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BioDT User Case 3: Biological Invasions

A Digital Twin for the level of invasion of alien invasive plant species

Ingolf Kühn – Helmholtz Centre for Environmental Research - UFZ

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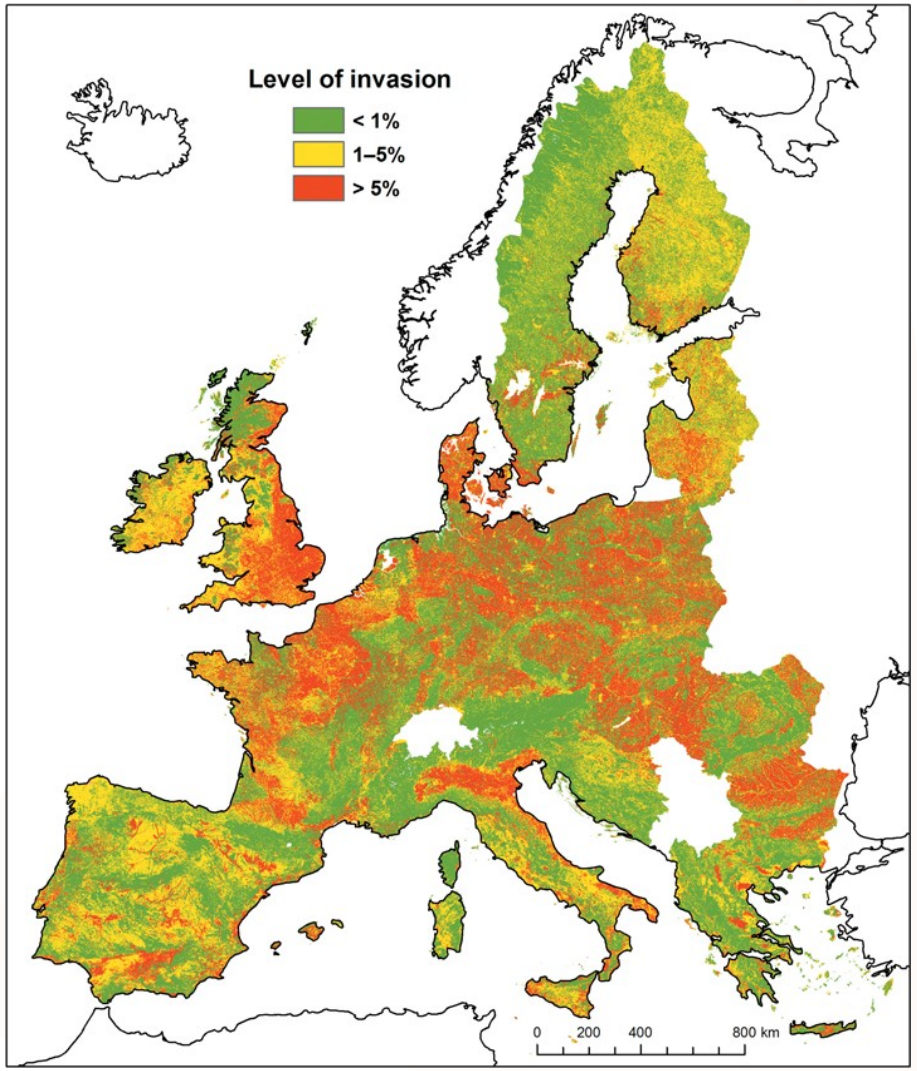
- Alien (exotic) species are not native to a region
- They were introduced by humans
- Invasive Alien Species (IAS) spread rapidly and/or cause harm
- Costs of animal invasions in Europe: US$ 140 billion
- Global costs: US$ 2.3 trillion

→ EU IAS regulation (*EU 1143/2014*)

- Invasive Alien Plant Species
- Levels of invasions per habitat
- Habitat distribution in Europe
- Climatic suitability
- Changes in the past decades
- Scenario projections under management interventions



Chytrý et al. 2009, Diversity & Distributions 15: 98-107

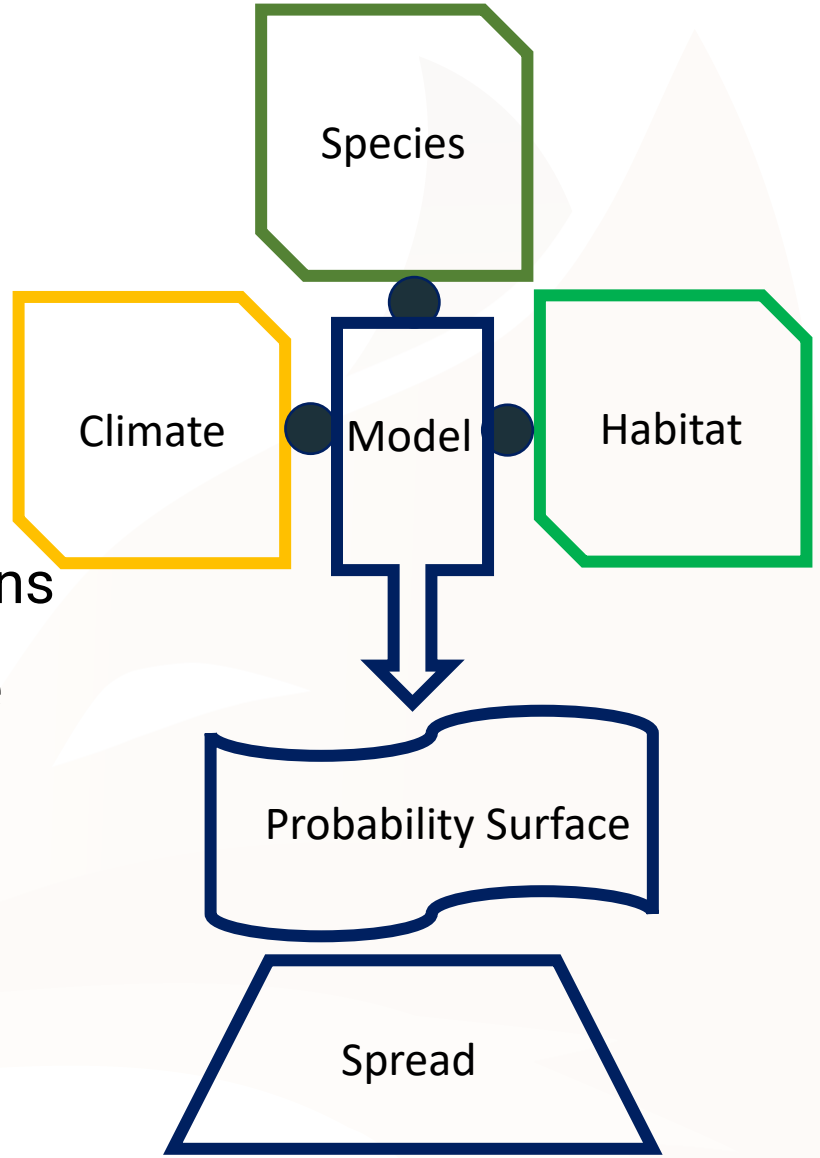
- Heterogeneous data sources
- Different country lists
- Little information on temporal dynamics
- Large rectangular and distance Matrices

→ Reasonably good knowledge of spatial distributions

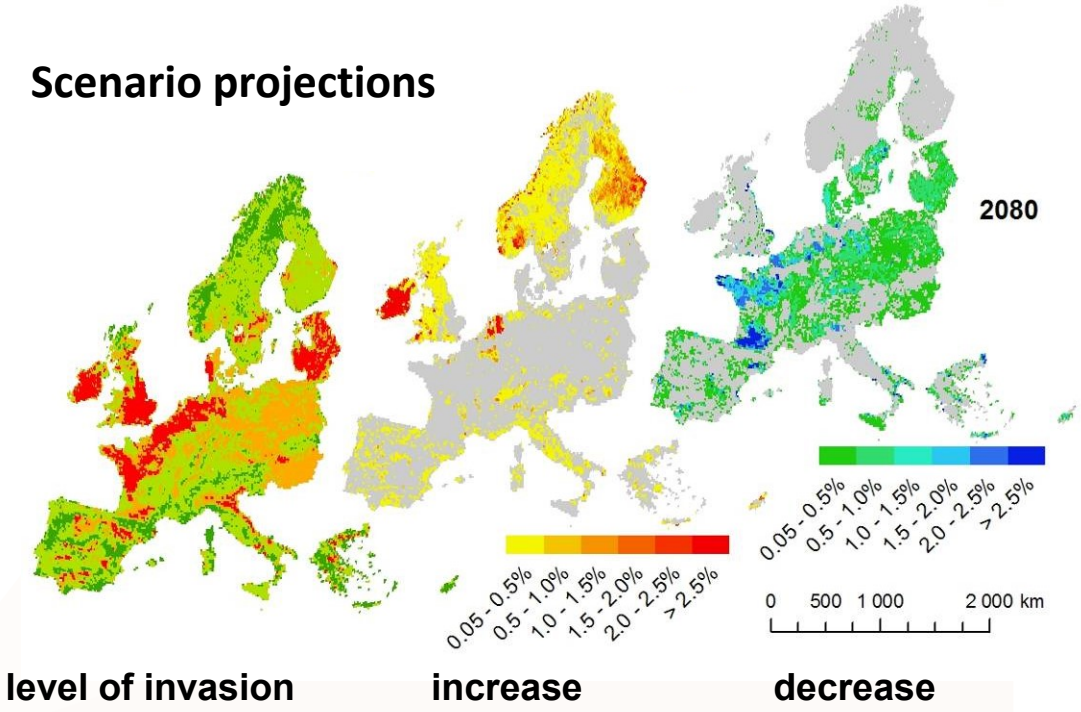
→ Combination of habitat module & climatic module

→ Land Management (Intervention)

→ Spread Scenarios



- Unification of decentral, heterogeneous data source
- “Real time” levels of invasions
- Quantification of change
- Early Warning
- Intervention (Management) Scenarios
- Policy relevance (requirements)



Chytrý et al. 2012, Global Ecology & Biogeogr 21, 75-87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