

NATIONAL SCIENCE FOUNDATION
All Reviews (Jacket and PI copies)

Proposal:1331100

PI Name:Eicken , Hajo

Title:Collaborative Research: Research, Synthesis, and Knowledge Transfer in a Changing Arctic: Science Support for the Study of Environmental Arctic Change (SEARCH)

Institution:University of Alaska Fairbanks Campus

NSF Program:Arctic System Science Program

Principal Investigator:Eicken, Hajo

Rating:Excellent

Review:

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This proposal is to implement the next phase of SEARCH. It's founded on extensive strategic planning, from which solid cross-disciplinary goals and a well-organized scientific structure were formed.

I'm excited by this bold and ambitious proposal. Among the many strengths are its well-focused scientific questions, its distributed Action Teams, and the inclusion of postdoctoral researchers who will have the time (salary), skills, and motivation to do the heavy lifting and to freshen the face of the program. Each of the four scientific questions will be addressed by an action team, with committed leaders already identified for each. The SSC will coordinate the program components and keep them on track. 'Arctic Futures 2050' provides additional focus for the entire enterprise, with a meaningful integration and synthesis target. 'Knowledge Exchange Fellowships' promote new interactions among academia and government scientists (funded by other sources). Specific timelines and outcomes have been identified.

The AON coordinator adds yet another facet to the proposal. I have no doubt that AON, its agency partners and international extensions would benefit from a coordinator, but this piece seemed a bit like an add-on. It's entirely possible that folding the AON coordinator into the new SEARCH framework is the logical and effective approach. Input from the NSF-AON Program is needed to help make this assessment. Some commitment from agencies to contribute up the cost of the coordinator would be reassuring.

It appears the coordination largely involves existing projects, which helps in planning and assures that products will be generated. I hope that resources will be applied to engaging new PIs and developing the ad hoc working groups so that those who have not been involved in the science planning processes have avenues for involvement.

The budget is large, but so are the likely outcomes. My preference would be to expand the roles of the postdoc's and contract the role of the Project Office. The former brings huge potential to deliver the cross-disciplinary science and to provide the substantive glue to hold the project together. Are two in-person SSC meetings every year really necessary?

In the context of the five review elements, please

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evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

Most of the proposed activities are aimed at coordination and communication among a broad community of scientists. The postdoctoral positions could launch new careers in interdisciplinary science.

Please evaluate the strengths and weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable

Summary Statement

The proposed initiative is built on extensive deliberation that has resulted in an outstanding science implementation plan. It requires a large investment by NSF, but the potential payoff in major significant products is great.

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Principal Investigator:Eicken, Hajo

Rating:Excellent

Review:

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This proposal has a strong potential to transform the SEARCH organization and in turn benefit the arctic research community in numerous ways. It builds on the organizational and community-building strengths of the ARCUS team and the science goals of the broader SEARCH effort. This structure puts a stronger focus on the science, and with the major changes to how the SEARCH entity operates it should put the group in a good position to serve the community for several years to come. I particularly like the approach of having the Action Teams target the science goals, and the Project Office focus on coordinating the broad synthesis activities.

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

One particular strength of this proposal is the importance the team places on bringing in all relevant stakeholders, and at virtually every step of the process. The changes taking place in the arctic impact others well outside of the region, and this proposal presents an exciting opportunity to build on past successes of SEARCH and other efforts and truly elevate it to the next organizational level. Having a full-time executive director, a full-time AON coordinator, the strong organizational support of the ARCUS organization, and the targeted activities to implement SEARCH 5-year goals, will all help increase the odds of success. There is a lot to like in this proposal, it has a strong science backbone but also has assembled an excellent team and vision for how to ensure the knowledge and results are put into action.

Please evaluate the strengths and weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable

Summary Statement

The proposal was very well written and developed, and I rate it as Excellent. The proposal team has presented a compelling plan for how to best move SEARCH forward, and elevate arctic science and

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related synthesis activities. SEARCH has a long track record and has been a successful effort, and the new proposed structure and associated activities has the potential to truly transform the organization and breath new life into the research community. This proposal is deserving of the highest priority of support.

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Institution:University of Alaska Fairbanks Campus

NSF Program:Arctic System Science Program

Principal Investigator:Eicken, Hajo

Rating:Very Good, Good

Review:

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

The proposal has many strengths: it is specific, takes advantage of new collaboration techniques, proposes an effective "action team" model, similar to the effective Climate Process Team model, and focuses on a suite of very important scientific issues in the Arctic. The proposal has an open structure and makes mention of engagement of young scholars as a priority.

Having said that, the actual work proposed seems narrower than the title would suggest. This is fundamentally an Arctic cryosphere proposal, narrower than the Arctic environment. While the impact of cryosphere changes on other Arctic Earth System components are mentioned, and while the cryosphere is certainly a dominant feature of the Arctic, this is not the only way to focus a large effort. At a minimum, changing terrestrial and marine ecosystems, the high latitude carbon cycle, changes to wildlife are focal, and while they are interwoven with the cryosphere, this proposal is really organized around the three defining cryo-components in the Arctic, sea ice, land ice (and snow?) and permafrost, not around the component Earth System components (cryosphere, ecosystems, hydrology, climate, carbon cycle). While focus was good, this seems like a step back from an integrative approach and potentially, somewhat exclusionary. this may have been a reaction to suggestions to focus: if so, this has led to some lack of balance of physical, biological and social science.

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

Very strong broader impacts, the societal impacts of the changes that are focal are massive, the need for communication great and reasonable mechanisms are proposed for addressing these needs.

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Summary Statement

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Rating:Excellent

Review:

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This very well written and aegued proposal seeks five yearsupport to promore coordinated research and outreach for Arctic sciences. Proposed activities are comprehensive and well structured. The proposal clearly has benefited from recent guidance from its scientific committee (fostered through ARCUS which then hosted the SEARC IPO). Proposed effort will engage a broad set of stakeholders in concrete actions and foster close cooperation as well as foster strategic partnerships to accomplish coordinated, co-designed and co-implemented actions. Proposed effort will definitey strengfthen US and international capabilities to better understand the ramifications of rapidly changing Arctic and manage both adverse impacts as well as possibly take advantage of future opportunities offered by a chaanged Arctic.

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

The proposed effort is well focused on research, education and outreach as well as coordination functions. Five thrust areas are well develope and contain a set of integrative actions that will ensure coordinated research, capacity building, knowledge exchange, and formation of stratgic partnerhips.

Please evaluate the strengths and weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable

Summary Statement

This proposal is very worthy of support. Th eproposed effort is well conceibved and designed. The management structure is also solid. All thgis assuress this revoewer that the proposed effort will attain stated objectives and deliver the outcomes as stated.

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All Panel Summaries (Jacket and PI copies)**

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INSTITUTION: University of Alaska Fairbanks Campus
NSF PROGRAM: ARCTIC RESRCH SUPPRT & LOGISTI
PROPOSAL TITLE: Collaborative Research: Research, Synthesis, and Knowledge Transfer in a Changing Arctic: Science Support for the Study of Environmental Arctic Change (SEARCH)

PANEL SUMMARY:

Panel Summary

Overall, this was viewed as a strong proposal that has clearly benefited greatly from the recent SEARCH re-focus activities. Panelists felt that the new vision and management structure which includes action teams and ad hoc working groups was a great addition. The fact that dedicated staff is envisioned was also considered a strength.

The scientific aspect of the proposal focuses on four areas. Some panelists thought that the scientific questions and goals should take a much broader view and were concerned that the questions are mostly couched in terms of "the impacts and consequences of changes in the cryosphere on..." But most panelists saw this as necessary focus that would lead Arctic Science forward in a significant way. One panelist raised substantial concerns that this was not an integrated system view, with items presented independently from one another and with little real detail about how a system integration would be achieved. Other panelists felt that the proposal, especially the Arctic Futures 2050 vision, adequately addressed the need for integration across the components.

Panelists hoped that the Action Teams coordinators would soon develop action plans to further address integration across the research foci and how the Teams intend to foster participation in the program. More detail on how the coordinators and post-docs will be used was considered useful in moving forward.

Finally, it was noted that a proposal of this scope should also include some mechanism to deal with upcoming future issues in the Arctic in addition to Arctic Futures 2050 (some suggested the inclusion of a decision making tool). Some additional clarification of the AON coordinator's role and responsibilities would also be helpful, especially in context of the broader national and international AON programs. Is in the intention that this person would be the interface between SEARCH and AON, or is it somehow envisioned that they will work with the NSF AON Director?

Broader impacts

This is a collaborative proposal, and the ARCUS component speaks largely to the issue of broader impacts. Outreach activities presented were a little weak, even though it was generally felt that ARCUS would fulfill this role well.

In summary, most, but not all, panelists were supportive of this work and thought it would be a good next step forward.

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PANEL RECOMMENDATION:

PANEL RECOMMENDATION KEY:

DNF:Do Not Fund, FIP:Fund If Possible, F:Fund