

The Meuse – a European river

an introduction to hydrology, models, water usage and
international collaboration

Bernhard Becker

Deltares • RWTH Aachen University

Jeanne d'Arc (1412-1431)



House of Birth in Domrémy-la-Pucelle



Domrémy-la-Pucelle

World War I and II



Saint-Mihil (1914-1916)



Pagny-sur-Meuse, Bridge (1940)

Maastricht Treaty

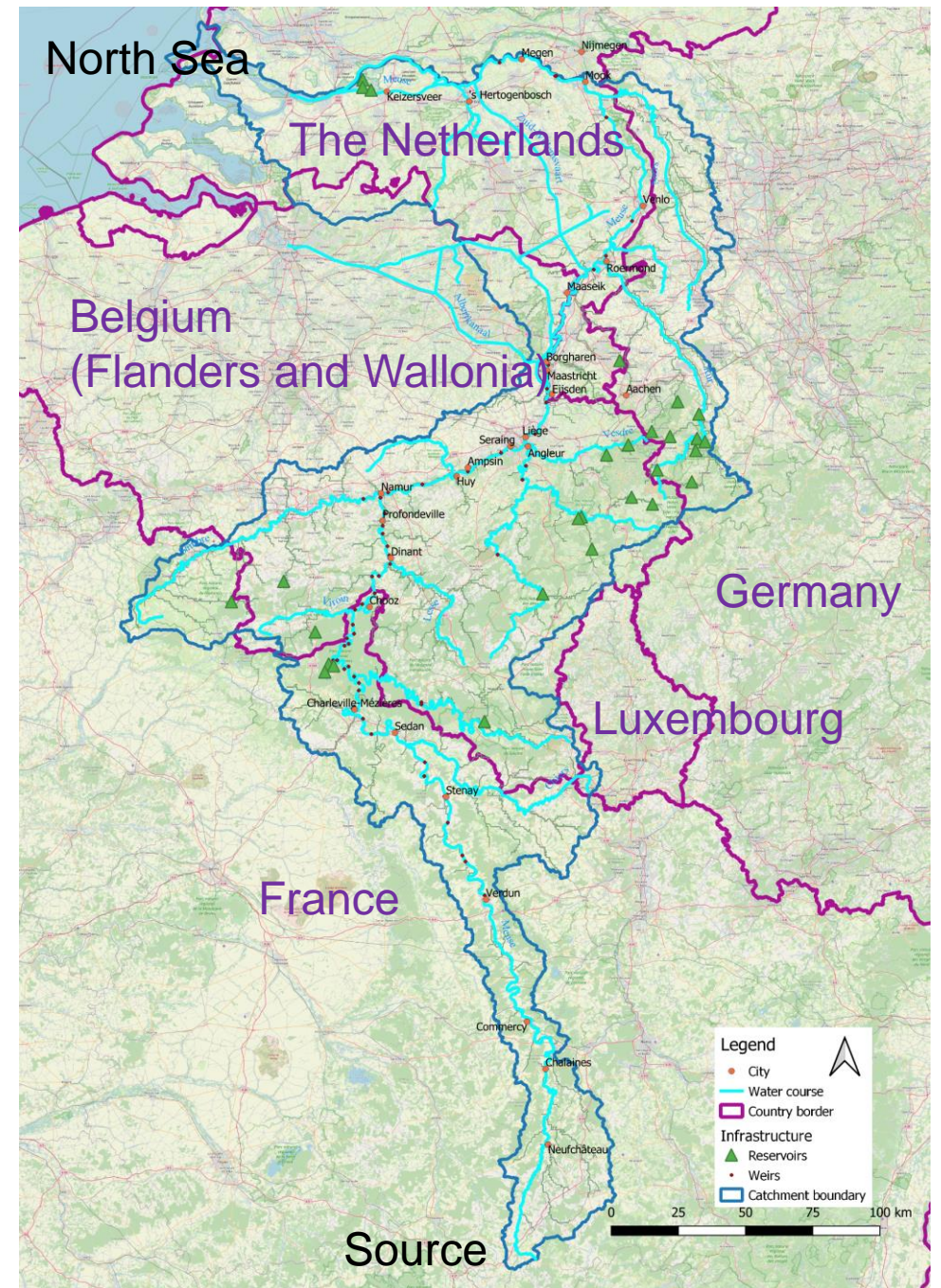
- Foundation treaty of the European Union (EU)
- Concluded in 1992 between 12 member states of the European Communities
- The Maastricht criteria
- One currency in all riparian countries of the Meuse since 2002



Facts about the Meuse

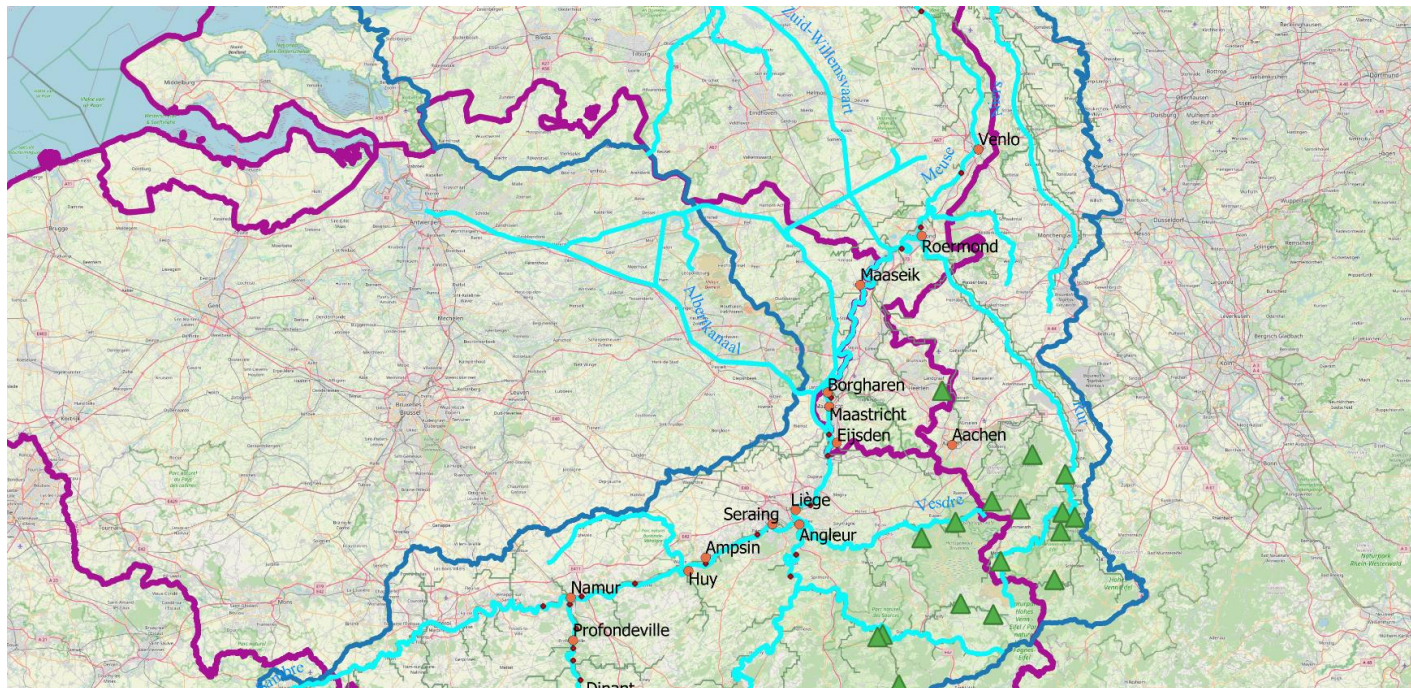
Property	
Length	900 km
Catchment area	35 000 km ²
Inhabitants	9 Mio
Average discharge at mouth	350 m ³ /s
Lowest observed discharge at Liège	20 m ³ /s
Highest observed discharge at Liège	3000 m ³ /s

Source: Marcel de Wit (2008): Van Regen tot Maas. Diemen: Veen Magazines

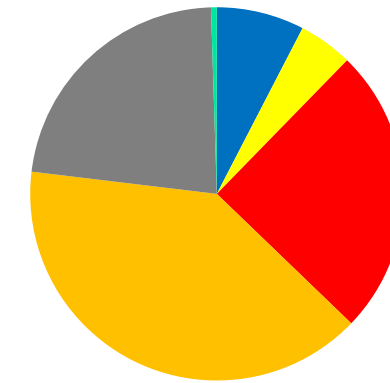


Meuse catchment: area and inhabitants

- Most people: Netherlands and Wallonia
- Largest area: Wallonia and France
- Albert Canal connects people from outside the catchment to the Meuse

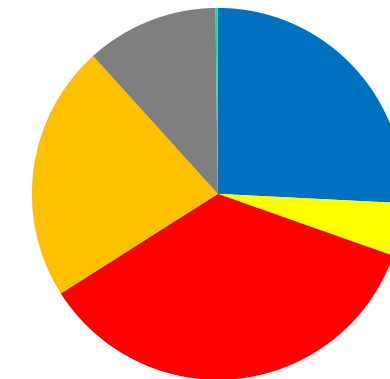


Distribution of inhabitants by country



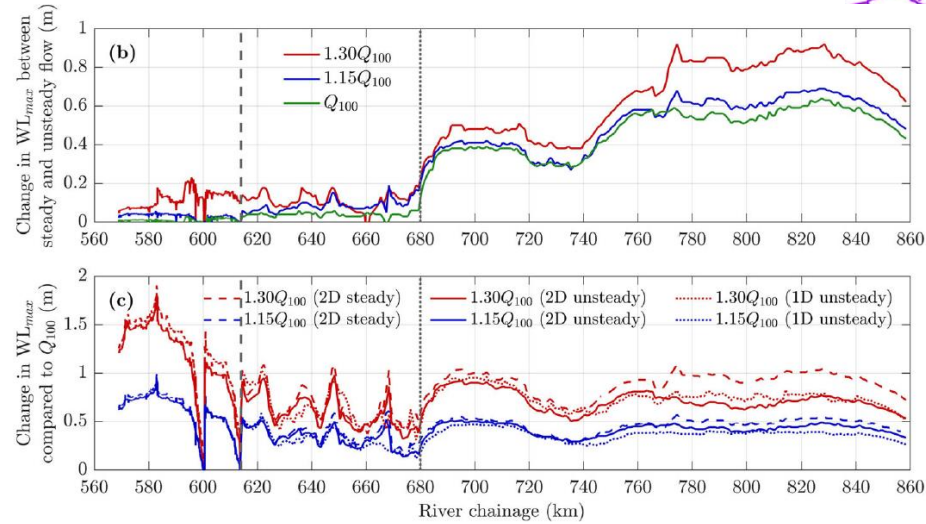
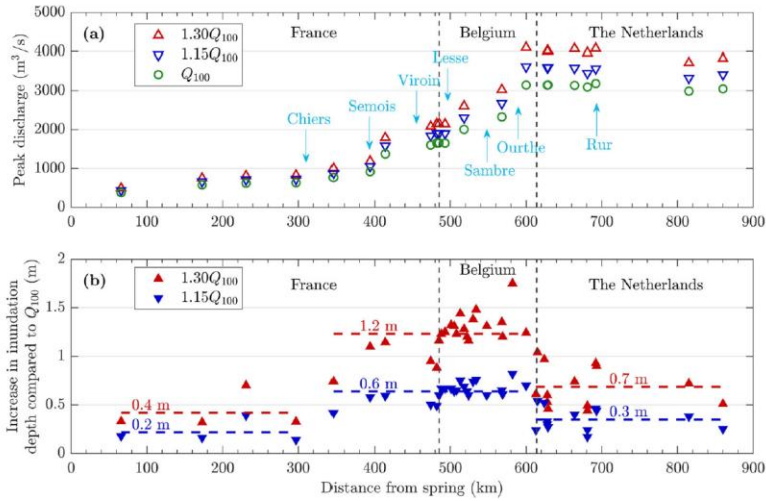
■ France ■ Flanders ■ Wallonia ■ Netherlands ■ Germany ■ Luxembourg

Distribution of the catchment area by country



■ France ■ Flanders ■ Wallonia ■ Netherlands ■ Germany ■ Luxembourg

Hydraulic models



Kitsikoudis, Becker, Huismans, Archambeau, Erpicum, Piroton, Dewals, WRM, 2021

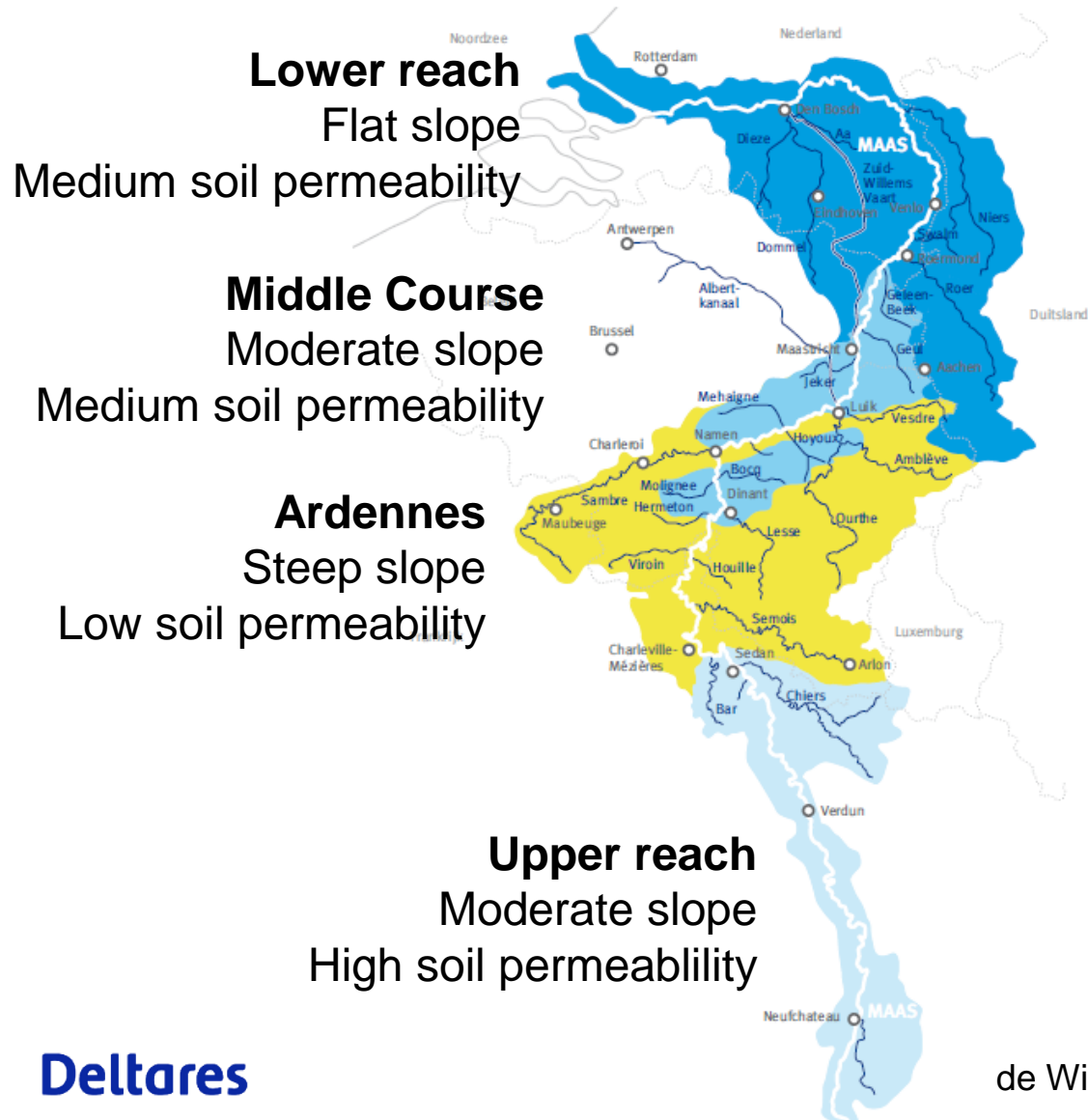
The first coordinated integrated hydraulic model run of the whole Meuse was carried out within the AMICE project

http://www.amice-project.eu/docs/pa1_pr4_1360524548_Technical_report_WP1_Action_6.pdf

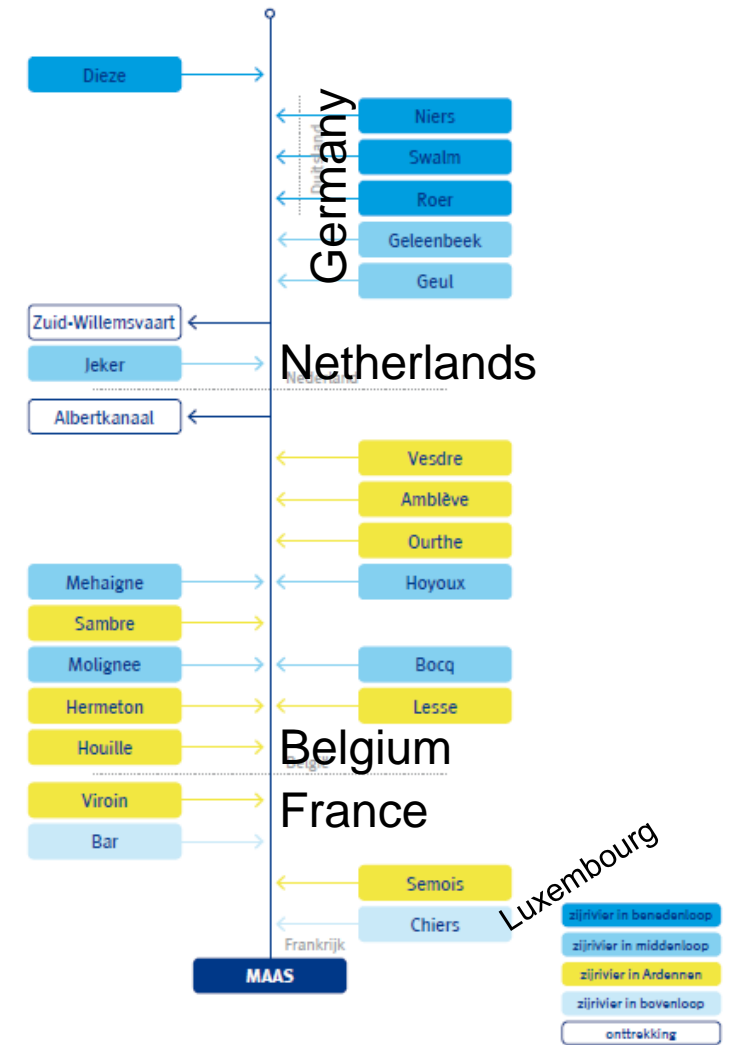


Impressions from the Meuse, its tributaries and the catchment

Geology and hydrology



Tributaries



Cuesta landscape, France



Trossey, France



Near Domrémy-la-Pucelle, France

Inter-basin transfers: Canal de la Marne au Rhin and Canal de la Meuse



Canal de la Marne au Rhin crosses the Meuse at Troussey (France)



Entry to the Canal de la Meuse, Troussey (France)

Chalk aquifer



Chalk mine, Fours à Chaux, Sorcy, France



Chalk mine, Fours à Chaux, Sorcy, France

“Wadi”



Near Troussey, France, May 2023



Near Troussey, France, May 2023

Meuse near Sedan



Weir



Bank erosion, floodplain

Meuse at Dinant (Belgium)



Photo: Anke Becker

Lac de Robertville (Warche)



The dam (under revision)



The spillway

The Ardennes mountains



Source of a creek tributary to the Amblève



Dry creek running off over rock with thin soil coverage

Coo (Amblève): pumped storage and waterfall



Lower basin of pumped storage plant



Cascade de Coo

La Haute Fagne / Hohes Venn (Belgium, Germany)



Flat swamp landscape, Roer sub-catchment



Moor

Geule



Near Kelmis (Belgium)



Terbruggen (Belgium)

Écluses de Lanaye, Sluis Ternaaien



4th lock chamber



Pump station

Meuse at Keizersveer



Road bridge



Cargo ship

Drinking water reservoirs in the Netherlands



Constructed 1970
(picture source: google maps)

Thank you for your attention!

