

## FINAL REPORT

<b>I</b>	<b>The Name of the Institution to be evaluated</b>	GeoEcoMar
<b>II</b>	<b>Evaluation Period</b>	May 18 <sup>th</sup> 2012
<b>III</b>	<b>Members of the Team</b>	
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***The preliminary /final report should contain:***

- 1) 1 page – Conclusions and recommendations;
- 2) At least N pages - Cel mult N pagini – observation of each evaluation team (N=number of teams);
- 3) 2 pages – justification of the mark awarded, for each of the 5 criteria, highlighting strengths and weaknesses, in accordance with the minutes/report of the visit;;
- 4) Only for institutions classified "A-":  
2 pages-specific measures, targets and recommendations to be met in a time of 2 or 3 years.

## 1) CONCLUSIONS AND RECOMMENDATIONS

GEOECOMAR is a multidisciplinary research group that has been recently established, compared to other research centers in the country, and that has shown a rapid development in equipment, tools and visibility. It is located in two important cities, namely Bucharest and Constanta, with modern buildings in both of them, hosting offices, laboratories and even a residence for visiting foreign researchers. It is also responsible for the maintenance of one of the few research vessels available for the Black Sea. It is also responsible for another research vessel serving along several stretches of the lower river course and parts of the deltaic coast.

Regarding scientific production the group shows a good positive gradient although a limited number of publications per capita. These publications are not the result of all groups either, being in some cases due to the fact that some of the groups are involved in non disclosure contracts. However in other cases it is simply the limited production per capita that breaks down the average. It is therefore recommended to increase the scientific production per capita and to support that to increase the number of young researchers, particularly PhD students working in the group. It is also recommended to find a solution so that the more confidential contracts calls find a way to produce scientific papers, obviously preserving the confidentiality required by those beneficiaries.

The publications include those appearing in journals with impact factor, those appearing in international and national conferences and also publications of a more general dissemination character, such as calendars, posters, etc. It is recommended to enhance that transfer dimension of the publications and also to include the maps into the scientific production of the institute, so that, that important part of GEOECOMAR can be properly evaluated explicitly.

The participation of GEOECOMAR in international and European Union research projects is satisfactory, and it is an activity that should be maintained and enhanced since it will give the group visibility and operating funds. It is recommended to increase the relative weight of the group in these international projects, since in some of them their participation is or appears to be limited. It is also important to recognize that the dependence on international projects is a remarkable feature of the institute (very exceptional) which as a side effect on long term can make it (but also) vulnerable to the dynamics of international research.

The scientific infrastructure is relatively new and features important elements such as the two research vessels one for the coastal sea and a smaller one for riverine surveys. It is recommended to maintain and eventually up-date that equipment since it is considered to offer scientific strategic value for the Institution and even for Romania and neighboring countries. However that updating needs a significant amount of investment, both for material and personal staff and that requires planning in advance with funds for a number of years. The staff required to operate the scientific equipment also needs to be looked at since some of the equipment appears to have a slow start-up process due to the lack of specialized staff. That, in turn, requires planning with budget implications over a number of years.

The financial dimension of the Institute appears to be well covered for the present purposes but will probably not be enough to allow that up-dating of the material and that renewal of the staff. Also the contract of young researchers, particularly PhD students, would require this type of funding plus a more active exploitation of the new agreements between research institutions and universities in Romania so that joint PhD work can be actively developed. The same approach can and should be applied for cooperation between GEOECOMAR and foreign Universities. If that effort is maintained, the visibility of the group will keep growing up, following the same positive trend that it has shown in the last years and this will lead GEOECOMAR to a quality and production levels comparable to those of other European Union Institutions. Because of that it is important to follow the evolution of the budget and the staff so as to ensure a continuous input of funds to update the equipment and to recruit new, particularly young research staff.

## **2) OBSERVATIONS OF EACH EVALUATION TEAM**

**Team** dealing with biology-ecology.

Coordinated by Prof. M.T. Gomoiu.

Located at the Constanza base.

This group has a small dimension and its main aim is to link and establish bridges between biology and ecology with the other disciplines considered at GEOECOMAR. The links with marine sedimentology are given particular attention, which is considered a good strategic line due to the importance of sediment quality in beach assessment studies.

The presentation has also included an analysis of future developments among which the issue of microbiology for water and sediment quality, because of the criteria mentioned before, constitute also an interesting strategic line for development. The activity level is considered very good. However there is a senior researcher and many young researchers that are slowly taking shape as scientists. Moreover, the papers reported by Prof. Gomoiu are not co-authored by any of the younger colleagues. This should be corrected since it results in a high vulnerability of the group.

**Team** of geochemistry and gas-chromatography.

This group deals with the chemistry and chromatography aspects of several other projects and groups in GEOECOMAR. This was presented by Dan Secieru and it is also a relatively small group, showing the small dimension and the large number of groups into which the Institution is being presented.

This group is contributing to the preparation of maps among them at 1:50.000 scale and also is involved in up-loading data sets in previous European Union programs. This is considered to be an interesting strategic line since adding value to already existing data is one of the priorities in many European calls.

It is worthwhile mentioning that there appears to be an important delay in the operation of the spectral chromatography analyzer. This has been attributed to the difficulty in contracting the rate researcher with the corresponding expertise. This is a limitation that should be explicitly considered in future development plans to avoid losing this time interval for the operation of the equipments.

**Team of Grain Size and Mineralogical Analysis.**

This group deals with the analysis of grain size distribution and the corresponding mineralogical analysis, as required by many contracts and research projects in GEOECOMAR. It was presented by Dr. Craciun who showed how the group takes part in the field campaigns for many projects and is actually providing support to more than 100 of those projects in contracts.

The group has a laser particle size analyzer and the corresponding sieving method for determining granulometry.

The group is producing maps at scale 1:200.000, contributing also to coastal maps.

Several questions related to the fall velocity for the analyzed sediments showed a more limited grasp of this concept and how to calculate it. Because of that it is suggested to strengthen that aspect of the group.

In more general terms it was also felt the importance to consider maps explicitly as an output from this group and in general GEOECOMAR production. It is also worthwhile mentioning the new philosophical approach to integrated coastal zone management for the Romanian coast as discussed in this presentation. However the group has not reported a single ISI publication and the institute direction should strictly enforce promotion/penalties for any groups without that productivity in the future. This could also be observed by the corresponding administrative or financing authorities.

**Team** of Ancient sedimentary studies.

This group also of a limited size was presented by Dr. Melinte. The group is focusing on the paleo-geography and some aspects of the paleo-biology of anoxic events in geological time scales. More specifically they are considering the Mesozoic and Tertiary levels.

It is felt that this group should benefit by enhancing the links to present day sedimentary dynamics. In particular they could try to relate their studies on paleo-biology and paleo-geography to the ongoing research line in many European projects dealing with decadal scale dynamics, since this strategic line is also considered to be of interest because it is directly related to the climate change dynamics. The activity level is considered very good, since compared to other groups they have a significant number of ISI papers. Also a number of international and national projects. The collaboration inside the team is good, contrary to other teams, making it one of the best teams.

**Team** of river sedimentary systems. This group is also very limited in size with a few researchers, one engineer and a few PhD students. It was presented by Dr. Oaie and he showed the good links that they have with other research teams which is a positive point. However there are main interesting issues that, related to the river catchment basin could be exploited in connection with the more coastal oriented activities going on within GEOECOMAR. This is also an interesting research line to be pursued since it would allow a more complete territorial coverage in the research work. The number of publications is rather low. On the other hand they were involved in activities of national interest (delimitation of the Romanian-Ukrainian border, technical expertise on the Bystroe Channel Affair).



**Team** dealing with deltas, lakes and wetlands. Sedimentary system.

This group deals with the environmental quality of deltas, lakes and other wetland systems. It was presented by Dr. Rodon and the main conclusion was that it was a relatively small group for such a variety of systems and processes, even time and space scales.

The group showed a certain focusing on the environmental quality of nutrients and nutrient related processes. This topic is certainly interesting for the sedimentary systems presented above, particularly from the point of view of climate dynamics and the effect of future scenarios of greenhouse gases. Because of that it is considered to be correctly positioned and directed along the right track, although it should be mandatory that this group extends its international dimension and cooperation.

Coastal research and management **team**.

This group, presented by Dr. Stanica, shows a large productivity (8 papers in international journals in the period 2007-2011) and a good number of communications and smaller publications. The group also shows a strong positive gradient, both in terms of projects and publications. There have been stages in a number of countries from young researchers in the group and this shows the approach to be followed by other groups in order to enhance the international visibility. It is therefore considered to be well positioned and directed along the right track, although the activity level is limited.

Geological – geophysical studies **team**.

This small group was presented by Prof. Panin and it is now dedicated to support the use of the *multibeam* sensor on board the research vessel *Mare Nigrum*. It is an interesting topic with multiple applications both commercial and scientific. The emphasis during the presentation was on the protection measures for the shelf and continental slope. The group also participates in European projects in the 7<sup>th</sup> Framework Program and appears to have good contacts and contracts with private and public funding agencies.

**Seismo-acoustic measurements team.**

This group is again of a rather small dimension and it was presented by G. Ion. The group deals with the morphology and structure of river and sea bottoms. The group is participating in a good number of confidential contracts that therefore limit the scientific productivity of the group. They are also cooperating with other teams within GEOECOMAR.

This group would be a good example to start redesigning the confidential contracts with external parties so as to avoid limiting their scientific productivity. Increasing the links of the group with other teams in GEOECOMAR would also be very feasible and could also help to increase the scientific productivity of this group. At the same time this would also increase the use of seism-acoustic measurements in other teams.

### Topo-hydrography **team**.

This is again a small group formed by 2 scientists and 1 PhD student. It was presented by Dr. Dimitriu who showed how they are contributing to produce high resolution topographic and bathymetric charts. Because of that the group has an important contribution to the National Geophysical data bases. They are also participating in the visualization of the obtained information both in 2D and 3D.

From the more scientific perspective, the group is dealing with the numerical modeling of sedimentary processes. However this is such a large area that the very small group considered cannot be efficient in developing the topic. Because of that it is recommended to focus the topics and, if possible, to increase the dimension of the group or to enhance the cooperation with other groups from GEOECOMAR. They should also start to produce ISI publications.

**Team** of marine gravimetry and magnetometry.

This group was presented by C. Sava. It is the group responsible for carrying out the first gravimetry and magnetometry measurements in the Romanian part of the Black Sea. The available instruments were obtained in the past from Russia so the maintenance and updating of the equipment is a continuous requirement and a difficult one. This suggests including the renewal of this equipment in the mid to long term strategic plan, looking for the corresponding funds.

The group is involved in the production of quality and magnetic anomaly maps. It is also involved in the mapping of the Romanian marine exclusive economic zone, issues with high National and Social interest.

**Team** of protected areas.

This group, presented by Dr. Seghedi is concerned with the evaluation of biological productivity and its potential and evolution in a number of sites in Romania. They are also updating the Natura 2000 site information in the country.

The group deals with the geoconservation principles, particularly applied to the management of protected areas.

The group has a good international visibility and is well connected with a number of international teams. Because of that it is considered to be well positioned and along the right track.

The group participates in various transfer activities such as the production of field trip guidebooks. However they feel that they should be doing more work to raise the social awareness about the protected areas they are studying, with emphasis on the marine environments.

**Team** of environmental geophysics

This group, led by S. Anghel was presented by A. Constantinescu, due to former commitments of the leader.

The group deals with the geophysical investigation of environmentally sensitive areas. This includes relatively less considered topics such as ground water dynamics and also the application to for instance archeological sites.

The group is participating in a number of projects, including also a COST action.

The application of the magnetic field anomalies in the discovery of archeological sites is an interesting issue that could be probably further developed. This would enhance the group resources and also its visibility, particularly at national level. It is recommended to increase the sea dimension of the work and that the proposed archeological studies in the Danube Delta region should be supported by the scientific direction of the institute as well of the Ministry of Culture and local authorities. In this respect we recommend GEOECOMAR to prospect the possibility to undertake such investigations also in the Black Sea.



**Carbon capture and storage team.**

This group presented by C. Sava works and supports the carbon capture and storage technology in Romania. This topic, that will very likely grow in the future, makes the group to be well positioned and in the right research direction.

The group is using geophysics for monitoring CO<sub>2</sub> storage sites and has been responsible for the first assessment for the CO<sub>2</sub> storage capacity in Romania, including the emission sources.

The group has also translated CCS documents into the Romania language, so as to raise the social and administrative awareness about the importance of carbon capture and storage. The group has also participated in the first CCS demo project in Romania.

Regarding innovation the group is involved in the selection of CO<sub>2</sub> storage sites, having identified the deep saline aquifers as a working possibility.

Environmental Impact Assessment **team.**

This group, presented by I. Stanescu deals with the execution of the environmental impact assessment studies. For that reason GEOECOMAR is registered in the National Registry of Environmental studies.

The group is very active in carrying out impact analysis risk assessments and similar more oriented type of work. The group appears to be much less fluent in English than the others, which probably limits its international visibility. The recommendation here would be a smooth transition to this language.

### GIS and digital cartography **team**.

This group, presented by Ion, is working on digital maps and the recovery of old data. Both topics are very valuable from the point of view of social needs and extracting added value from former research projects. However, none of these topics are very suitable for publication, particularly in scientific journals with a significant impact factor. Because of that it is strongly recommended to increase the links of this group with other more research-oriented groups in GEOECOMAR so that both parts can benefit.

An important activity done by this group and which should be maintained is the recovery of old sub-bottom profiler data now available only in paper rolls. This is an important source of information that, if lost, will never be recovered again. Therefore it should be supported in spite of its low short term scientific apparent value. In conclusion the group scientific activity should be enhanced to make it more comparable to other groups of the institute. This refers particularly to the necessity to publish.

## Strategic plan:

GEOECOMAR presents the strategic plan along three main lines of action:

- Methodology
- Processes
- Applications

The strategy for the development is presented by Dr. Stanica with a time horizon of 4 years. This strategy is bounded and driven by the following axes:

- Realistic consideration on the existing resources both human and equipment.
- Reinforcement of the status of the Institution as a center of excellence at National and European levels.
- The maintenance and for the new cases the building of research and development infrastructure at European standards.
- Looking for a smooth transition or change of generations, so as to ensure the sustainability of the center.
- Continue developing the multidisciplinary approach in projects, publications, etc.
- Increase the number of contracts of part time researchers, so as to enlarge the expertise of the center.
- Implementation of the mechanism of contracting associated researchers. This should allow incorporating to GEOECOMAR researchers who have spent a period abroad and want to come back.
- Development of new research directions so as to be well positioned for the new calls in European and National projects. This new research directions include:
  - o Radioactivity & isotops
  - o Microbiology
  - o Eco-toxicology
- For each of these initiatives the approach followed by GEOECOMAR is the following:
  - o Identify the topic
  - o Find a “champion”
  - o Develop strategic plan
  - o Define a financial plan, mixing public and private funds

It is recommended to increase the number of young researchers, particularly PhD students so as to ensure the survival of the center and the smooth transfer of generations and to increase the number of publications per capita. It is also recommended to establish a plan for “capturing” researchers who go abroad. It is mentioned that if GEOECOMAR supports those researchers they should come back to the institution for at least four years.

It is also encouraged to continue the participation in a number of European initiatives in which the center is already participating such as for instance the EMSO, ESFRI project dealing with the European Marine Sea-Floor Observatories.

GEOECOMAR is also participating in ERIC (European Research Infrastructure Consortium) and Dr. Stanica is the national representative in the ESFRI groups.

It is also recommended to maintain the participation in Eurofleets (where they participate with their 2 ships) and to be linked to the new center for the Black Sea dealing with global changes and that will be located at GEOECOMAR Constanza. As final recommendations it is mentioned to increase the number of papers with an impact factor, to include in the development plan the upgrading of the hard and e-infrastructure capacity and finally in more general terms to circumvent all the above mentioned weak points with an adequate plan within the development strategy, considering always the threats posed by the present crisis of the Euro zone.

Note:

N=number of teams declared in the Self-Evaluation Report

**3) JUSTIFICATION OF THE MARK AWARDED**, for each of the 5 criteria, highlighting strengths and weaknesses, in accordance with the minutes/report of the visit

<b>C<sub>1</sub></b>	<b>The quality of R&amp;D activities and their results</b>	<b>4.6</b>
<p>The publications, both in written and oral form, show a significant gradient in quantity and quality during the last years. The Institute is well represented within the international circuit even in journals with an impact factor. The publication also include book reports and more general public type of documents such as calendar, maps, etc. The publication of maps also is an important contribution of the Institute.</p> <p>However the production of papers with an impact factor per capita remains quite limited both because of the group inherent limitations and also because of the participation of the group in non-disclosure contracts. These type of contracts, although important for the group survival, should be reconsidered carefully so as to make them compatible with some sort of publication even including patents.</p> <p>The group has shown to have a good grasp of the science funding system both within Rumania and within the European Union, where GEOECOMAR has an important visibility in their fields of action. The institution has also established international contracts with countries such as The Netherlands, Japan and the United States of America, enhancing its international visibility. They also have established bi-lateral agreements with Italy, Bulgaria, etc, that contribute to the technology transfer and to the training of researchers from the Institution. Thanks to that they are participating in an important number of competitive research projects, particularly those of the European Union.</p> <p>It is recommended to increase the number of scientific publications per capita, prompting the young researchers to contribute actively to this task, normally linked to the development of their PhD thesis. It is also recommended to enhance the dissemination effort towards the Administration and also to increase the group visibility within private companies working in the field of coastal territory development and planning.</p> <p>In summary the group shows a good gradient (<b>rate</b>) in production that should be maintained or, if possible, enlarged. It is also recommended to enhance the international dimension of the scientific production, looking also for joint publications that will increase the group visibility and working relationship with research groups from other countries. This will also contribute to raise the number of papers per capita. In this same line, as mentioned before, it is also recommended to increase the PhD production since this will naturally lead to an increase in the number of publications.</p>		
<b>C<sub>2</sub></b>	<b>Human resources Quality</b>	<b>4.6</b>
<p>GEOECOMAR presents a large number of relatively small groups with important differences in scientific production and PhD production. The number of young researchers and ongoing PhD's is limited apparently due to the lack of formal links with Romanian universities. It is recommended to use the new legislation to increase the production of the number of completed PhD's and also to increase the number of young researchers since presently only 14 people out of the 127 are below 35 years. Enhancing the number of young researchers will naturally lead to an increase number of papers and communications and, if linked to Romanian universities and their PhD programs this will also increase the visibility of the group within the country. It is</p>		

recommended to pursue the same links with other European Union universities since this could also contribute to the international dimension of the group and to increase of the number of young researchers, particularly considering the high unemployment rates in several European Union countries presently.

Regarding the group structure it is desirable to add some flexibility to the group structure since this will allow establishing or supporting new research priorities in a much more efficient manner. It is also recommended to smooth out the in homogeneities between groups since at least two of them show a significantly lower level of scientific production.

The percentage of administrative staff is about 20% which is about half of the research and development staff which amounts to about 55% of the group. This percentage of the administration appears to be relatively high and therefore difficult to maintain in the mid-term. It is therefore desirable to establish a development plan for the coming years that limits the percentage of administrative staff while considering at the same time the needs to maintain and update the research equipment, particularly the two research vessels.

In general terms the scientific staff appears to be well committed regardless of age and including some of the senior staff. However the number of young researchers remains very limited and that hinders the short term increase the scientific production.

The rapid evolution of the scientific field will also require more flexibility in the establishment of groups and in the sharing of staff and research equipment. The introduction of younger PhD students with plury-disciplinary topics could be a natural way to make the group more flexible and inter connected.

<b>C<sub>3</sub></b>	<b>Quality infrastructure and its rate of exploitation</b>	<b>4.5</b>
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GEOECOMAR has a laboratory infrastructure and field infrastructure that, in general terms, has increased sharply in the last years. The marine and riverine research vessels have been maintained and partially up-dated, although showing very clearly the need for new ships in a few years time. That will demand, in turn, an adequate development plan that takes into account the budget and the required scientific and operational staff to offer the service of those vessels to the Romanian and international communities.

The exploitation rate of the scientific infrastructure shows a slow start up, mostly due to the lack of specialized staff coincident in time with some of the new equipment acquired. The institute should take steps to favor hiring specialized personnel in parallel to buying specific equipment. The research vessels can also allow a more intensive exploitation, provided the number of contracts and the available staff are enhanced in parallel.

It is also recommended to coordinate the staff and equipment available at the facilities in Bucharest and Constanza since some benefits of joining the expertise and means of the two groups will easily become apparent.

In general terms all the equipment appears to be in good use, showing the commitment of the staff to its maintenance and the commitment of the administration and direction of GEOECOMAR to the availability of a relatively modern set of infrastructures.

In general terms it is recommended to consolidate the gradient in equipment that the institution has shown in the last years. This will require suitable technical staff and a maintenance budget that allows the maintenance and eventually the renewal of all facilities, particularly the research vessels whose cost is an order of magnitude larger. The development plan should also consider in parallel the new lines of scientific research being pursued at the Institute and the available equipment, so as to select the more suitable staff, looking for expertise that can be used in more

than one equipment or field. A flexible connexion between all the groups could help in that direction.

<b>C<sub>4</sub></b>	<b>Management efficiency and quality of the research environment</b>	<b>4.5</b>
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The staff appears to be well motivated at all levels, both the more senior components and the younger ones, who are actively involved in the development of projects and carrying out stages in other institutions and countries. The staff also shows some flexibility among groups but this is a quality that should be enhanced in the coming years to increase competitiveness and make the group more flexible to deal with new research challenges.

The group administration appears to be effective in the sense that it is running the projects smoothly and it is able to organize a number of dissemination activities both at national and international levels. The institute recently obtained an ISO certification.

The staff also appears to be well motivated and satisfied with the work program, participating actively in the scientific production and in the organization of meetings, conferences, etc. The staff also appears to be partially involved in the decision making required by the projects although this will likely have to be increased when introducing new PhD researches as recommended above.

In general terms the research environment appears to be according to European and International standards, showing the potential of the group to follow a well-structured development plan that is based on the identification of new research challenges and the nomination of a “champion” for those emerging topics. As a weak point it is recommended to reduce progressively the percentage of administrative staff and to identify more explicitly in the development plan the expertise required to run smoothly the new scientific equipment. The presence of a scientific council of the institute (not present at the presentation meeting) would add more transparency and an improved access of the staff to the decision making.

<b>C<sub>5</sub></b>	<b>Quality and credibility of the institutional development plan</b>	<b>4.6</b>
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The development of the institute in the last years has been remarkable, shaping a modern research group in line with the recent calls of the European Union and other science funding agencies, including those of Romania.

The direction of the group appears to have a good grasp of the new emerging research approaches and they are trying to adapt the scientific and application dimensions of the group research along those lines.

However the recruitment policy shows an important limitation in the number of young researchers, particularly PhD students that are working in the group. It is strongly recommended to make use of the new legislation in Romania to prepare co-directed PhD thesis between GEOECOMAR and Romanian universities. In this same line it is also recommended to establish a similar approach of co-directed thesis between GEOECOMAR and other universities in the European Union and elsewhere.

The cooperation track of GEOECOMAR with teams from a number of European Union countries and also with the United States and Japan is very solid and contributes to the international group visibility. GEOECOMAR has put an important emphasis on the interdisciplinarity of projects, combining geology with for instance bio-ecology. It is recommended to pursue those lines while maintaining the research depth in each of the individual fields.



The number and scope of projects is quite good although the scientific production coming from those projects should be increased, particularly addressing explicitly the problem of the non-disclosure contracts which, although important for the group economic survival, should also be carefully considered so as to contribute to the group scientific production. The activities to transfer research results to the national community in Romania and the general public should also be enhanced to increase the group visibility at the country scale.

Finally as mentioned before the group will need in the coming years an important flexibility to deal with new research lines. Because of that it is recommended to smooth the present segmentation of the groups into a smaller number of larger research units, enhancing the sharing of expertise, staff and equipment. That will also help to limit the drawbacks of the limited mass of some of the groups.

Regarding topics there are some areas that appear to be more limited than it should be desirable for such a group. The area of numerical modeling and remote sensing appear to have a relatively limited number of researchers, which may in turn limit the group development using those tools. The same applies for the area of specialized measurements and associated data processing. This means considering those requirements in the development plan so as to incorporate that expertise to the group in due time.

In summary the institute shows a good direction and international cooperation, developing ideas and participating in projects with various countries. The recruitment policy for young researchers particularly PhD students should be enhanced to increase the scientific production and the available research staff to deal with new research challenges.


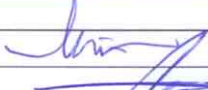

### **Overall technical considerations, observations, conclusions:**

The group is well positioned in the national and international scientific communities. The prospects of developments are also good although they could be limited by the small number of young researchers and PhD students. It is therefore recommended to make full use of the new Romanian legislation to attract young researchers from Romania and other countries and in parallel to increase the group expertise and the scientific production per capita. This will also contribute to prepare in due time, a new generation of advisors.

The equipment is also relatively modern with the exception of some laboratories and in particular the two research vessels. It is recommended to start thinking of a budget to be included in the institution development plan so as to allow in the coming years a renewal of the equipment and in particular of the two research vessels.



The group flexibility should be enhanced to be able to deal with new research challenges and to make better use of the scientific equipment available. This will increase the group visibility and productiveness both at national and international levels.

**Proposed certification level: A<sup>+</sup> (4.6)**

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Agustin Sanchez-Arcilla Conejo	
2	Serban MISICU	
3	Constantin COSMA	
4	Vladica CVETKOVIĆ	
5	Jean-Marie MARTIN	
Observers		
1	Coordinating Authority	
2	CCCDI Representative	
3	ANCS Representative	

Date: .....

**Proposed certification level: A<sup>+</sup> (4.6)**

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Evaluator 1	
2	Evaluator 2 MIȘICU ȘERBAN-VALENTIN	
3	Evaluator 3	
4	Evaluator 4	
5	Evaluator 5	
Observers		
1	Coordinating Authority	
2	CCCDI Representative MEJANU VIOLA RADAȘ	
3	ANCS Representative RĂNEA CĂTINĂ	

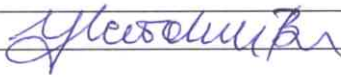


Date: .....

**Proposed certification level: A<sup>+</sup> (4.6)**

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Evaluator 1	
2	Evaluator 2	
3	Evaluator 3 <i>ROSMA CONSTANTIN</i>	
4	Evaluator 4	
5	Evaluator 5	
Observers		
1	Coordinating Authority	
2	CCCDI Representative <i>MEDIANU VICTOR PAPES</i>	
3	ANCS Representative <i>RAVET CIU N</i>	

Date: .....

**Proposed certification level: A<sup>+</sup> (4.6)**

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Evaluator 1	
2	Evaluator 2	
3	Evaluator 3	
4	Evaluator 4	
5	Evaluator 5	
Observers		
1	Coordinating Authority	
2	CCCDI Representative <i>MEDIANU Victor RABES</i>	
3	ANCS Representative <i>RAVEA CRIU</i>	

Date: .....

Finally as mentioned before the group will need in the coming years an important flexibility to deal with new research lines. Because of that it is recommended to smooth the present segmentation of the groups into a smaller number of larger research units, enhancing the sharing of expertise, staff and equipment. That will also help to limit the drawbacks of the limited mass of some of the groups.

Regarding topics there are some areas that appear to be more limited than it should be desirable for such a group. The area of numerical modeling and remote sensing appear to have a relatively limited number of researchers, which may in turn limit the group development using those tools. The same applies for the area of specialized measurements and associated data processing. This means considering those requirements in the development plan so as to incorporate that expertise to the group in due time.

In summary the group shows a good direction and international cooperation, developing ideas and participating in projects with various countries. The recruitment policy for young researchers particularly PhD students should be enhanced to increase the scientific production and the available research staff to deal with new research challenges.

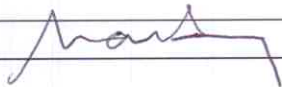
**Overall technical considerations, observations, conclusions:**



The group is well positioned in the national and international scientific communities. The prospects of developments are also good although they could be limited by the small number of young researchers and PhD students. It is therefore recommended to make full use of the new Romanian legislation to attract young researchers from Romania and other countries and in parallel to increase the group expertise and the scientific production per capita.

The equipment is also relatively modern with the exception of some laboratories and in particular the two research vessels. It is recommended to start thinking of a budget to be included in the institution development plan so as to allow in the coming years a renewal of the equipment and in particular of the two research vessels.

The group flexibility should be enhanced to be able to deal with new research challenges and to make better use of the scientific equipment available. This will increase the group visibility and productiveness both at national and international levels.

**Proposed certification level: A<sup>+</sup> (4.6)**

Nr. crt.	Name, Surname	Signature
Evaluation TEAM		
1	Evaluator 1	
2	Evaluator 2	
3	Evaluator 3	
4	Evaluator 4	
5	Evaluator 5 MARTIN JEAN-MARIE	

2	CCCDI Representative	MEARIAN VICTOR RAGAS	
3	ANCS Representative	RANGA CTW	

Date: ..23/7/2012.....