

VENUE

National institute of biology
Marine biology station Piran
Fornače 41
6330 Piran, Slovenia

How to get there

Airport-Piran distance: Trieste Ronchi
airport: 80 km; Ljubljana Brnik airport:
130 km; Venice Marco Polo airport:
200 km; Klagenfurt: 200 km.

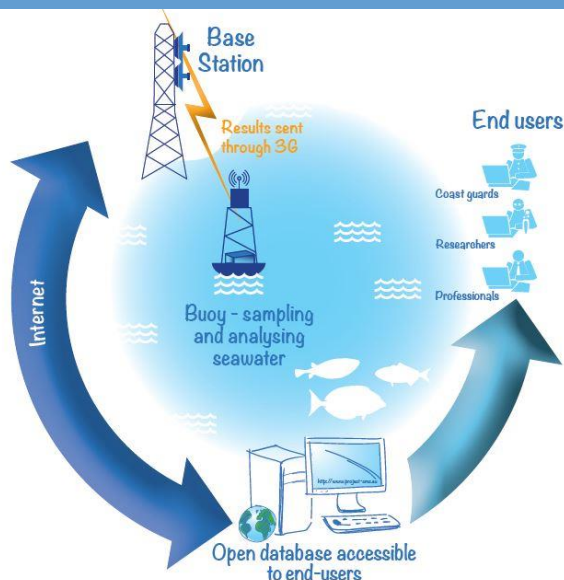
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www.project-sms.eu

ABOUT SMS

SMS delivers a novel automated networked system enabling daily in-situ monitoring of seawater in coastal areas by the automated detection of a series of emerging pollutants. Using innovative analyzers and in-situ probes, a wide spectrum of compounds that have detrimental effects on the marine environment such as nutrients, toxic algae, algal toxins, herbicides, flame retardants, and pharmaceuticals are detected.



Sensing toxicants in Marine waters makes Sense using biosensors

SMS Demonstration Workshop

July 6th 2017

The SMS concept is based on a novel automated networked system, which includes a multi-modular apparatus (a coastal buoy or a floating platform) that hosts in a single unit—the Main Box—a Sampling Module and an Analysis Module. The former contains sample collection, filtering and preconcentration and treatment components, whereas the latter includes five automated sub-modules for the unattended measurement of (i) toxic algal species, (ii) their associated toxins, (iii) hazardous compounds, namely glyphosate and pentaBDPE, (iv) sulphonamides and (v) a series of standard water quality parameters including nutrients.

In particular, a modular measurement prototype based on Enzyme Linked Immuno- Magnetic Optical (ELIMO) assays, is operative to detect microalgae from genera *Alexandrium*, *Dinophysis* and *Pseudo-nitzschia*. The water sample is automatically pretreated by a separated automated module performing water sampling, cells preconcentration and lysis.



Figure 1 Portable analyzer automating complex analytical methods

A modular measurement prototype using the same ELIMO measurement technology was developed and tested in laboratory for the quantitative sequential measurement of toxins Okadaic acid, Domoic acid and Saxitoxin.

This automated module is capable to measure, unattended, up to 50 water samples and the measurement ranges between 0.01 and 1 $\mu\text{g/L}$. The water sample is preliminary filtrated on field at 0.1 μm cut-off, with automatic filter backwashing using the filtered sample.

The water quality monitoring system is equipped with a communication module for real-time wireless data transfer to a remote control center, where data processing takes place, enabling alarm functionality of early warning system. Two field experiments are going to be performed in La Spezia (Italy) using a floating platform and in Piran (Slovenia) using a large coastal buoy.



Figure 2 In-situ field probe for long term measurements

July 6th 2017 – Demonstration workshop

Plenary session

09.00 - 09.30: Welcome and introduction - *G. Palleschi, University Roma II - Project Coordinator and MSc Jure Vindišar, Assistant Director for Technology Transfer, NIB*

09.30 - 09.50: Method of analysis for the detection of saxitoxin, domoic acid and okadaic acid based on ELIMO technology - *K. Petropoulos and A. Porchetta, University Roma II*

09.50 - 10.10: Method to measure toxic algae species in coastal water based on ELIMO technology - *C-L. Manes, Microbia Environnement*

10:10-10.40: Coffee break

Lab demonstrations

10:40 - 11:10: Sulphonamide determination using an automated micro Loop Flow Reactor analyzer - *A. Amine, Hassan II University, Casablanca, Morocco*

11.10 - 11.40: Toxic algal detection in marine environments - *C-L. Manes, Microbia Environnement*

11.40 - 12.20: Algal toxins and PBDE automated determination using a micro Loop Flow Reactor portable analyzer based on ELIMO technology - *K. Petropoulos, University Roma II*

Plenary session

12.20 - 12.50: Data management and field experiments - *L. Sanfilippo, SYSTEA SpA*

- Algal toxins on-line data from the floating platform in La Spezia
- Specific toxic algae species and nutrients on-line data from the coastal buoy in Piran

12.50 - 13.15: Opportunities and perspectives for application of the automated methods in aquaculture and coastal areas monitoring - *A. Gunatilaka*

13.15 - 13.45: Discussion and conclusions - *G. Palleschi, University Roma II - Project Coordinator*

13.45 – 15.00: Lunch break

15.00 - 17.00: Visit to the coastal buoy in Piran



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