

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



Remote sensing for marine spatial planning in the Neva Bay and the Eastern Gulf of Finland

What kind of knowledge can be extracted from satellite data During implementation the TOPCONS Project?

We can use different kind of satellite images for solving goals of regional, local and detail levels:

- Monitoring of aquatic system.
- Integrated using with field observations – better interpolation and extrapolation.
- Asserting the sampling sites and aid in field data processing.
- Marine and coastal landscapes study.
- Compiling/updates maps of investigated areas (from very high resolution RS data by scale up to 1 : 2000).
- Control/Supervise the hydro-technical and other kinds of human activity.
- RS as aid for decision makers.
-



04.07.2005

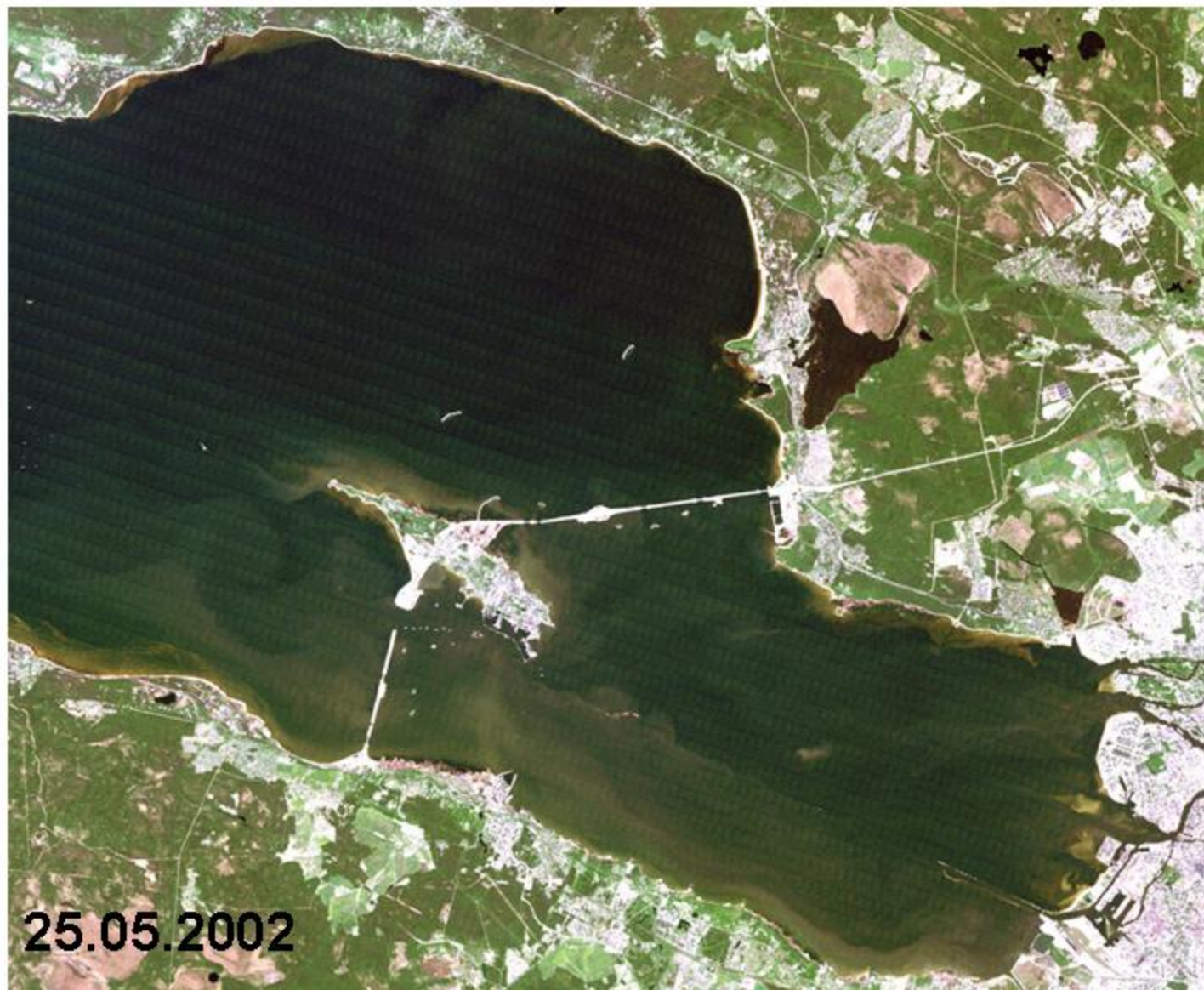


MSS_21_05_1976_RGB_321



L5_03_07_1987_RGB321

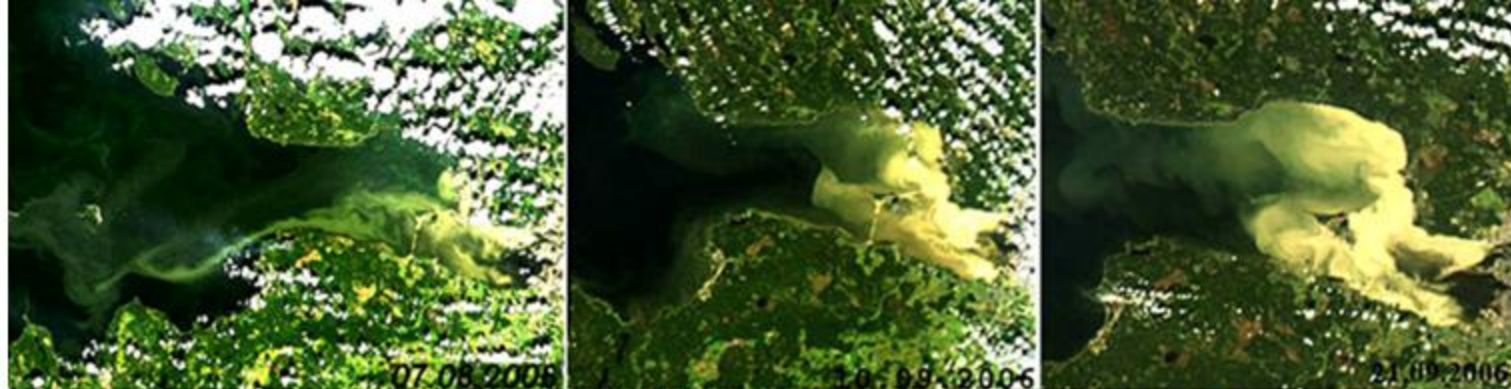
Before the project «Sea Façade of the St. Petersburg» started



Изображение LANDSAT-5 за 25.05.2002. Весенний период, работы по намыву не ведутся уже 10 лет (с 1992г.). «Просматривается» дно Невской губы (отмели, мели, отвалы фарватеров), отмечается «цветение» весеннего фитопланктона.

Terra/MODIS
and
Aqua/MODIS

2006г.



2007г.



2008г.



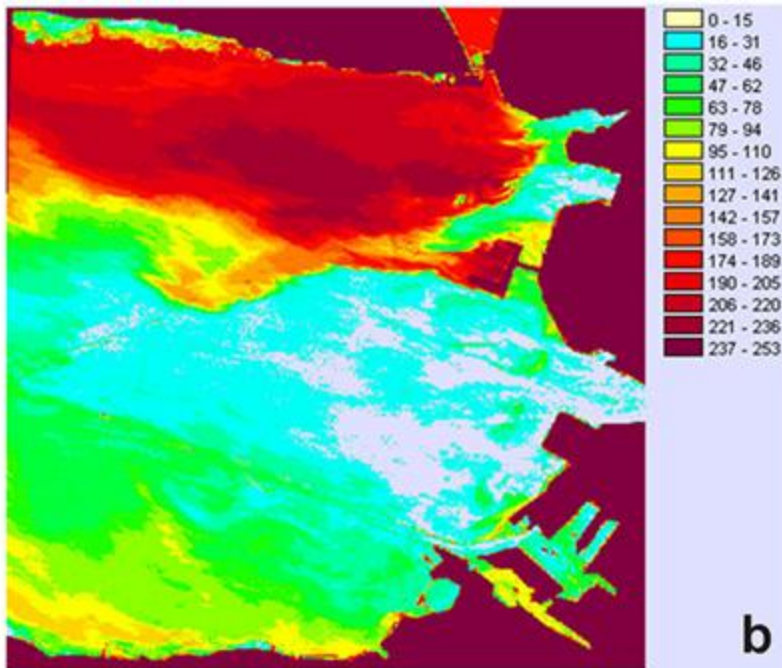
Variability of hydro-physical fields in the eastern Gulf of Finland caused by influence of natural and anthropogenic factors. Scenarios chosen from satellite Data Base for EGoF (monitoring using MODIS).

MODIS – 24.11.2007

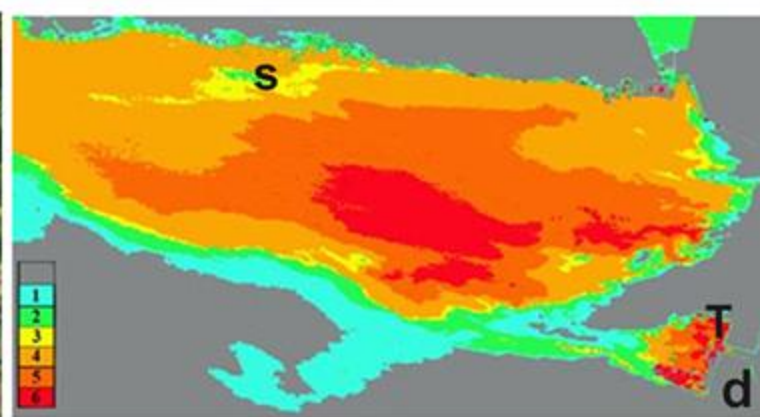


Late autumn and winter aspects. Fine SS distribution after the dredging activity has been stopped. Scenario chosen from satellite Data Base for EGoF (monitoring using MODIS)

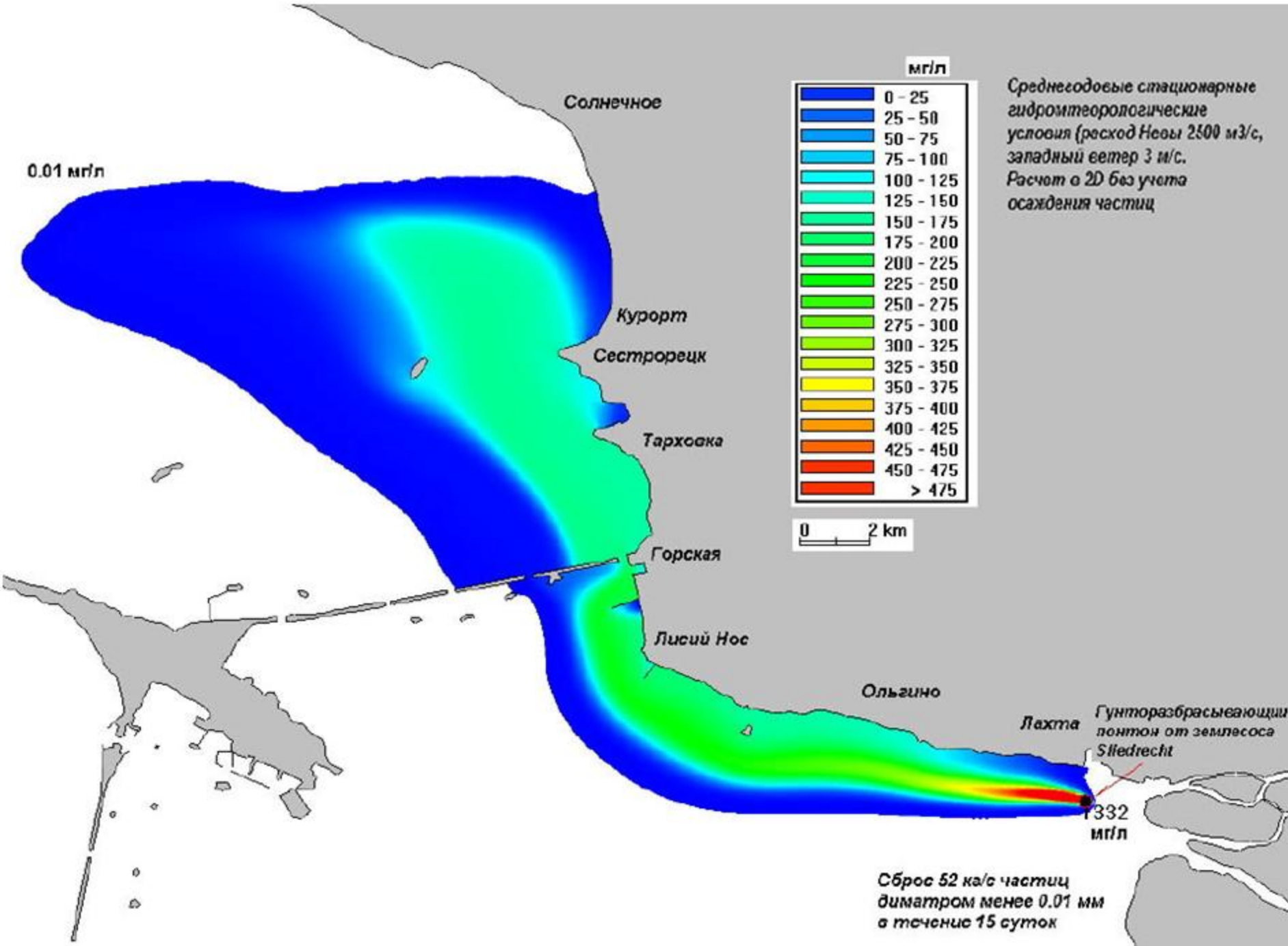




- a) Quick Bird image, 08.08.2007 – spot of water contamination by suspended sediments;
- b) values of radiances in channel-2 (for 16 intervals);



- c) MODIS/Aqua image, from 08.08.2007 – dispersion of suspended sediments faraway from licensed area; d) results of cluster analysis of the polluted area on the Quick Bird image: 1-6 zones with different values of sediments concentrations: 1 – minimum amount of suspended sediments, 6 – maximum, S – sewage plum from waste-pipe, T – new terminal (under construction).



мг/л

0 - 25
25 - 50
50 - 75
75 - 100
100 - 125
125 - 150
150 - 175
175 - 200
200 - 225
225 - 250
250 - 275
275 - 300
300 - 325
325 - 350
350 - 375
375 - 400
400 - 425
425 - 450
450 - 475
> 475

Среднегодовые стационарные гидрометеорологические условия (расход Невы 2500 м³/с, западный ветер 3 м/с. Расчет в 2D без учета осаждения частиц

0 2 km

0.01 мг/л

332 мг/л

Сброс 52 кг/с частиц диаметром менее 0.01 мм в течение 15 суток

Лахта Гунторазбрасывающий понтон от землесоса Sledrecht

Солнечное

Курорт

Сестрорецк

Тарховка

Горская

Лисий Нос

Ольгино



Fragment of image L5_14_07_2006_RGB321

Some results of the EGoF monitoring during 2012



Terra/MODIS from 28.05.2012. Unusually early time Cyanobacteria bloom



Terra/MODIS from 29.05.2012. Unusually early time Cyanobacteria bloom

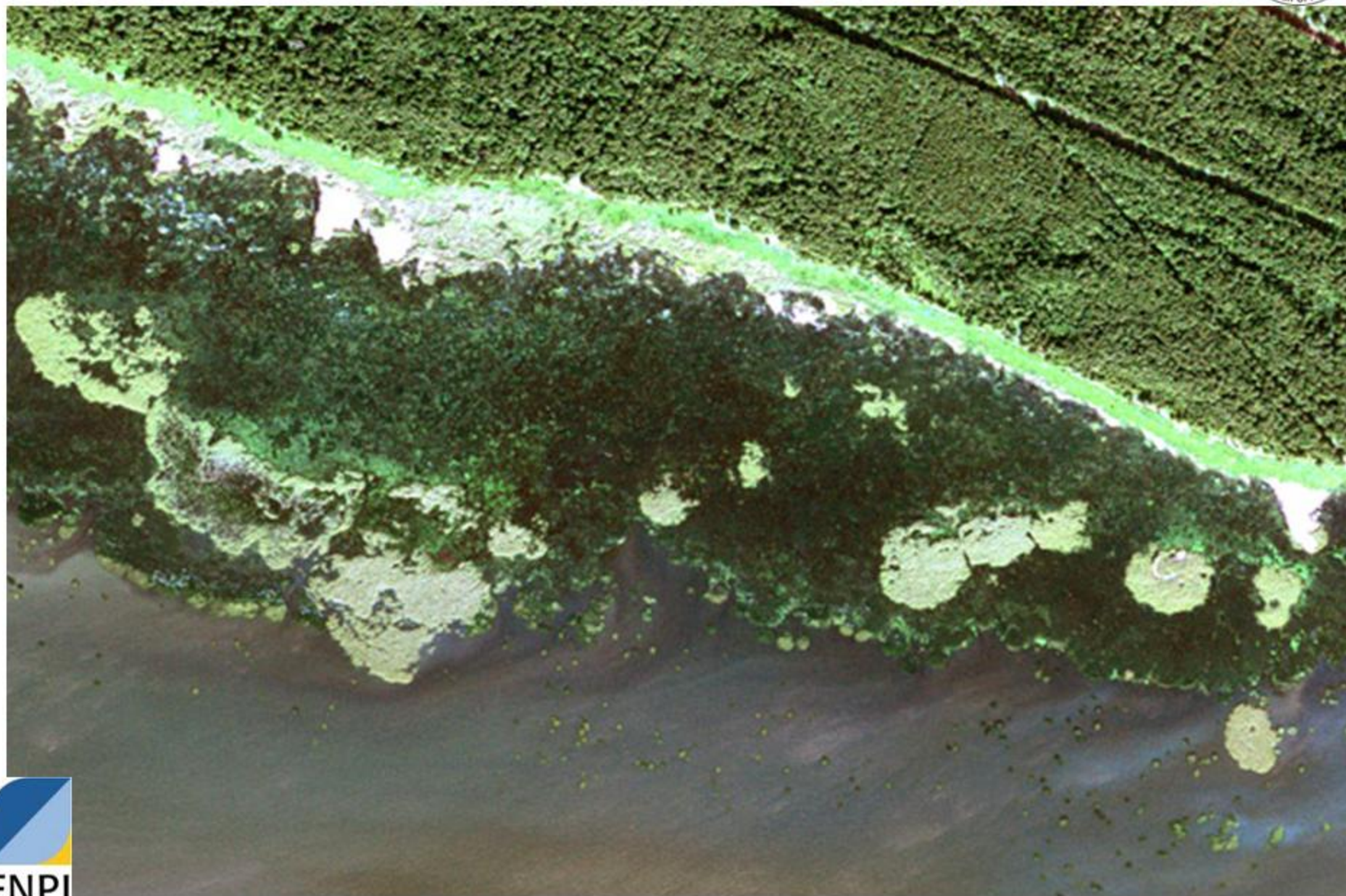


Terra/MODIS from 18.08.2012

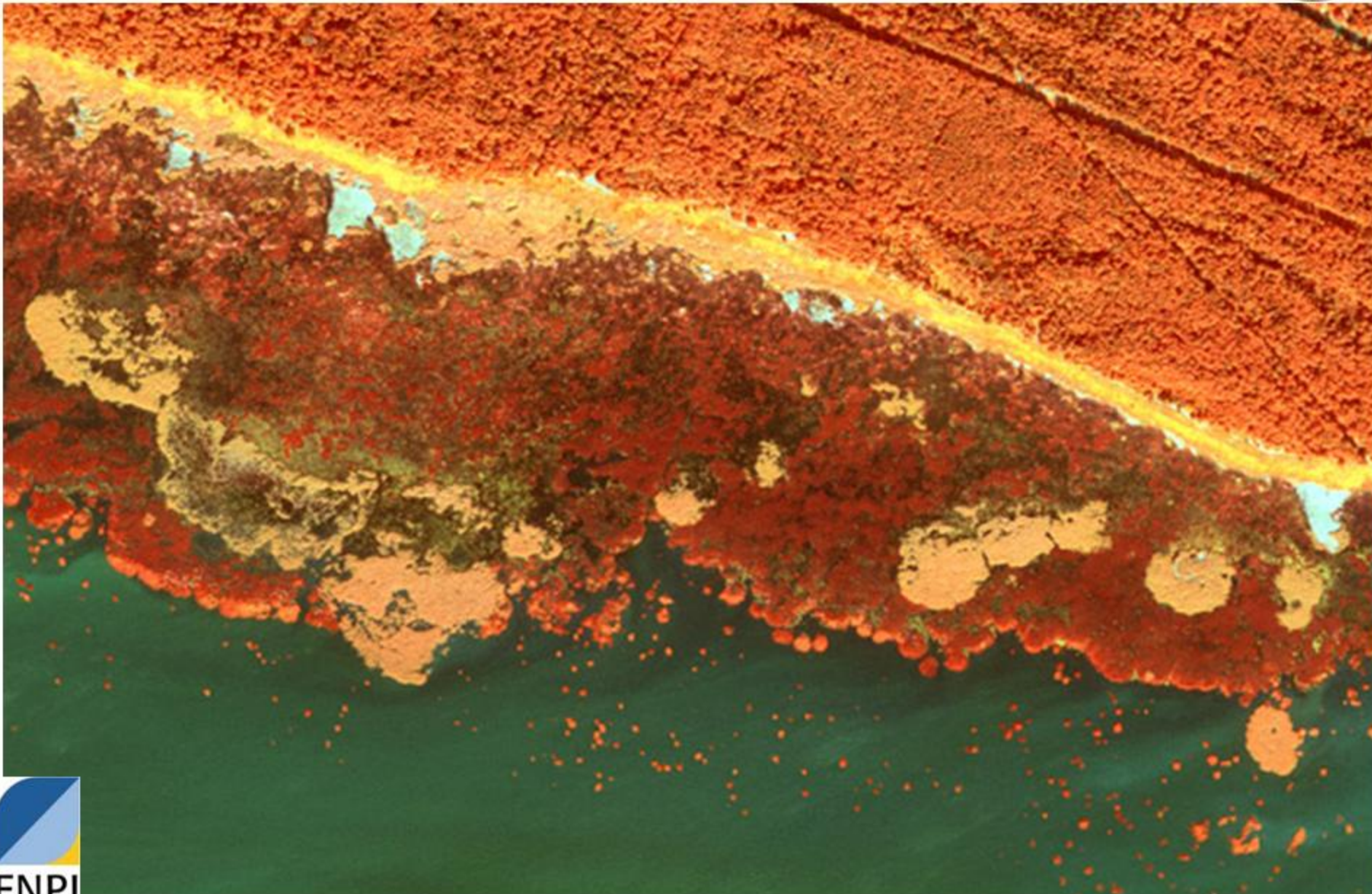


Aqua/MODIS from 26.08.2012

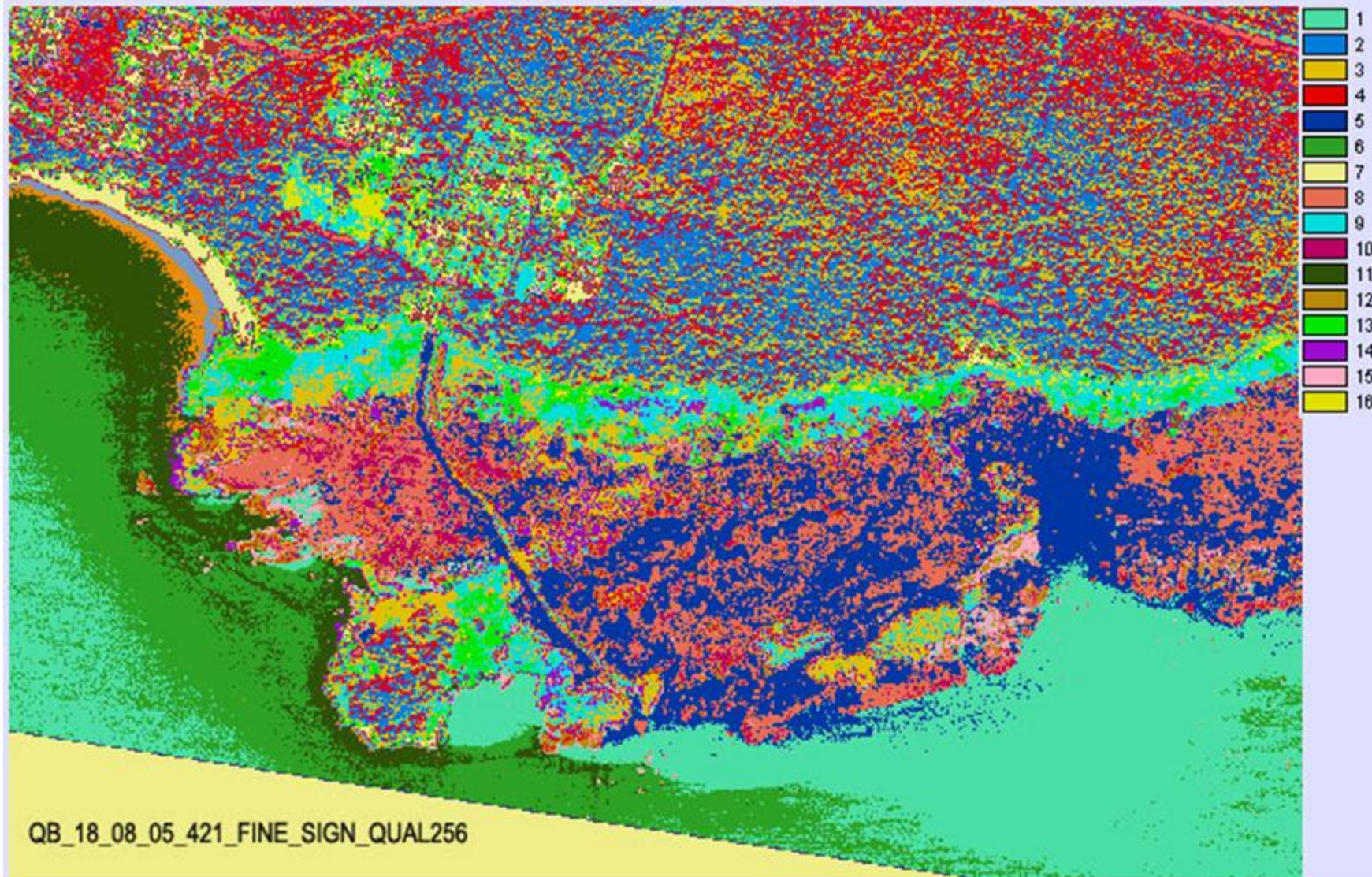
WV-2_11_08_2010_RGB_321



WV-2_11_08_2010_RGB_421



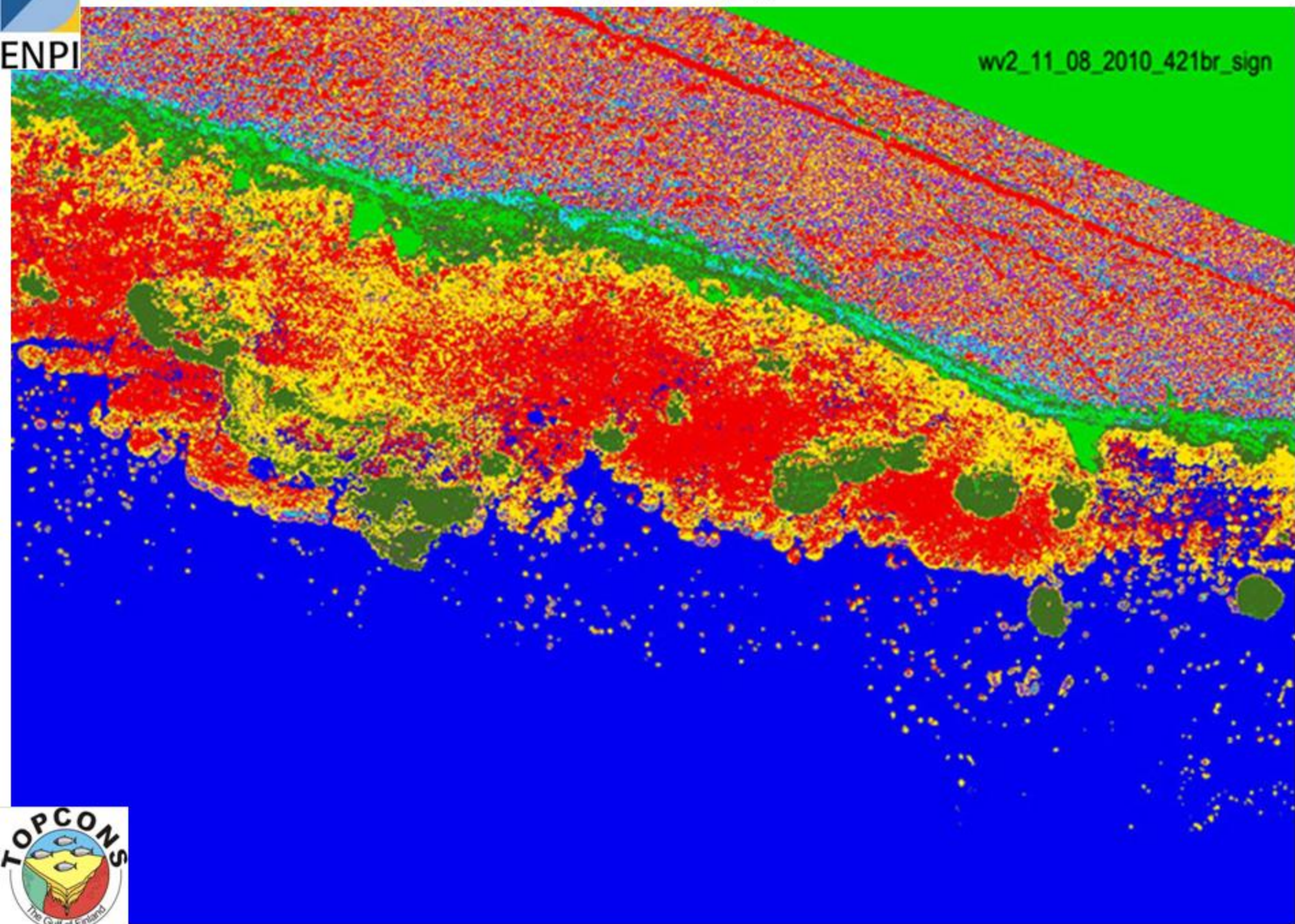
Cluster Analysis Result



wv2_11_08_2010_421br_sign

ENPI

wv2_11_08_2010_421br_sign



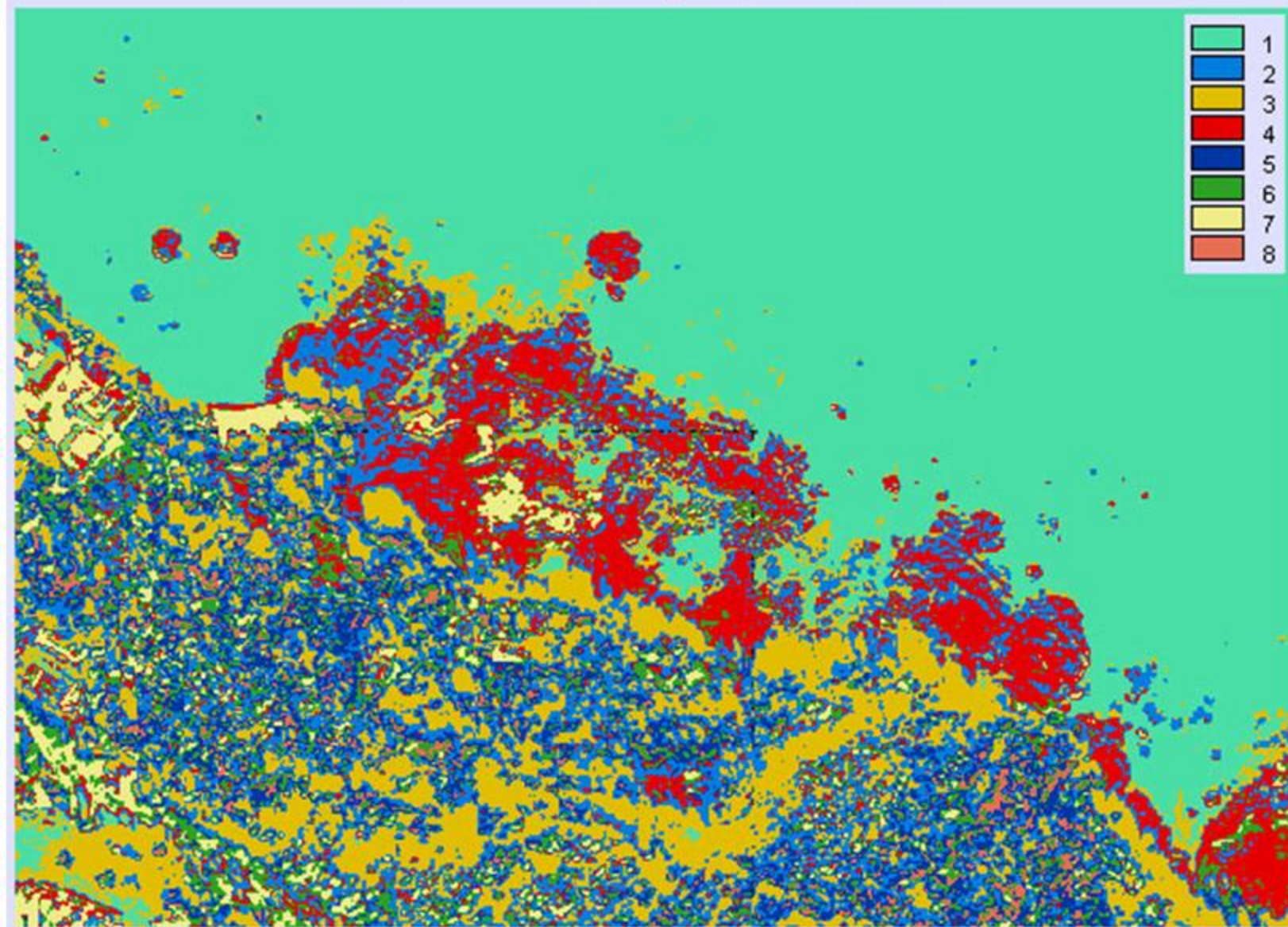


ENPI

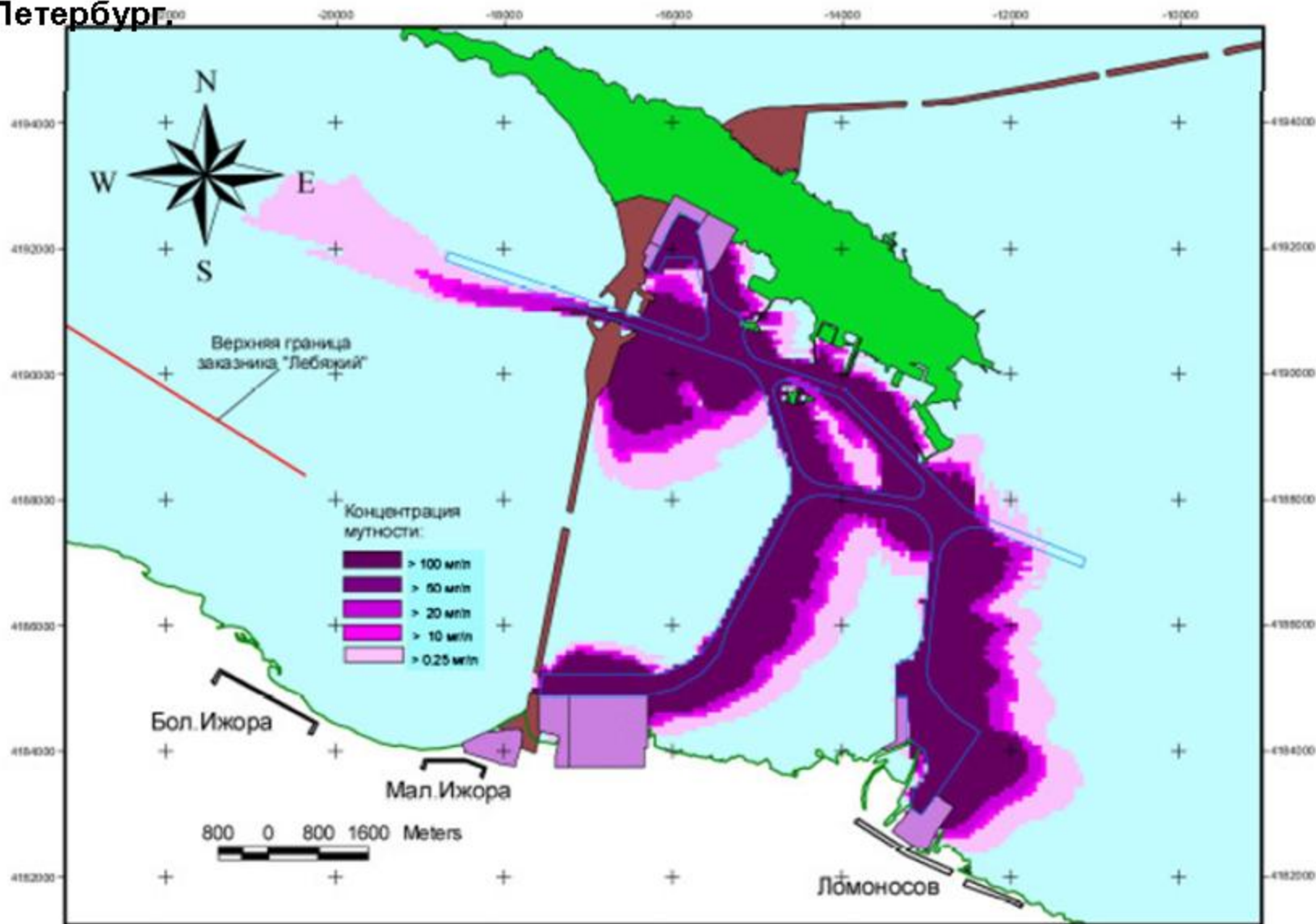
GE_fr1_RGB_421



Cluster Analysis Result



В.А. Жигульский, А.Ф. Обуховский. Экологические аспекты дреджинга в Российской части Балтийского моря. Презентация на семинаре CEDA «Экологические аспекты дноуглубительных работ», 13 – 14 октября 2009г., Санкт-Петербург.



ОВОС – «Бронка», «Янтарь». Модельные расчеты загрязнения акватории взвесью

A scenic view of a grassy shoreline with waves crashing against the rocks under a cloudy sky. The text "Thank you for attention!" is overlaid in red.

**Thank you
for attention!**