Nutrient emissions in the NEMUNAS Catchment with MONERIS

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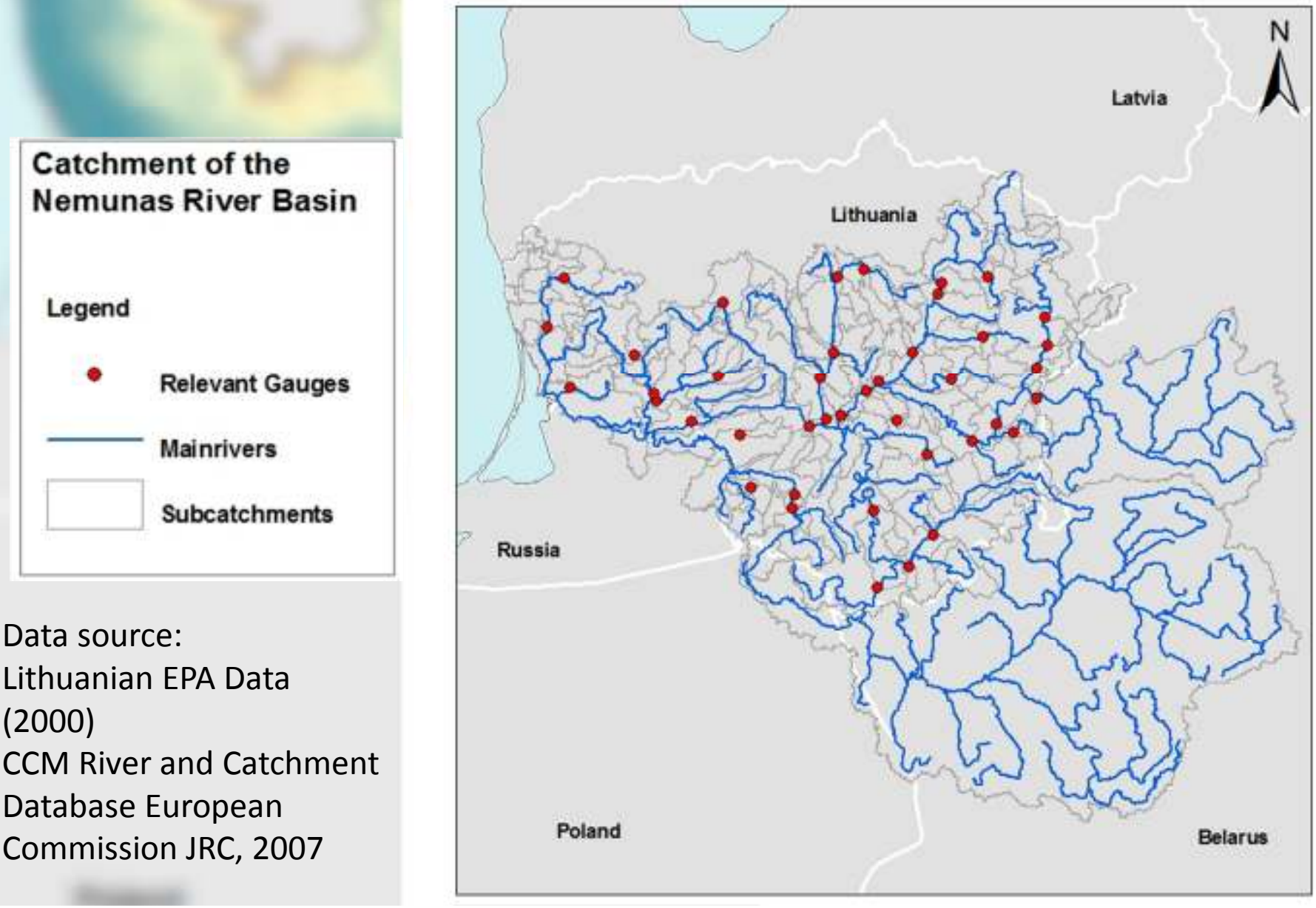
Introduction

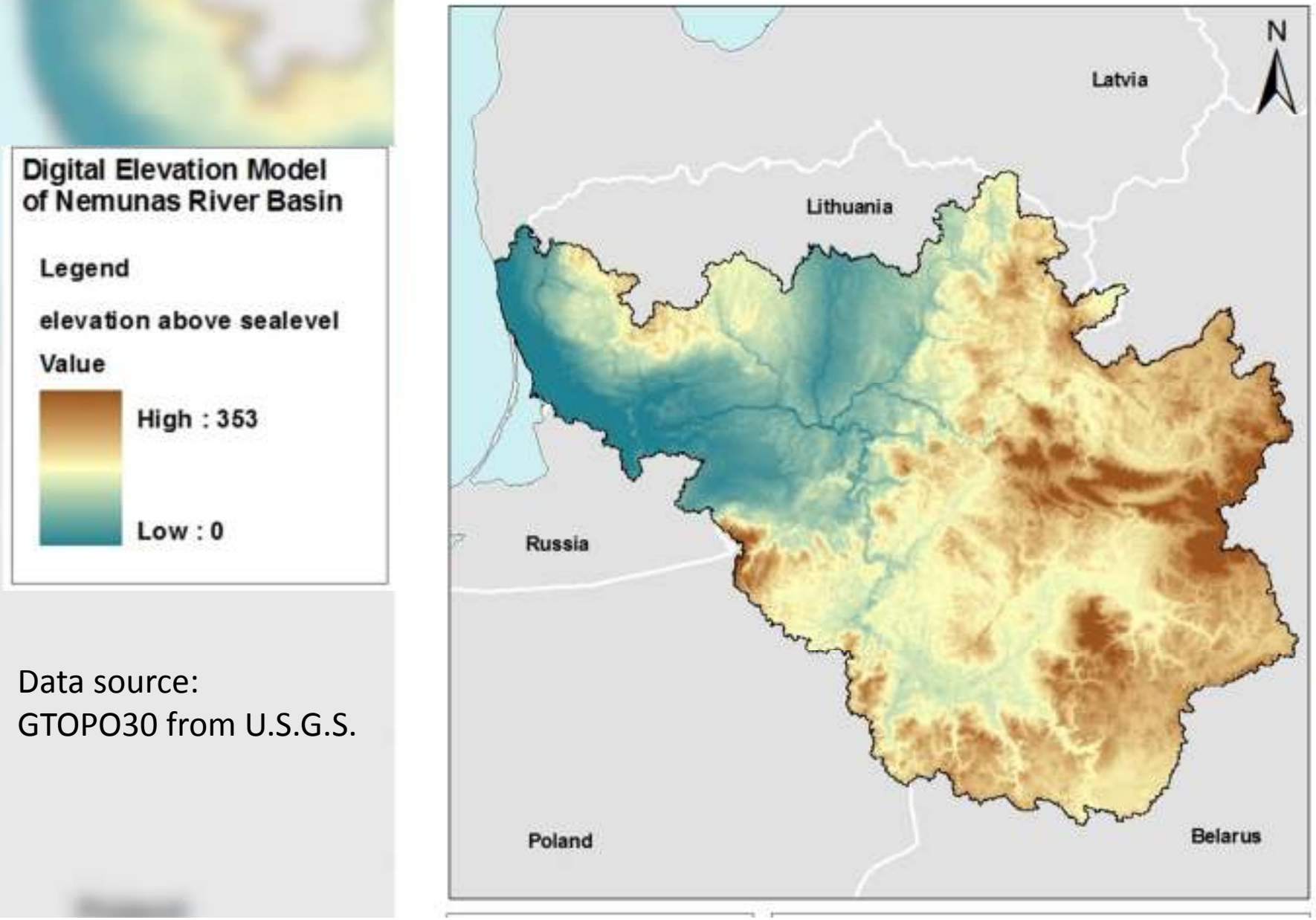
- Emissions and loads modelled for the years 2001 – 2004 and for mean hydrological conditions
- All input data provided by project partner have been used. Missinf data have been derived from general European wide available data
- Only monitoring stations with at least 12 measurements per year have been used
- For Belarus not all needed input data could be collected. Loads from nearest monitoring station in Lithuania were used for loads from Belarus.

Analytical units and monitoring stations



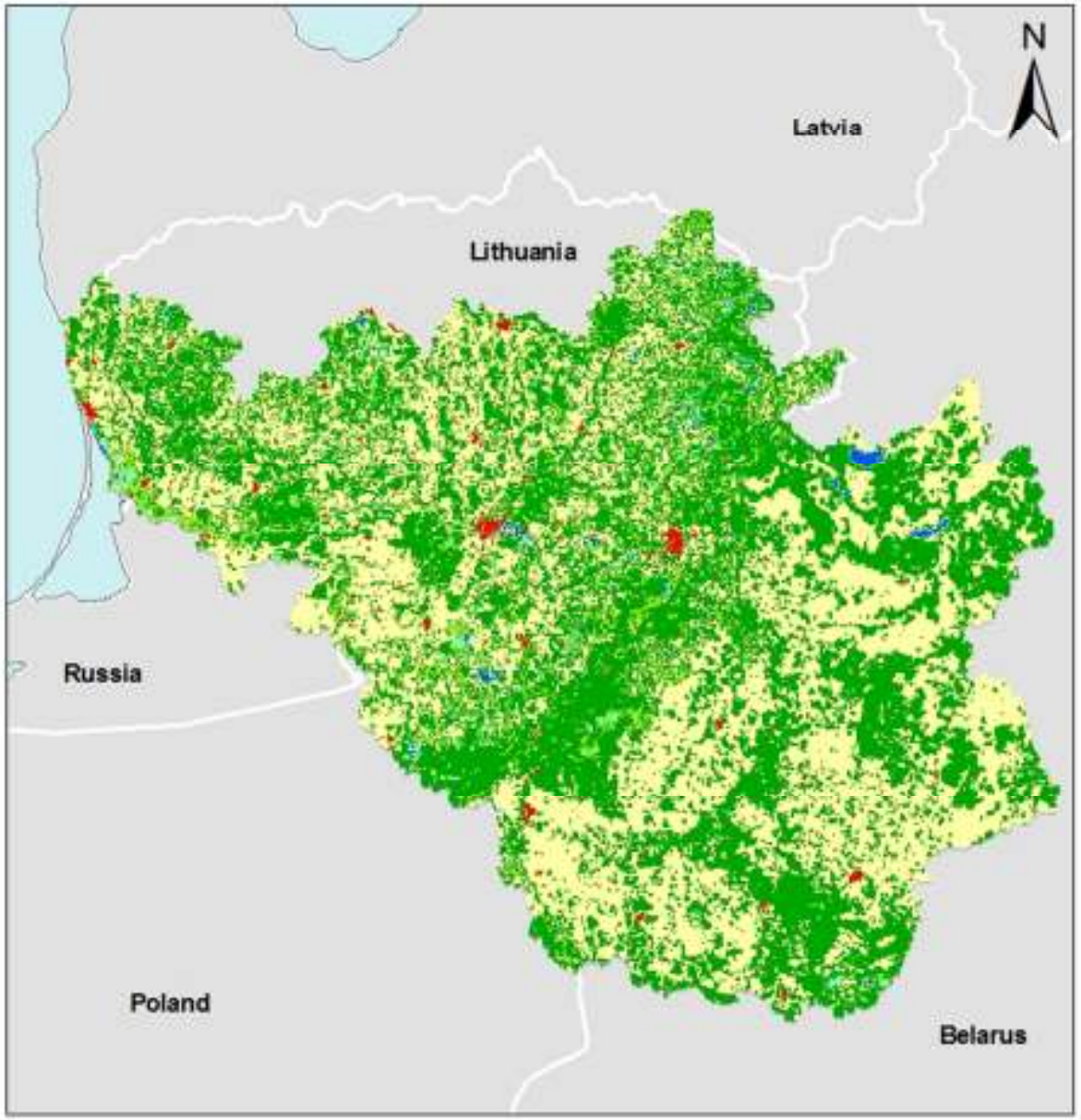
Data source:
Lithuanian EPA Data (2000)
CCM River and Catchment Database European Commission JRC, 2007

Digital elevation model



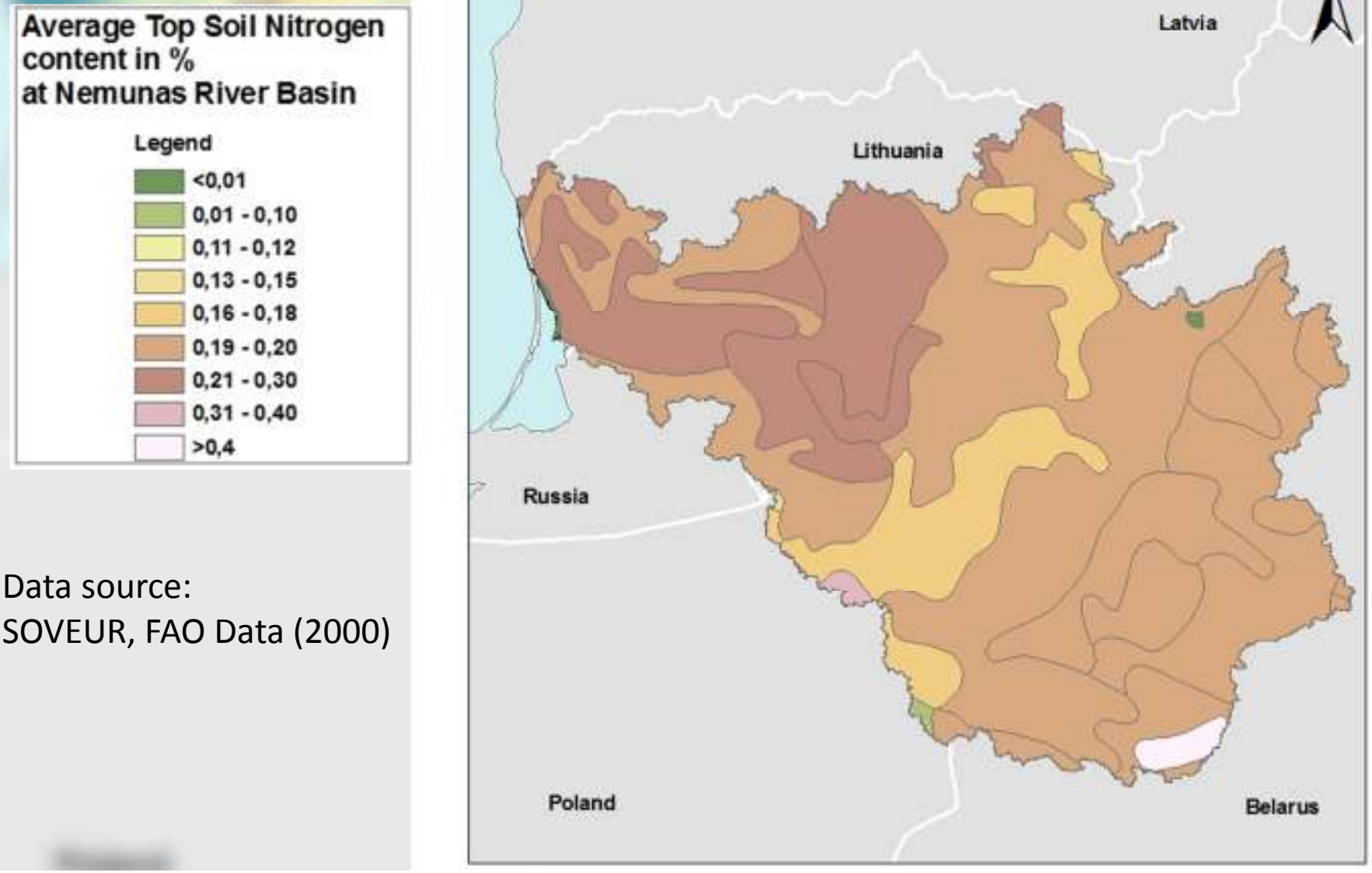
Data source:
GTOPO30 from U.S.G.S.

Landuse



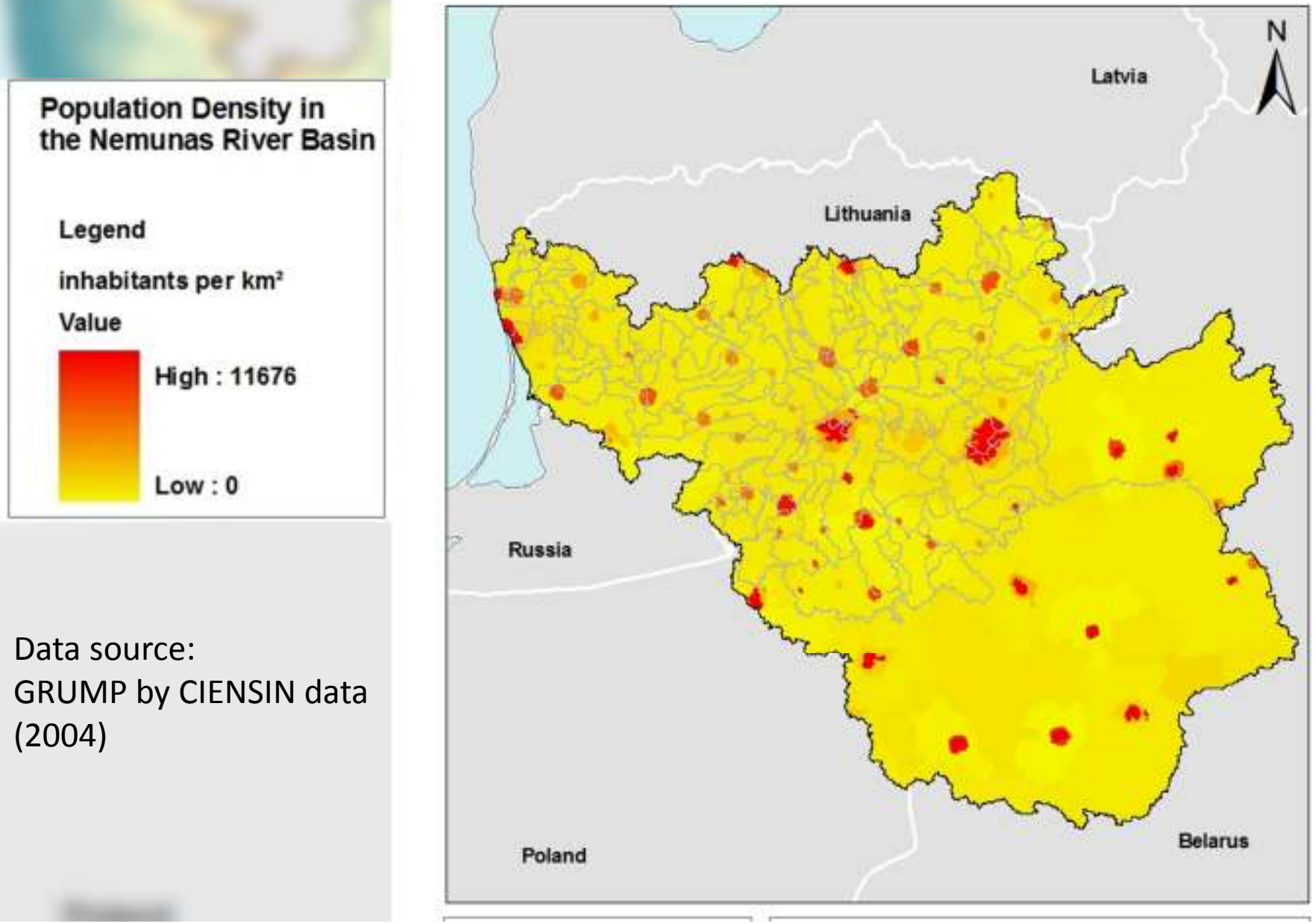
Data source:
Composition of CLC 2000 and GLC by Baltic Nest Institute

Nitrogen content in top soils



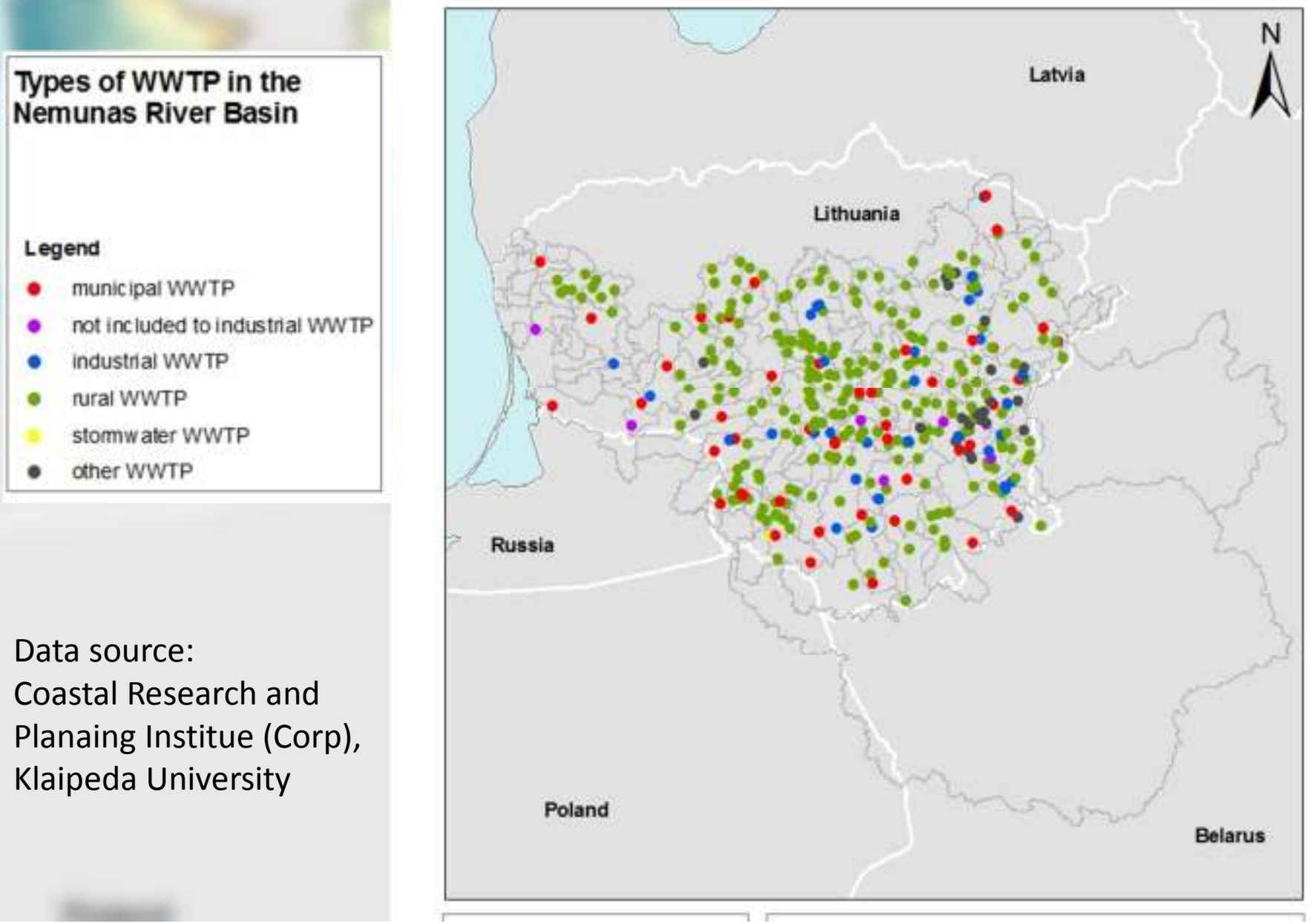
Data source:
SOVEUR, FAO Data (2000)

Population density



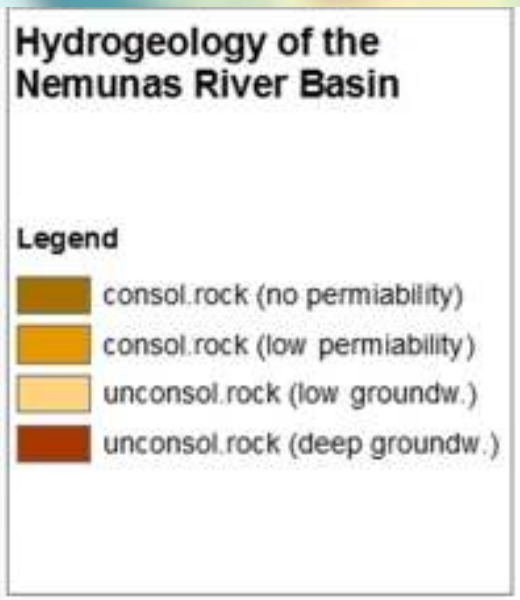
Data source:
GRUMP by CIENSIN data (2004)

Waste water treatment plants

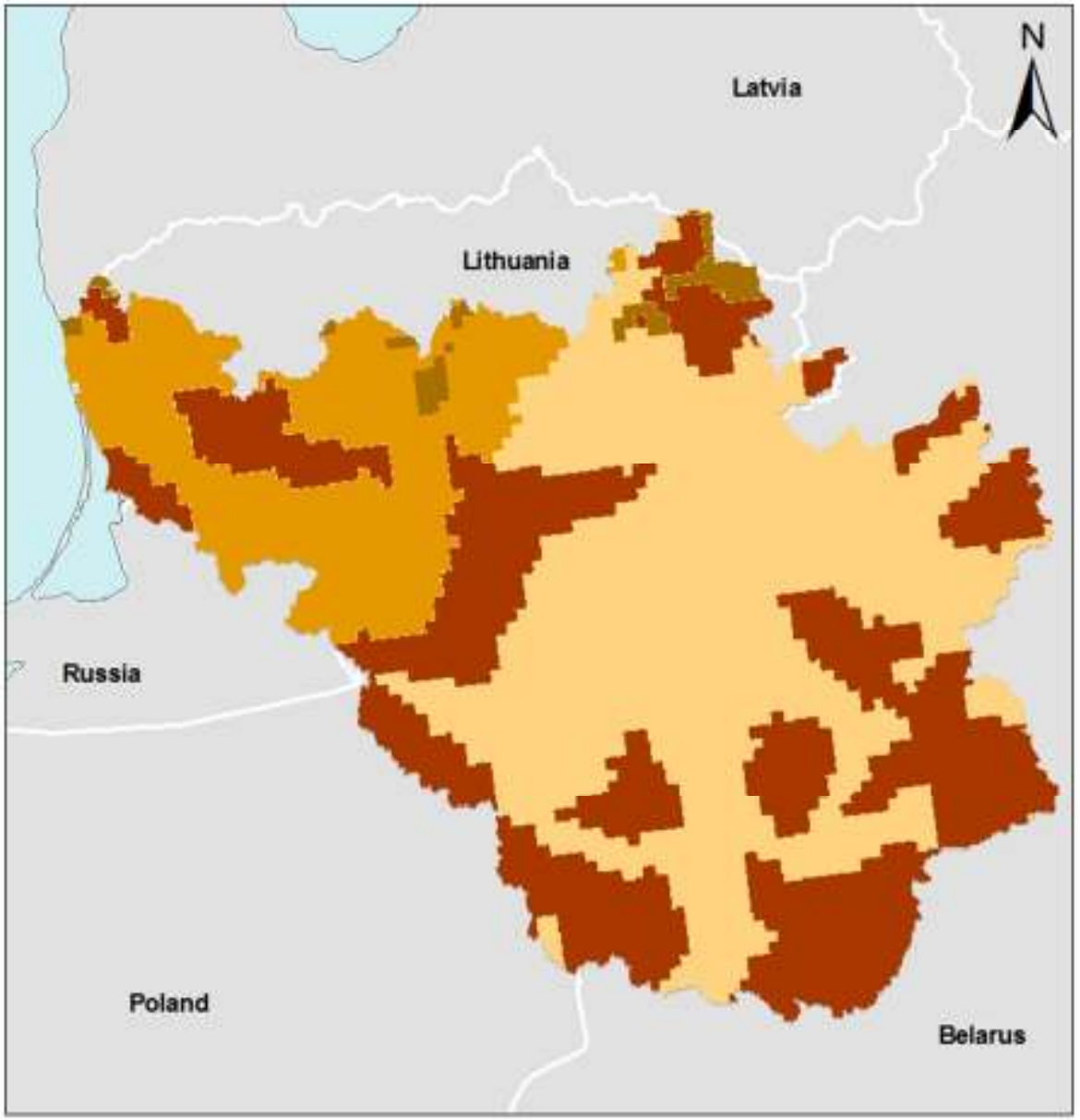


Data source:
Coastal Research and Planaing Institue (Corp), Klaipeda University

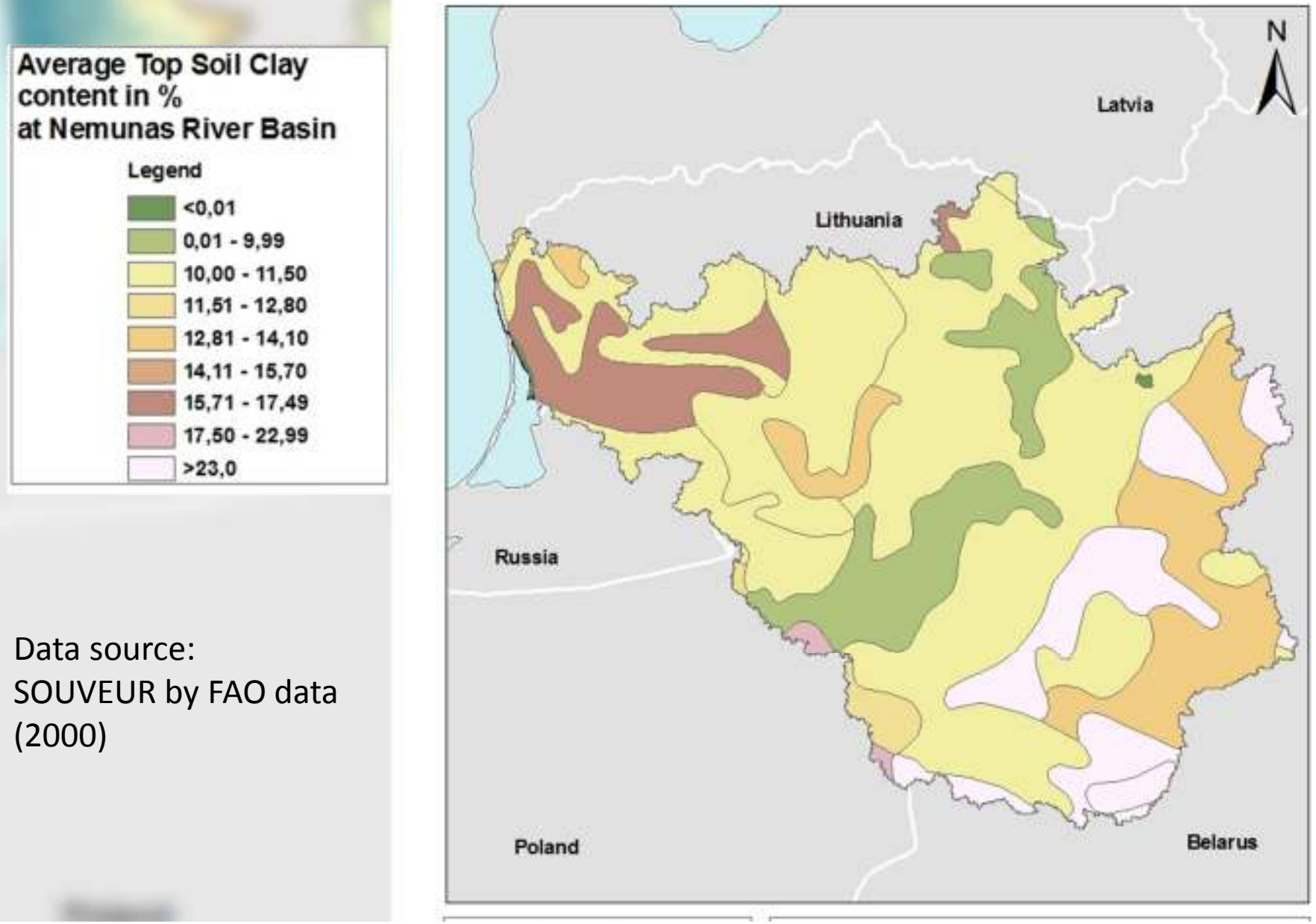
Hydro-geology



Data source:
RIVM

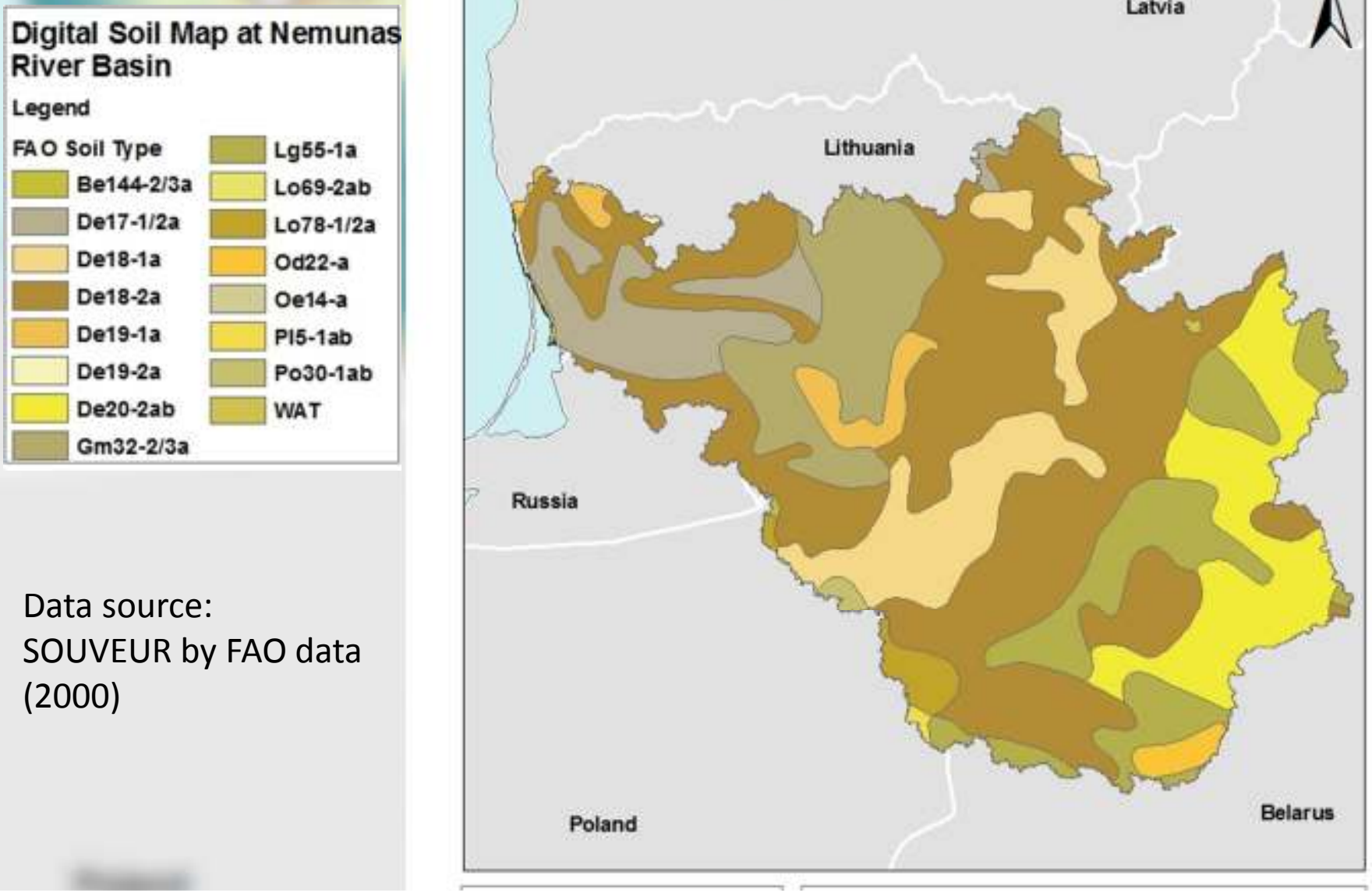


Clay content in topsoils



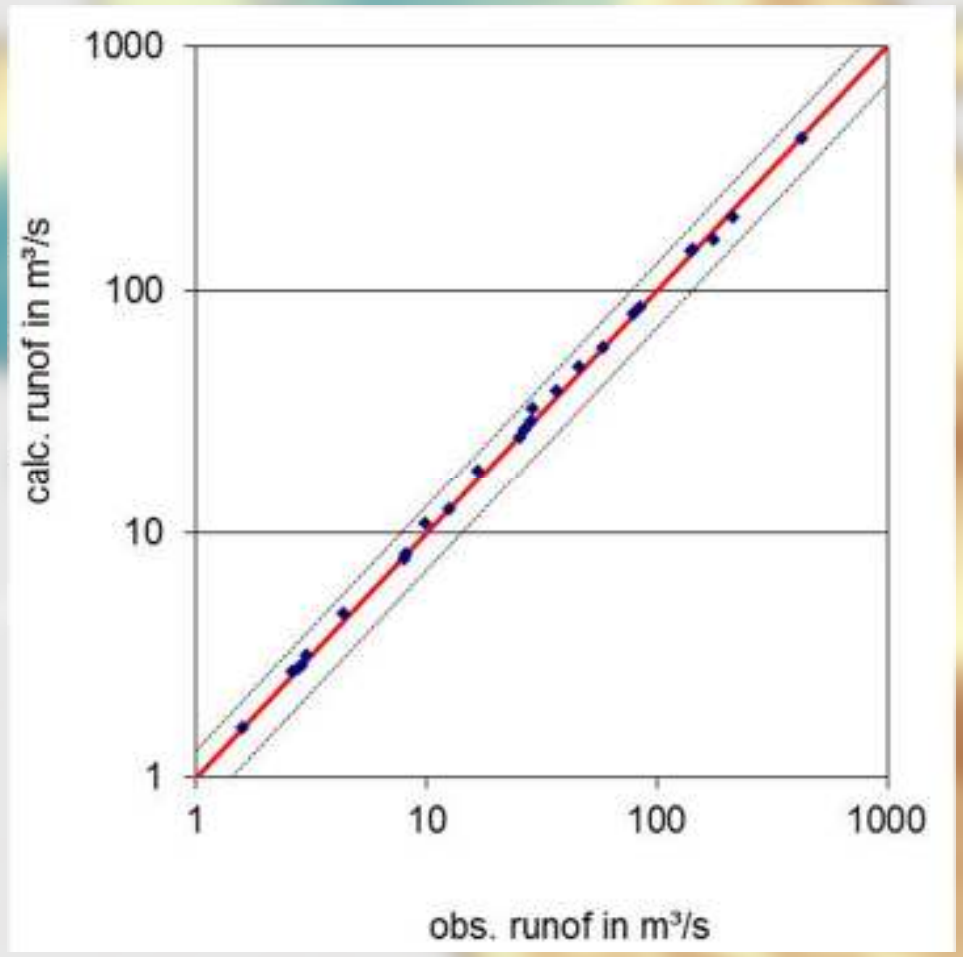
Data source:
SOUVEUR by FAO data (2000)

Soil map

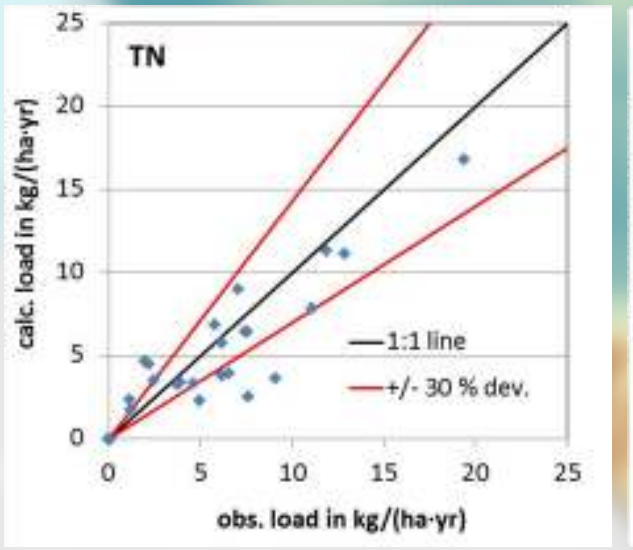


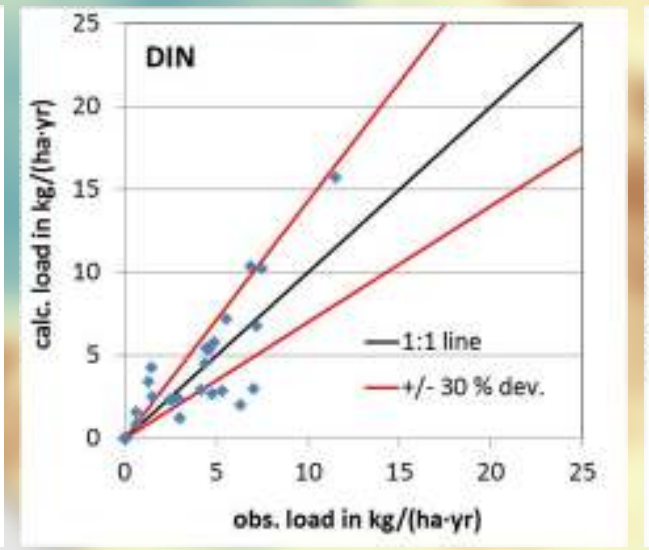
Data source:
SOUVEUR by FAO data (2000)

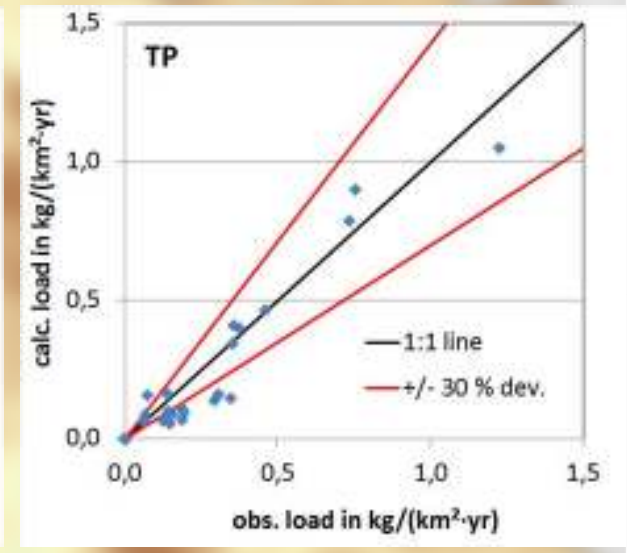
Observed vs. calculated load



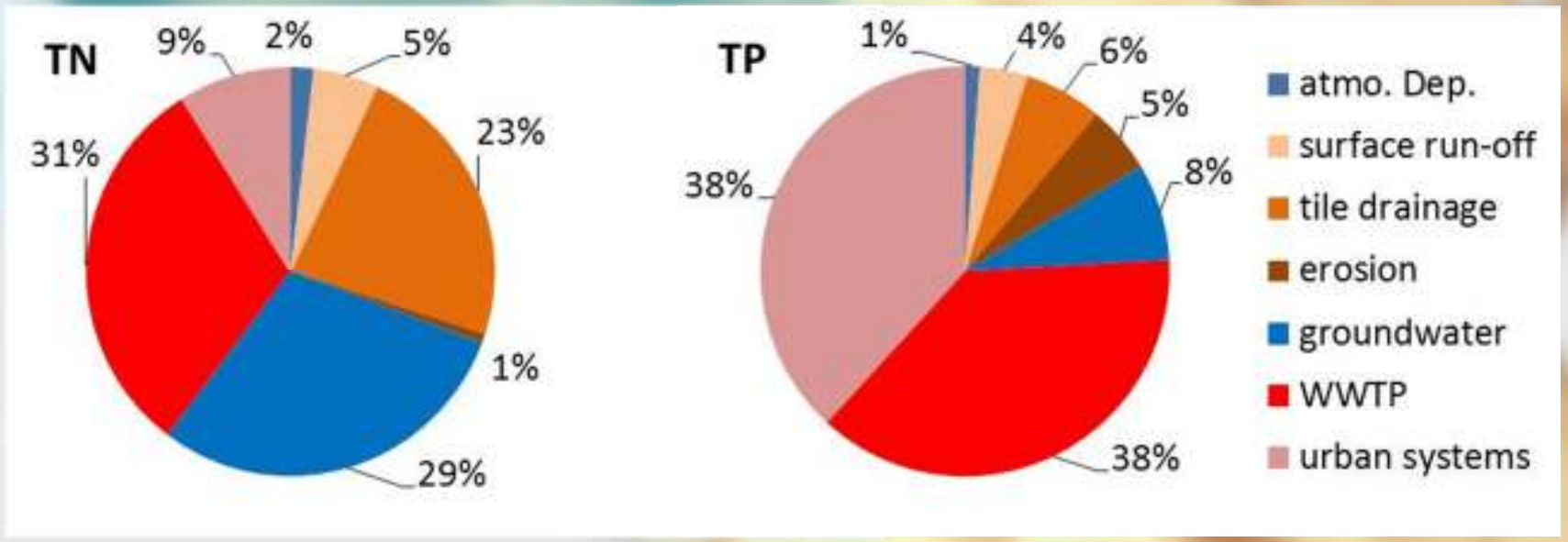
Load comparisson mean 2001 - 2004



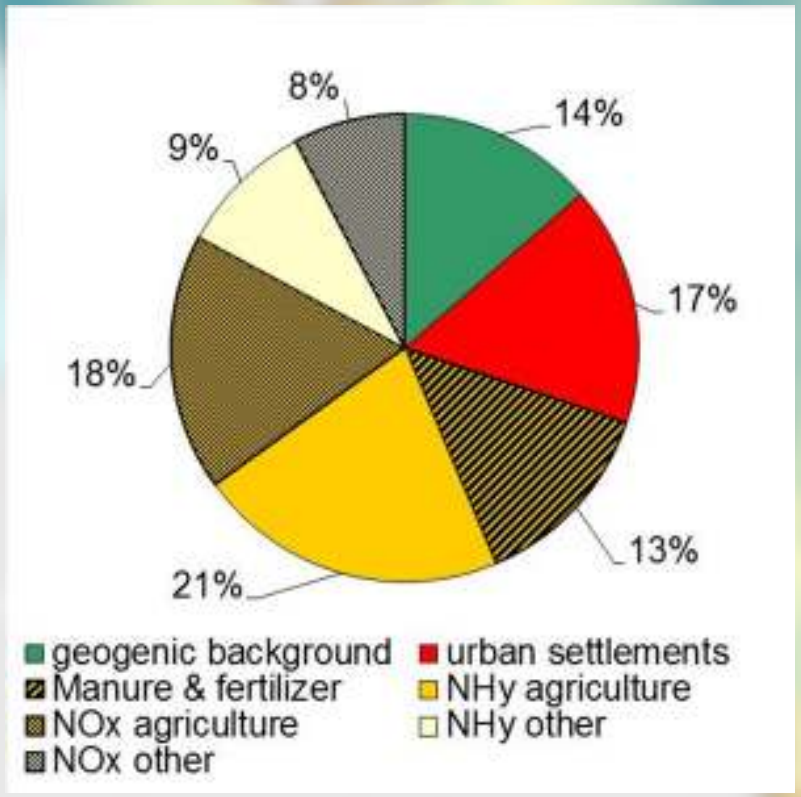


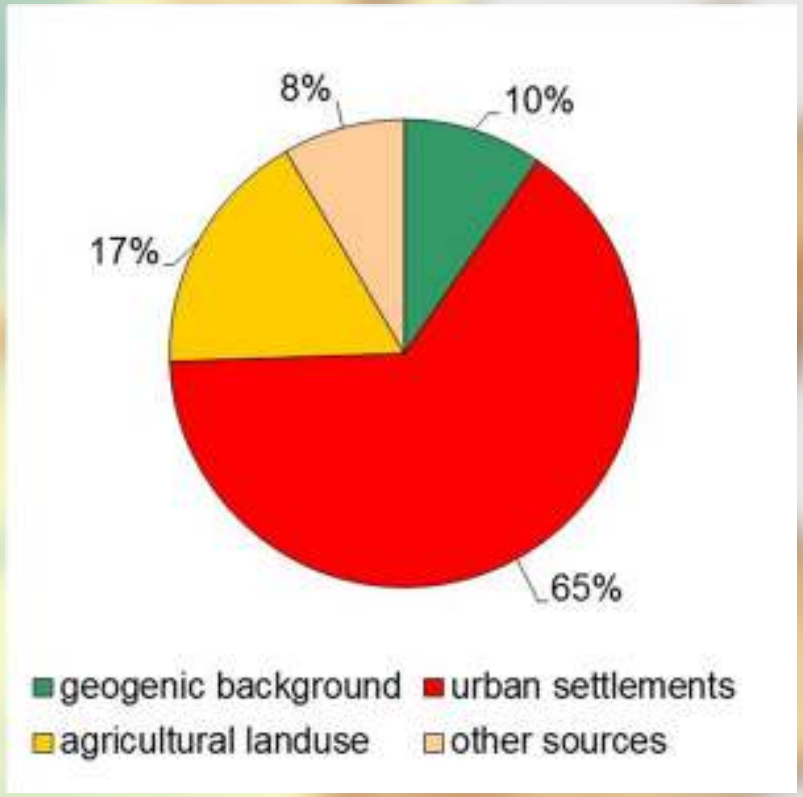


Emissions by pathways – mean 2001 - 2004

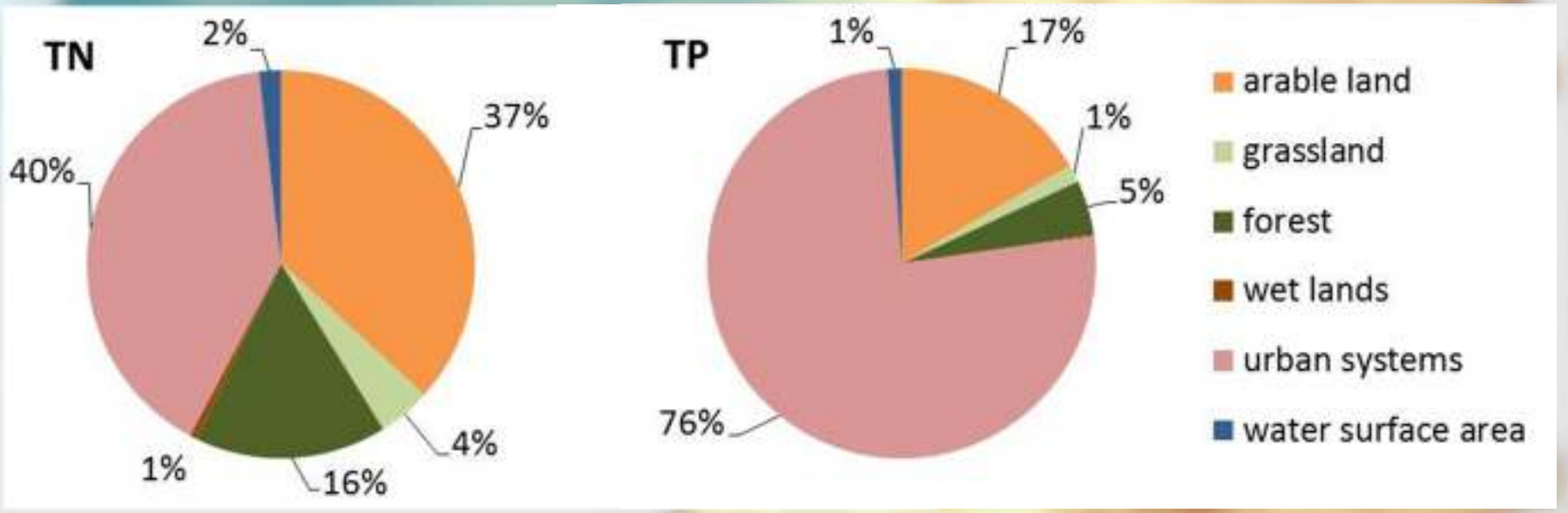


Emissions by sources – mean 2001 - 2004

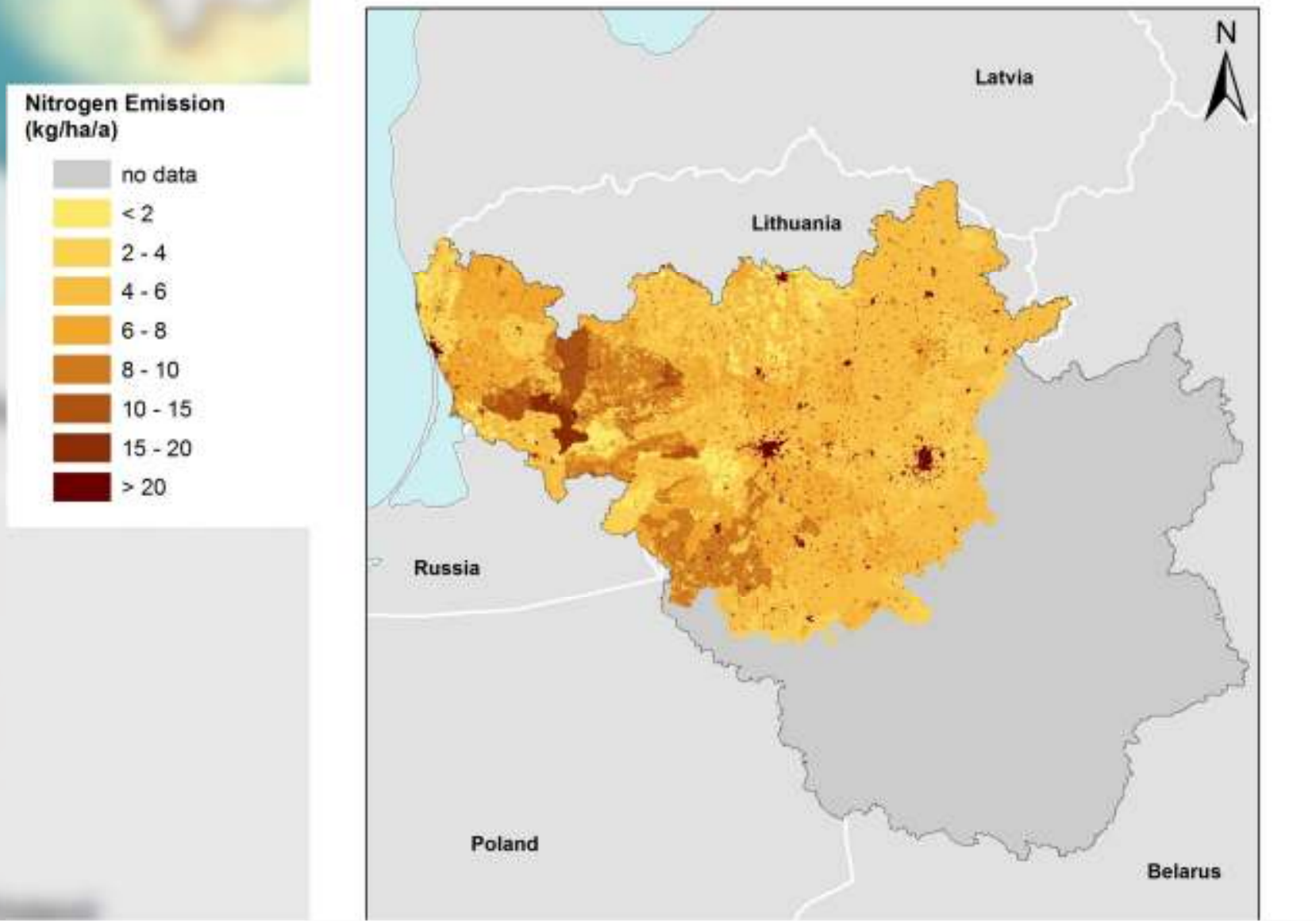




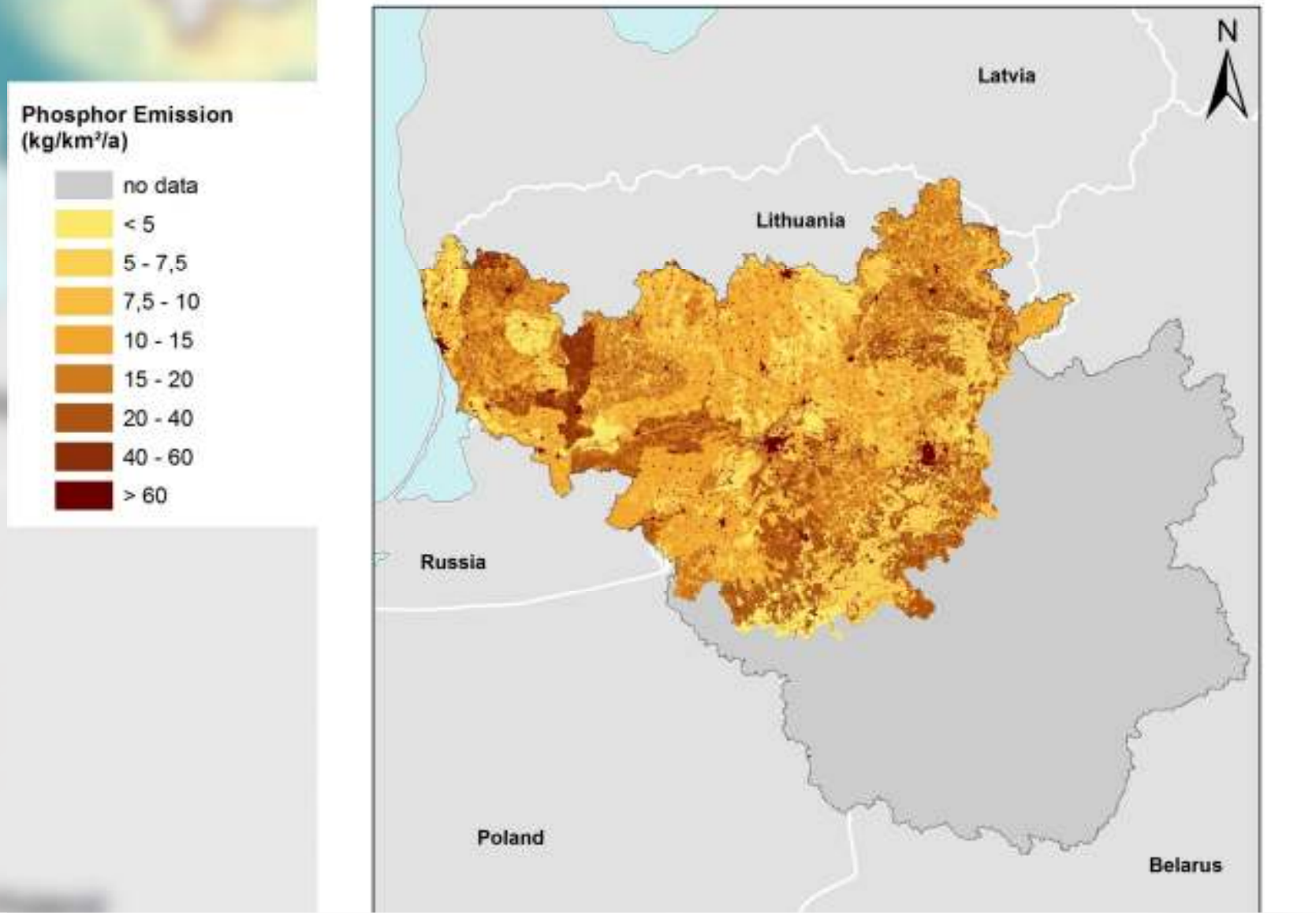
Emissions by land use – mean 2001 - 2004



Specific TN emissions by land use – mean 2001 - 2004



Specific TN emissions by land use – mean 2001 - 2004



Conclusions

- In general a good data base has been available for the model application
- Although 55 % of the catchment is used as arable land, only 13 % of the TN emissions originate from manure application, due to low N-surpluses
- Low total specific TN emissions emissions lead to an high share (56 %) of emissions from atmospharic deposition
- Point sources are dominant for TP emissions, due to a high share of not connected inhabitants
- Low slopes lead to low soil losses and to a small share of emissions via erosion
- Due to low emissions the emissions reduction potential is rather small
- And will very much depent on a reduction of atmospheric deposition