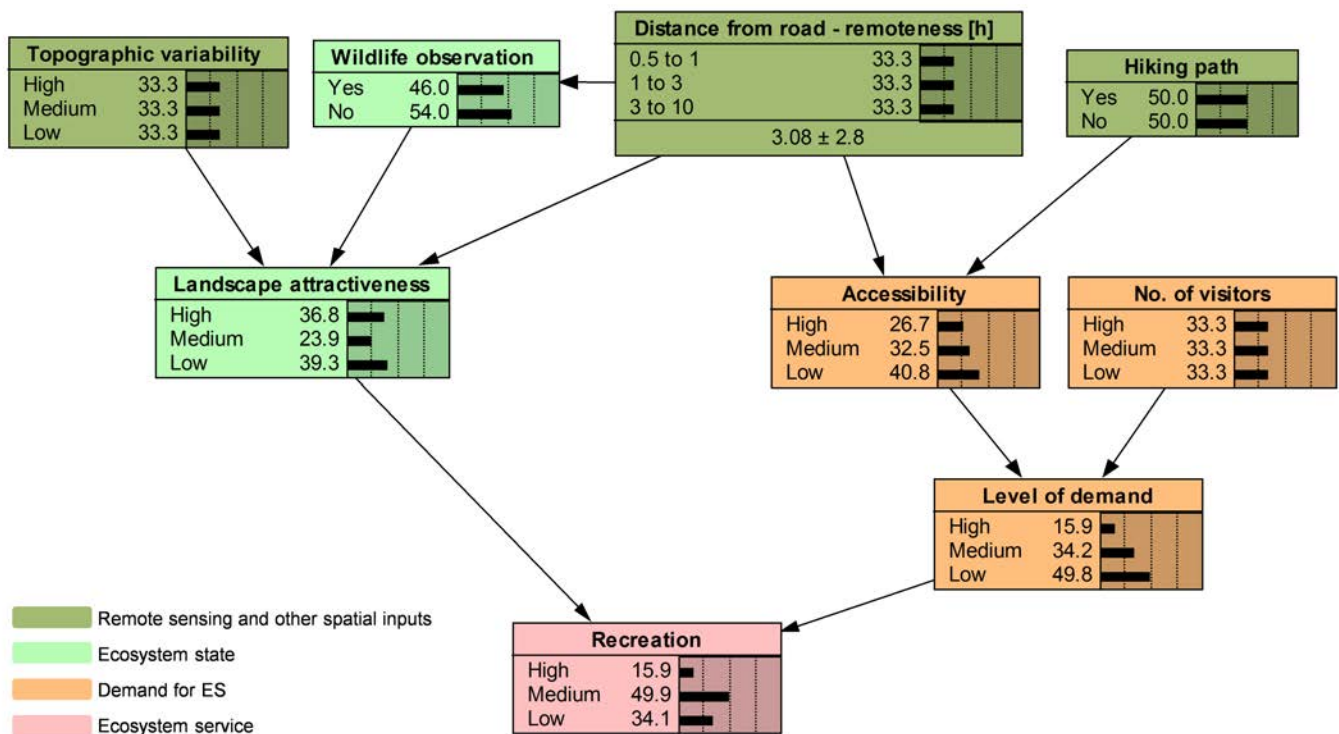


gBay: a Bayesian Network Toolbox for Ecosystem Services

gBay: an on-line platform using Bayesian Networks with geodata

To support modelling ecosystem services over space and time, we have developed gbay, an online platform where users can link their BN models with geodata, such as land cover maps or remote sensing products.



Example of a Bayesian Network for the recreation ecosystem service in the Swiss Alps.

Ecosystem services

Ecosystems provide many goods and services to society, from climate regulation, food provision, protection from natural hazards, space for recreation, and habitats for valuable species.

Mapping and modelling these services can help identify trade-offs and synergies, predict future changes, and support more sustainable planning.

Bayesian Networks (BNs)

Bayesian Networks are graphical models that are useful for ecosystem service modelling, since they:

- Can combine quantitative data with expert and stakeholder knowledge
- Visualize relationships between variables in a system and support communication
- Can account for uncertainties

gBay: a Bayesian Network Toolbox for Ecosystem Services

How to use the gBay toolbox?

Bayesian Network users can find guidelines on how to develop a BN and how to use the gBay toolbox, along with examples of ecosystem service models, data, and case studies on this wiki page:

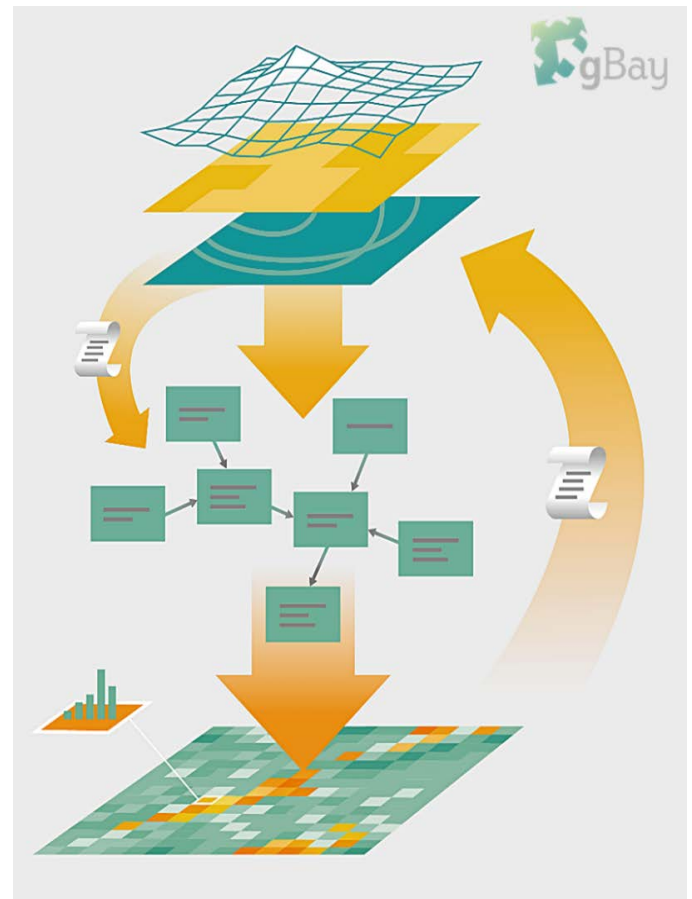
Link: wiki.gbayerthz.ch

Applications in ECOPOTENTIAL

Spatial BNs have been used in the ECOPOTENTIAL project for many different applications, such as:

- Analysing trade-offs between provisioning and cultural ecosystem services in the Wadden Sea (NL) and Danube Delta (RO)
- Disentangling uncertainties about avalanche protection in the Swiss Alps
- Collaborative modelling of water bird communities with stakeholders in Doñana National Park (ES).

Developing scenarios of future land use change in the in the Sierra Nevada National Park (ES).



An example: Trade-offs between ecosystem services in the Wadden Sea, the Netherlands

The Wadden Sea is an important nursery for fish species and a resting station for a variety of wading birds, which attract birdwatchers and other visitors. The ecosystems face pressure from climate change, as well as from fisheries and pollution, resulting in trade-offs between provisioning services (e.g. fishing) and cultural services (e.g. birdwatching). To better understand this system, a DPSIR (Drivers-Pressures-State-Impacts-Responses) model was constructed, and then simplified into a Bayesian Network model that shows trade-offs between provisioning and cultural ecosystem services.

