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# Forecasting: Climate Change and Water Impact

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## PSU Integrated Cluster (IC) Project Funding Process & Proposal Form

**Project Proposal Submittal Process:** All IC projects requesting funding will require the completion and submittal of three (3) forms:

- X **Project Proposal Form – project scope & outcomes** (*included in this document*)
- X **Project Guidelines Form – reflective document outlining desirable IC project attributes**
- X **Project Budget Form – Excel spreadsheet to facilitate budget planning**

### **Instructions for Submitting Project Proposals:**

- ✓ Download the 3 forms to your computer
- ✓ Complete the forms and save them; including the title of your project in the file name
- ✓ Forward the 3 files via email to the IC Project Manager, Ross Humer [rhumer@plymouth.edu](mailto:rhumer@plymouth.edu)
- ✓ Project Proposal will be logged & forwarded to the appropriate IC Guide Team

If not reviewed in advance of the submission, it is important to discuss the Project with the IC Guides to review, refine, and rework (if necessary) to obtain funding approval.

**Project Funding Review Process:** All proposed projects will be reviewed by the Cluster Guide team. Depending on the level of funding amounts being requested, the proposal request will follow the process outlined as follows:

- **Level 1:** Any project with a proposed budget of less than or equal to \$1,000 can be approved by the Cluster without additional review
- **Level 2:** Any project with a proposed budget of \$1,000 but less than \$5,000 can be approved by the IC Project Review Team, which is made up of representatives from each of the 7 Clusters (*see release time exception directly below*)
- **Level 3:** Any project with a proposed budget of \$5,000 or greater **or** requires faculty release time, must be first endorsed by the IC Project Review Team and submitted to the Academic Deans for review and approval

The project funding approvals are limited to one academic year; projects which require additional funding in subsequent years will need to be resubmitted annually for review and approval.

**Deliverables:** At the conclusion of the academic year, a deliverable to the Integrated Cluster Proposal Review Team and Academic Deans is required in order for the project director/coordinator, artist, or author and collaborator(s) to be eligible for future funding. This reporting requirement may be met by numerous means which will be identified as this process matures. It is anticipated that awardees will present their works before a wide public gathering to be scheduled during the upcoming Academic Year.

**Instructions for the PSU Integrated Cluster Project Proposal Form:** Please complete all of the elements of the following form in the spaces provided before saving and then submitting the document.

## **PSU Integrated Cluster Project Proposal Form**

**Title:** Forecasting: Climate Change and Water Impact, a STEAM based exhibit at the Museum of the White Mountains

**Project Leadership:** (Identify Project Director/Manager or Co-Manager/s) Project Director: Cynthia Robinson, with significant management support from Co-Curators Kimberly Ritchie and Shandra McLane, and additional support from Marcia Schmidt Blaine and Eric Kelsey

**Project Description:** This exhibit, which will be on view at The Museum of The White Mountains January 23- April 21, 2017, will explore climate change overlapping the lens of scientific information with artistic imagery and expression, inviting the viewer to engage in the material via contemporary art installations and scientific data concerning oceans of the world, waterways, atmosphere, glaciers, and drought.

The project brings together the disciplines of meteorology, technology, and visual art to explore a topic on the forefront of today's news: climate change and its impact on water. It will provide student with a model for describing and presenting information that originates in NH but has wider impacts. Using cutting edge technologies from both arts and science disciplines, the exhibit will be a launching location for multiple educational experiences for PSU students, area public schools, and NH educators.

### **Project Goals and Outcomes:**

#### **Project Goals – Briefly identify and describe the objectives of this project**

The resulting experience will be an excellent location for cross cluster presentation, conversations, and investigations. How can an exhibit present scientific data? How can an exhibit educate students and the public about the current research on climate change? What is the evolving understanding of how climate change will impact New England and New Hampshire in particular? What research conclusions unfolding now in Plymouth have impact on a global scale? What role are some contemporary artists taking on in the ongoing discussions of climate change?

#### **1. Student Learning Outcomes – Outline the expected student learning outcomes**

- a. The project will include a series of 3-4 “Artist and Scientist” events featuring talks and interactive activities pairing the exhibit’s artists with both participating scientists and visiting scientists that will be focused on PSU students including:

- i. The American Meteorological Society – PSU Chapter
  - ii. Meteorology, Sustainability, Environmental classes
  - iii. Art, art history, art education students
- b. The project will include both the formal exhibition and related exhibits featuring works by PSU and NH school students in the Museum’s Open Lab space, as well as in Silver Center (in partnership with the Karl Drerup Art Gallery’s exhibition program) and in Lamson Library. Through these multiple and overlapping platforms, PSU and area students will be introduced to artwork that includes and presents climate change and water concepts.
- c. The project will feature plans, guidelines, and lesson plans that PSU faculty members can use to incorporate the exhibit experience into their Spring 2017 semester plans. Students will be introduced to environmentally based artwork and to climate change research. Disciplines such as Communication, Media Studies, English, and Integrated Arts will find ample inspiration for reflection and discussion, and we are reaching out to these and other professors. Participating artists, Eric and Martin Demaine, are artists in residence at MIT, and will present a math infused workshop for PSU classes. Meanwhile, we have several visual art and environmental studies professors already committed to incorporating the exhibit into their curriculum:
  - Kimberly Ritchie - 2D Art Foundations x 2 classes - 32 students
  - Pam Anneser – Student Design Company - 12 students
  - Will Ritchie - Issues of Sustainability - 25 students
  - Will Ritchie - Environment and Society x 2 - 50 students
  - Len Reitsma - Current Environmental Issues - 25 students
  - John Christ - Contemporary Art Seminar, 15 students
  - Cynthia Robinson- Intro to Art Education, 17 students

**Rationale and Impact:**

**Considering the questions below, please write your project rationale and impact statement.**

**Include how this project will further the Mission and Vision of PSU with respect to**

**1) fostering collaboration across disciplines**

As discussed above, this project involves both collaborative interdisciplinary planning and clear opportunities for students and faculty to explore and discuss connections between science and art.

This project fits into the existing work the Museum of the White Mountains is doing to introduce and advocate the Museum as an on campus resource for a wide spectrum of disciplines. We are working to provide not only the space as a destination for on

campus “field trips”, but also to provide guided learning experiences and specific lesson materials tailored to individual professor’s course driven goals.

## **2) addressing a relevant societal issue,**

As discussed above, this exhibit addresses a global issue with local and regional impacts.

As project participant, Brian Eisenhauer says, "Water is life. Concerns about water supplies, water quality, and access to clean water are growing across the globe. Climate change is making these challenges more complex, and in our region we can expect the future to bring more extreme storms, longer periods of drought, changes in our snow load, and many other impacts that will change the systems we depend on to live. To address these challenges we need to understand and be inspired by the stories data tells us about the changes in the world we are seeing."

## **3) establishing relationships with community partners, external institutions, companies, non-profits, schools, government agencies, etc**

a) This project highlights a scientific research partnership between PSU and the Mt Washington Observatory. Some of the research findings, led by Eric Kelsey, will be on display, and the data collection process will be summarized in a video documentary that will be playing in the exhibit.

b) This project will create partnerships with two area schools.

1. We have approached Holderness Central School, to have an 8<sup>th</sup> grade teacher incorporate student results from her unit of study on climate change during January, working with her 22 students to establish a topic and have the students write and diagram the analysis of their findings. These products will potentially be displayed as part of the exhibit.
2. The independent school, Holderness School’s environmental science teacher is planning to connect her November/December water unit of study and also her January climate change unit to the exhibit, with potentially products of those investigations becoming part of the exhibit. Those students will also come to the exhibit for a guided experience.

b) A related exhibit will be on display during the exhibit timeline, showcasing Shandra McLane’s international glass seed project that includes partners: Arctic Circle Organization, Bicentennial Swedish-American Fund Grant, Glassfactory, Sweden, Dartmouth College, Museum of Glass, WA, Plymouth State University, New Boston Elementary School, NH, NH State Council on the Arts, and Squam River Studios.

c) The Karl Drerup Art Gallery’s Exhibition Program has planned to create connections to the project via two exhibits that will be on display in Silver Center for the Arts during the exhibit’s timeline.

- The “Exploring Environment: A Regional High School Juried Art Exhibit”, on view in February will include a maximum of 12 artworks from each of 30-40

public and private high schools. This exhibit has been an annual project, which was presented for over 40 years by Friends of the Arts Regional Arts Council until they closed their doors in Summer 2016. KDAG was asked to take over the role of presenting the exhibit, and has forged a partnership with The Arts Alliance of Northern New Hampshire to do that, while asking teachers to submit works that address a variety of environmental themes.

- The NH Art Educator's Association's "Youth Art Month: Reflections on Water" on view in March, will include artworks from students in over 30 New Hampshire elementary and high schools.
- Plans for both exhibits include exhibit celebrations that will incorporate visits to the Museum for the students, their families, and their art teachers.

d) We will extend our collaborative learning model by reaching out to all NH public school educators to attend a professional development day that will present STEAM-based workshops inspired by the exhibit. As an added benefit, this outreach will share our cluster model with advisors and educators of future PSU students.

**4). Making an impact How does this proposed project advance the Integrated Cluster mission and vision? How does this project facilitate high impact teaching and learning, cross-disciplinary collaboration, student engagement and partnership involvement, and real world problem exploration?**

This exhibit will provide a model for illustrating how two very different ways of thinking may be combined to present a clear, eloquent, and compelling story that is approachable for non scientists and non artists alike. It will be an important case study in the ultimate goals for integrated cluster thinking- that bridging the disciplines and inventing ways to collaborate can provide new and deeper understanding of the material.

**What are the anticipated impacts of this project? Is this project an extension of work already in progress, or an entirely new endeavor? Does it integrate with areas that team leaders are already teaching or is it an opportunity to delve into unfamiliar content or a bit of both?**

This project includes a bit of both. The artists and scientists included in the exhibit have been working in this field with climate change as an element. The new element is the opportunity for Kimberly Ritchie and Shandra McLane to collaborate with Eric Kelsey to create a visual work.

This project is also part of a larger vision for The Museum of The White Mountains to engage with PSU students in current work that involves PSU faculty and students. As one of our new "Academic Exhibitions", the goal is to create a relevant and useful learning experience that may be used by multiple areas of the PSU community. We expect student groups to use not only the exhibit space but also the Open Lab

downstairs to apply the experience in discussions and future observations and reflections.

### **Project Rationale and Impact Statement:**

The exhibit will include recent and important findings by PSU and Mt Washington Observatory scientist, Eric Kelsey and cutting edge artwork by critically acclaimed artists, Eric and Martin Demaine, Fawn Atencio, Kimberly Ritchie, Shandra McLane, working at the intersection of art and science, as well as featuring ground breaking visual collaborative work developed by artists and scientists.

As Project partner, Eric Kelsey says, “Climate change science has advanced significantly over the last 40 years. Initial projections of 21<sup>st</sup> century climate were limited to the global-scale, where climate scientists could confidently state that the globe would warm, but with high uncertainty in the degree of warming. Our increased knowledge of the climate system and advanced computing technology has resulted in today’s more detailed climate projections at the regional level (e.g., New England) and with increased certainty in the rate and spatial variability in atmospheric and oceanic warming, and precipitation changes. For example, climate models project that mountains should warm faster than nearby lower elevations. However, temperature records from Mount Washington indicate the opposite is occurring in New England: Mount Washington is warming more slowly than surrounding low elevations.” Kelsey and his research team are testing hypotheses to understand this topic of climate change.

## Project Team

PSU Project Participants (essential core team participants including faculty and staff)

Name	Position/ Title	Project Role	Discipline/ Specialty	Email
Kimberly Ritchie	Assistant Professor	Co-Curator	Art	Karitchie1@plymouth.edu
Cynthia Robinson	Assoc. Director, MWM	Co-Curator, project admin, participating faculty	Arts admin, events, educator, art education	ccrobinson@plymouth.edu
Shandra McLane	Adjunct professor	Co-Curator	Art	shandra@squamriverstudios.com
Marcia Schmidt Blaine	Interim Director, MWM	advisor	museum	mblaine@plymouth.edu
Eric Kelsey	professor	Advisor, collaborating partner	Meteorology	ekelsey2@plymouth.edu
Mike Heitz	MWM Admin	Tech advisor, support	Admin and technology	mheitz@plymouth.edu
Rebecca Enman	MWM registrar, archivist	Exhibit elements and ingredients organization, Exhibit and events promotion	Admin	rrenman@plymouth.edu
Ian Halter	Videographer	Creating video that will be part of exhibit, project documentation	videography	irhalter@plymouth.edu

**Non-PSU Project Participants** (stakeholders; partners; academic institution; etc.)

<b>Name</b>	<b>Organization</b>	<b>Project Role</b>	<b>Discipline/ Specialty</b>	<b>Email</b>
<b>Sharon Schilling</b>	<b>Mt Washington Observatory</b>	<b>Collaborating partner, speaker for Artist/Scientist event</b>	<b>Non profit applied science organizational leadership</b>	
<b>Rachel Jastrebsky</b>	<b>Holderness School</b>	<b>Project partner, applying /sharing content in student work</b>	<b>High school Science education</b>	<b>rjastrebsky@holderness.org</b>
<b>Emily Kelley</b>	<b>Holderness Central School</b>	<b>Project partner, applying /sharing content in student work</b>	<b>Elementary school science education</b>	<b>ekelley@pemibaker.org</b>
<b>Squam River Studios</b>	<b>Arctic Circle Organization, Bicentennial Swedish-American Fund Grant, Glassfactory, Sweden, Dartmouth College, Museum of Glass, WA, Plymouth State University, New Boston Elementary School, NH</b>	<b>Providing related exhibit content</b>	<b>Environmental art in school and communities</b>	
<b>NH Art Educators</b>	<b>30-40 NH public and private schools, NH Art</b>	<b>Providing related exhibit</b>	<b>K-12 Art Education</b>	

	<b>Educators Association</b>	<b>student artworks</b>		
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**Student Participant Profile** (Identify the student population/s to be engaged in the project. Identify if this has been or is planned to be incorporated into curricula)

<b>Class/ Student Organization/ Individuals</b>	<b>Role in Project</b>	<b>Academic Level (Undergraduate or Graduate)</b>	<b>Academic Discipline</b>	<b>Total Student Population</b>
<b>2d Art Foundations(2 sections)</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>art</b>	<b>32</b>
<b>Student design Company</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>Graphic art</b>	<b>12</b>
<b>Issues od Sustainability</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>environment</b>	<b>25</b>
<b>Environment and society(2 sections)</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>environment</b>	<b>50</b>
<b>Current Environmental Issues</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>environment</b>	<b>25</b>
<b>Contemporary Art Seminar</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>art</b>	<b>15</b>
<b>Intro to Art Education</b>	<b>Using exhibit as part of curriculum</b>	<b>undergrad</b>	<b>Art education</b>	<b>17</b>

**IRB (Institutional Review Board) Compliance**

This project DOES NOT require IRB compliance

## **Project Management: Timeline and Milestones**

Identify the timeline for the project including start, completion, and major project milestones. A closing report will be required as a part of the project funding process.

**Project Start Date:** 5/1/2016

**Project Complete Date:** 4/1/2017

<b>Project Milestone</b>	<b>Milestone Description</b>	<b>Target Completion Date</b>
<b>Project outline and timeline</b>	<b>Artists, basic exhibit ingredients identified and collaborative work plan sketched with timing</b>	<b>May, 2016-October, 2016</b>
<b>On campus partners identified</b>	<b>Input and partnership to gather information and student engagement solicited from specific PSU science community members</b>	<b>12/16/2016</b>
<b>Final plan</b>	<b>All artwork, text pieces, student engagement plan achieved</b>	<b>12/16/2016</b>
<b>Project implementation</b>	<b>Exhibit installed and open to the public</b>	<b>1/23/2017</b>
<b>Related activities and events</b>	<b>Student groups interact in exhibit, STEAM conference for NH educators presented, public workshops presented</b>	<b>3/1/2017</b>
<b>Project evaluation</b>	<b>Data collected and presented from project process, events, feedback, applications</b>	<b>April-May, 2017</b>

Please identify any pre-project education or training for students, faculty, and staff that would be helpful for your project team to have in advance to begin work on a strong footing (e.g., skill training, concepts), and identify any training and education that you are willing to help provide during the preparatory period for the project team before team work formally begins.

Student Education/ Training Requirements: none