

<b>ESTADO FINAL RESOLUCION DEL CONSEJO</b>  <b>Observaciones:</b> _____  _____	<b>FECHA</b> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> </div>	<div style="border: 1px solid black; width: 50px; height: 20px; margin: 0 auto;"></div> <div style="text-align: left; padding-left: 5px;"> <b>1. APROBADO</b>  <b>2. PENDIENTE</b>  <b>3. RECHAZADO</b>  <b>4. A FISCALIA</b> </div>
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## EVALUATION REPORT CENTERS FOR ADVANCED RESEARCH

### I. PROJECT INFORMATION

CENTER'S NAME

**Center for Oceanographic Research in the Eastern South Pacific (COPAS)**

DIRECTOR: Carina B. LANGE

### II. EVALUATION PANEL

NAME	ORGANIZATION/ INSTITUTION	E-MAIL	SIGNATURE
Louis LEGENDRE	CNRS and Université Pierre et Marie Curie-Paris 6, France	legendre@obs- vlf.fr	

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME**

**1. Circulation and Mixing in the Eastern South Pacific Ocean**

**PRINCIPAL INVESTIGATOR**

**Wolfgang SCHNEIDER**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals		X		
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results		X		

**PROGRAM'S NAME**

**2. Microbial Communities and Water-Column Biogeochemical Cycling**

**PRINCIPAL INVESTIGATOR**

**Osvaldo ULLOA**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results	X			

\* If there had been none, please disregard this question

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME**

**3. Plankton Dynamics and its Role in Carbon Cycling in the Eastern South Pacific**

**PRINCIPAL INVESTIGATOR**

**Ruben ESCRIBANO**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals		X		
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

**PROGRAM'S NAME**

**4. Pelagic-Benthic Coupling in the Eastern South Pacific**

**PRINCIPAL INVESTIGATOR**

**Humberto E. González**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

\* If there had been none, please disregard this question

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME**

**5. Community Structure, Metabolism and Biogeochemistry in the Benthic Realm of the Eastern South Pacific**

**PRINCIPAL INVESTIGATOR**

**Renato Quiñones**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results	X			

**PROGRAM'S NAME**

**6. Paleo-Studies in the Eastern South Pacific: A Joint Geochemical and Paleobiological Approach**

**PRINCIPAL INVESTIGATOR**

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results		X		

\* If there had been none, please disregard this question

#### IV. CENTER EVALUATION

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Uso Interno
Degree of adoption of suggestions from the last report *	X			
Accomplishment of objectives and goals of the Center	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration between the programs of the Center	X			
Creation and reinforcement of international networks	X			
Outreach	X			
Diffusion of results	X			
Establishment and tasks of the Advisory Committee	X			

#### RECOMMENDATIONS (see following concepts)

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APPROVE	APPROVAL WITH SUGGESTIONS	ADDITIONAL INFO.	PENDING	REJECT	FONDECYT USE

19	04	08
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Evaluation Date

Signature reviewer

## **EVALUATION CONCEPTS ANNUAL REPORT**

1. **Approve:** The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report.
2. **Approval with suggestions or minor observations**
  - 2.1 **Minor observations:** The reviewer recommends the approval of the report despite the justified incompleteness of some aspects that does not constitute an obstacle for the continuity of the Center activities.
  - 2.2 **Suggestions:** The reviewer recommends minor changes in order to improve the future performance of the Center.
3. **Additional information:** The reviewer requires additional documentation or specific explanations to fully evaluate the report.
4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.
5. **Reject:** The reviewer has strong objections to the contents of the report.

## **EVALUATION COMMENTS:**

### **III. PROGRAMS EVALUATION**

#### **1 . Brief comments on each Program**

*Program 1.* The scientific results presented are interesting, but it difficult to see what was truly new, and/or exciting for the international oceanographic community. The interactions with Programs 2, 3, 4 and 6 led to 8 inter-program publications and presentations, which is good. Given the number of COPAS investigators and students, and collaborators in the Program, the number of publications, although satisfactory, could have been higher.

*Program 2.* There were major discoveries concerning nitrogen fixation. The interactions with Programs 1, 3 and 4 led to 4 inter-program publications and presentations. The quantity and quality of publications were high.

*Program 3.* There was significant progress on the roles of micro- and mesozooplankton in carbon fluxes. However, the synthesis of results was impeded by the lack of modeling studies. Further progress will require the combination of field, laboratory and modeling work. The interactions with Programs 1, 2, 4 and 5 led to 20 inter-program publications and presentations, which is very good. The quantity and quality of publications were high.

*Program 4.* There were several interesting correlative and process studies, and the use of ECOPATH modeling helped to elucidate the trophic relationships leading to clupeiform fishes. However, the synthesis of results was impeded by the general lack of modeling studies. Further progress will require the combination of field, laboratory and modeling work. The interactions with Programs 1, 2, 3, 5 and 6 led to 24 inter-program publications and presentations, which is very good. The quantity and quality of publications were high.

*Program 5.* There were several very interesting physio-ecological results pertinent to biogeochemistry. The interactions with Programs 3, 4 and 6 led to 4 inter-program publications and presentations. The quantity and quality of publications were high.

*Program 6.* The high-resolution results going back to the last centuries were especially original and interesting. The interactions with Programs 1, 4 and 5 led to 8 inter-program publications and presentations, which is good. Given the number of COPAS investigators and students, and collaborators in the Program, the number of publications, although satisfactory, could have been higher (there are several manuscripts submitted and under review).

### **IV. CENTER EVALUATION**

#### **1. Degree of adoption of suggestions**

COPAS generally adopted and implemented the December 2006 recommendations from the Evaluation Committee of the Continuity Plan. In this respect, very positive developments in 2007 were: the planned start in October 2008 of the construction of a 1800 m<sup>2</sup> building, to house COPAS and colleagues from the Department of Oceanography; the recently awarded 10-year grant (2007 Base Financing Program for Scientific & Technological Centers of Excellence of CONICYT), which will ensure sustained ocean observations in southern Chile; the fact that the 10-year program also aims at meeting the need for advanced information for

the productive sector (public and private) of southern Chile; the effort made to increase the number of seminars, although the suggestion of the Evaluation Committee of putting a graduate student in charge of organizing the seminars failed, and the following decision to ask COPAS postdocs to organize seminars.

COPAS seemed somewhat reluctant to follow the recommendation to expand the outreach program beyond the local or regional scope, because COPAS is the only FONDAP Center outside Santiago. The local and regional outreach activities of COPAS are very good, but COPAS is also the only oceanographic FONDAP Center in Chile. In this respect, it should have a national role, and its long-term funding may depend on its recognition as a national facility by the Chilean public. Hence, COPAS must think not only locally, regionally and internationally, but also nationally. The “ocean exhibit” that will bring COPAS activities to Santiago in November 2008 is a positive answer to the Evaluation Committee’s recommendation.

### 3. Quantity of outcomes

During 2007, COPAS researchers have published 62 scientific papers (56 ISI and 6 non-ISI), and 2 book chapters, and have made 138 presentations at national and international meetings and workshops.

A major achievement of 2007 was that 4 new researchers joined COPAS, including a new full-time Researcher hired in February 2008; I will come back to this new oceanographer/modeler position later. In addition, there were 9 postdoctoral fellows in COPAS in 2007, some supported by COPAS and others by extramural funding.

In 2007, there were 29 Ph.D. 6 M.Sc. and 15 undergraduate students in COPAS. Out of these, 10 Ph.D. and 3 M.Sc. students obtained their degree. Among the 10 Ph.D. students who completed and defended their thesis in 2007, 4 are already employed as faculty members, and 4 hold postdoctoral positions in Chile or abroad.

In addition, the quantitative indicators of outreach are high (see below).

The institutional commitments of UdeC in 2007 are impressive: direct financial support to COPAS activities, i.e. Ch\$30 million pesos for general operations, Ch\$ 7 million pesos to cover costs of maintenance and repair of scientific equipment, and Ch\$ 9.75 million pesos in support of the recently hired oceanographer/modeler, replacement of the institutional vessel (Kay-Kay II) by a new vessel (L/C Kay-Kay II); construction of the new building to start in October 2008; and Ch\$ 1500 million pesos as counterpart in project *Oceanographic Applications for the Sustainable Economic Development of the Southern Region of Chile*.

All quantitative indicators of COPAS activity in 2007 are high. These are signs of a healthy and dynamic center.

### 4. Quality of outcomes

Not only the number of publications was very satisfactory, but the quality of journals where COPAS researchers published in 2007 was very good, i.e. average impact factor of 2.16 (3.06 when including a publication in *Nature*).

The 9 postdocs belonged to 3 of the 6 programs, i.e. Programs 1, 3 and 5 did not have any postdoc. There is no explanation in the Annual Report for that difference between the two groups of Programs.



The hiring of Dr. Fabián Tapia as full-time Researcher (Oceanographer/Modeler) is a very positive development for COPAS. His expertise on the coupling of physical and biological processes in coastal/nearshore environments and his interests in a number of other topics (i.e. nearshore physical processes and their effect on pelagic-benthic coupling, interaction between mesoscale dynamics and inner-shelf physical variability, distribution and transport of invertebrate larvae on the shelf, connectivity in populations with complex life cycles, and marine protected areas) are very relevant to COPAS. It is important that COPAS integrates modeling in all phases of its activities, from the development of projects to the design of experiments and sampling programs, the analysis of data and, finally, the synthesis of results.

Another very positive development is the strengthening and formalization of the scientific ties with the Chilean Navy (SHOA).

The list of objectives that were achieved in 2007 (scientific, educational, networking and outreach), as stated in the Annual Report, is impressive. Among other achievements, the opening of the COPAS Data Portal (for internal use) is a significant progress; it is not clear, however, if the COPAS Data Portal follows international standards and will be compatible with similar portals elsewhere in the world.

The postponement of some objectives to 2008 is not a problem. The idea of publishing a COPAS “glossy” magazine may have to be abandoned later, because such a task may prove beyond the means of a single center. In view of the shift of the general public (especially youngsters) toward the Internet for information (is it also the case in Chile?), COPAS should perhaps devote efforts to the development of a general-public Internet site in Spanish instead of a glossy magazine. A general-public site may be less prestigious than a glossy magazine, but it may be much more cost effective.

Overall, the quality indicators of COPAS activity in 2007 are high.

#### 5. Degree of integration between programs

As explained above in the analysis of Programs, I found it difficult to fully evaluate the degree of integration among the Programs of the Center. The organization of research in three Themes generally ensures that the research activities of the six Programs are integrated. It would be useful if COPAS provided, in future reports, a Table containing six columns (i.e. the six Programs) and three rows (i.e. the three Themes), with in each cell of the Table a clear indication of the contribution or not of the given Program to the given Theme.

In addition, the inter-program publications (12) and the inter-program presentations at international and national meetings (16), listed in tables under “Networking”, show that the programs were reasonably well integrated in 2007. The time series studies and the internal workshops (see “Networking”) also result from program integration. The internal safety courses, international workshops, and internal meetings, courses and seminars are positive signs of the internal cohesion of the Center, but do not provide evidence of interactions among Programs.

#### 6. International Networks

Over the years, COPAS has developed very strong international networking. This includes: active participation in IGBP-related international programs and initiatives and also in a European Network of Excellence; bilateral relations with foreign research organizations, institutes and laboratories (in Japan, Europe, and the USA); and leadership in South American

initiatives. The Center and several of its researchers are well known internationally. From the Annual Report, the links of COPAS with the USA do not seem very active, but I may have missed relevant information.

#### 7. Outreach

COPAS outreach activities were numerous and varied in 2007. The numbers of students, teachers and parents reached, and of researchers and undergraduate students involved were high. The coverage in the media (newspaper, TV and the Web) was good. The emphasis on creating an innovative array of programs at the Regional level and on improving the quality of the teaching material was a wise investment of efforts. The COPAS Outreach Coordinator was active at networking in the Pacific region, which contributed to the overall COPAS networking effort. This wide array of successful outreach activities would not exist without COPAS.

One major tool for outreach in modern societies is the Internet. The present COPAS site (<http://copas.udec.cl/>) is quite technical, and aims at informing the international scientific community of COPAS existence, structure and research activities. The site has little to offer to the Spanish speaking general public, especially youngsters. I suggested above that COPAS should consider devoting efforts to the development of a general-public Internet site in Spanish, as a cost-effective medium for outreach. The Spanish speaking site for the general public could be part or not of the present COPAS Internet site.

#### 8. Diffusion of results

As noted above, the COPAS publications in 2007 were high, in both quantity and quality.

#### 9. Advisory Committee

The members of the External Advisory Panel are well-reputed researchers and research managers. The Panel plays an important role in promoting and enhancing the Center's linkages and image internationally, and promoting direct links with decision makers in the Southeastern Pacific Region. The Advisory Panel's operation is satisfactory.

#### **RECOMMENDATION**

My recommendation for the 2007 COPAS Annual Report is: **"Approve"** (The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report).

**RECOMMENDATIONS TO THE CENTER DIRECTOR:**

(only if report is approved))

1. Following the hiring of a full-time Oceanographer/Modeler, COPAS should consider integrating modeling in all phases of its activities, from the development of projects to the design of experiments and sampling programs, the analysis of data and, finally, the synthesis of results.
2. COPAS should consider devoting efforts to the development of a general-public Internet site in Spanish, as a cost-effective medium for outreach.
3. Concerning the integration among Programs, it would be useful to provide, in future reports, a Table with six columns (i.e. the six Programs) and three rows (i.e. the three Themes), with in each cell of the Table a clear indication of the contribution or not of the given Program to the given Theme.

<b>ESTADO FINAL RESOLUCION DEL CONSEJO</b>  <b>Observaciones:</b> _____  _____	<b>FECHA</b> <div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 40px; height: 20px; margin: 0 auto;"></div> <b>1. APROBADO</b> <b>2. PENDIENTE</b> <b>3. RECHAZADO</b> <b>4. A FISCALIA</b>
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## EVALUATION REPORT CENTERS FOR ADVANCED RESEARCH

### I. PROJECT INFORMATION

CENTER'S NAME

**Center for Oceanographic Research in the eastern Pacific Ocean (COPAS)**

DIRECTOR

Dr. Carina Lange

### II. EVALUATION PANEL

NAME	ORGANIZATION/ INSTITUTION	E-MAIL	SIGNATURE
Lawrence M. Mayer	University of Maine	Lmayer@maine.edu	

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME**

Circulation and Mixing in the eastern South Pacific Ocean

**PRINCIPAL INVESTIGATOR**

Wolfgang Schneider

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results	X			

**PROGRAM'S NAME** Microbial Communities and

Water-Column Biogeochemical Cycling

**PRINCIPAL INVESTIGATOR** Osvaldo Ulloa

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center		X		
Diffusion of the results	X			

\* If there had been none, please disregard this question

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME** PLANKTON DYNAMICS AND ITS ROLE IN CARBON CYCLING IN THE EASTERN SOUTH PACIFIC

**PRINCIPAL INVESTIGATOR:** Ruben Escribano

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

**PROGRAM'S NAME** PELAGIC-BENTHIC COUPLING IN THE EASTERN SOUTH PACIFIC

**PRINCIPAL INVESTIGATOR** Humberto E. González

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

\* If there had been none, please disregard this question

**III. PROGRAMS EVALUATION (please fill up as many forms as programs exist within the Center)**

**PROGRAM'S NAME** Community Structure, Metabolism and Biogeochemistry in the Benthic Realm of the Eastern South Pacific

**PRINCIPAL INVESTIGATOR** Renato Quiñones

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of the results reached regarding the objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

**PROGRAM'S NAME** PALEO-STUDIES IN THE EASTERN SOUTH PACIFIC: A JOINT GEOCHEMICAL AND PALEOBIOLOGICAL APPROACH

**PRINCIPAL INVESTIGATOR** Silvio Pantoja

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Internal use
Degree of adoption of suggestions from the last report *				
Accomplishment of objectives and goals of the reported program	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration with other ongoing programs of the Center	X			
Diffusion of the results	X			

\* If there had been none, please disregard this question

#### IV. CENTER EVALUATION

ITEM	Total/ Good	Partial/ Regular	Insufficient/ Deficient	Uso Interno
Degree of adoption of suggestions from the last report *	X			
Accomplishment of objectives and goals of the Center	X			
Quantity of reached outcomes related to proposal objectives and goals	X			
Quality of reached outcomes related to proposal objectives and goals	X			
Degree of integration between the programs of the Center	X			
Creation and reinforcement of international networks	X			
Outreach		X		
Diffusion of results	X			
Establishment and tasks of the Advisory Committee		X		

**RECOMMENDATIONS (see following concepts)**

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
APPROVE	APPROVAL WITH SUGGESTIONS	ADDITIONAL INFO.	PENDING	REJECT	FONDECYT USE

Evaluation Date

Signature reviewer



## **EVALUATION CONCEPTS ANNUAL REPORT**

2. **Approve:** The reviewer recommends to accept the report in its present form since he/she considers objectives and goals fully accomplished and all relevant issues covered by the report.
2. **Approval with suggestions or minor observations**
  - 2.1 **Minor observations:** The reviewer recommends the approval of the report despite the justified incompleteness of some aspects that does not constitute an obstacle for the continuity of the Center activities.
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3. **Additional information:** The reviewer requires additional documentation or specific explanations to fully evaluate the report.
4. **Pending:** The reviewer makes significant observations to the report and conditions its approval to the accomplishment of specific demands.
5. **Reject:** The reviewer has strong objections to the contents of the report.

## **EVALUATION COMMENTS:**

The research reported by the six groups continues to be successful, and is responding well to the proposal objectives. Both quantity and quality appear excellent, the latter as evidenced by the high quality of journals in which it is being published. The work has both regional and generic value; a good example of the latter is the nitrogen cycling work of Dr. Farias. Extensive new funding, in addition to that obtained in the Base Funding Program, is emerging. There continues to be evidence, via coauthorships, for collaboration among the various groups. The hiring of a modeler, Dr. F. Tapia, is a welcome and timely addition to the group and should facilitate even more collaboration. The group is therefore continuing to build its scientific reputation as the experts on the Southeast Pacific, as well as a source of many interesting discoveries that will apply elsewhere in the world.

The Center's responses to suggestions from the last evaluation appear to have been very successful. The announcement of sufficient funds to begin construction of a central building for COPAS is excellent news. Such a central facility will greatly facilitate progress and build morale in the Center. Given our discussion last year of overhead mechanisms within FONDAP, and the fact that the Center is not in a position to affect national policy on this question (see their response to Suggestion 3), it is quite welcome that the administration of UdeC has committed overhead funds from other projects for this construction. This commitment should make it clear that UdeC is serious about COPAS.

COPAS's success in the national Base Financing Program attests to the competitiveness of this group. The probable ten years of funding will provides further institutionalization of an important part of the COPAS effort and leverages their recent expansion into southern Chile. The role of the TTKA, questioned in a previous evaluation, now becomes clear via its accomplishment in formulating this successful identification of priorities and writing the proposal. This long-term funding should reinforce the University's commitment to funding the building.

One suggestion that still needs attention is the expansion of outreach beyond local efforts. It is true that the expanded work in the fjord region will provide some expansion outside Concepcion, but it is also true that there are media (electronic and paper) that would allow COPAS to achieve greater outreach in Chile, and indeed beyond. If COPAS wishes to become recognized as the national center of excellence in oceanography, it will have to reach to places beyond where it has people stationed. As an example, the COPAS web site is focused primarily on COPAS, which is certainly important information. However, it might be expanded to provide other useful information such as pages on how the ocean affects various land zones in Chile, and/or web links to other pages such as real-time satellite images or correlations between fish landings and primary productivity.

Our suggestion regarding seminars also remains, and one hopes that the post-docs do better than the graduate student.

There was no interface with the Advisory Committee during the period evaluated, as per plan. There will be a meeting with them in the coming year.