Cartographic dissemination of peat land re-use scenarios – Intelligible and accessible web maps for specialists and the masses

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Accessible atlas for 140 layers of spatial-statistical predictions of peatland re-use scenarios

Peatland re-use scenario data for dissemination

Peatlands, where timber production is not commercially productive without specific maintenance options, cover 20 % (i.e. 0.8 million ha) of the drained peatland area in Finland. To optimize the re-use for these low-productive drained peatlands, is a key issue concerning peatland future use in Finland.

The main objective of the LIFEPeatLandUse project is to quantify and valuate peatland ecosystem services to assist land use planners and policymakers in making ecologically, economically and socio-culturally sustainable land use decisions. This is done by developing and demonstrating a decision support system, where ecological and economic information is aggregated to numerically optimize cost efficient land use options so that benefits of ecosystem services are safeguarded. The monetary value of the land use options is maximized under given constraints set to the biodiversity, environmental loading, and GHG emissions, to fulfill the constraints set in the regional, national, and EU level policies.

In addition to consolidating and increasing the knowledge base on the impacts of peatland use on ecosystem services through the compilation of multiple datasets and geo-spatial modelling, aim is also to enhance general awareness, reduce conflicts, and promote stakeholder co-operation concerning the use of peatlands and to promote the sharing and utilization of long-term monitoring data and scientific information in the land use planning. Thus, in addition to sharing project outcome data for the use of specialist, it will be disseminated to the general public.

Project output includes spatial statistical predictions for seven different re-use scenarios including 1) no measures, i.e. abandonment from active forestry, 2) tree biomass harvesting and then abandonment from active forestry, 3) intensive forestry, 4) restoration, 5) peat harvesting without after-use, 6) peat harvesting with reforestation and 7) peat harvesting with peatland rewetting (Figure 1).

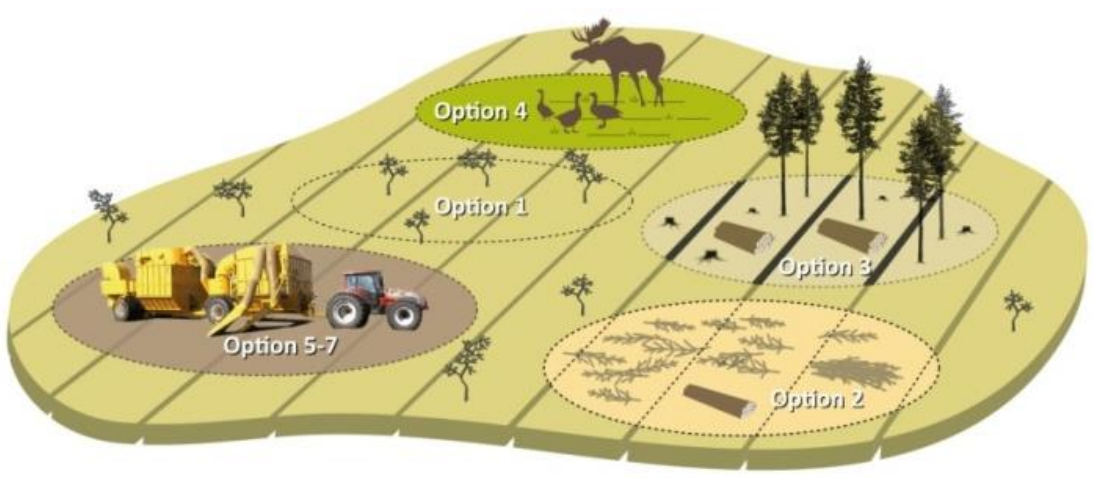

Figure 1. Cartographic communication model and interactive web-maps .

Predictions are realised as a scenarios including spatial measures of 1) biodiversity, 2) environmental loading to t water courses, 3) greenhouse gas balances and 4) monetary value. Predictions cover the time period of 100 years with 5 moments of time.

The final number of published maps is relatively high (140 data layers), but however, the size of datasets are aimed to be controlled with spatial generalisations (Figures 2a and 2b).

Web mapping techniques and opportunities for interactive maps

Practical publishing process of web maps and sharing geographic information data in the web is relatively easy, by applying commercial, open source or public administration funded solutions. As an example, GeoServer with OpenLayers give powerful tool to publish maps based directly on geographic information data. Web map can be customised with additional functions by e.g. with HTML5.

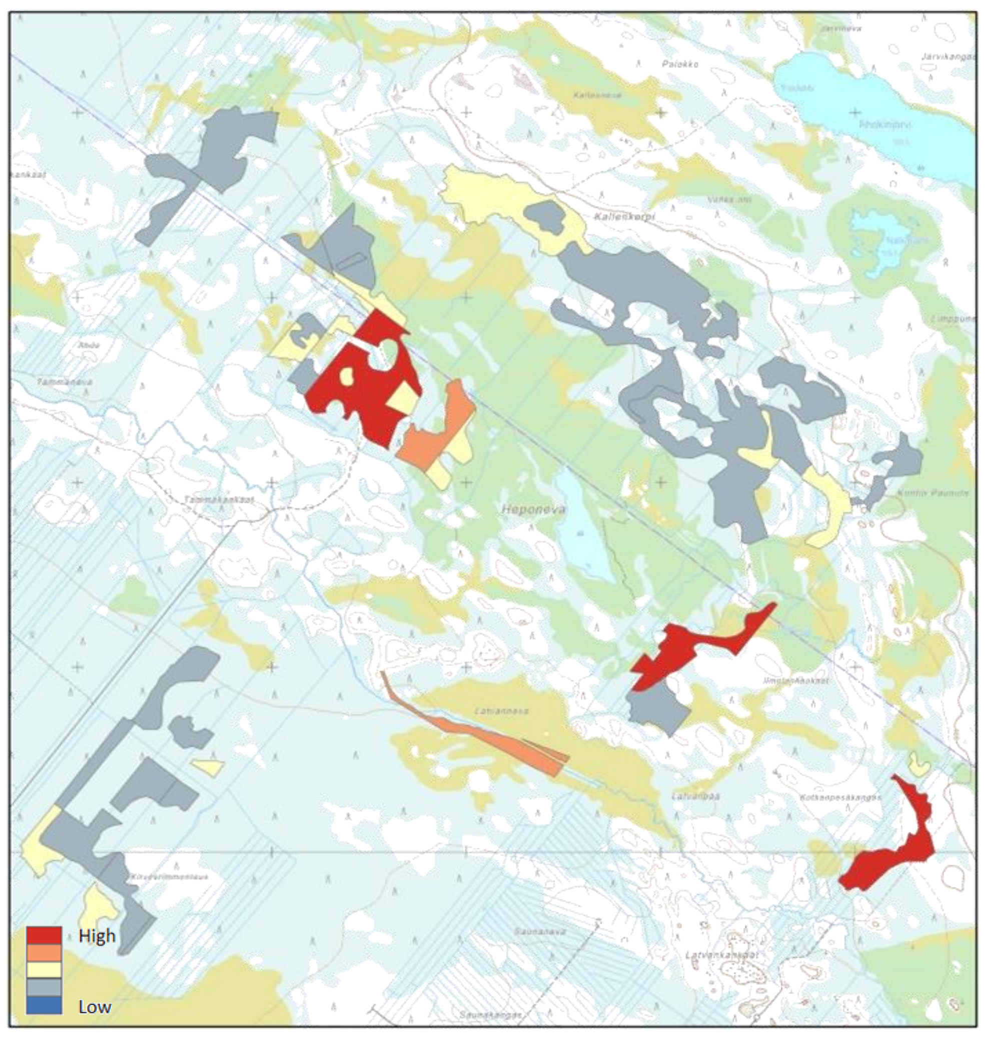

Figure 2a. Analytical scale of the spatial statistical predictions of GHG balance at forest compartment level.

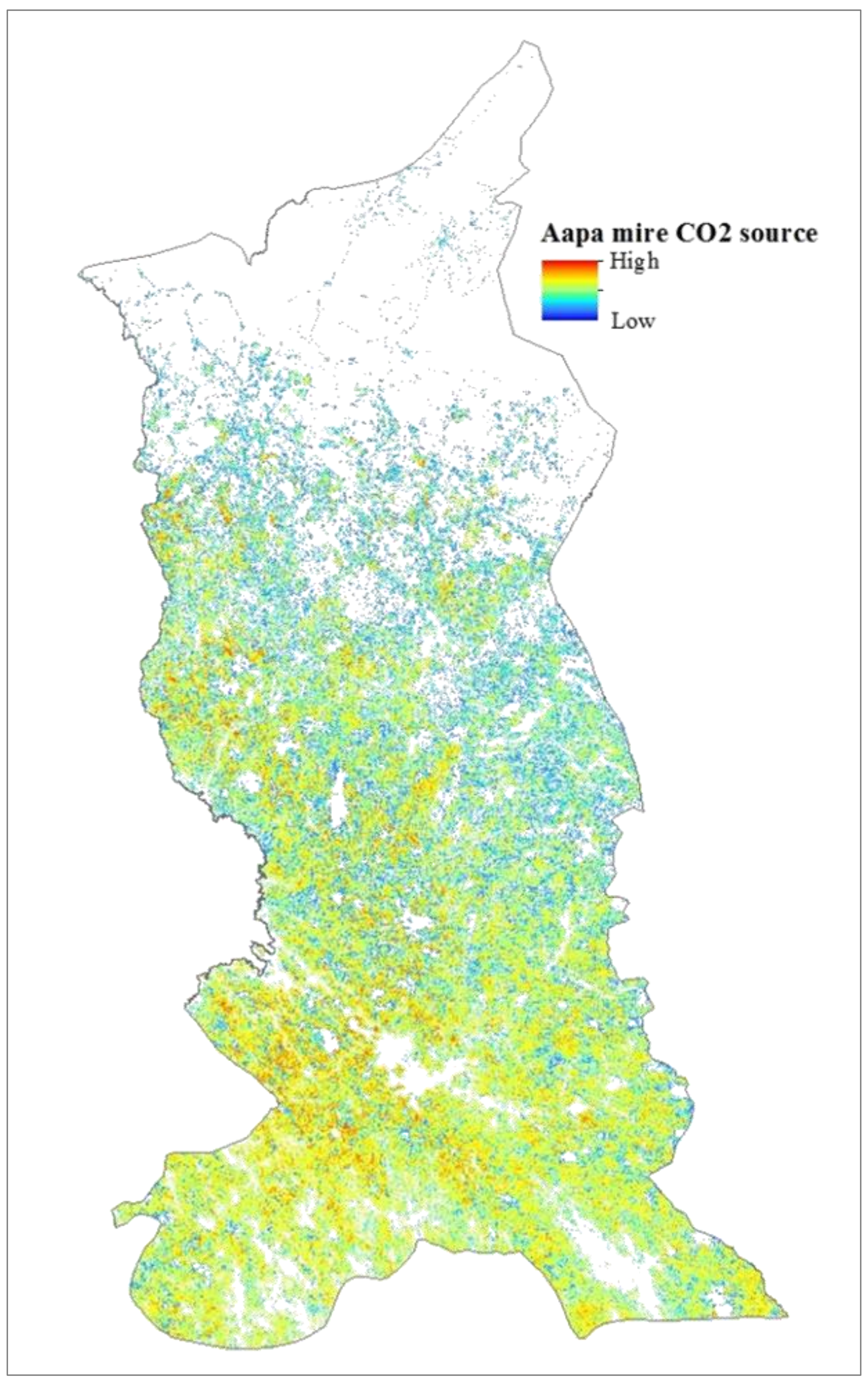

Figure 2b. Representational scale of the GHG balance generalised to 1 × 1 km grid cell resolution for publishing openly at sub-national and national level.

Cartographic communication and accessible web maps

Cartographic communication with static maps and interactive maps have similarities including choices in colours, symbols and classifications, but also deep differences exist. In additional to basic mapping functions of zooming and scrolling, and abilities change visibility of layers, a number of addition functionalities may be applied. Persson et al. (2006) have recognized 70 applicable interactivity functions within 8 categories. When these functionalities are brought to the context of a classical cartographic communication model (Figure 3) of Koláčný (1969), the deep traditional division of map production and its utilization are changing to more diverse form. Instead of producing a map of already interpreted information, cartographer produces rather a mapping environment including data, its representation functions and context. Therefore, cartographic information alters more in relation to cartographic abilities and motivations of user, increasing the freedom of scrutinizing the data, but decreasing partly the benefits of professional interpretations.

With web-mapping, peatland re-use information may be disseminated by highly accessible way, but at the same time, responsibility of interpretations in relation geographic information is shifted towards user. Thus, to develop intelligibility of data including about 140 raster layers, consisting of geospatial predictions, there is need for supplementary material related to data collection, modelling methods and model interpretations. Thus, a special attention is paid to intelligibility material, offering the scientific background and framework of peatland re-use scenarios.

References

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Persson, D., Gartner, G., and Buchroithner, M. (2006). Towards a typology of interactivity functions for visual map exploration. In: Cartwright, W., Gartner, G., Meng, L. & Peterson, M. Geographic hypermedia (pp. 275-292). Springer Berlin Heidelberg.

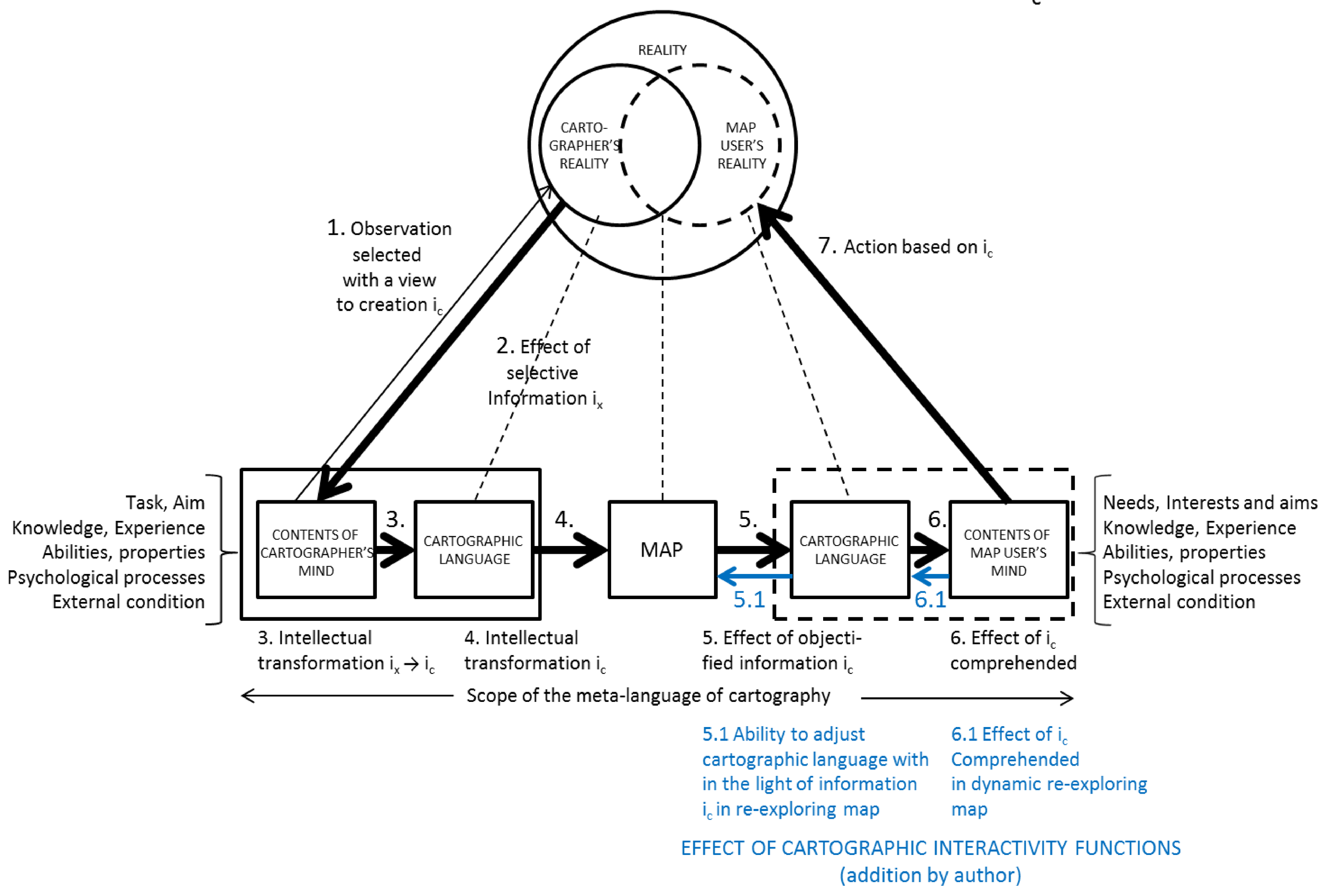

Figure 3. Cartographic communication model and interactive web-maps. Source: Redrawn from Koláčný (1969) and updated by authors (blue texts and graphics)

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