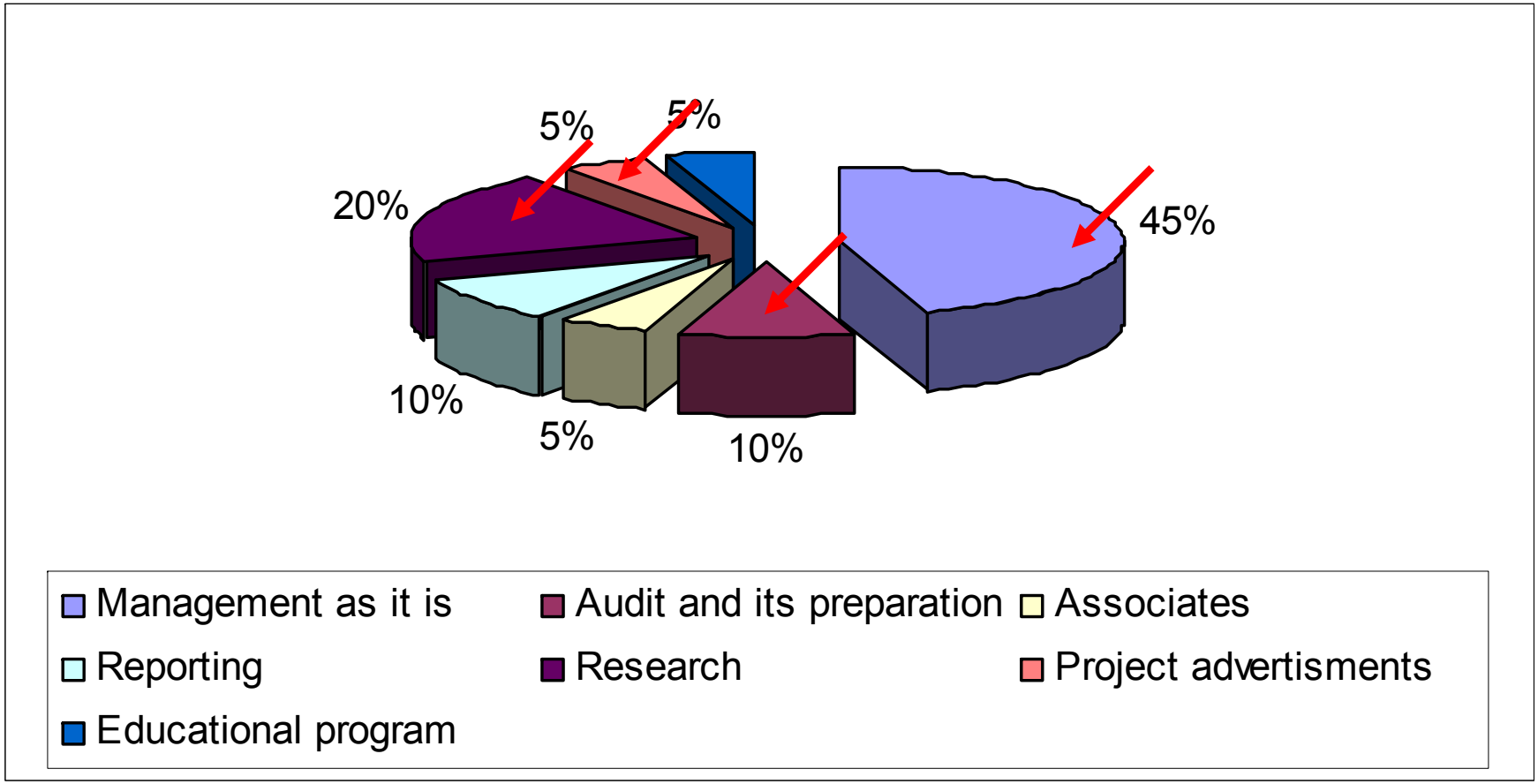
14-15 November 2012

TOPCONS
&
IEG SPBRS RAS

1st REPORTING PERIOD
&
Workshop 2

By random selection of Project Staff timesheets we did:



Management
Project staff

Executive Committee

(Administrative staff)

Totally at moment 4

EXPERT GROUP

Totally(Administrative staff)

Totally 10

Technical staff

Totally 6

PhD and Volunteer

Those who share duties

Totally 3

Representatives of Associates

Totally 2

STAFF: Temporary – 14

Permanent - 5

Project presentations

BSD

WEB PAGE in Russian at

www.spbrc.nw.ru

&

www.zin.ru

(at preparation)

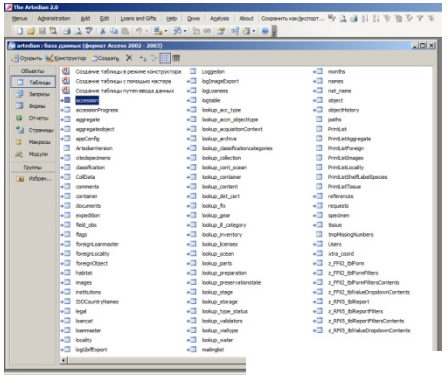
Морское био- и гео- разнообразие: предпосылки и перспективы междисциплинарных исследований и долгосрочного приграничного и международного научно-практического сотрудничества

Марина Ивановна Орлова,
Зоологический институт РАН,

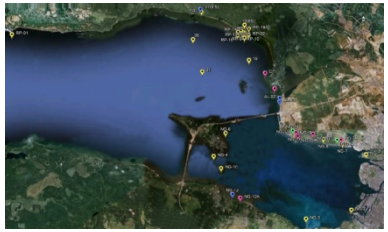
Дарья Владимировна Рябчук,
ВСЕГЕИ

Meeting of Expert GOF Trilateral group with representative of the RF President

Research



DATA (BIOLOGY)



Glossary

Associate 1, contribution with GOSTs etc

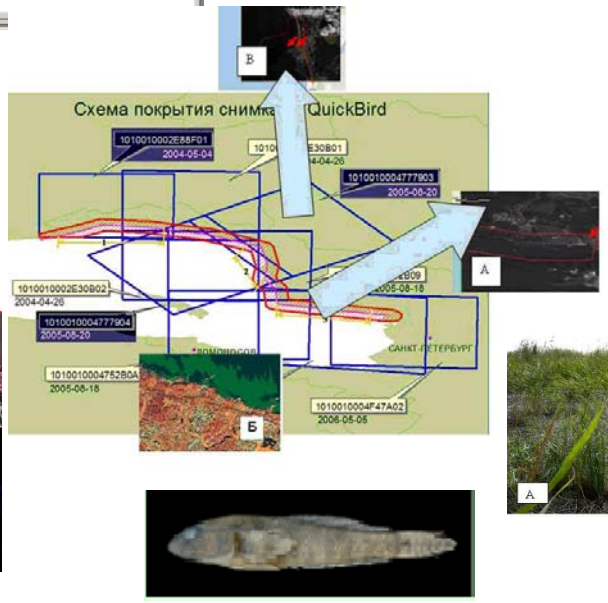
List of variables and sampling strategy

?

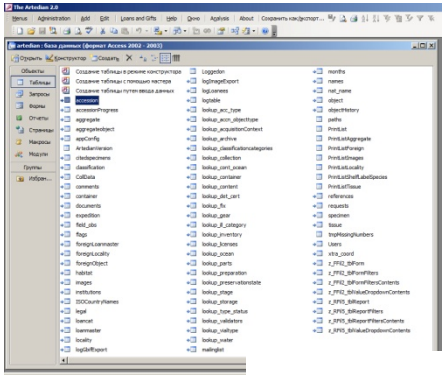
Integrative approach to data collection???

?

FIELD GUIDE?????



Research



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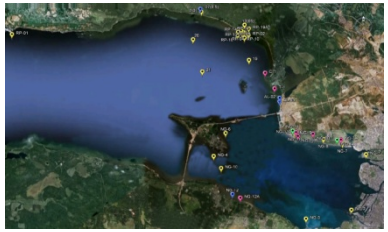

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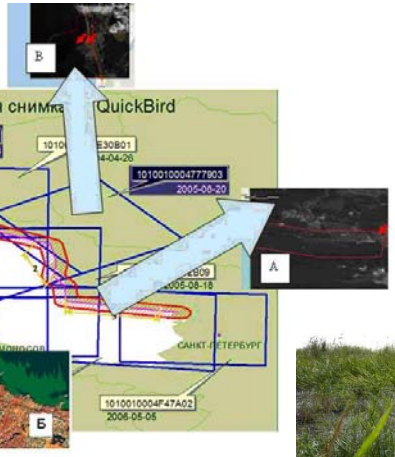
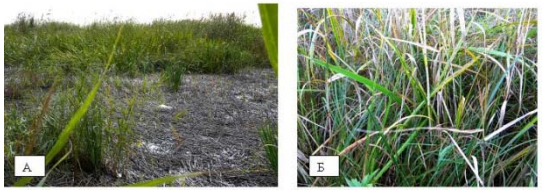
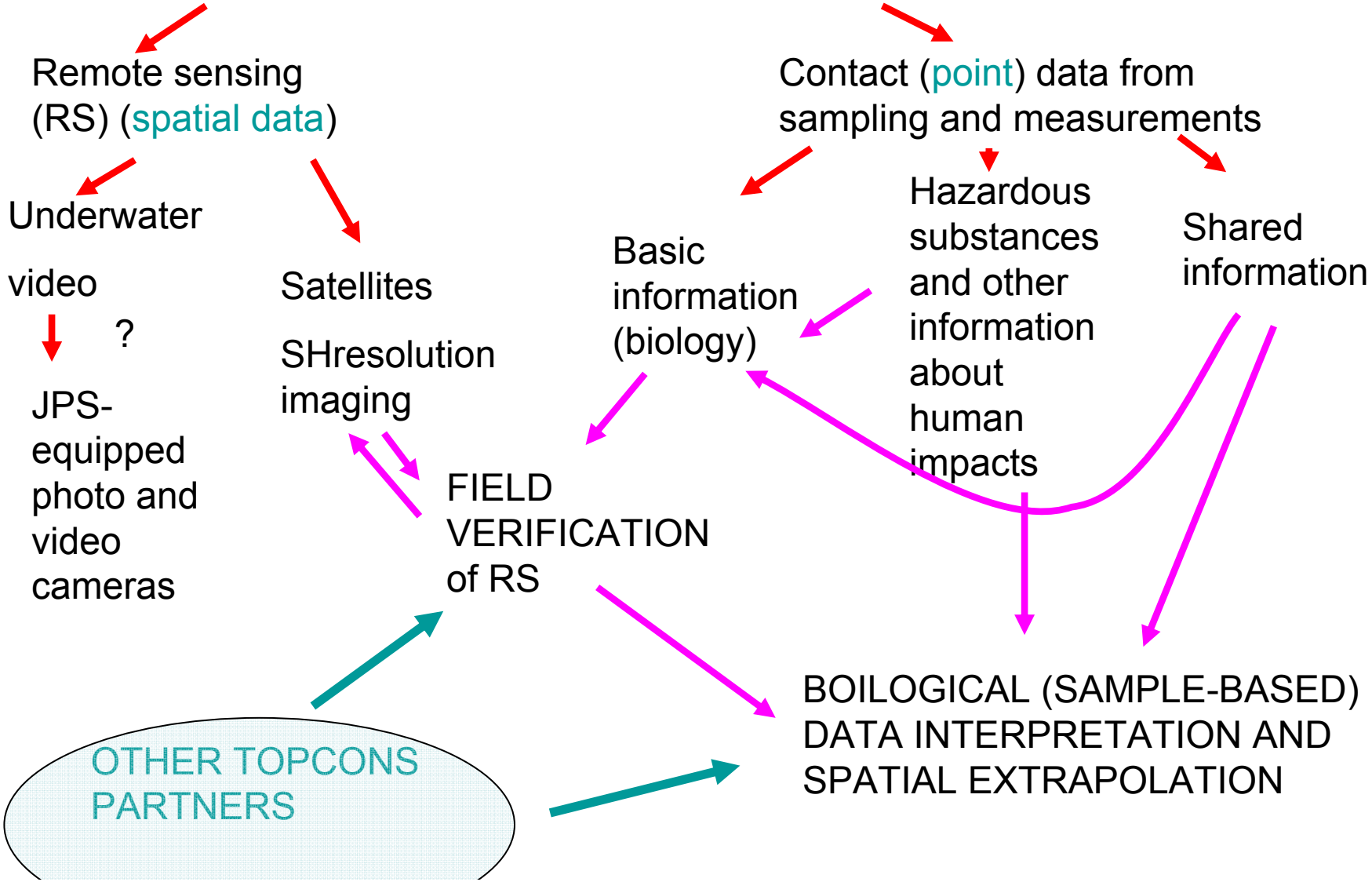
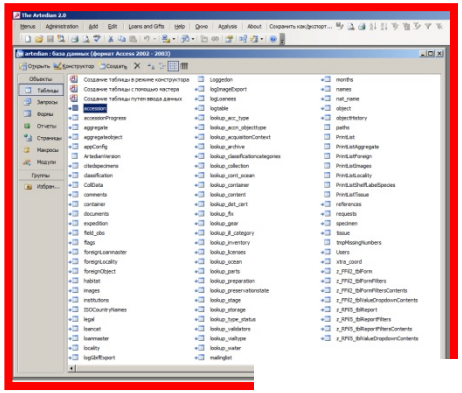




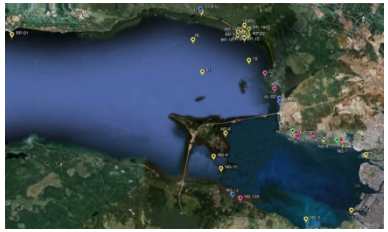
Variables/Data for integrative approach



Research



DATA (BIOLOGY)



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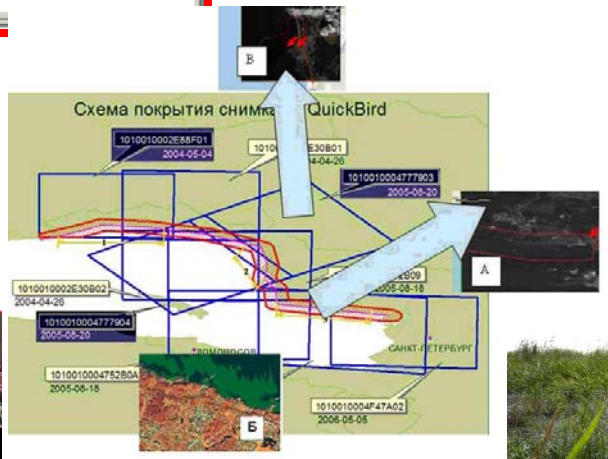
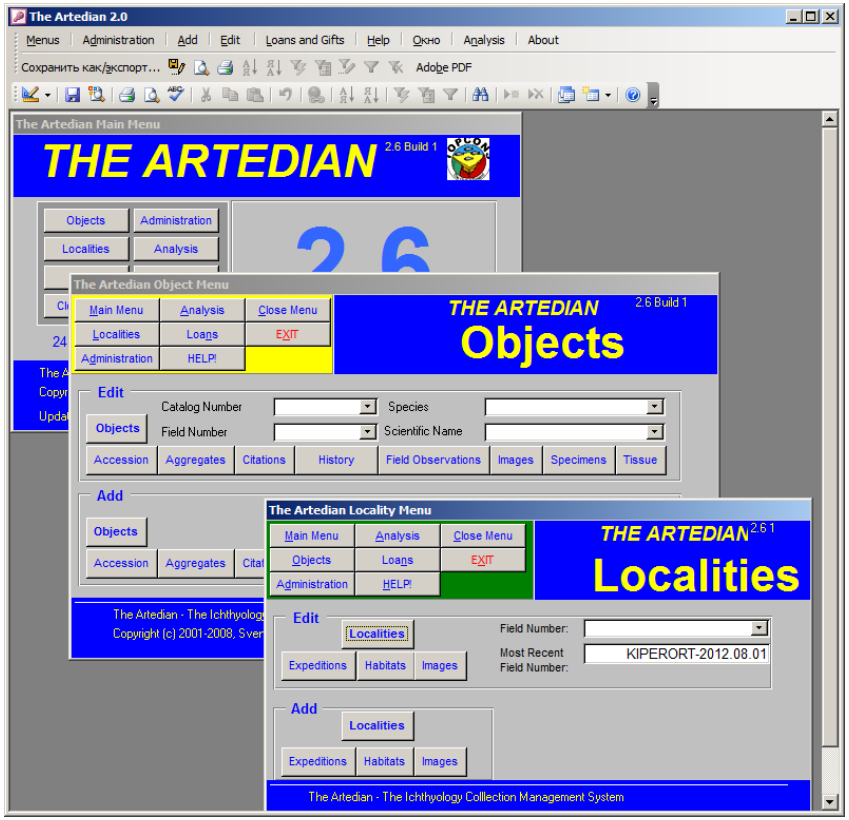




Types of data, compatible to the Arthedian

Data on living communities (available, collecting and expected to be collected) are diverse and they are often accompanied with data on environmental characteristics and human impacts (see SPBRC_Strategy fro field and environmental sampling file). It is expected that they will be also accompanied with diverse photo and videodocumentation, remote sensing information

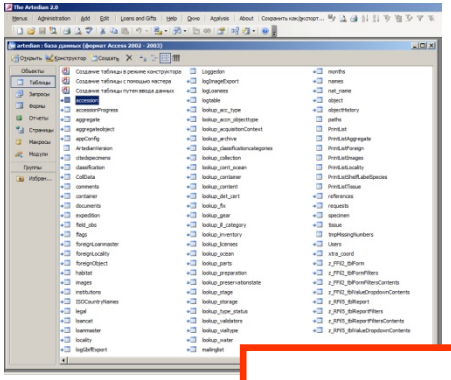
Objectives

The Arthedian is adapted for TOPCONS in order to cover requirements for collection, storage and management of the data described, as well as requirement to be compatible to geological data and modern GIS systems used for mapping and spatial planning.

Table of metadata for “Locality”

Имя поля	Тип данных	Описание
Locality_ID	Счетчик	Sequence Number
Field_Number	Текстовый	Field Number/equivalent
Access_Number	Текстовый	Link to Accession table
Continent_ocean	Текстовый	Continent including shelf OR ocean
Island	Текстовый	Major island or island group
Country	Текстовый	Country
Prov_State	Текстовый	State or Major political division
District	Текстовый	Lesser political division
Munic_County	Текстовый	Municipality, county or other local division
Ocean	Текстовый	Supplements Continent_ocean for Marine records, e.g., on shelves
WaterBody	Текстовый	Megadrainage, such as Baltic Sea Mediterranean Sea, Caspian Sea, Barents Sea
RiverDrainage	Текстовый	Nearest 1st or 2nd order stream, e.g. Xingu,
LakeBasin	Текстовый	Major lakes, mostly internal drainages, like Balkash, Tanganyika, Storsjön
Locality	Текстовый	This is the interpreted locality
StatedLocality	Текстовый	Data from labels, can be incorrect
LatDD	Числовой	Decimal degrees, latitude
LongDD	Числовой	Decimal degrees, longitude
Lat_degrees	Числовой	Degrees minutes seconds, latitude degrees
Lat_minutes	Числовой	Degrees minutes seconds, latitude minutes
Lat_seconds	Числовой	Degrees minutes seconds, latitude seconds
Lat_NS	Текстовый	Degrees minutes seconds, latitude direction
Long_degrees	Числовой	Degrees minutes seconds, longitude degrees
Long_minutes	Числовой	Degrees minutes seconds, longitude minutes

Research



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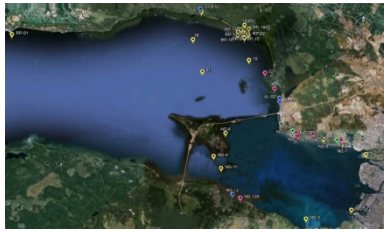

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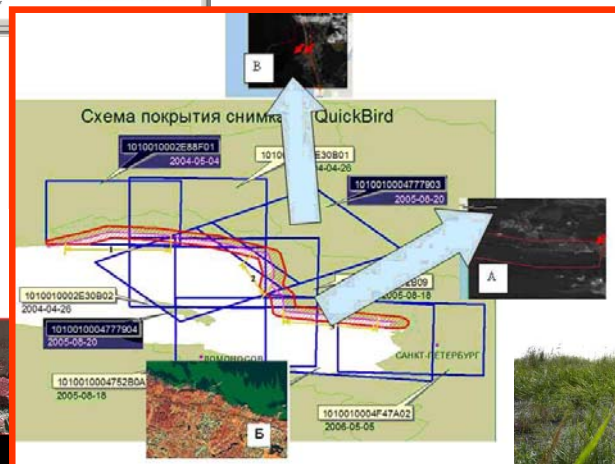
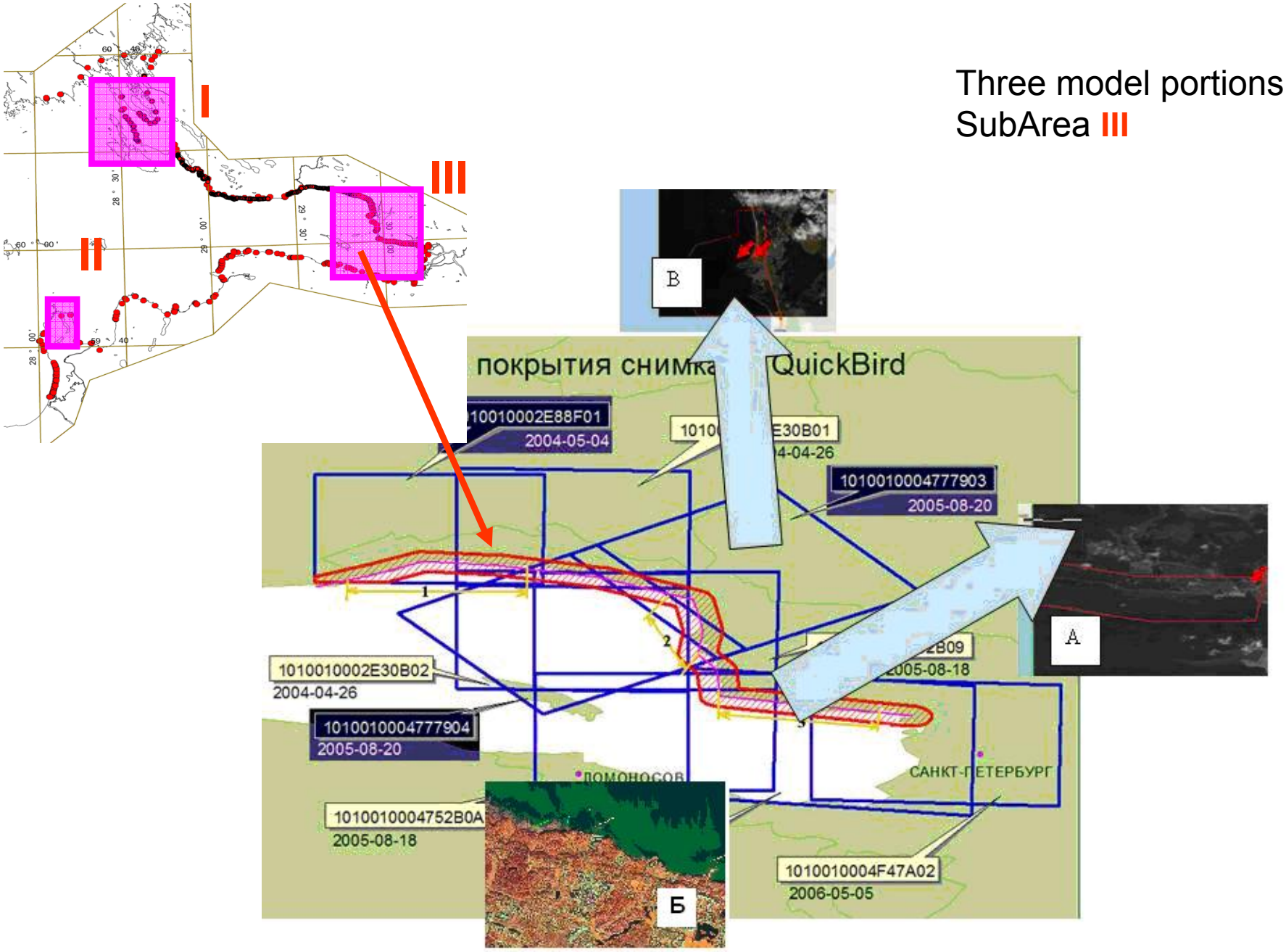


Three model portions in SubArea III



1. №: Участок 1
2. Спутниковая система: данные Ikonos

3. Обзорный снимок и границы фрагмента, совмещенные с картой

Description of satellite image ordering

Border of fragment

4. Площадь участка на местности: 37 кв. км

5. Идентификационные параметры

ID снимка	Дата	Облачность
2000065812900THC	2010-10-17	1%

Identification data

6. **Координаты UTM WGS 84 (градусы: долгота, широта)**

№ точки	Долгота, широта
1	29.9200,60.1253
2	29.9542,60.1262
3	29.9567,60.1189
4	29.9556,60.0887
5	29.9777,60.0574
6	29.9550,60.0572
7	29.8689,60.0572
8	29.8406,60.0834
9	29.8672,60.1032
10	29.9222,60.1100

Coordinates

METADATA

Use of RS for biological sampling, mapping etc. (sorry for language)
TENTATIVE APPROACH

Use for field planning and aquatic plant associations mapping(one of examples)

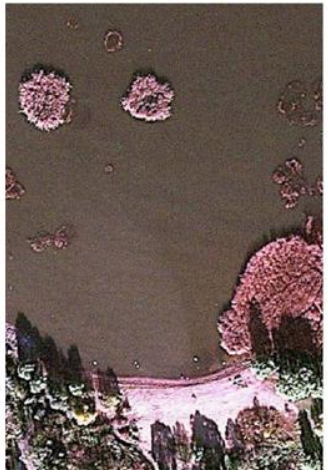
DEPTH: 1 – 0 M

1

Заказан снимок

2

Выбран участок и набор однородных элементов ландшафта для расшифровки



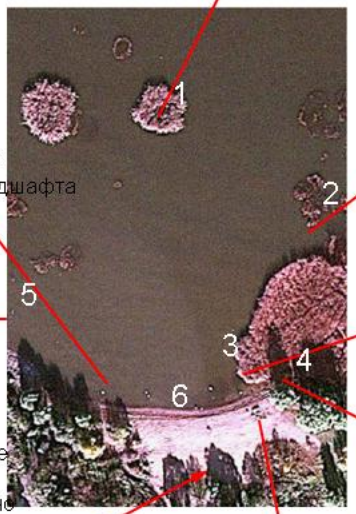
3, 4 – предположения и их полевая верификация

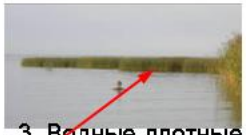
Вид пляжа в Мартышкино (с запада на восток)

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)

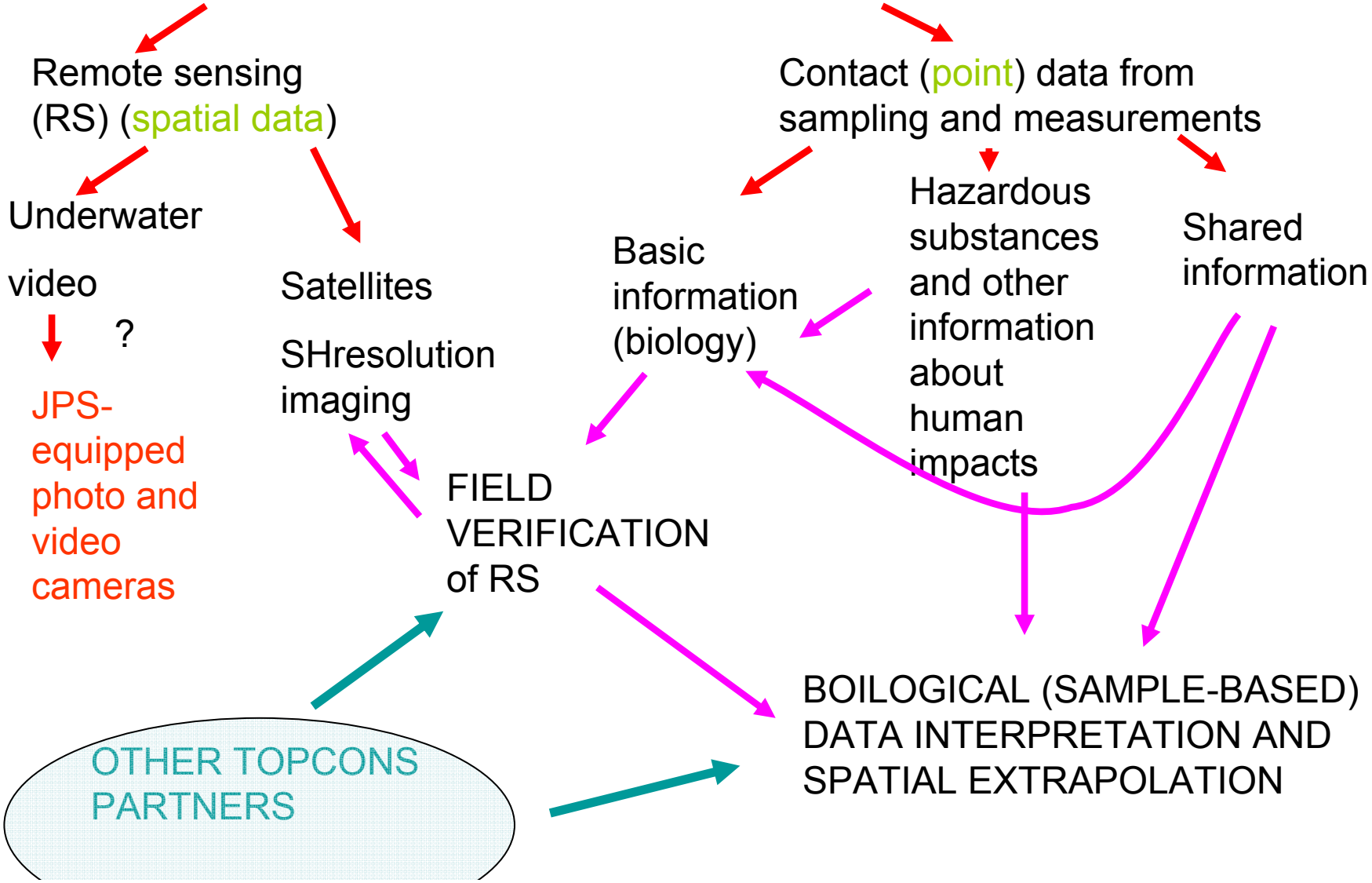
5. **Маленькие пятна чистых зарослей камыша** (соответствие элементов снимка и ландшафта установлено впервые)

Береговая и прибрежная растительность

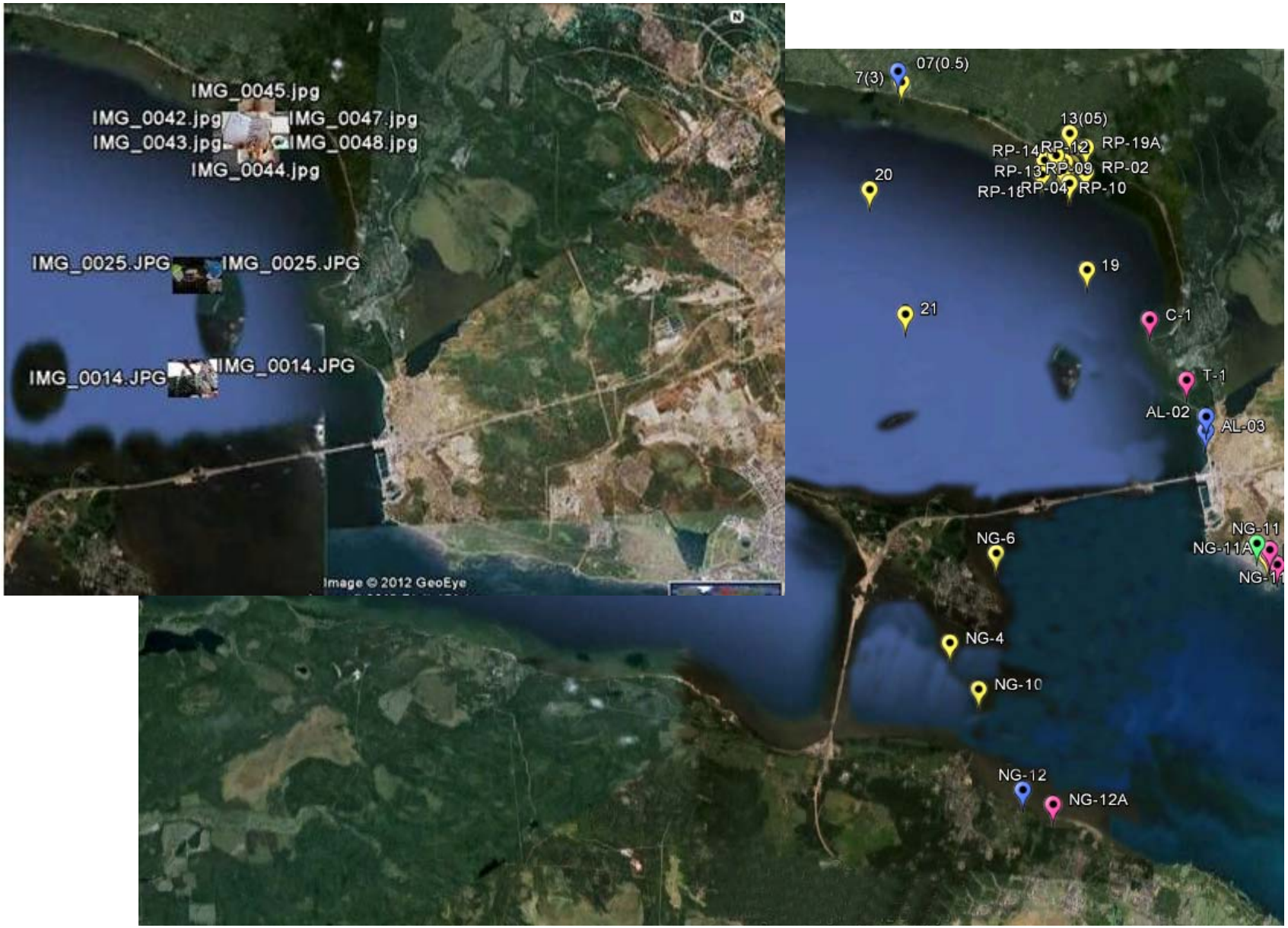
Восточная часть пляжа

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

Variables/Data for integrative approach

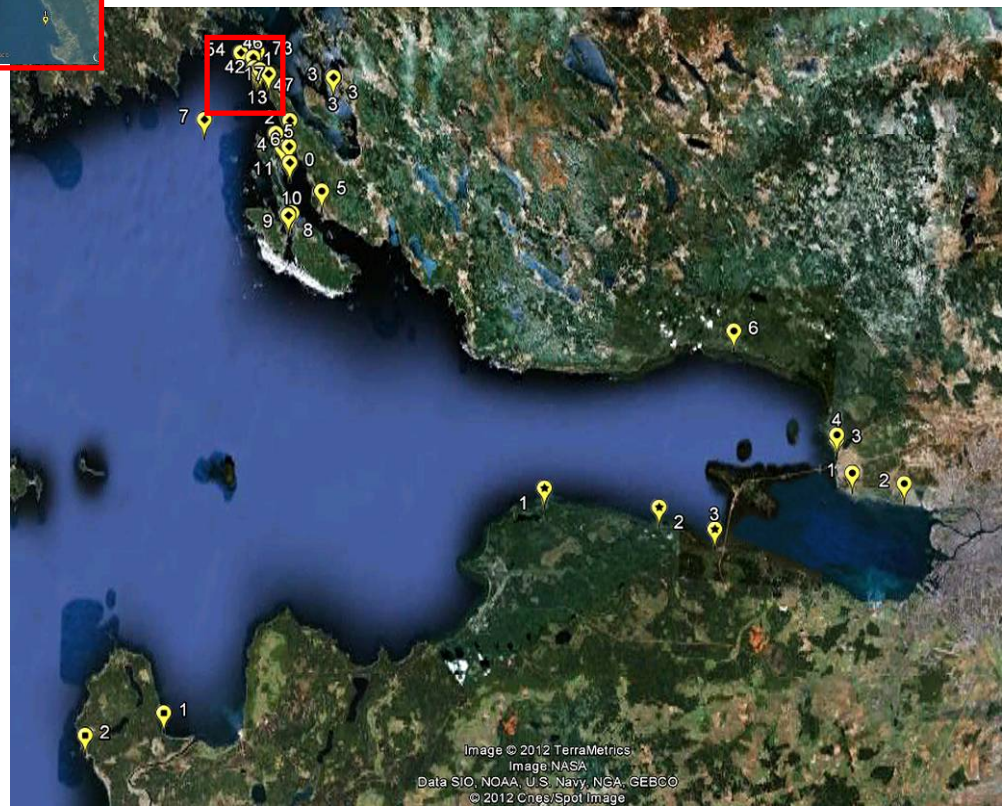


(CANON PowerShot SX230 HS, with box[for underwater photo/video (WP-DC42)



Sampling (1st REP)

VSEGEI-RAS (VybML expedition) & Fish RAS expedition



Sampling&Measurements

Temperature,
salinity,
transperency,
seston,

hazardous
substances

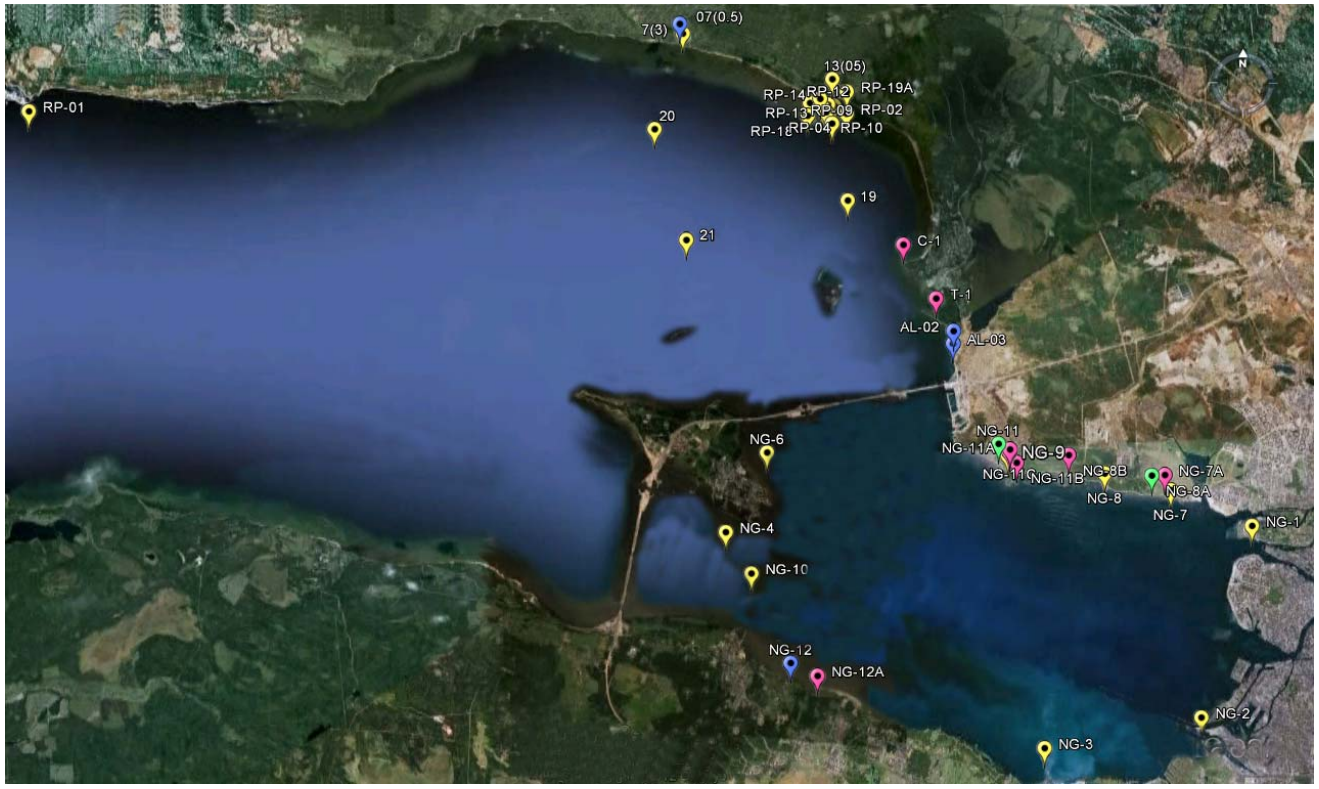
meroplankton
macroalgae
aquatic vascular
plants
macrozoobenthos

Coastal fishes

Sampling (End of field season

RAS expeditions (from vessel and by car) in model area III –
area of HIGH LEVEL OF SEA USES & CONFLICTS

Sampling&Measurements



Temperature,
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meroplankton
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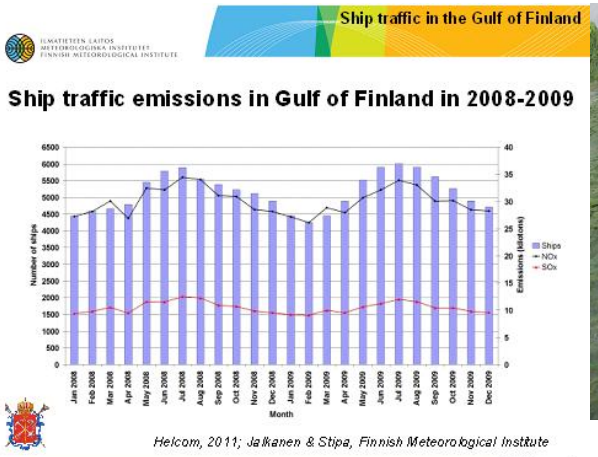
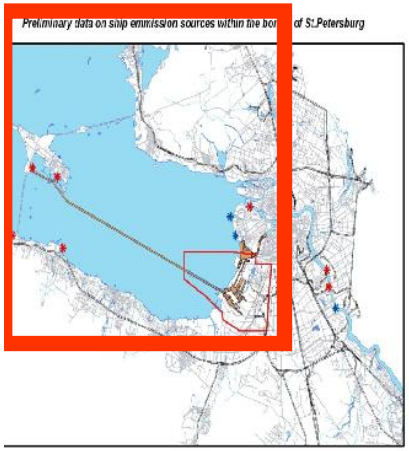
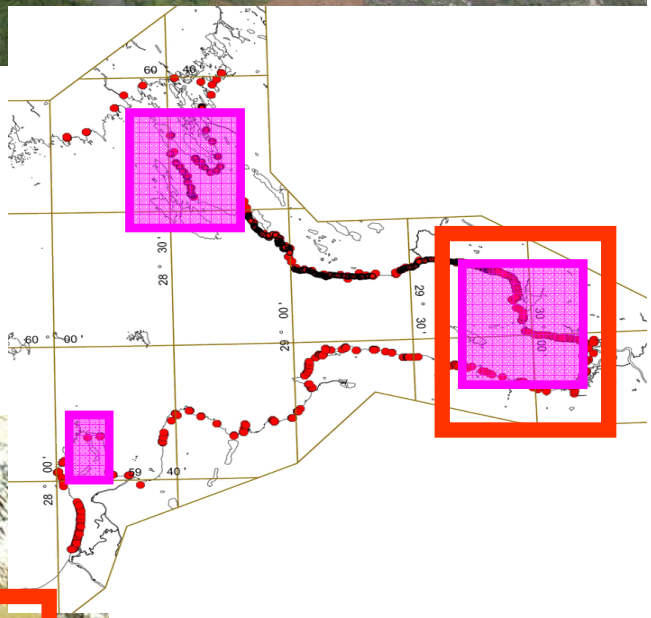
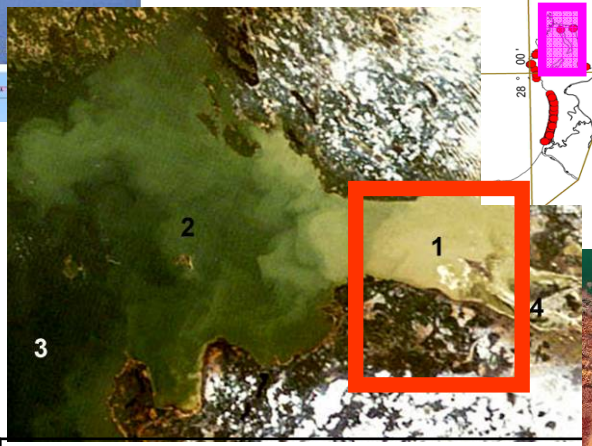
Coastal fishes







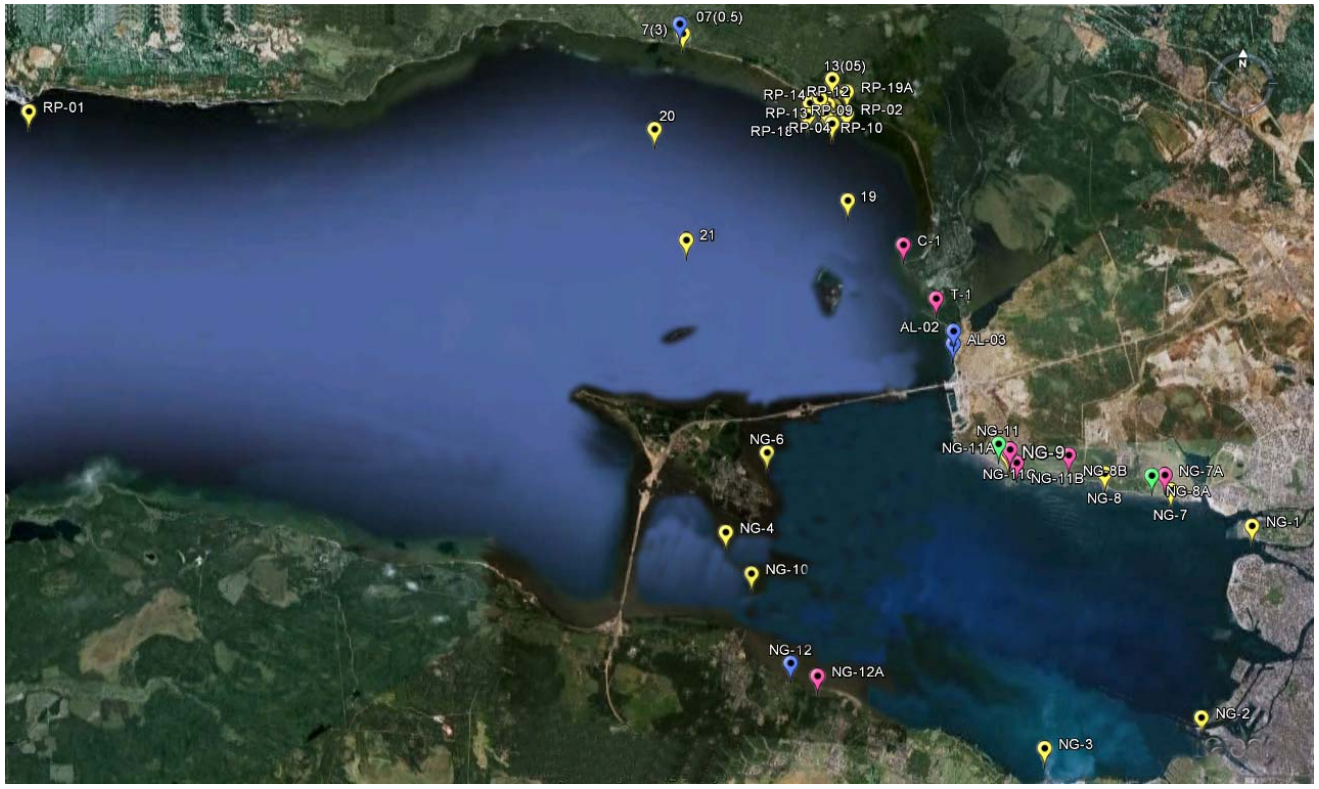


КС Landsat/TM за 09.08.2007. Распределение взвешенных осадков в восточной части ФЗ. 1 – максимальное содержание взвеси (>300 мг/л);
2 – «цветение» сине-зеленых водорослей;
3 – фоновые воды

КС Aqua/MODIS за 24.11.2007г. Распределение взвешенных осадков в восточной части ФЗ. 1 – максимальные значения концентраций взвеси;
2 – минимальные концентрации;
3 – фоновые воды; 4 - начало процесса льдообразования в Невской губе

Sampling (End of field season)

RAS expeditions (from vessela and by car) is model area III –
area of HIGH LEVEL OF SEA USES & CONFLICTS



Sampling&Measurements

Temperature,
salinity,
transperency,
seston,

hazardous
substances

meroplankton
macroalgae
aquatic vascular
plants
macrozoobenthos

Coastal fishes

Fishes:

Typical biotopes sampled in 2012

Alien fishes: *Proterorhinus sp.* *Romanogobio albipinnatus*, *Perccottus glehni* ротан

Rapid expansion of *Proterorhinus sp.*

Sampling (End of field season)

RAS expeditions (from vessela and by car) is model area III –
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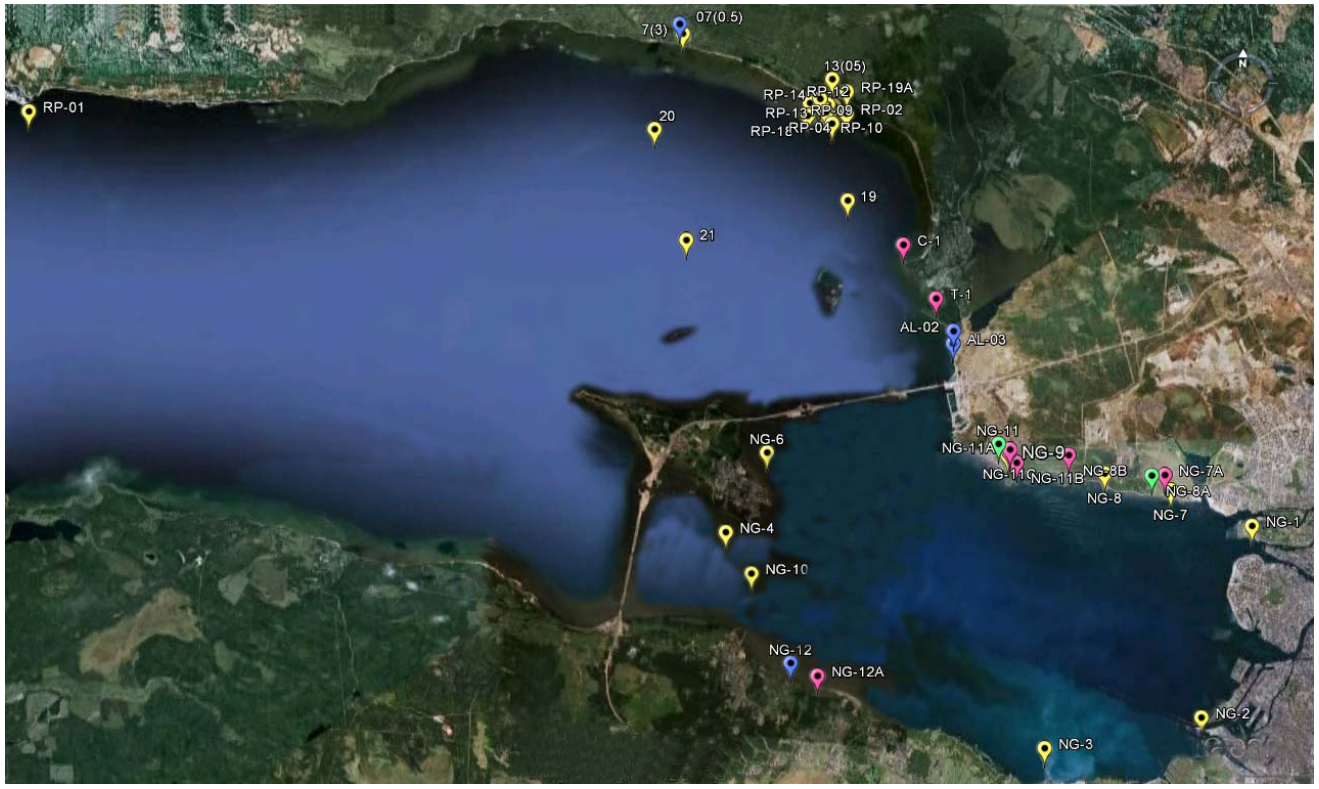
Sampling&Measurements



Temperature,
salinity,
transperency,
seston,

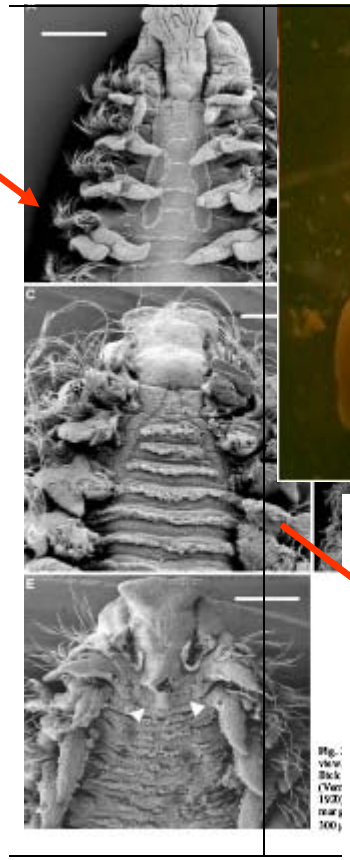
hazardous
substances

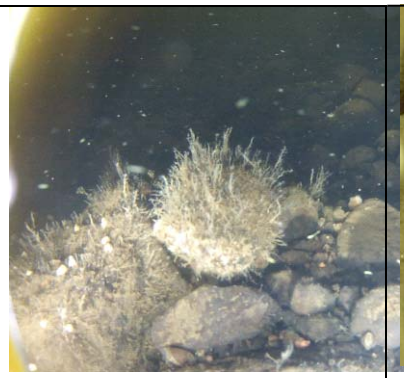
meroplankton
macroalgae
aquatic vascular
plants
macrozoobenthos

Coastal fishes

Macrozoobenthos, common and new species

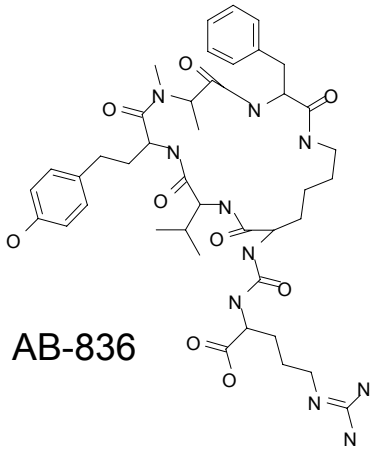
And Cyanobacterial blooms



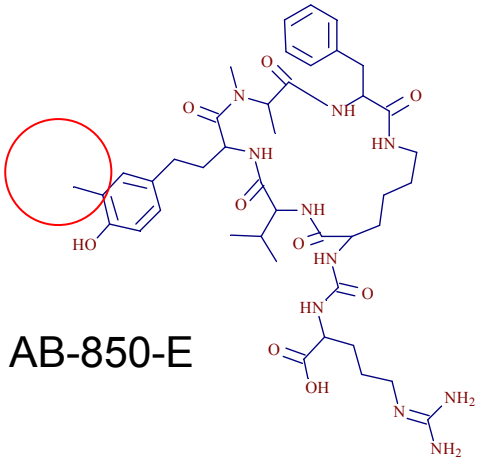


Working hypotheses

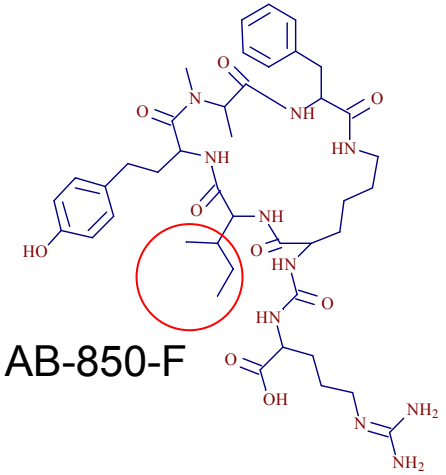
?



AB-836



AB-850-E



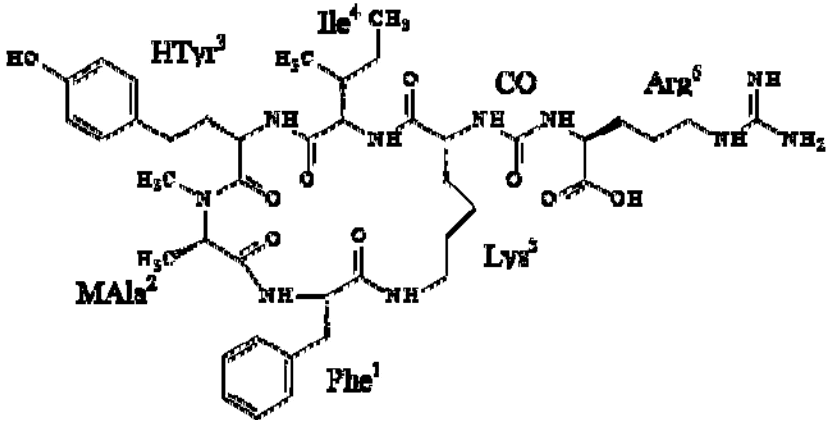
AB-850-F

2010	AB 836, ng/L	AB 850, ng/L	AB 908, ng/L
Lake Sestroretsky Razliv			
July-August	2-7	3-21	24
Suzdalskoe Lake			
Mid June - August	3 - 630	190-260	42-475

AB - Anabaenopeptine

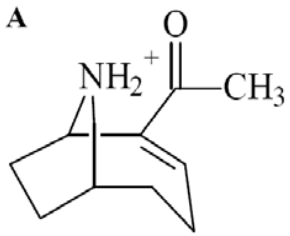
The concentration of anabaenopeptines in water samples was calculated by method of internal standard

Anabaenopeptines detected in water samples in 2010

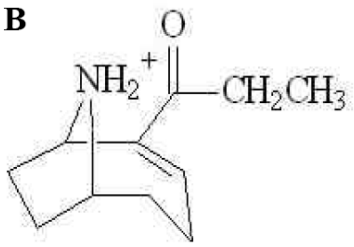


AB-908

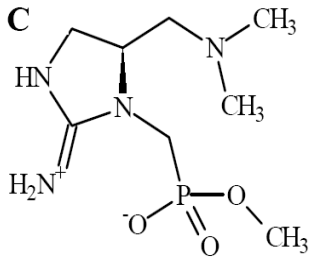
Cyanobacterial toxins in fresh-water bodies –
neurotoxins (anatoxins) and hepatotoxins (microcystines).



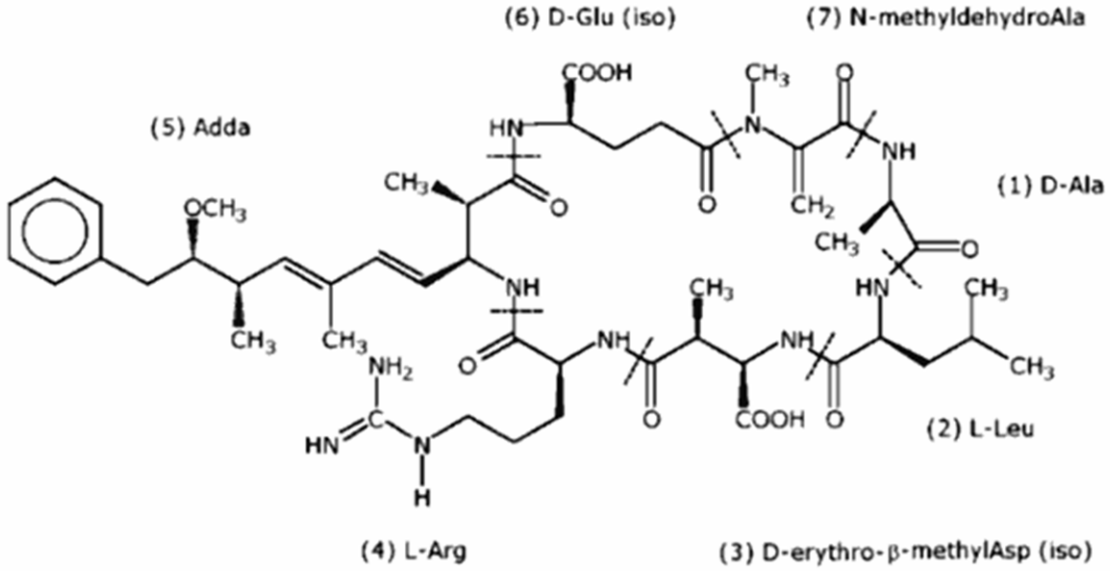
Anatoxin-a



Homoanatoxin-a

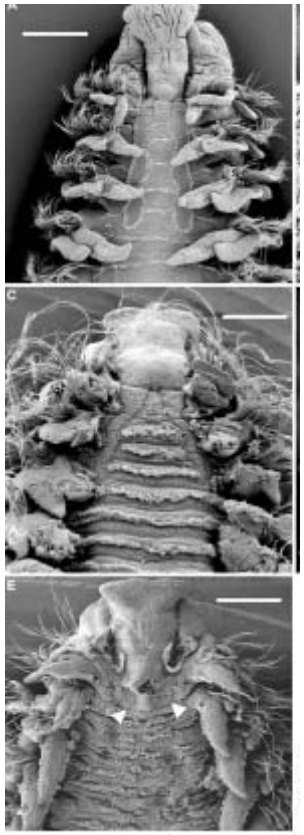


Anatoxin-a(S)



<u>Group of Microcystins</u> -
more than 80 structures
have been described

2012:



Mass development of Marenzelleria arctica – the new alien species

↓

Change in N:P ration

↓

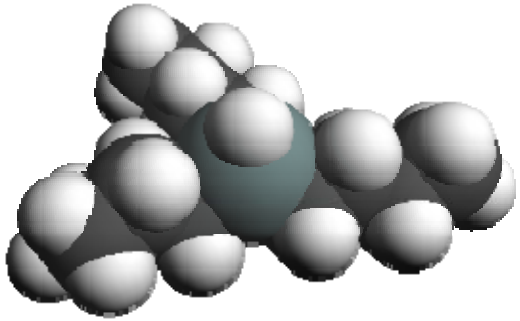
Concentration of cyanotoxins

August (VybML 2012 expedition – low

August-September – low

October – not detected

Tributyltin (TBT) compounds



$(C_4H_9)_3Sn^+$.

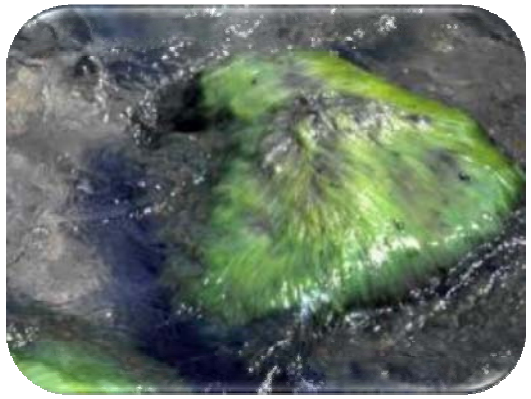
Anions: oxide, acetate, chloride, carbonate, fluoride, hydroxide, sulfide, linoleate, methacrylate, naphthenate benzoate

In sea water, TBT exists mainly as a mixture of the chloride, the hydroxide, the aqua complex, and the carbonate complex.

	pH
$Bu_3SnOH_2^+$	<7
Bu_3SnCl	7
Bu_3SnOH	8
$Bu_3SnCO_3^-$	>8

Uses

Due to their effectiveness against algae, fungi, gram-positive bacteria and some marine organism, organotin compounds have been commonly used as antifouling agents since early 1960s



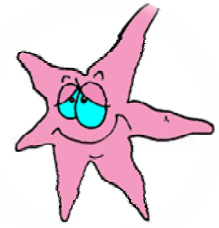
TBT is a highly toxic biocide that has been used to prevent the growth of marine organisms on the hulls of large ships

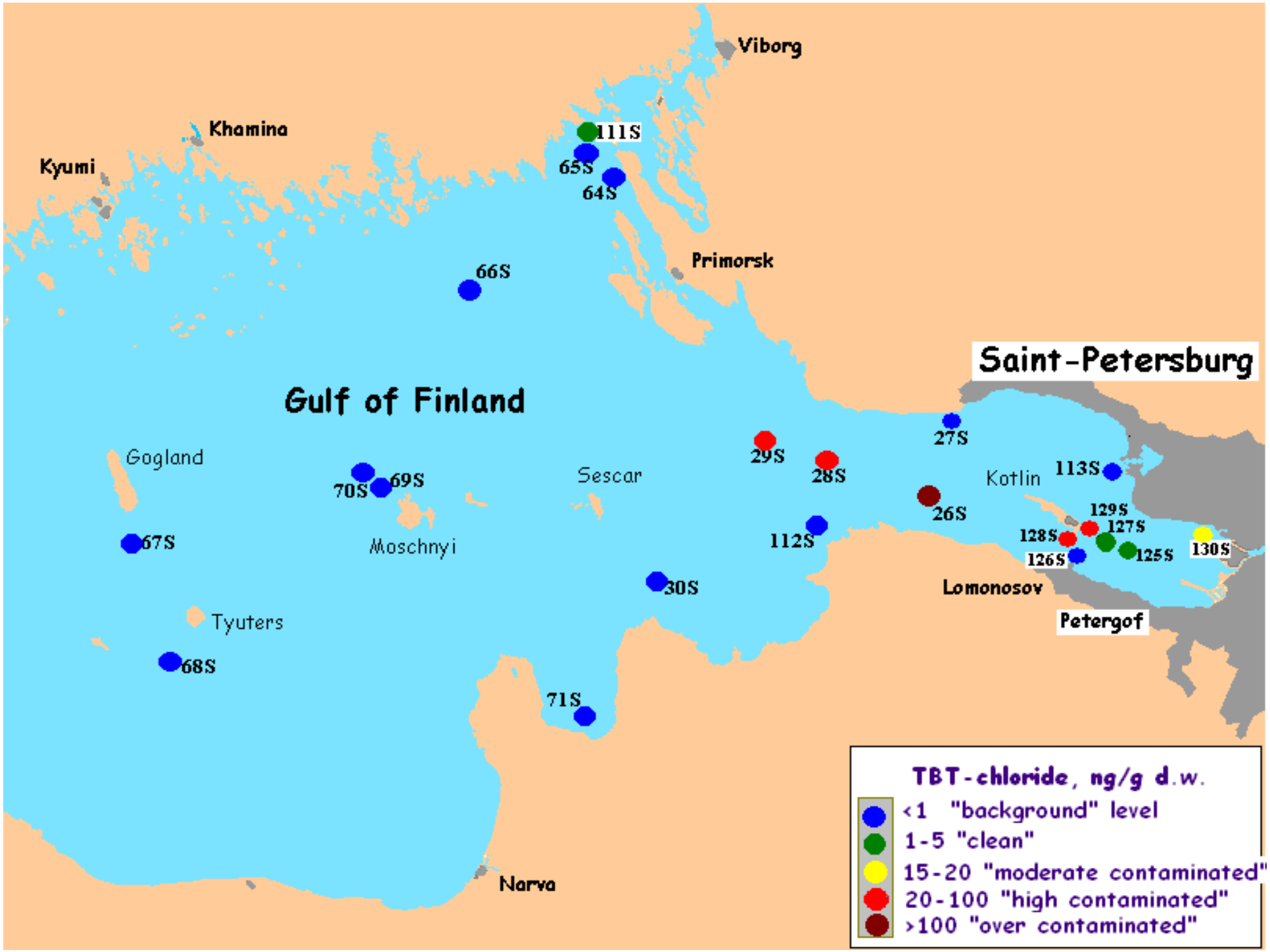
Toxicity

Alarming effects on living organisms appear at "ppt" (pg/g) concentration levels

TBT is highly toxic to marine mollusks, is linked to immuno-supression and imposex (development of male characteristics in female) <u>in snails and bivalves</u>

TBT bioaccumulates in organisms because of its solubility in fat

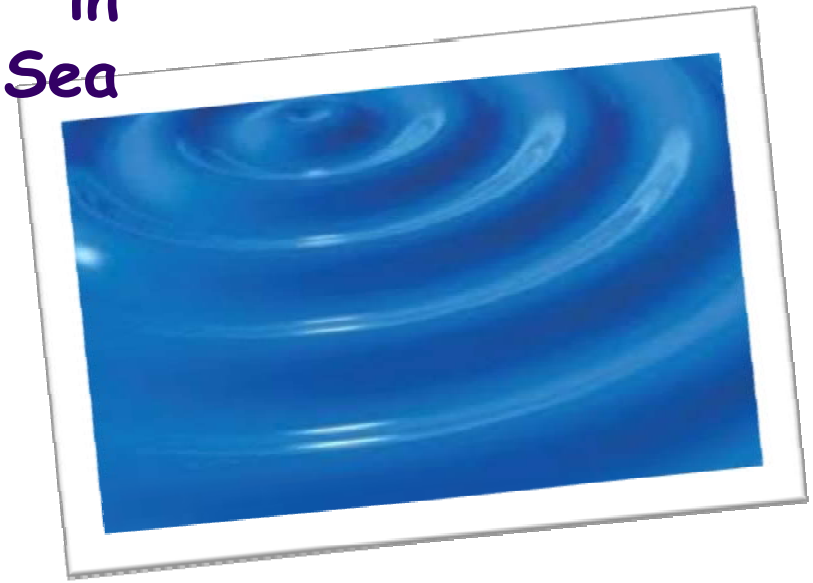



Viborg
Khamina
Kyumi
111S
65S
64S
66S
Primorsk
Saint-Petersburg
Gulf of Finland
Gogland
70S
69S
Sescar
29S
28S
27S
Kotlin
113S
26S
129S
127S
128S
125S
130S
126S
67S
Moschnyi
112S
30S
Lomonosov
Petergof
Tyuters
68S
71S
Narva
TBT-chloride, ng/g d.w.
<1 "background" level
1-5 "clean"
15-20 "moderate contaminated"
20-100 "high contaminated"
>100 "over contaminated"

Helcom

Antifouling use of all organotin compounds on all vessels has been banned in 2003 in European countries

TBT have been identified as priority hazardous substances specified in Helcom BSAP (Baltic Sea Action Plan)



Nevertheless, monitoring of aquatic systems is still required

Nearest plans:

- Post WS-2 meeting in St.-Petersburg (verification of partial (RAS) action plan according to WS-2 decisions)
- Completing the biological samples and pharma substances treatment
- Continuing of work under Arthedian taxonomical background
- Continuing of works on available data
- Continuing with RS and “point” data collation and decoding
- Plan for field season 2013 along with VSEGEI and RSHU, other partners
- Databases and data exchange - ?????
- Software - ?????
- Trainings –????
- Field guide- ????
- Webpage
- Decision makers’ seminar – role of RAS????

Thank you!

ENPI