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**ESONET European Seas Observatory Network**

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## **Project Deliverable D#65**

### **Outreach and communication in ESONET via aquaria network**

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Project Coordinator: Roland PERSON Coordinator  
organisation name: IFREMER, France

#### **Work Package 7**

Organization name of lead contractor for this deliverable: **SOPAB**

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<b>Dissemination Level</b>		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



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# **WP7**

## *Film produced for ESONET*

# **Ocean under Observation**

### ✓ **Summary of the aims/objectives of the film**

Nowadays many processes that take place in the ocean are society issues constantly covered by the media. The impact on the marine environment is real and has profound consequences on marine ecosystems and society. Oceanic seismic events can also lead to disaster. Finally biodiversity in the oceans is still poorly known and threatened species appear. But just how do the General public and policymakers make sense of the reports of these global changes?

School students and policy makers of our respective countries need to increase their awareness on what happen in the ocean.

ESONET aims to record the global ocean properties over several years to assess the evolution of the oceans.

How can the scientists follow from a distance what happened at thousands of meters deep for a whole year? The 14 open ocean observatories moored at key locations monitor the seawater properties from the surface down to the abyss.

**'Ocean under observation'** has 4 parts:

- Presentation of the various major subjects of current studies in oceanography
- Different ways to measure (satellites, scientific cruises, isolated observatories...)
- New communicating deep observatories which are complementary and essentials for scientific research.
- It is important to develop observatories network at European level but also develop collaborations with other networks in North America and Japan

### ✓ **Dissemination of the film and public target**

This movie will be used to promote the ESONET and proposed in 2 languages (English and French) to be broadcast through websites at an international scale to:

#### - International Networks

ESONET – EMSO	<a href="http://www.esonet-noe.org/">http://www.esonet-noe.org/</a>
Athena Web	<a href="http://www.athenaweb.org/">http://www.athenaweb.org/</a>
EuroGOOS	<a href="http://www.eurogoos.org">http://www.eurogoos.org</a>
GEOSS	<a href="http://www.earthobservations.org">http://www.earthobservations.org</a>
Consortium EUR-OCEANS	<a href="http://www.eur-oceans.eu">http://www.eur-oceans.eu</a>

- The international scientific community

The film '**Ocean under Observation**' will be distributed to ESONET freely available (in DVD on demand and on the website).

Partners could propose the film to other scientific networks/projects in which they are involved to promote ESONET Science.

- The general public

Oceanopolis SOPAB is part of a European Network of Aquaria (created during NoE EUR-OCEANS 2005-2008). This network is a platform which encourages the dissemination and the sharing of educational resources for the General Public across Europe).

The film 'Ocean under Observation' will be presented to European Science festivals and outreach events.

## ✘ Annexe 1: Scenario

# Ocean under Observation

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The increase in human activity since the industrial era is forcing society to ask questions about the reasons behind climate change and its ecological consequences.

The ocean is at the heart of these problems and how it is affected by increasing global temperatures, rising sea levels and increasing acidification is still being debated.

Current available measurements are no longer sufficient to establish a clear diagnosis. New investigative tools are becoming available.

### **The Ocean Under Surveillance**

It is important to monitor the water masses and currents.

A key stage in the world wide oceanic current is in the north Atlantic, where cold, very dense water, from the Arctic, sinks and flows into the deep waters of all the oceans.

If this phenomenon was to weaken, for example in response to a reduction of the ice caps and a drop in salinity, it would have, in return, important consequences for the planet's climate.

It is therefore essential to make observations, sometimes at great depths, in difficult and even hostile places.

Our climate relies on greenhouse gases, and in particular carbon dioxide, whose emissions are closely linked to human activities. But what about methane?

The amount of methane stored at the bottom of the oceans is still widely unknown, probably under-estimated and should be subjected to careful monitoring.

The exploration of these areas, which for a long time have been considered as huge deserts, would also allow recently discovered phenomena, such as mud volcanoes and hydrothermal vents as well as cold-water corals, to be listed.

Changes in biodiversity may be a result of climate change. But again, our knowledge in this domain is fragmented and requires closer monitoring.

Here, at the MOMAR site, on the mid-north Atlantic ridge, near the Azores, video surveillance of the hydrothermal vent colonies, brings to the fore how the local chemistry and changes in temperature affect the species present.

These ridges are above all zones of interaction between the earth's crust and the seabed where chemical exchanges with the seawater as well as volcanic & tectonic activity are significant. Earthquakes & tsunamis go back a long way!

November the first 1755: a violent earthquake shook the town of Lisbon. The epicentre was less than 200 kilometres from the Cape of Saint Vincent.

Several minutes after the tremor an enormous tsunami, with 10 metre high waves flooded the port and the town centre, before reaching the Tage River. There were thousands of victims.

As can be seen here, certain areas of the seabed are potential seismically active sites.

The entire ocean and its behaviour have been closely monitored for several decades. Despite marine studies using oceanographical boats and satellites, several points remain to be explained. This is especially the case with sea bed interactions, where access isn't easy, due to a lack of fixed stations on the sea bed.

To date, there are several sources of information available :

These come from satellites which, in only a few hours, can explore enormous areas, measuring the temperature, sea level or the phytoplankton content. But only at the surface!

On the other hand, during expeditions on oceanographical boats, measurements are taken throughout the whole of the water column, but only at precise moments and places.

And finally, isolated moorings which don't transmit in real-time and have a limited life-span, can't pass on a large amount of information.

Around only recently, deep sea observatories are highly powerful, complimentary tools. In a word, they can record measurements over long periods , even decades, and transmit them back to land in almost real-time, by cable or satellite. They also allow an almost continuous supply of information, by overcoming storage and energy problems. These observatories can be compared with unmanned laboratories anchored to the sea bed. They are equipped with a whole array of measuring instruments capable of recording different types of data :

It is therefore the only way with which to observe, simultaneously and in real-time, oceanic phenomena related to biology, physics, the study of currents, seismology.....

The marine science of tomorrow is based on this mixture of disciplines.

The required data must be from a sufficiently long and precise enough time series so as to be able to make out long- and short-term trends. They will help to avoid certain inaccuracies which lead to errors.

For example, this model of a theoretical temperature curve shows-up large seasonal variations where a time-scattered sample wouldn't. A random sample could also distort the reality. With this it could be thought that the average temperature is dropping.

These observatories also make it possible to intervene remotely when an unexpected phenomenon occurs. For example, when faced with a sudden change in the strength of the current it will be possible to increase the frequency of the measurements. If any animals are detected the photography and video recording systems can be activated.

This is why international programmes are set-up which aim to network the observatories and their data.

## **\* Annexe 2: Credits**

### **Film Directed by**

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### **Produced by**

Oceanopolis SOPAB, ESONET Outreach partner in France

### **Cameramen**

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NOAA, USA

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**ESONET (European Seas Observatory Network)**

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