

EXTERNAL REVIEW  
OF THE  
CIFAR  
UNIVERSITY OF ALASKA  
FAIRBANKS, ALASKA

SUBMITTED TO THE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
SCIENCE ADVISORY BOARD  
ON  
16 AUGUST 2011

## SUMMARY

An external review of the research, education, and outreach programs of the CIFAR at the University of Alaska was conducted on 27-28 July 2011 in Fairbanks, Alaska. Guidelines for conducting the review were provided by the Office of Oceanic and Atmospheric Research within the National Oceanic and Atmospheric Administration (NOAA). The review was conducted under the auspices of the NOAA Science Advisory Board (SAB) and, therefore, is subject to the requirements of the Federal Advisory Committee Act (FACA). A list of review panel members is provided in Appendix I. The review panel's on-site agenda is provided in Appendix II.

The quality, scope, and timeliness of CIFAR's science are exemplary, as seen in presentations, publications, and other products. The CIFAR-supported student research is yielding an astonishingly high return on investment, both because of the quality of the science and the relevance of the science to important practical questions ranging from stock assessment to polar bear conservation to predicting glacial melt to tsunami preparedness. Especially noteworthy is the high leverage achieved by minimal CIFAR support that helps close funding gaps and recruit students in the area of stock assessment, an area that is recognized as an important national need. In general, CIFAR excels at leverage, collaboration, and avoiding redundancy. The climate change and variability and coastal hazards research is simultaneously world class and directly related to operations.

We see two major opportunities for improvement building on CIFAR's strengths and successes to date:

- 1.) Given the extraordinary return on investments from the CIFAR-supported students, an increase in "Task I" administrative funding from NOAA is strongly recommended. The review panel recognizes that this likely requires that NOAA look at the logic and consistency of Task 1 funding across all CI's.
- 2.) The Russian-American Long-term Census of the Arctic (RUSALCA) efforts would benefit from immediate attention to synthesis and generation of specific hypotheses or models that could enhance the data already collected and data to be collected in the future.

In addition, there are smaller opportunities that may be worth considering, which include thinking about strategically aiming cohorts of CIFAR students towards specific research gaps by writing theme-based calls for student proposals. Examples of such themes might be those identified in National Ocean Policy, or in NOAA's Arctic Vision and Strategy documents. Specifically, such themes might include resilient communities, or anticipating impacts of climate change on future fisheries management options and their economic consequences. Benefits might also arise from continuing to explore new collaborations with University of Alaska Anchorage to take advantage of complementarities (for example stronger social science). There may also be opportunities for enhanced synergies and collaborations between CIFAR and Alaska Center for Climate Assessment & Policy, (NOAA's Regional Integrated Science and Assessment or RISA Program for Alaska). We noted that there was not much social science integration, but this was not entirely for lack of will or interest, but for lack of funding.

Overall CIFAR is performing outstandingly, taking full scientific advantage of its location in the state that is essentially "on point" for the nation when it comes to climate change. At the pragmatic level, CIFAR is also contributing science that will help Alaska's economy maintain jobs and economic value from its marine resources, despite the challenges of a changing climate. Given the

quality and focus of CIFAR, the review panel concludes that modest investment in social science to complement CIFAR's excellence in the biogeophysical sciences would be a wise investment. In particular, seed money for social science could greatly help NOAA by filling gaps in fisheries science that in some circumstances may currently put NOAA's decisions at risk for failing to account for social impacts. If NOAA wants more social science it will need to provide some funding for that social science, or reprioritize accordingly.

## I. OVERVIEW OF CIFAR

Established in an open competition in 2008 to replace its predecessor – the Cooperative Institute for Arctic Research – and realign it with new NOAA policies, the Cooperative Institute for Alaska Research (CIFAR) conducts ecosystem and environmental research related to Alaska and its associated Arctic regions, including the Gulf of Alaska, Bering Sea, Chukchi/Beaufort Seas, and Arctic Ocean. CIFAR continues to facilitate the developed long-term collaboration between NOAA and the University of Alaska that began under the Cooperative Institute for Arctic Research in 1994, within which targeted research, technology, education and outreach can be developed and sustained. CIFAR plays a central role in communication and coordination among NOAA, researchers, management agencies, nongovernmental organizations, Alaska communities, and the general public in collaborative research, education, and outreach efforts. CIFAR conducts research in three thematic areas: **1) Ecosystem Function** – Gain sufficient knowledge of Alaskan ecosystems to forecast their response to both natural and anthropogenic change; **2) Coastal Hazards** – Improve understanding of coastal hazards, storms, and tsunamis that affect Alaska's population, ecosystems and coast to improve weather forecast and warning accuracy; and **3) Climate Change and Variability** – Foster climate research targeted at societal needs and advance Arctic climate research to improve predictive capacity of climate variations affecting coastal regions and ecosystems.

CIFAR currently operates under NOAA Cooperative Agreement NA08OAR4320751, with additional funding from NA08OAR4320870 (which is for the RUSALCA program). CIFAR's administrative and programmatic responsibilities are shared by Sarah Garcia, financial manager; Barb Hameister, publications and meetings manager; Susan Sugai, associate director; and John Walsh, director. CIFAR is closely affiliated with the University of Alaska Fairbanks (UAF) Center for Global Change and Arctic System Research, a campus-wide forum for discussing and acting on global change issues, which is staffed by the same 4 personnel. CIFAR does not have in-house researchers. Instead, research is conducted by scientists affiliated with other units at UAF and elsewhere in the statewide University of Alaska.

## II. STRATEGIC PLAN

With respect to strategic planning, CIFAR focuses on themes specifically identified in the Announcement of Federal funding Opportunity Number OAR-CIPO-2008-2001224. These themes are climate, ecosystem, and environmental research on the Alaska region. CIFAR's work has been consistent with the NOAA strategic plan that was in force at the time CIFAR was founded, in 2008. NOAA's strategic plan has evolved since then, and is now based on the 2010 "Next Generation Strategic Plan" and the 2011 "Arctic Vision and Strategy" documents. CIFAR participants at the University of Alaska and at NOAA contributed to the formation of these strategic planning documents. In turn, these documents have been used, to some extent, by CIFAR in approaching the scientific mission goals.

The specific research foci are ecosystem studies and forecasting, coastal hazards, and climate change and variability. These were identified in the Announcement of Federal funding Opportunity Number OAR-CIPO-2008-2001224. None of these are near completion, which is not surprising given their complexity and the depth of challenges they present. In addition, emerging thematic areas include:

- i. Linking the three themes to the National Ocean Policy (NOP), and specifically to implementation of ecosystem-based management and coastal and marine spatial planning, as well as to other actions identified in NOP strategic actions plans (specifically the plan focusing on the Arctic) that are currently under development.
- ii. Downscaling climate model results to regional and local scales such that they are of use to communities for planning purposes
- iii. Better identification, and ultimately adaptation to hazardous coastal threats from tsunamis, storms, erosion, shipping, and resource development (offshore oil and gas exploration and development).
- iv. Evolution of marine ecosystems to anthropogenic climate change.

NOAA establishes strategic plans that have mission goals and themes. CIFAR's work has been consistent with NOAA's mission goals. Of course, NOAA's strategic plans have been updated and new "vision and strategy" documents, such as on the Arctic, have been created. The evolution of the goals and the reprioritization of scientific research themes expressed by NOAA should be implemented to the maximum extent possible within CIFAR. This can be accomplished through the selection of hypotheses to be tested by RUSALCA activities, and in the Global Change Student Research Grant Competition (specifically in the call for proposals). This will further help align CIFAR's work with NOAA's strategic focus.

## **Recommendations**

1. NOAA should be encouraged to involve CIFAR scientists in its strategic planning. This happens on an informal basis currently, but integration could be improved if these dialogues were institutionalized—thereby enhancing the "cooperative" nature of the endeavor.
2. In turn, whenever NOAA's strategic plans have been revised, those revisions should be used as the basis for reviewing strategic planning at CIFAR and updating it accordingly. In other words, as NOAA's mission goals evolve, so too should CIFAR's. One place to promulgate such goals and themes is in the call for student proposals in the Global Change Student Research Grant Competition
3. Without additional Task 1 funding, CIFAR begins to look more like a pass-through of federal funding than a truly cooperative institute. If CIFAR is expected to conduct strategic planning and to implement such plans, it needs to have the resources to do so, and these resources are apparently "Task 1 funding." We conclude that the current level of Task 1 funding is inadequate. We recommend increasing the annual Task 1 administrative funding to \$300K/yr (from the current level of \$110 K/yr), as was the target when the Announcement of Federal funding Opportunity Number OAR-CIPO-2008-2001224 was originally released. Given that nearly \$10M has flowed through

CIFAR over the past three years, this is a modest increase. We recognize that this issue applies to other CIs, and is not specific to CIFAR. NOAA needs to address this issue.

### **III. SCIENCE REVIEW**

CIFAR's most significant scientific programs are in the areas of:

- Fisheries and ocean physics achievements under RUSALCA
- Tsunami risk assessment under Tsunami Warning & Environmental Observatory for Alaska (TWEAK)
- Work with the NWS office on the bridge between weather and climate
- Climate downscaling and projections for Alaska under collaboration with IARC

CIFAR arranged presentations on all four subjects by the project scientists. In addition, the students supported by CIFAR competitions (Global Change and Stock Assessment) also made presentations on their research projects. Based on the presentations and discussions with scientists we rank CIFAR research, overall, as excellent on all the review criteria: Quality, Creativity, Integrity and Credibility. The scientists and students we met exhibited a high degree of professionalism and enthusiasm about their research. More specifically:

- CIFAR research is timely and NOAA-centric. It is diverse and displays interaction with a broad range of NOAA programs, from fisheries to weather to climate, from ocean to coasts to land. It is conducted by a highly qualified and dedicated group of scientists and students.
- Much of CIFAR research is closely tied with operational applications and activities and is relevant to decision makers and stake holders such as users of weather information, fisheries and coastal and inland communities. This is particularly so in areas of tsunami preparedness, weather and climate hazards, and stock assessment.
- An impressive set of student presentations hinting at the high quality not only of the education provided by the University but of their research potential. CIFAR produces high-quality students that work in areas of high relevance to NOAA and have the potential to directly feed the NOAA workforce (and have done so in the past).
- The students' presentations demonstrate that CIFAR can successfully apply small amounts of money (most of it leveraged through cost sharing and return of overhead) to steer the Institute research in the direction that matches its strategic plan. This also demonstrates CIFAR's success in capacity building, in particular in areas of stock assessment and climate research.
- RUSALCA presentations were lengthy, overly-technical/detailed and did not provide important integrative/synthesis information. Some of the presentations did not demonstrate a move from data collection to hypothesis-driven research.
- We noticed and were concerned about a lack of social science integration. We understand that the CIFAR Director and Assoc. Director have little leverage to increase involvement of social scientists in the Institute because of lack of funding within NOAA, and perhaps too a lack of emphasis or priority by NOAA officials. The CIFAR leadership has continually tried to support social science students in the program through their internal grants programs but so far the applicant success rate has not been high.

### **Recommendations**

- CIFAR should continue support of students through small grants. This is very effective and successful. NOAA should provide more support directly towards this program particularly

because the graduating students could strengthen the Agency's workforce and contribute to its renewal.

- Regarding RUSALCA, it could be that the program is overburdened with operational difficulties, particularly on the fisheries/ecosystem side, and more guidance is needed from the outside. However, this unique Russian-American collaboration makes possible sampling in Russian waters which is key to understanding physical and ecological changes in the Arctic. NOAA should provide modest additional funding, or reprioritize existing funds, to optimize this unique integrated ecosystem study through synthesis of data already collected so that future studies can be focused on key hypotheses. CIFAR Director and Assoc. Director should be encouraged to exercise more involvement in the management of the program, particularly in steering it in the direction of integrations, synthesis, and hypothesis-driven research. Senior leadership from NOAA's Climate Program (Drs. John Calder and Kathy Crane) should also play a significant role in this regard. There is a need to bring these scientists together as soon as possible and in a rigorous peer-reviewed workshop to better develop hypotheses and models, perhaps with some outside specialists with fresh perspectives.
- Regarding social science integration: Perhaps it is too much to expect a strong social science involvement without more direct agency support, competitive or non-competitive. But there was nearly none at all. The SAB should press NOAA to increase funding for social science in support of the physical and biological science conducted by CIFAR.

#### **IV. EDUCATION/OUTREACH**

The Education/Outreach component of CIFAR focuses on funding competitive student research projects, and to support students experiencing gaps between funding sources. Because funds are not sufficient, CIFAR has had to shelve initiatives for K-12 education and community or stakeholder outreach.

#### **Findings and Recommendations**

##### **1. Student Component**

The student component is outstanding. We commend CIFAR for an excellent use of Task I funds for exemplary student projects in the Global Change Student Research Grant Competition and Stock Assessment Student Traineeships. We also agree that using CIFAR funds to cover gaps in student funding is appropriate and has successfully enabled students to complete their degrees on schedule and to move smoothly into the workforce. We were impressed by the number of alumni who are working in research jobs that serve Alaska.

We noted the student component could be a good way to focus some funds on social science research, an area of interdisciplinary research that is lacking in other CIFAR projects. We recommend that training be made available to improve skills in preparing proposals so that, in the future, CIFAR is in a better position to make student awards in the social sciences. In addition to promoting obvious excellence in research, the recruitment of students for both the Global Change Student Research Grants and Stock Assessment Student Traineeships are opportunities to strategically recruit a diversity of backgrounds and viewpoints. Lastly, the students supported by CIFAR were so impressive additional benefit would accrue from promoting a "CIFAR student network" that included existing students and alumni and that not only stayed connected but also

perhaps gathered once a year both socially and scientifically.

Our recommendation is that the Global Change Student Research Grants and Stock Assessment Student Traineeships continue to be a focus and priority for CIFAR, and CIFAR could build on this strength by experimenting with inexpensive innovations such as theme-based calls for proposals, recruiting strategies aimed at diversity, and building a social network of this next generation of science leaders.

## 2. K-12 education

It is unfortunate that funding limitations preclude the continuation of the climate change course for K-12 teachers. This proven model is an excellent tool for building science literacy, raising young Alaskans to understand the influence of global change on the natural environment and their lives, and introducing the next generation to a cutting edge area of natural resource management.

## 3. Outreach

Although stakeholder and community outreach is not funded by CIFAR, related university programs (e.g., Alaska Sea Grant, ACCAP) fill that role to some extent. We recommend that CIFAR continue to build those partnerships and leverage funds to 1) effectively communicate science (e.g. bowhead whale video), and 2) engage others in the scientific process and development of products from the research that serves the needs of communities (e.g. TWEAK; climate model downscaling). We encourage CIFAR to fund projects that clearly integrate outreach to communities or involve community stakeholders directly in hypothesis development or execution of research.

## V. SCIENCE MANAGEMENT

Science management at CIFAR is much better than would be expected given the limitations caused by insufficient Task 1 funding that CIFAR chooses to direct largely to students rather than towards administrative support. The panel judges that the largest and most important contribution CIFAR makes to science management is in support of students. It provides gap funding to students engaged in stock assessments, and runs a small competitive grants program for students through the Global Change Student Research program. CIFAR is aided in this by match funds provided by UAF and has leveraged other funds. The high quality of students work indicates that the selection process and mentoring are ably executed.

The financial health of CIFAR is perilous because Task 1 funding is not nearly sufficient to cover its administrative functioning. CIFAR has been able to thrive in spite of this to date because of generous staff who are available for less financial support than would normally be the case. If the director and associate director were to retire soon, which is foreseeable, it would be very difficult to find replacements with the current level of funding, which has not changed since 2004. In addition, because of the university's lack of flexibility with respect to carrying funds forward across fiscal years, CIFAR and the Center for Global Change will have difficulty funding students from their state appropriation.

In addition to the major critical funding issue, NOAA's new requirement for an annual report on all CIFAR awards through March 31 by April 30 of the same year puts a strain on CIFAR because this is the same time period during student grants are submitted to CIFAR and evaluated. Federal granting regulations do not allow for a change in the CIFAR reporting date, which means if this strain is to be reduced it can be accomplished only by changing when the student grants are due.

## VI. SUMMARY AND CONCLUSIONS

The panel spent two full days listening to sixteen scientific presentations, viewing a dozen posters, and having the opportunity for over four hours and back-and-forth discussions with CIFAR leadership, NOAA representatives, and University researchers. CIFAR research focuses in three thematic areas: **1) Ecosystem Function** – Gain sufficient knowledge of Alaskan ecosystems to forecast their response to both natural and anthropogenic change; **2) Coastal Hazards** – Improve understanding of coastal hazards, storms, and tsunamis that affect Alaska’s population, ecosystems and coast to improve weather forecast and warning accuracy; and **3) Climate Change and Variability** – Foster climate research targeted at societal needs and advance Arctic climate research to improve predictive capacity of climate variations affecting coastal regions and ecosystems. The specific implementation of this research is exemplary in its quality, scope, and timeliness, as seen in both the presentations and publications. The quality of student research was truly extraordinary, and NOAA is attracting and training talent to meet some of NOAA’s highest priority needs – including weather readiness, climate resilience and variability, and stock assessment. Impressively much of the research is immediately useful to decision-makers and operations. Examples include TWEAK, the tsunami warning Google interface, stock assessment, and climate extremes and flooding projects.

The panel did identify two specific opportunities for improvement building on CIFAR’s strengths and successes to date:

- 1.) Given the extraordinary return on investments from the CIFAR-supported students, an increase in Task I funding is strongly recommended. The review panel recognizes that this likely requires that NOAA look at the logic and consistency of Task 1 funding across all CI’s.
- 2.) The RUSALCA efforts would benefit from immediate attention to synthesis and generation of specific hypotheses or models that could enhance the data already collected and to be collected in the future.

In addition, there are smaller opportunities that may be worth considering for networking CIFAR students, running competitions aimed at particular research themes and continuing to explore new collaborations such as with University of Alaska Anchorage to take advantage of complementarities (for example stronger social science). The most significant and perhaps most beneficial new investment NOAA could make would be to provide seed funding for social science embedded in CIFAR projects.



## APPENDIX I

### LIST OF EXTERNAL REVIEWERS

**[1] Dr. Peter Kareiva, Chairperson (Member of NOAA's Science Advisory Board)**

Chief Scientist and Director of Science

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Dr. Peter Kareiva is the Chief Scientist and Director of Science for The Nature Conservancy (TNC) where he provides science leadership and conducts his own research program. Prior to joining TNC, Dr. Kareiva led the Division of Conservation Biology at NOAA's Northwest Fisheries Science Center in Seattle, where he was primarily engaged in salmon conservation.

Dr Kareiva received his BS in Zoology from Duke University in 1973, his Masters in Environmental Sciences from University of California at Irvine in 1976, and his PhD in Ecology and Evolutionary Biology at Cornell University in 1981. His first faculty position was in Biology and Applied Mathematics at Brown University (from 1981-1983). After that he became an Assistant, Associate and then Full Professor at the University of Washington. His academic honors include a Guggenheim Fellowship and election to the American Academy of Arts and Sciences, and election to the National Academy of Science. He has written over 150 scientific papers, edited six books, and just completed a conservation science textbook.

Dr. Kareiva's research has emphasized mathematical approaches to addressing questions in fisheries, biotechnology risk analysis, conservation, landscape ecology, insect ecology, and climate change science. In his current job Dr. Kareiva's research is focusing on how to map and quantify ecosystem services in a way that can be useful to resource managers and policy leaders.

**[2] Dr. David Policansky**

Scholar

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David Policansky has a B.A. in biology from Stanford University and a M.S. and Ph.D. in biology from the University of Oregon. He has taught introductory biology, genetics, ichthyology, evolution, ecology, and graduate seminars. He is a scholar in the Board on Environmental Studies and Toxicology at the National Research Council, where he directs studies on applied ecology and natural resource management. He is a member of the American Fisheries Society, and chairs the advisory council for the University of Alaska's School of Fisheries. He was a 2001 Harriman Scholar on the retracing of the 1899 Harriman Alaska Expedition. His interests include genetics; evolution; and ecology, including the effects of fishing on fish populations; ecological risk assessment; natural resource management; and how

science is used in informing policy. He has directed more than 30 projects at the National Research Council on natural resources and ecological risk assessment, including recent reports on the Endangered Species Act; salmon in the Pacific Northwest, Maine, and Alaska; wetlands delineation; enhancing water supplies in the Middle East; cumulative environmental effects of oil and gas activities on Alaska's North Slope; ecological indicators; environmental impacts of wind-energy projects, and ecosystem-based approaches to the management of marine fisheries. He has published approximately 35 papers, book chapters, and book reviews, most recently on fisheries, the role of science in decision making, and common-property resources.

**[3] Dorothy Childers**

Associate Director

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Ms. Childers is the associate director for Alaska Marine Conservation Council, a community-based organization working to protect the long-term health of Alaska's oceans and sustain the working waterfronts of our coastal communities. Dorothy received a Pew Fellowship in Marine Conservation for a project addressing the northern Bering Sea and the potential movement of large-scale fisheries into new areas due to changing ocean conditions. She collaborates with the Bering Sea Elders Group (traditional tribal leaders), to identify culturally important areas and ecologically sensitive areas for the marine resources that traditional communities rely on. Dorothy serves as the conservation representative on the North Pacific Research Board and Alaska Sea Grant public advisory committee.

**[4] Dr. John Farrell**

Executive Director

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Dr. Farrell received a bachelor's degree from Franklin and Marshall College in 1983, and then a master's degree and a Ph.D. in geological sciences from Brown University in 1986 and 1991, respectively. Dr. Farrell's scientific expertise is in paleoceanography and paleoclimatology, with an emphasis in geochemistry. He's published over thirty peer-reviewed papers. He was a program manager and then Director of the International Ocean Drilling Program. He then served as Associate Dean of Research and Administration of the Graduate School of Oceanography at the University of Rhode Island, where he oversaw college research, and co-taught a graduate-level paleoceanography seminar. Since 2006, he has served as the Executive Director of the U.S. Arctic Research Commission. Farrell recently served on an NSF committee of visitors for the

Atmospheric and Geospace Sciences Division. He is a member of several federal interagency committees and task forces, and is co-leading the development of the strategic action plan for the Arctic region, as part of the new national ocean policy.

**[5] Dr. Yochanan Kushnir (*Ex-Officio*, Cooperative Institute Representative)**

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Dr. Kushnir is a Lamont Research Professor at the Lamont-Doherty Earth Observatory, The Earth Institute, Columbia University, and Director of the NOAA Cooperative Institute for Climate Applications and Research (CICAR). Kushnir's research is focused on understanding the phenomena associated with climate variability and change, including the North Atlantic Oscillation, the variability of the tropical Atlantic region, the interaction between El Niño and the Indian summer monsoon, and the Atlantic Multidecadal Oscillation.

Kushnir is a member of the Earth Institute faculty where he teaches undergraduate and graduate courses in climate science and serves on some of its research and education committees. He has taught at the Columbia University School of International and Public Affairs and at Barnard College in the Department of Environmental Sciences, and the Feinberg School for Graduate Studies, Weizmann Institute of Science, Israel. Dr. Kushnir received his Ph.D. in Atmospheric Sciences from Oregon State University in 1985.

## APPENDIX II: AGENDA FOR THE REVIEW

Review of the Cooperative Institute for Alaska Research (CIFAR)  
July 27–28, 2011, University of Alaska Fairbanks

<b>Wednesday, July 27, 2011 (Room 401 Akasofu Building, unless noted otherwise)</b>		
8:00–8:30	<b>Science Review Panel</b> executive session in 417 Akasofu	<i>Panel</i>
8:30–8:40	Welcome to the International Arctic Research Center (IARC)	<i>Larry Hinzman, Director, IARC</i>
8:40–9:10	CIFAR's role in UA's research & graduate education	<i>Susan Henrichs, Provost</i>
9:10–9:45	Overview of CIFAR program & new directions	<i>John Walsh, CIFAR Director Susan Sugai</i>
9:45–10:00	Break	
10:00–11:00	Meeting NOAA's human resource needs for quantitative fishery stock assessment scientists--CIFAR AFSC-SFOS Stock Assessment Fellowships Roundtable presentation by videoconference from Juneau & Seattle	<i>Phil Mundy, Director, NOAA Auke Bay Laboratories Gordon Kruse, Prof SFOS, NPFMC SSC Anne Hollowed, NOAA, AFSC, Seattle, NPFMC SSC Terry Quinn, CIFAR PI, Prof SFOS, NPFMC SSC Dana Hanselman, NOAA Fisheries Scientist, AFSC</i>
11:00–11:05	CIFAR's role in the Global Change Student Grant Competition	<i>Susan Sugai</i>
11:05–11:25	Whole mitochondrial genome analysis to uncover detailed genetic structure of chum salmon populations and possible historical refugia	<i>Michael Garvin, Ph.D. student</i>
11:25–11:45	Eco-physical biomarkers & contaminants in a changing environment: Using stable isotope analysis to assess the biological significance of maternal transfer of contaminants in polar bears	<i>Katrina Knott, Ph.D. student</i>
11:45–12:05	Effects of debris cover on glaciers in Alaska	<i>Samuel Herreid, B.S. student</i>
12:05–12:15	Welcome from President Gamble, UA Statewide	
12:15–1:00	Lunch for review panel & participants	
1:00–1:20	CIFAR Task I education & outreach: past & proposed efforts	<i>Susan Sugai</i>
1:20–1:40	CIFAR/UA Museum of the North collaboration for CIFAR research outreach to North Slope whaling communities & general public	<i>Steve Okkonen, Assoc Prof SFOS, CIFAR PI</i>
1:40–2:00	Ocean acidification (real-time sensors for Bering Sea and Gulf of Alaska) collaboration with other funding sources	<i>Jeremy Mathis, Asst Prof SFOS (CIFAR &amp; ACCAP)</i>
2:00–2:15	Break	
2:15–4:00	RUSALCA (Russian-American Long-term Census of the Arctic) w/ opening comments by <i>John Calder</i> , Director, NOAA Arctic Research Program	<i>Terry Whitley, Prof SFOS Tom Weingartner, Prof SFOS Katrin Iken, Assoc Prof SFOS Bodil Bluhm, Assoc Prof SFOS Russ Hopcroft, Prof SFOS Brenda Norcross, Prof SFOS</i>
4:00–5:00	Science Review Panel executive session	<i>Panel</i>
5:00–5:30	Questions to CIFAR regarding day 2 presentations	<i>Panel, CIFAR</i>
5:30–7:30	Reception & poster session in 501 Akasofu with opening comments from UAF Chancellor Brian Rogers	<i>Panel, CIFAR, NOAA, UA</i>

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**Thursday, July 28, 2011 (Walking tour of Akasofu and Elvey Buildings, UAF)**

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8:00-9:00	Science Review Panel executive session in 417 Akasofu	Panel
9:00	Meet in 401 Akasofu for walk to NWS	Panel, John Walsh
9:05-9:55	Tour of NWS "research to operations" in 355 Akasofu Bldg, including climate downscaling to Alaska, satellite products for aviation safety (volcanic ash products), and snow forecasts/flood early warning systems. Near real time wind and wave state data from buoy deployed just south of Bering Strait.	John Walsh James Partain, Director, NOAA Alaska Regional Climate Center Eric Stevens, Science & Operations Officer, NWS Katrina Bennett, Ph.D student
9:55-10:00	Walk to 301 Elvey via CIFAR offices in 305/306 Akasofu	
10:00-10:30	Demonstration of TWEAK tsunami hazard and wave run-up models for Alaskan coastal communities in 301 Elvey	Elena Suleimani Dmitry Nicolsky, TWEAK researchers
10:30-10:35	Walk back to 401 Akasofu	
10:35-11:00	Panel questions for CIFAR	Panel, CIFAR
11:00-noon	Science Review Panel executive session in 417 Akasofu	Panel
Noon-1:00	Review Panel lunch w/ CIFAR PIs and NWS in 501 Akasofu	
1:00-2:00	Closed session with CIFAR directors in 417 Akasofu	Panel, CIFAR
2:00-4:00	Science Review Panel executive session in 417 Akasofu	Panel
4:00-5:00	Panel's initial report back to CIFAR, tentative recommendations in 401 Akasofu	

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