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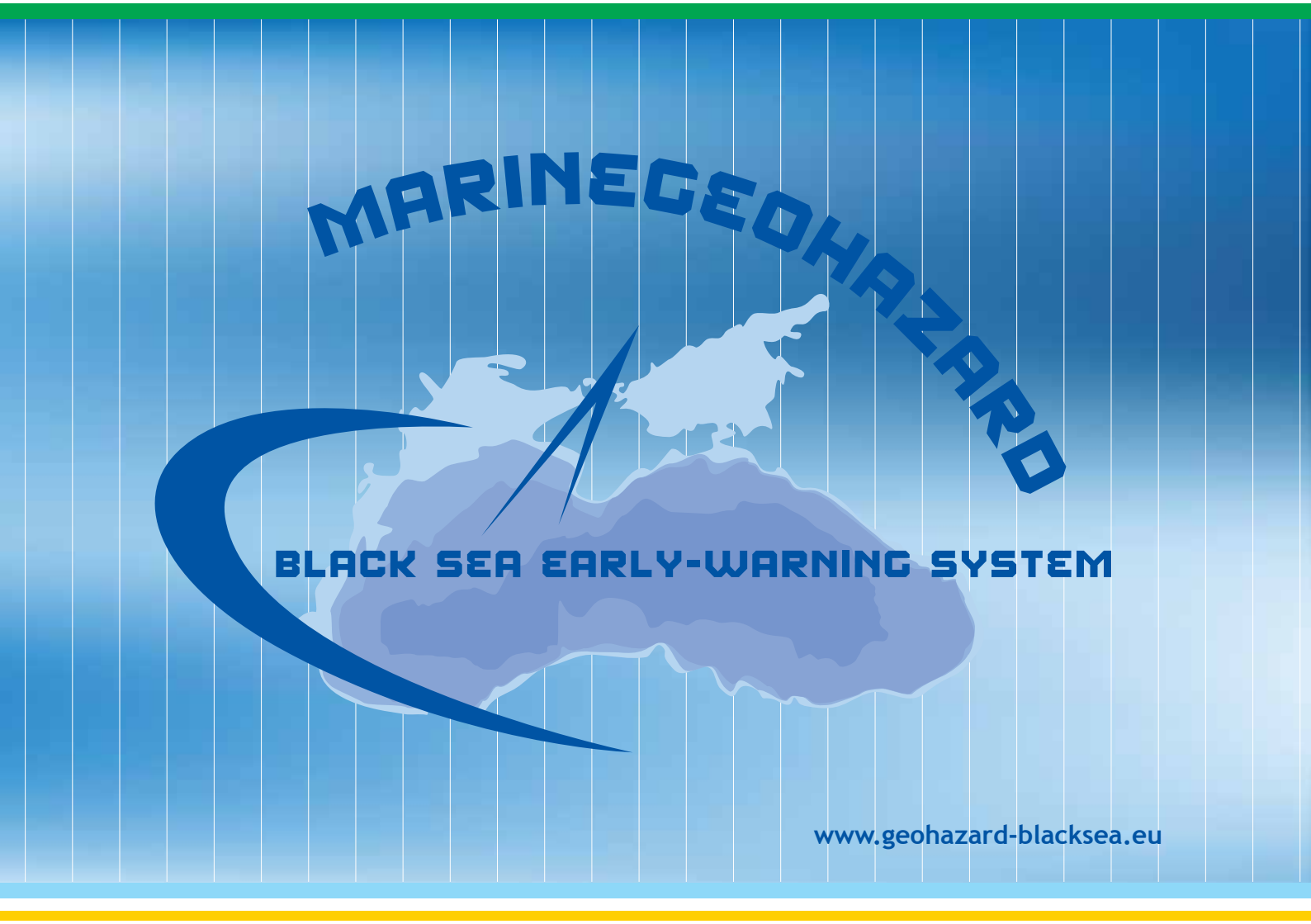
# MARINEGEOHAZARD

## Set-up and implementation of key core components of a regional early-warning system for marine geohazards of risk to the Romanian-Bulgarian Black Sea coastal area



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Newsletter
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# Echos... MARINEGEOHAZARD, Kick-Off Meeting

On 27th of May 2011, in Bucharest, Romania, in the "Carol I" Hall of the Central University Library, an important event took place in the development of the MARINEGEOHAZARD project, namely the "Kick –Off Meeting

Both, the Project Coordinator, GeoEcoMar and its partners from Bulgaria (Institute of Oceanology, Varna – IO-BAS, Geological Institute of Bulgarian Academy of Sciences, Sofia – GI-BAS) and from Romania (The National Institute of Earth Physics - NIEP) delivered a series of presentations regarding the project objectives, but also with reference to the specific activities of the institutions involved in the project implementation.

The event was marked by a series of speeches from Romanian authorities representing the Ministry of Regional Development and Tourism, Ministry of Environment and Forests, General Inspectorate for Emergency Situations and National Authority for Scientific Research.

The International Advisory Board of the Project was represented by Prof. Stefano TINTI from the University of Bologna, Italy, expert in geohazards, President of UNESCO-IOC from 2005 to 2009.

As Coordinator of the Project Consortium, the National Research and Development Institute for Marine Geology and Geoecology (GeoEcoMar), represented by its General Director, Dr. Eng. Gheorghe Oaie, highlighted the main research directions in

which the Institute operates, focused mainly on the field of marine geology and geoecology. The research infrastructure of GeoEcoMar and its human capital were also a reference point of the presentation.

the organizational structure of the Institute and its main research directions, some concrete elements related to the seismology of Western Black Sea basin, referring to the 9 active seismic sources and the maximum magnitudes related to them.

Dr. Eng. Gheorghe OAIE, General Director of GeoEcoMar

Prof. Dr. Gheoghe MARMUREANU, General Director of National Institute of Earth Physics

The National Institute of Earth Physics - NIEP, the second Romanian partner in the project MARINEGEOHAZARD, represented by its General Director, Prof. Dr. Gheorghe MĂRMUREANU, highlighted, in addition to

With a history of over 50 years in scientific research, namely in the field of Earth Sciences, the Geological Institute of the Bulgarian Academy of Sciences (GI-BAS), a partner in the MARINEGEOHAZARD project,

represented by Prof. Dr. Stefan SHANOV, highlighted the role played by the Institute among the other research structures, at national level, in Bulgaria, focusing on the structure of the Institute and in particular on the departments directly involved in the proper development of the MARINEGEOHAZARD project: the Seismo-tectonic Laboratory, the Geotechnical Research Station from Ruse and the Geohazards Department.

Prof. Dr. Stefan SHANOV, Geological Institute of the Bulgarian Academy of Sciences

Dr. Asen STEFANOV, the representative of the Institute of Oceanology of the Bulgarian Academy of Sciences – IO-BAS, also a partner in the MARINEGEOHAZARD project, highlighted, in his presentation, the mission of the Institution he represents, at the level of the Bulgarian society, as well as the goal of the same institution at the level of European Community. In support of his claims come the research infrastructure

Dr. Asen STEFANOV, Institute of Oceanology of the Bulgarian Academy of Sciences

and staff of the Institute and also the national and international projects, in which the Institution is/was involved.

In the second part of the meeting, a debate on the main activities of the MARINEGEOHAZARD project took place, a series of technical talks being presented by Dr. Eng. Gheorghe OAIE, Prof. Dr. Stefan SHANOV, Dr. Sebastian DAN, Dr. Orlin DIMITROV, Dr. Radu DIMITRIU, respectively Gyöngyi RUZSA, as coordinators of the project activities.

During the meeting, there were several interventions from Prof. Nicolae PANIN, technical coordinator of project, Prof. Dr. Stefano TINTI, member of the International Advisory Board, Prof. Dr. Boyko Ranguelov, specialist in marine geohazards.

In the last part of the meeting, Mrs. Ana OLTEANU, financial officer of the project, presented the project's financial problems.

## NEWSLETTER INTERVIEW

MARINEGEOHAZARD, an innovative project for Romania and Bulgaria; an interview with Dr. Eng. Geologist Gheorghe OAIE, General Director of GeoEcoMar

*Question:* In your opinion, what is the utility of the MARINEGEOHAZARD project, at the level of two countries like Romania and Bulgaria?

Dr. Eng. Geologist Gheoghe OAIE: In fact, we can talk about many uses. First of all, it will be the first early warning system in case of hazardous events which can endanger the coastal areas of Romania and Bulgaria. I refer, firstly, to underwater earthquakes and landslides which can generate tsunami waves. Even if these waves, fortunately, do not have the same extent as those formed in the oceans, they can be dangerous both for the population and the marine structures. This system, unique to the Black Sea area, will become a component of the marine geohazards early warning system already operating in all seas and oceans bordering Europe.

Another utility of the system refers to the chance offered to research institutes to have direct access to information on the dynamics of the marine environment, information transmitted in real time, which can be used both for monitoring of physical-chemical parameters of the western Black Sea and for their modeling, in order to understand the evolution of the specific processes.

We desire that the main users of the early warning system to be the Inspectorates for Emergency Situations of the counties located in the Black Sea area and, of course, all local communities and authorities.

*Question:* What is the risk of tsunami waves in the Black Sea? Which is the highest wave known?

Dr. Eng. Geologist Gheorghe OAIE: If we think only of studies conducted over the years by a number of experts from Turkey and Ukraine, it seems that a significant tsunami type event would occur every 11 to 20 years. The apparition of such extreme events is possible, for example, in case the Black Sea or the surrounding area would produce an earthquake with a magnitude exceeding 6.5 on the Richter scale.

Studies undertaken in the last five years by GeoEcoMar showed that tsunamis do occur in the Black Sea. This is easily explained: as long as there are traditional tsunami-triggering mechanisms within the basin, tsunami-type events can be produced.

Previously, I have quoted the main triggering mechanisms, to which I would add the movements along active faults or potential releases of gas from the seafloor.

Besides these there are other less important triggering mechanisms.

As for the highest wave known, it is difficult to answer. Various sources listed wave heights of 3-4 m, rarely 5 m. Some foreign authors, analyzing tsunami type events in the Black Sea, have concluded that a wave up to 10 m height might be produced every 1000 years. They rely on both recent and historical data.

Several years ago GeoEcoMar has worked in a project related to the existence of tsunamis in the Black Sea; Antique sources do not mention tsunami-type extreme marine events for Romanian coast. Only the archives of hydrometeorological stations from Romanian Black Sea coast recorded extreme events, from storms to earth-quakes, and some of them might have been even tsunamis.

Instead, several historians of centuries I - III (e.g. Kallatius Demetrius, Theophanus, Mowses Khorenatsi), mention waves that flooded the land in Thrace and led to the destruction of fortresses on the Black Sea shores of Georgia and Bulgaria (e.g. Dyoskuria, modern Sukhumi- Georgia, Bisone, today Kavarna, or Dionisopolis, current Balchik – Bulgaria).

Regarding the Romanian coast of the Black

Sea, we can speak of geological evidence proving the occurrence of extreme marine events; $C^{14}$ analyses indicate ages of 3137-2100 years for such events.

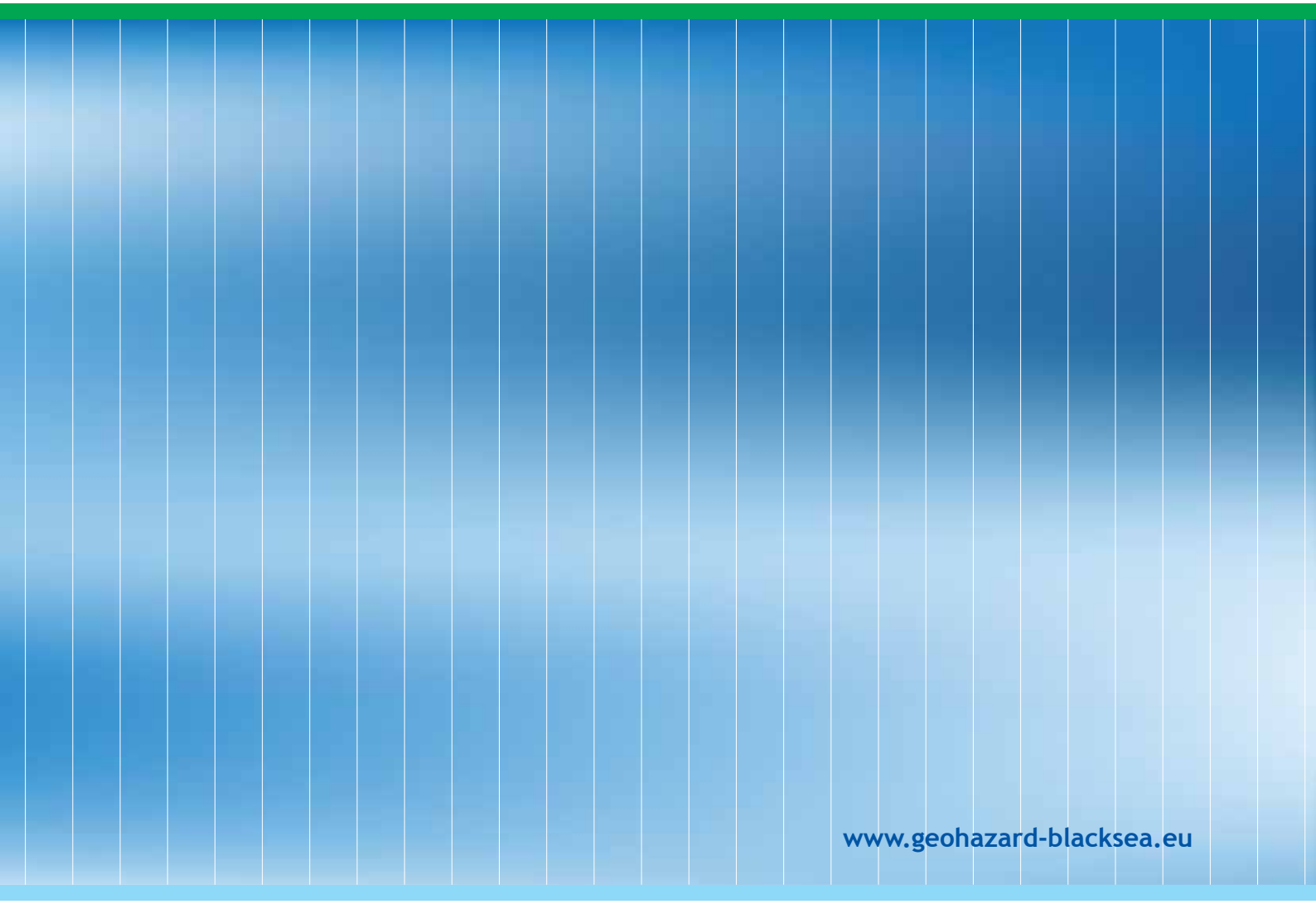
*Question:* The geohazards warning system for the Black Sea area will be operational in two years. How long do you think it will take its implementation within the local communities and which would be the main methods of education and information?

Dr. Eng. Gheorghe OAIE: According to the project implementation plan, also in these two years, all the potential users of the security system should be up to date with what it represents, how it works and what it can offer. Four meetings with the stakeholders are scheduled during the project.

Considering education, well, the problem is a little bit difficult! Only if we look at areas of the world usually affected by tsunamis, we realize that, sometimes, a very large number of victims was due to lack of education among the population or to weak involvement of authorities.

Some other times, to those above we can add the enforcement by rules in case of danger, both by the population and the authorities. Therefore, public awareness must be made with the help from authorities, those relying themselves, in turn, on the research institutions that can scientifically substantiate the decisions. Published information (e.g. brochures, posters) is a must, as well as direct meetings with local authorities and schools. The Inspectorate for Emergency Situations should be carrying out plans in case of danger.

The population must understand that tsunami waves, even with heights of 1 m, do not behave like the common wind generated waves. These waves do not break on the beach, but prograde, as a compact mass, beyond the beach, depending on the topography of the area. Even the withdrawal of water from land to sea is dangerous because it will be loaded with everything destroyed on land, while objects carried offshore can affect or destroy what is left after the first impact. The idea is that the population should understand that the apparition of such waves, even if they seem a curiosity, should not be viewed as a distraction, but as a potential danger.

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