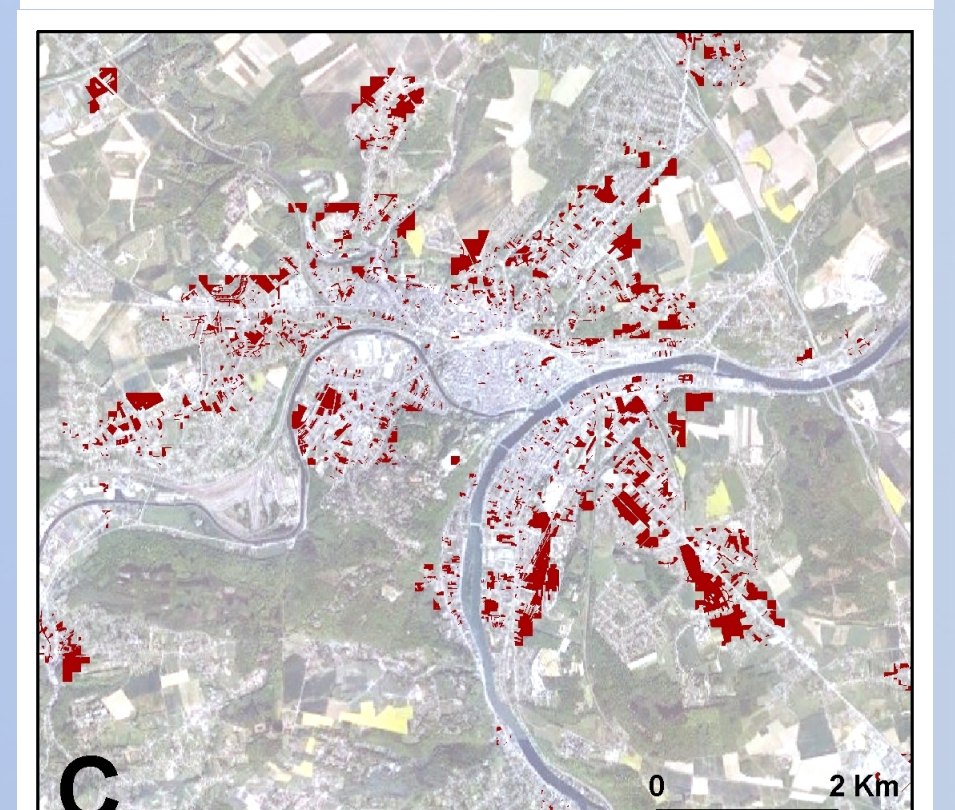
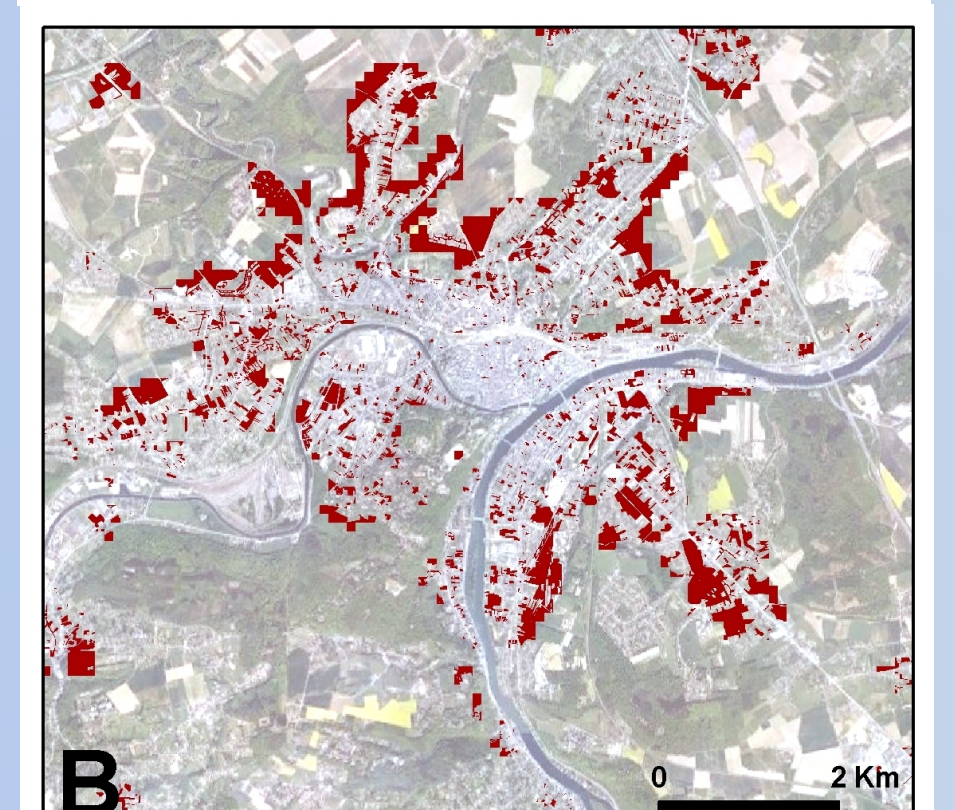
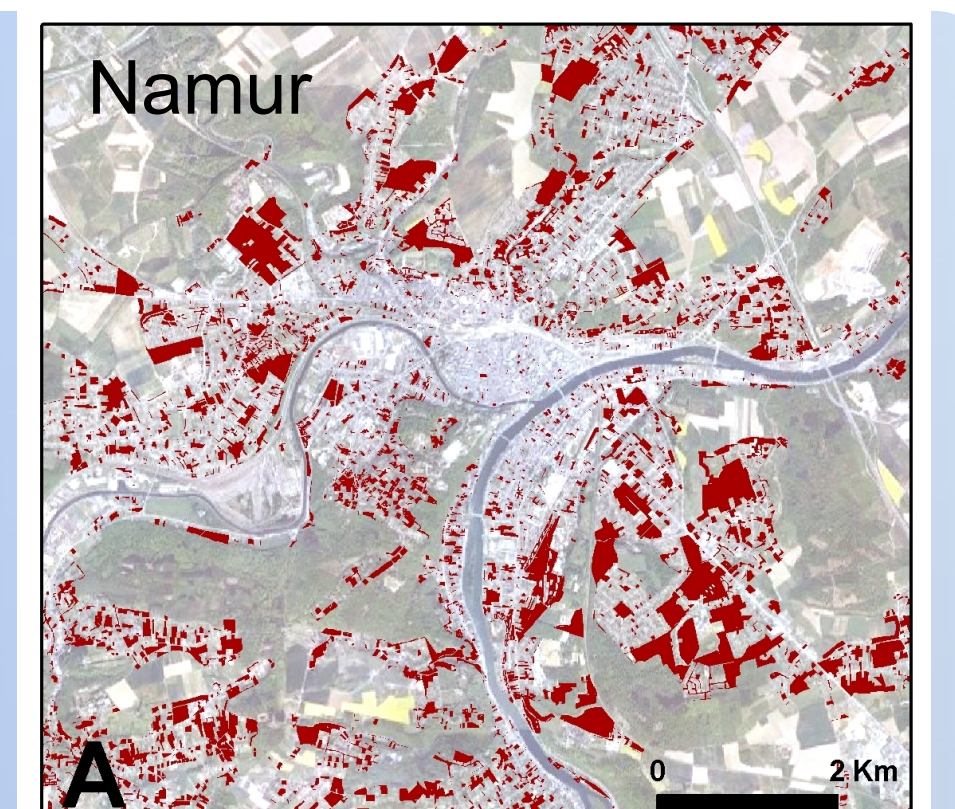
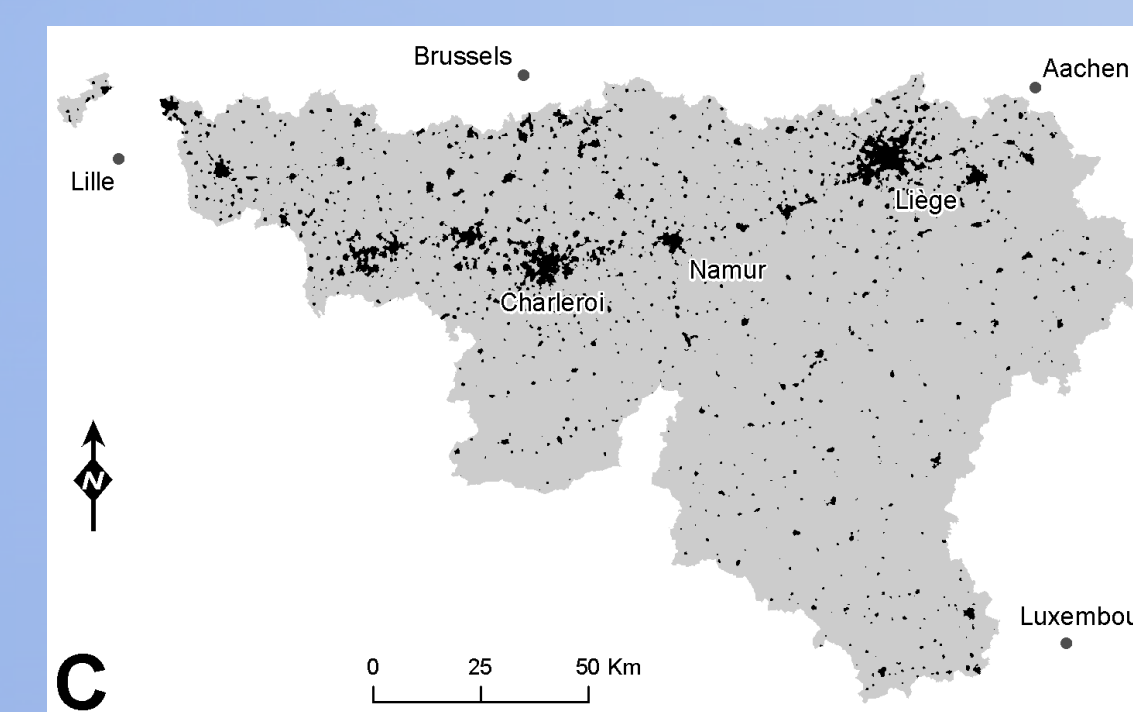
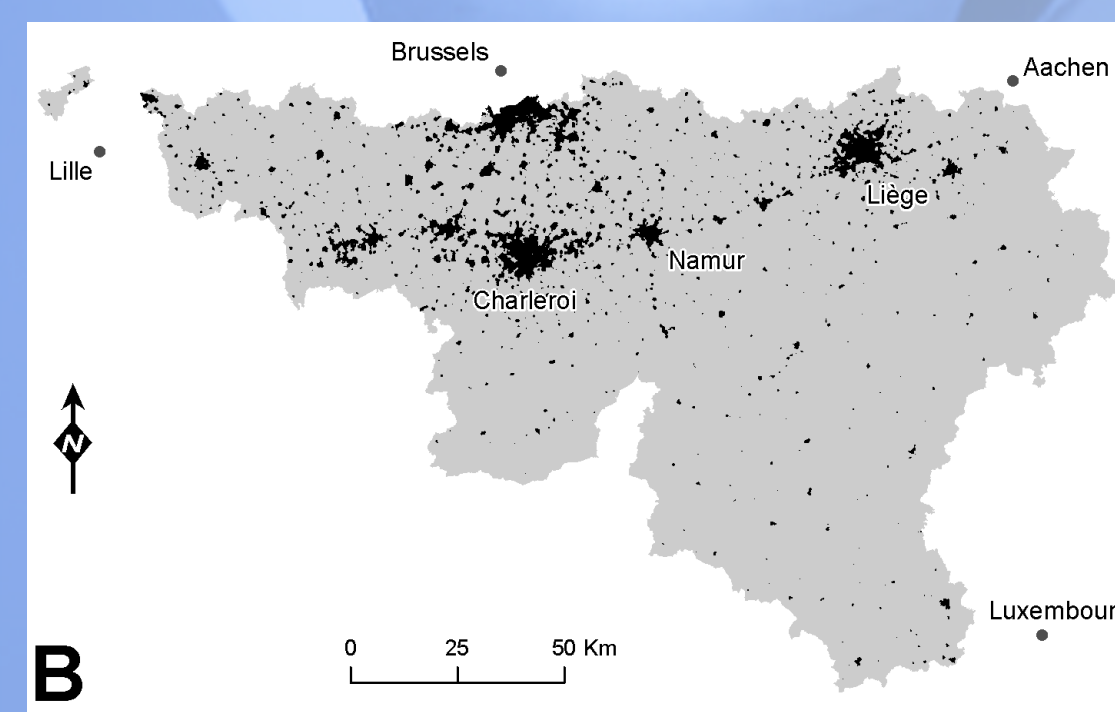
2. Modelling the evolution of residential areas by 2100

3 urbanization scenarios families

(A) **Current trend** : full urbanization of the residential areas available according to the wallonian land-use allocation plan

(B) **Sustainable planning, regional development** : concentration of residential areas in cores (criteria of density, urban function diversity and proximity to employment)

(C) **Sustainable planning, local development** : concentration of residential areas in cores, non consideration of the proximity of employment

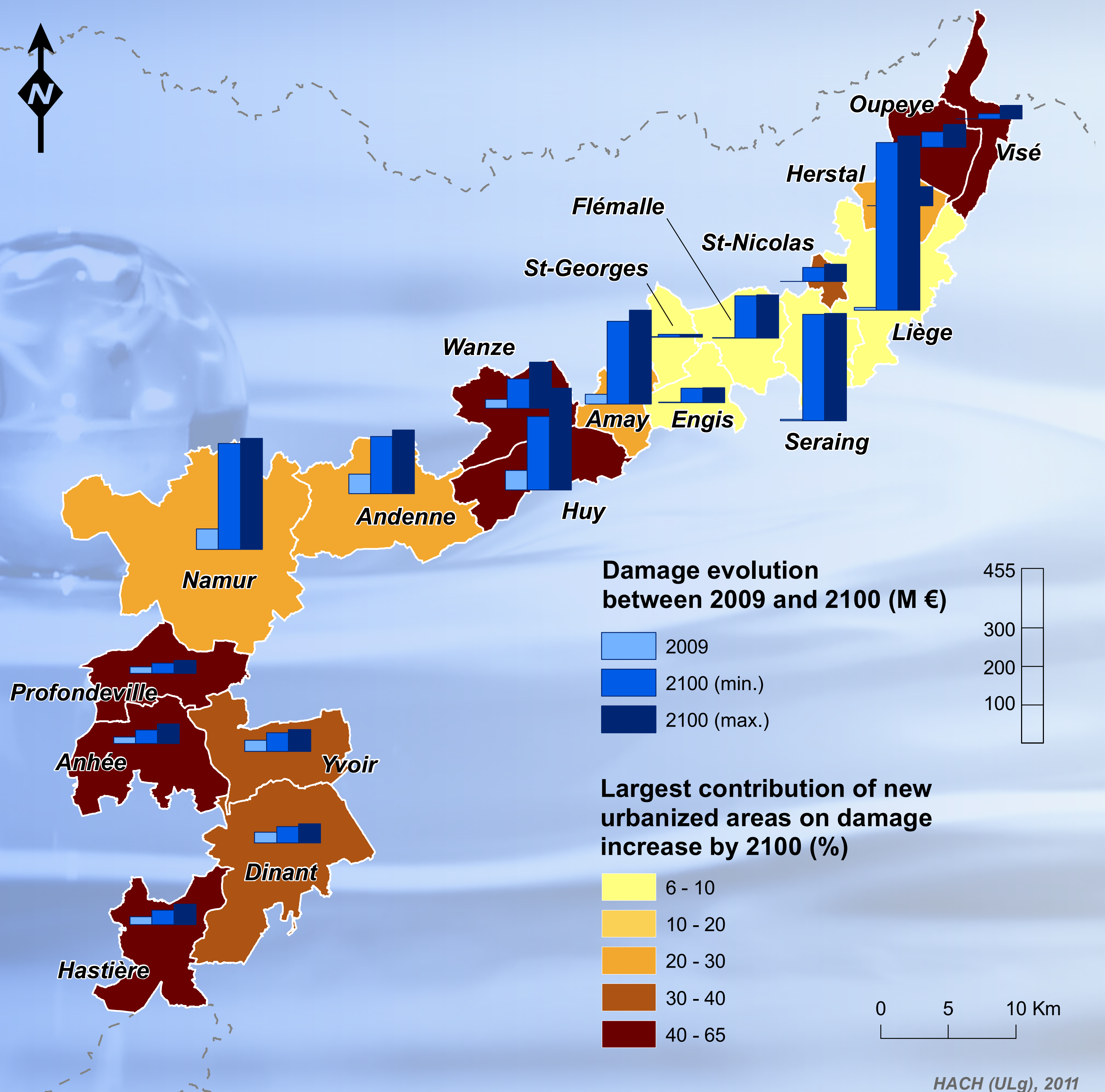
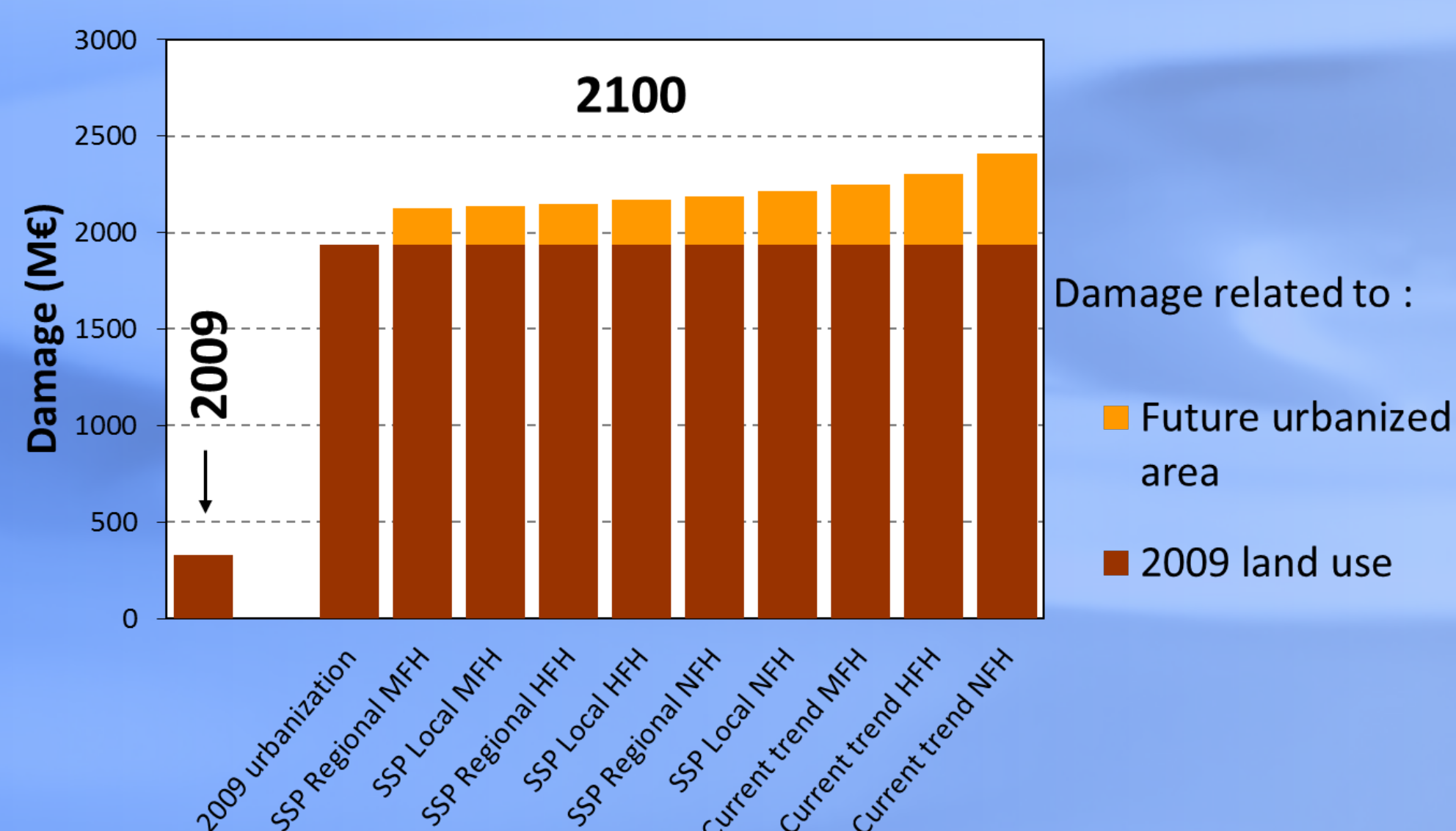


3. Damage evolution between 2009 and 2100 for a 100-year flood

Multiplication of flood damage by 6 to 7 between 2009 and 2100, whatever the urbanization scenario

-> Globally, low influence of urbanization (11 to 19 %) but impact locally greater than 40% in some municipalities (see map)

-> Inadequacy of the present day restrictions (flood hazard map) in view of the increase of flooded areas by 2100



- Multiplication of damage by 6 to 7
 - Mainly because of climate change
 - Low influence of urbanization, except locally

HACH (ULg), 2011