



Transboundary cooperation for the production of tools for spatial planning and conservation of the Gulf of Finland

Трансграничное сотрудничество по разработке инструментов для пространственного планирования и сохранения Финского залива

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Content

- I. Why to co-operate across border and in interdisciplinary way?
- II. Major objectives for co-operation
- III. Target areas (multidimensional space)
- IV. Integrated approach and “diversity of information to be collected
- V. Examples of interactions between disciplines
- VI. Toward estimation of human impacts using living assemblages (protected or of commercial value) and markers (including emergent)
- VII. Further fate of collected information: analyses, classifications, landscape modelling, biological validation, topographical background, etc, spatial tool
- VIII. Perspectives and impacts

I. Why to co-operate - European perspectives: Marine data, Marine knowledge 2020

Marine knowledge 2020

Definition and scope

Marine Knowledge 2020 brings together marine data from different sources with the aim of:

Helping industry, public authorities and researchers find the data and make more effective use of them to develop new products and services.

Improving our understanding of how the seas behave.

More on marine data

[Marine research](#)

[Fisheries data collection](#)

Related content

[Consultation on "Marine Knowledge 2020: from seabed mapping to ocean forecasting"](#)

See more at

http://ec.europa.eu/maritimeaffairs/policy/maritime_spatial_planning/index_en.htm

I. Why to co-operate – local perspectives: The draft of the Basics for Ecological policy of St- Petersburg for the period till 2030

(Items of the draft where the expected results and outputs of co-operation could be applied - a combination of numbers and letters as sections and points in the draft):

- 1-б-г; е; ж; then а-д; ж; **И – international co-operation**
- 2 – в; then б; В; ж; з; и; then б; г.
- 3- nothing; then д
- 4 – а; г.
- 5 – д; ж;
- 6 - д;
- 7 – nothing
- 8 – б; е
- 9 – nothing
- 10 (development of international co-operation) – all letters
- 11 – в фТВ г-

No detailed comments on the document itself, to know more see
<http://www.infoeco.ru/index.php?id=744>

I. Why to co-operate – GOF perspectives: toward development of knowledge background for MSP in EGOF (2014...XXXX)

Provided general knowledge on ecosystems structure, functioning, natural and antropogenic driving forces

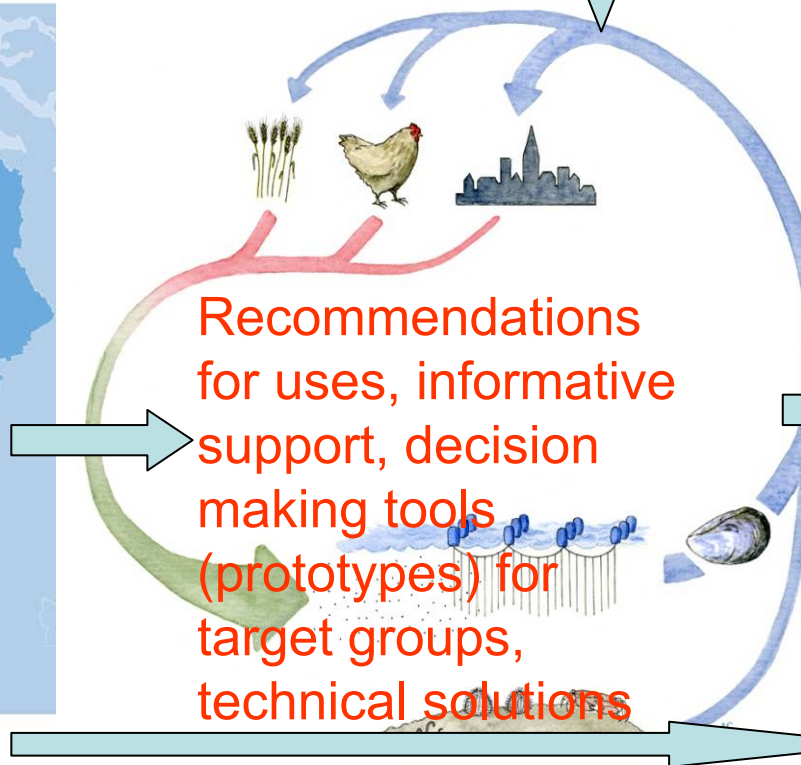
Existing data harmonization and current observations updating existing knowledge

Knowledge background

Collecting processing and visualization, of interdisciplinary Information on ecosystems and human uses

Providing information for for mapping and maps upgrade and mapping itself

■ EU Member States
■ non-EU States



II. Overview of transboundary co-operation objectives and output

- The main objectives are to create methodology and tools to aid in modelling and mapping the locations of the most diverse and sensitive marine and coastal landscapes, and in the light of this knowledge, to execute planning of the ecosystem-based management. .
- Co-operation produces knowledge background that can be directly utilized for the planning of sustainable use and the conservation of the marine environment and remediation of the effects of human disturbances.

Want to know more? Add this to your bookmarks:

www.merikotka.fi/topcons

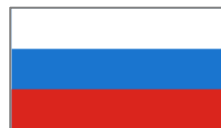
» to collect and harmonize existing and new biological, geological and hydrographical data from the eastern Gulf of Finland

» to develop maps on local scale benthic landscapes combining geological and biological diversity

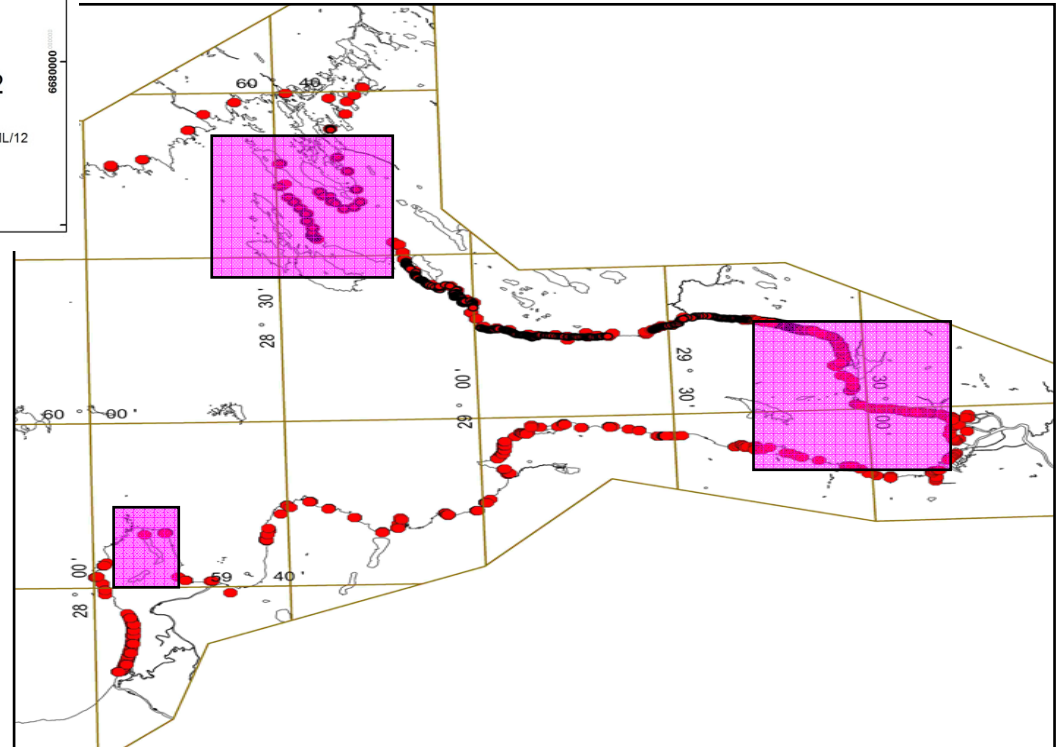
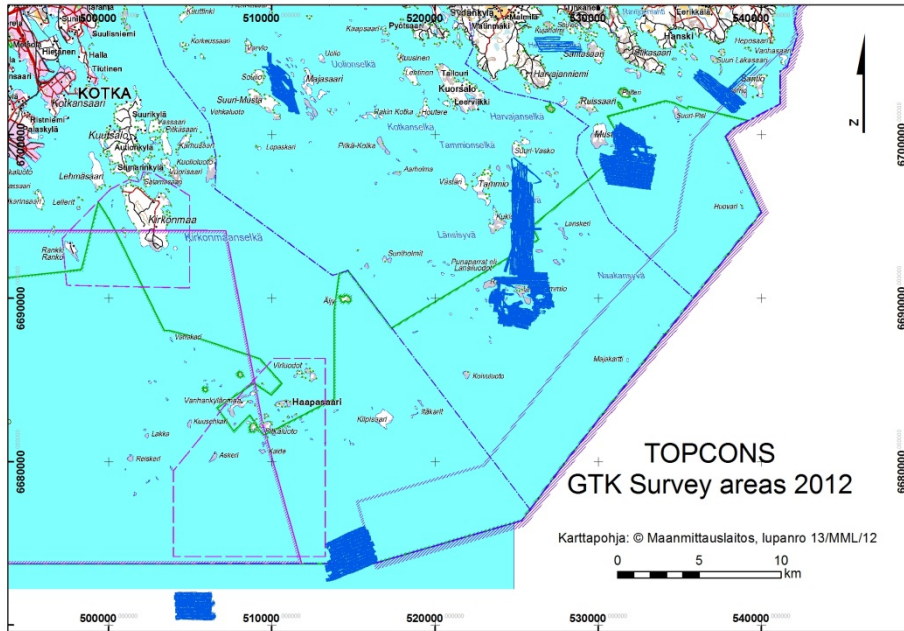
» to collate a dataset of human pressures in the area

» to create a spatial planning tool to support sustainable management actions

» to produce a route map for the development of a regional marine strategy



III. Target areas in Finland and Russia



III. List of human activities and natural driving forces impacting marine landscapes in target areas

 **Actor(s): Population, its target groups and interests**

Natural driving forces:

High contribution of coastal zone

Relatively large catchment area

Expressed natural gradients (estuarine nature)

 Seasonal variations

Unperiodic sea level fluctuations

 **Geology**

As a result: high heterogeneity of landscapes

Newly identified world-wide problems:

Residuals of medical products, Genetically modified organisms

Sinergetic (other) interactions of fActors (to be investigated)

 **Areas of sea uses overlaps**

 Those relevant with minimum MSP requirements

Seminatural:


Anoxic/hypoxic conditions


Eutrophication

Geologic hazards

Alien species / Changes in biodiversity

Anthropogenic impacts (sea uses):

 Shipping, adjacent activities, infrastructure

 Cables and pipelines

 Recreation

Storm-surge barrirer

Dredging

 Mineral and oil extraction

Washing new territories

 Fisheries

Pollution by hazardous substances

Military use

 Archaeological and cultural heritage

 Uncontrolled use of coastal lands

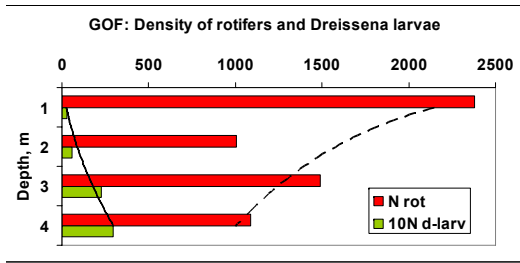
Special issue: compatibility *of uses (needs to be investigated)

* UNESCO WS2006

IV. Integrated methodical approach to data collection and diversity of spatial and point variables

- Collation of existing data from both countries
- Field surveys using same methods
- Harmonization of analyses of field samples and data
- Development of maps describing biological and geological diversity
- Development of maps describing human activities
- Construction of a marine spatial planning tool combining both environmental and human activity information
- Development of new research methods
 - Remote sensing
 - Modeling

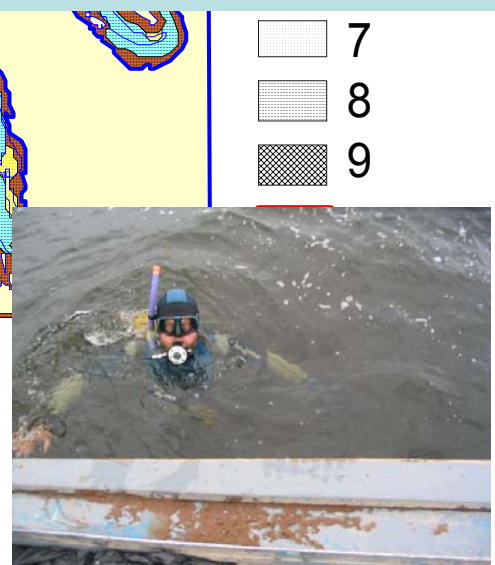
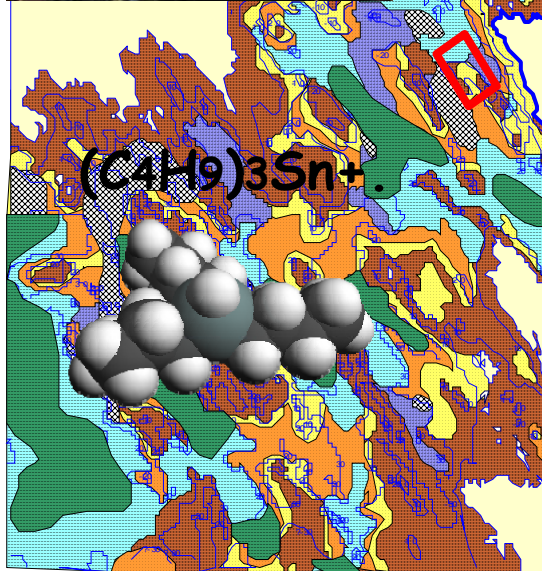
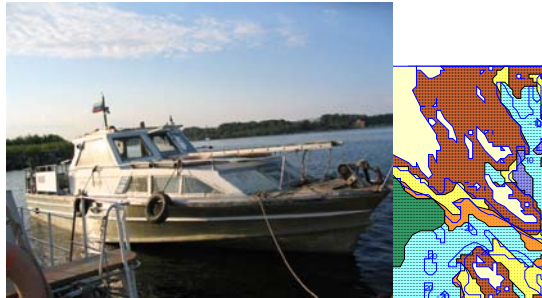
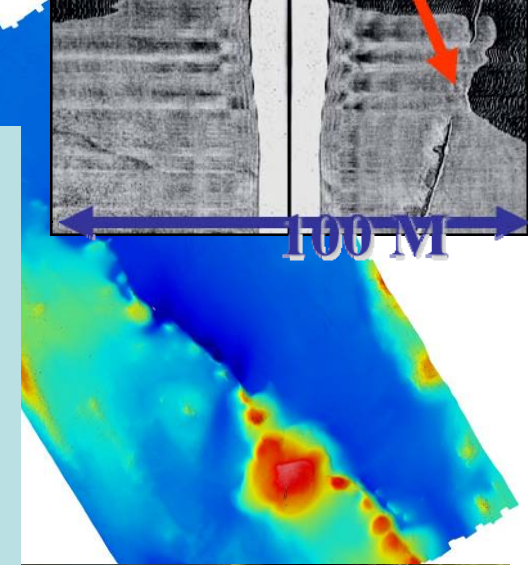
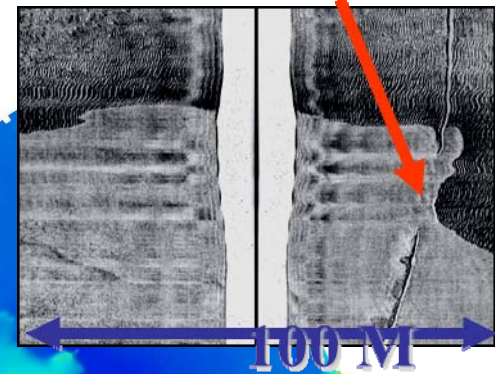




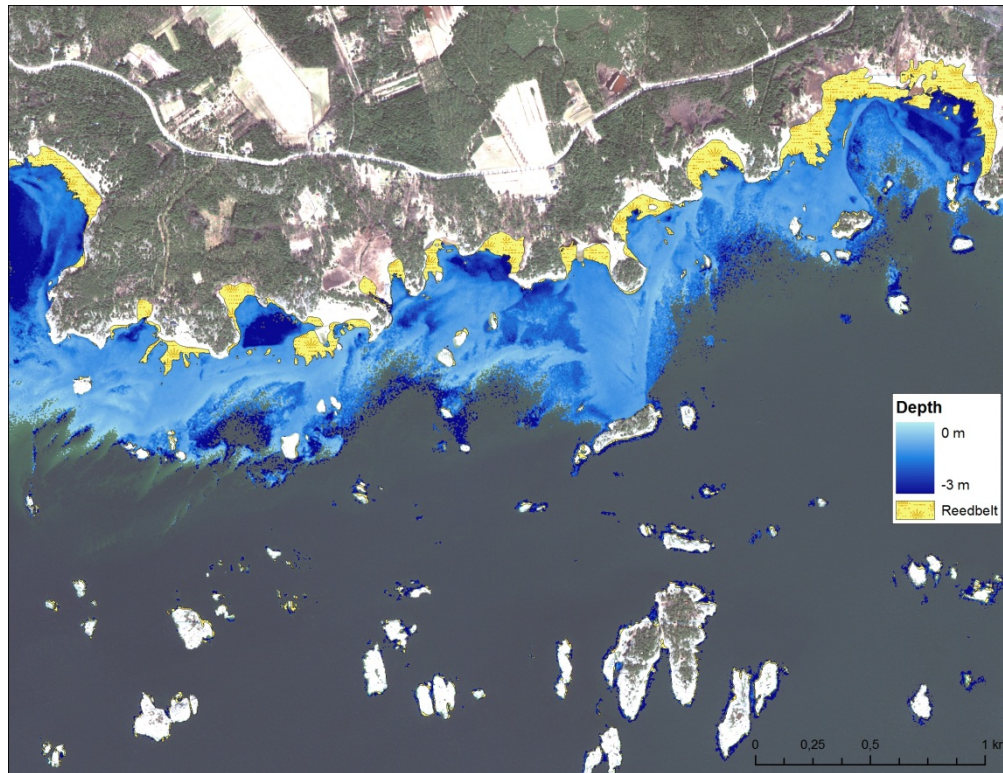
IV. Data collection

Approach is a combination of:

- Spatial observations (RS, acoustic methods, underwater video)
- Point data collection (geology, hydrophysics, biological sampling, sampling fro hazardous substances).



V. New methods combination for resolving old questions - Combining biology and spatial (super high resolution satellite images decoding in field planning and aquatic plant associations mapping (one of examples)



3, 4 – предположения и их полевая верификация



Вид пляжа в Мартышкино
(с запада на восток)

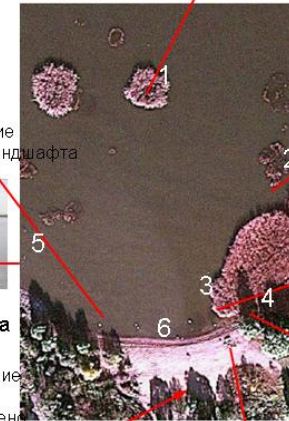
1. Большие пятна водных чистых зарослей тростника и камыша
(соответствие подтверждено верификацией)



2. Плотные чистые заросли камыша, камень
(соответствие подтверждено верификацией)



6. Камни (соответствие элементов снимка и ландшафта установлено впервые)



3. Водные плотные чистые заросли тростника (соответствие подтверждено верификацией)



5. Маленькие пятна чистых зарослей камыша (соответствие элементов снимка и ландшафта установлено впервые)



Береговая и прибрежная растительность

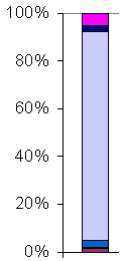


4. Заросли тростника с гидрофильным разнотравьем (соответствие подтверждено верификацией)

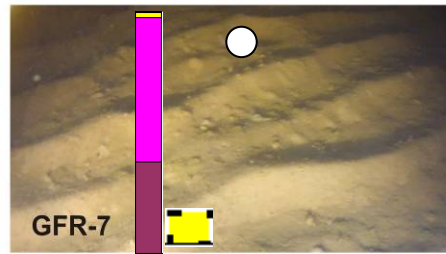
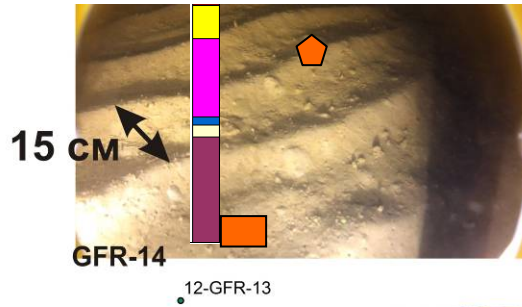
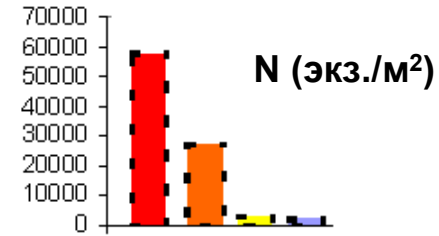
Восточная часть пляжа

DEPTH: 3 – 0 M

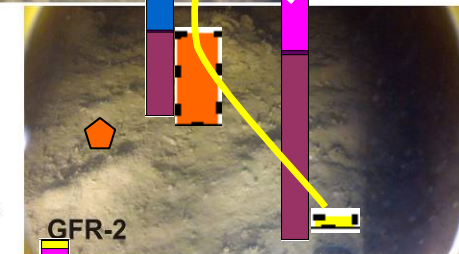
Основные таксоны, формирующие биомассу (%)



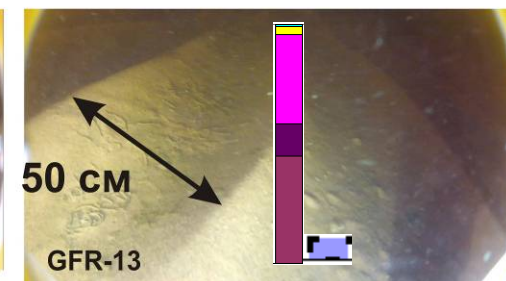
- Bivalvia, D. polymorpha
- Gastropoda
- Bivalvia, other than D. polymorpha
- Oligochaeta
- Chironomidae total
- Ceratopogonidae



V. Initial combining biological and geological data, underwater photo – submitted to "Regional ecology journal" (in Russian)



DEPTH: more then 2-3 m



VI. Coastal Fishes and Nesting Birds are involved:

Typical coastal biotopes



UPDATES TO THE FISH SPECIES COMPOSITION OF THE COASTAL SHALLOW WATERS OF THE EASTERN GULF OF FINLAND WITH THE SPECIAL REFERENCE TO INVASIVE FISHES
 ANTON, PROTERORHINUS SP. IN COASTAL SHALLOW WATERS OF THE EASTERN GULF OF FINLAND

KNOW more.... Today Poster by Anton Uspensky)

Species	Number of specimens	Number of individuals	Number of eggs
<i>Proterorhinus</i> sp.	1	1	1
<i>Romanogobio albipinnatus</i>	1	1	1
<i>Percottus glehni</i>	1	1	1



Alien fishes: *Proterorhinus* sp.
Romanogobio albipinnatus, *Percottus glehni* ПОТАН

Rapid expansion of *Proterorhinus* sp.

VI. Hazardous substances as markers of human activities, human being, interaction of natural and antropogenic forces:

TBT;

Cyanotoxins; Gulf of Finland

Pharmaceuticals;

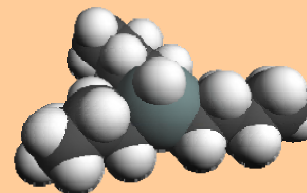
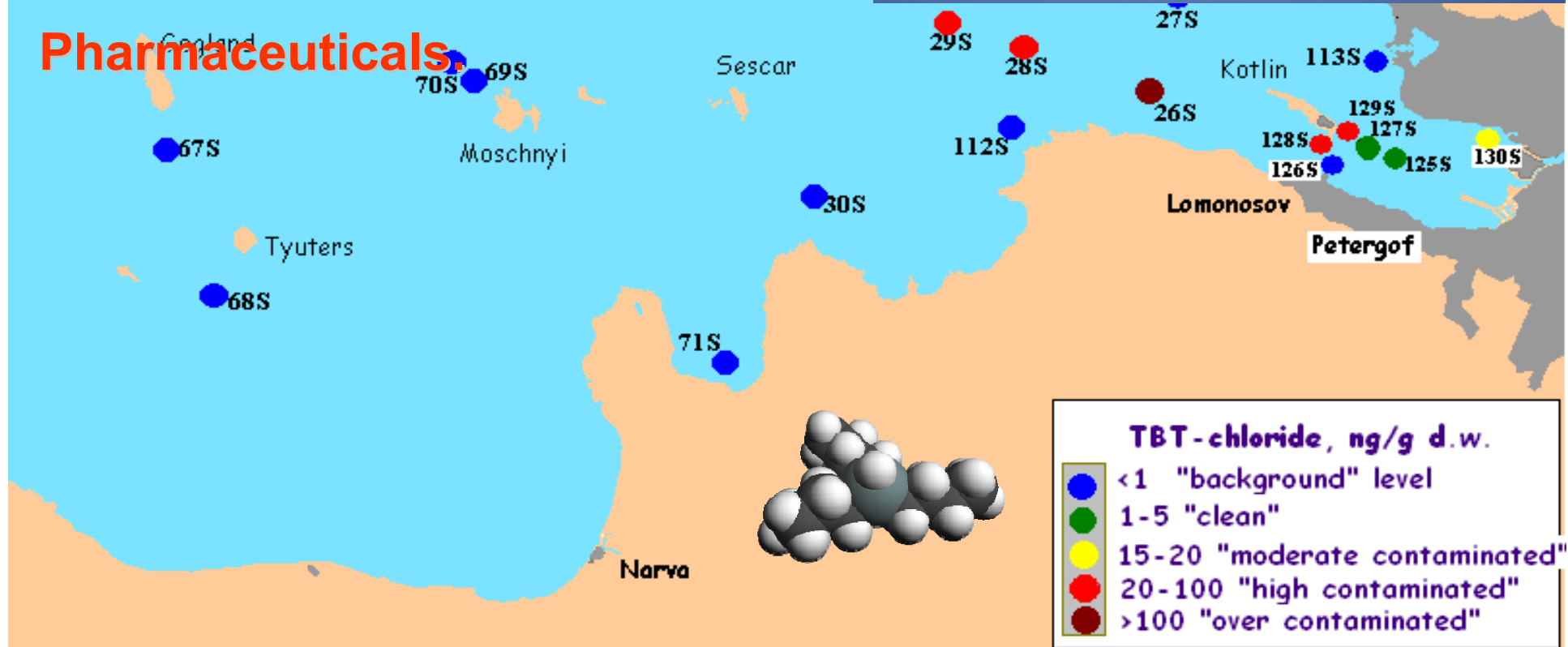
Pharmaceuticals in St.Petersburg Waters



**KNOW
more.....tomorrow**

Vladislav Donchenko
Zoya Zhakovskaya

SPb SRCES RAS



Collected and historical data storage, sorting,
analysing, combining spatial and point data



Analysing and classification of
landscapes, assessment of sensitivity,
validation of geologic modelling with
biological data and data on human
impacts



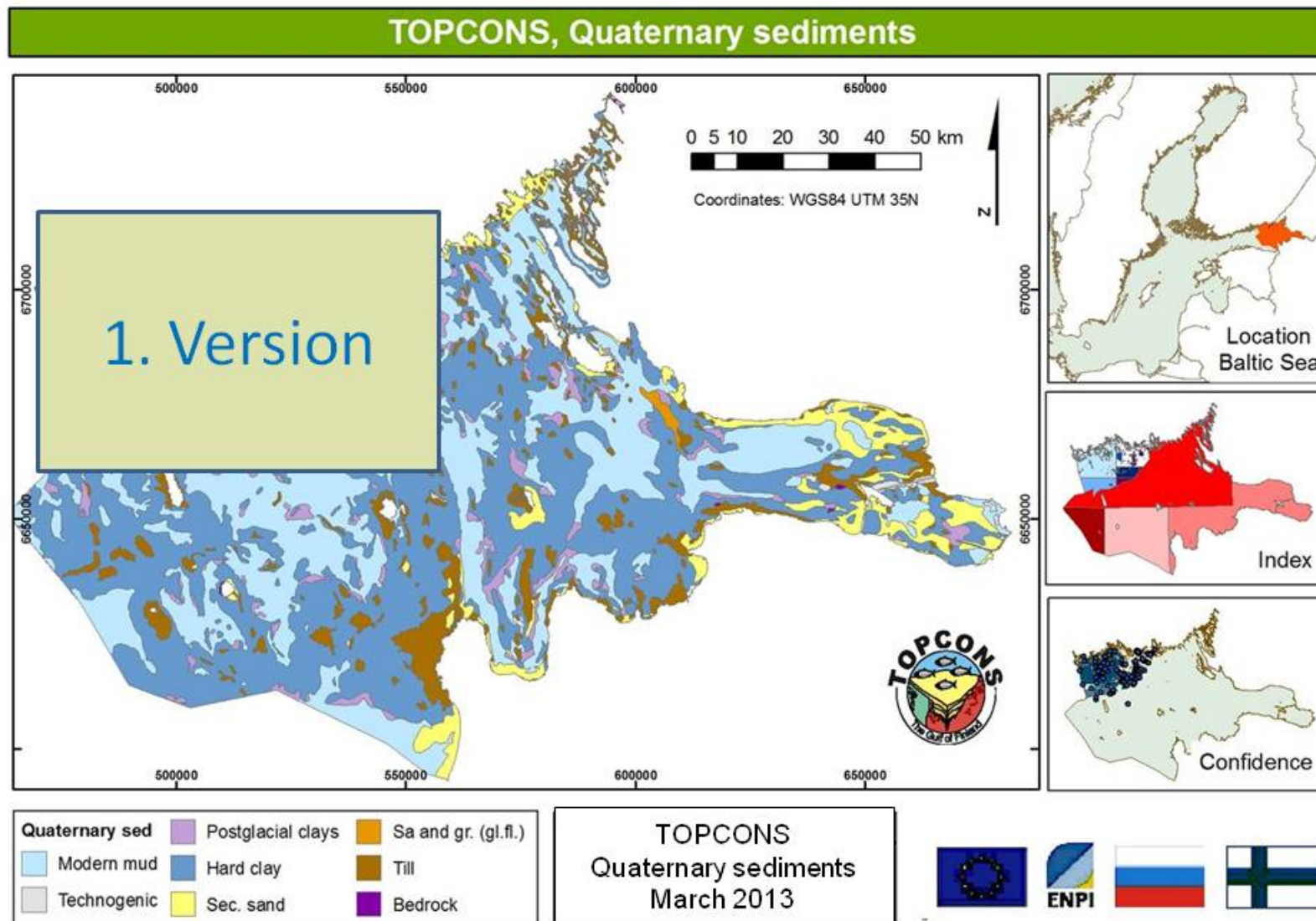
Topographical background for MSP,
routemap



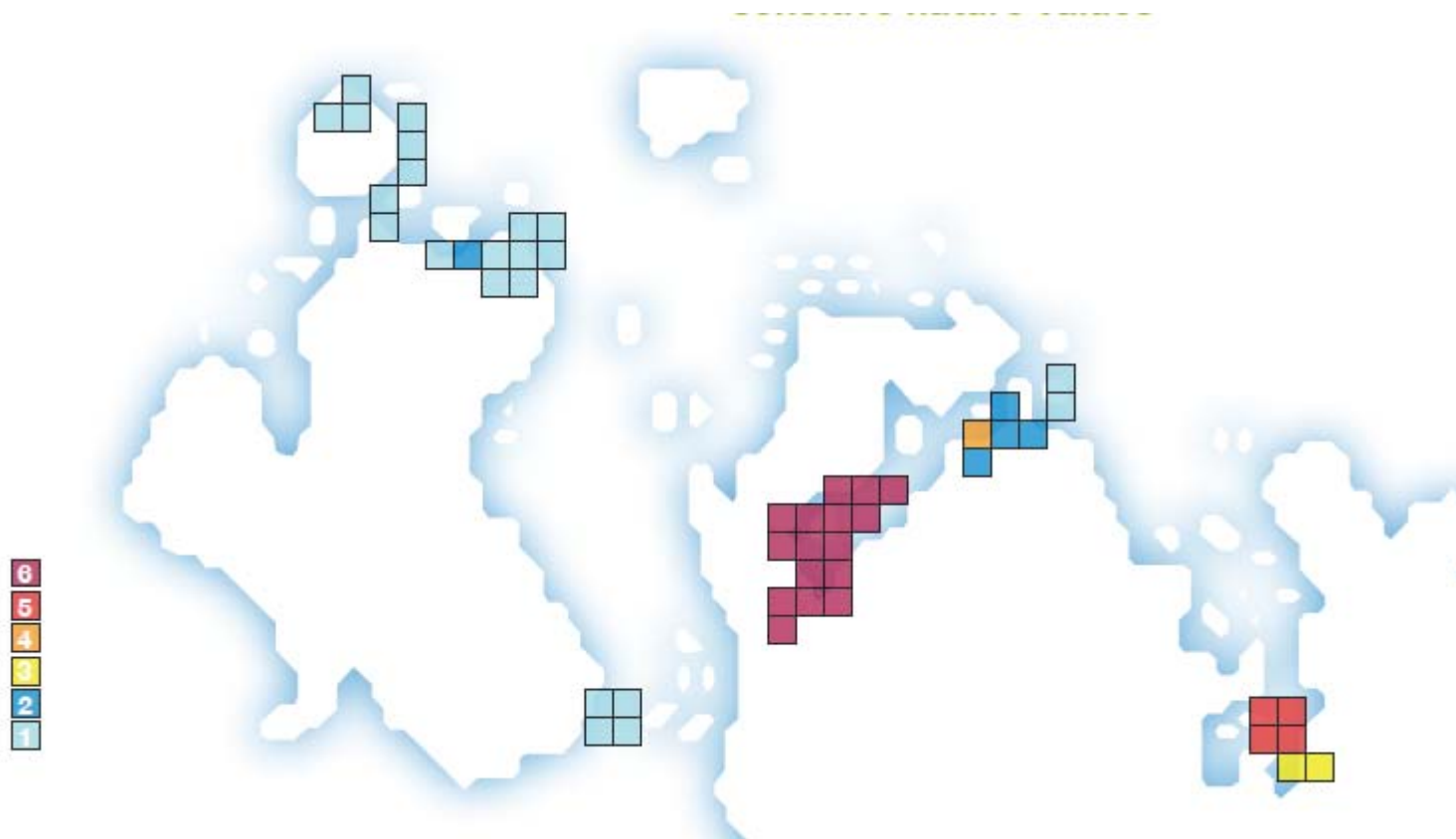
Spatial tool prototype

VII Why do we need such a
diversity of data?

VII. Topographical background for marine landscapes mapping



VII. An assessment of environmental sensitivity



VII. Spatial planning tool

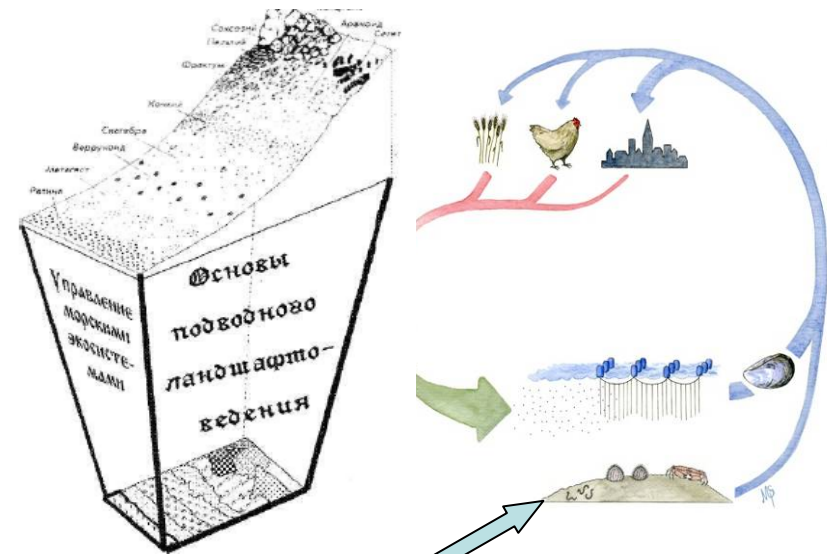
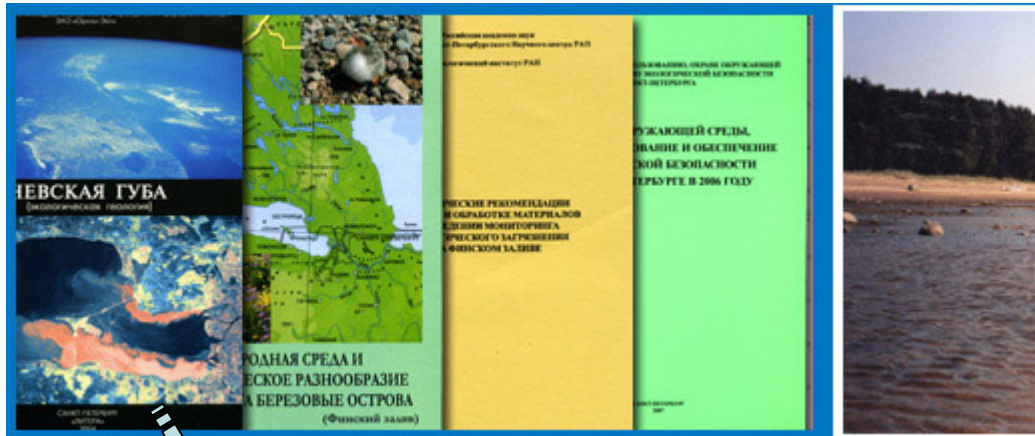
- Modelled geo and biodiversity correlations + Bayesian networks + GIS environment
 - BNs and GIS info communicating
 - New maps given certain changes in conditions
- > Effects of management actions to the system can be studied

Using Bayesian networks:

- Provide a quantitative means to study alternative decisions in the presence of multiple aims
- Transparent and consistent method for inductive inference
- Use probability as the measure of belief and calculate the process
- Observing new fact and updating the model

VIII. Development and perspectives for neighbouring trans-boundary regional co-operation.

MSP principles - 1 and 7, Key word - LANDSCAPES



Information Knowledge background MSPtools

Areas of possible scientific programs

Regional policy across boundaries

Effective, valuably, eco-friendly use of nature resources

Areas of outputs and Impacts of transboundary cooperation





Thank you
for
your attention!



And



Acknowledgement to colleagues, programs
and projects, those contributed ideas and
resources for this co-operation

