

NASA Experimental Program to Stimulate Competitive Research  
Administered by Office of Education, NASA  
Congressionally Directed Appropriation  
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Headquarters  
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### PROJECT DESCRIPTION

Public Law 102-58, passed in 1992, authorized NASA to initiate NASA EPSCoR to strengthen the research capability of jurisdictions that have not in the past participated equably in competitive aerospace research activities.

The goal of NASA EPSCoR is to provide seed funding that will enable jurisdictions to develop an academic research enterprise directed toward long-term, self-sustaining, nationally-competitive capabilities in aerospace and aerospace-related research. This capability will, in turn, contribute to the jurisdiction's economic viability and expand the nation's base for aerospace research and development. Since its inception, NASA EPSCoR has been closely linked to the National Space Grant College and Fellowship Program (Space Grant).

### PROJECT GOALS

The following are the specific objectives of NASA EPSCoR:

- Contribute to and promote the development of research capability in NASA EPSCoR jurisdictions in areas of strategic importance to the NASA mission;
- Improve the capabilities of the NASA EPSCoR jurisdictions to gain support from sources outside the NASA EPSCoR program;
- Develop partnerships between NASA research assets, academic institutions, and industry;
- Contribute to the overall research infrastructure, science and technology capabilities, higher education, and economic development of the jurisdiction; and
- Work in close coordination with the Space Grant consortium in the jurisdiction to improve the environment for science, technology, engineering and mathematics (STEM) education.

### PROJECT BENEFIT TO OUTCOME (1,2, OR 3)

NASA EPSCoR directly supports Outcome 1, which comprises five Objectives. EPSCoR directly contributes to Objectives 1.1 and 1.5 and may also contribute to Objectives 1.2, 1.3, and 1.4.

- **Objective 1.1 – Faculty and Research Support:** Provide NASA competency-building education and research opportunities for faculty, researchers, and post-doctoral fellows.
- **Objective 1.5 -- Targeted Institution Research and Academic Infrastructure:** Improve the ability of targeted institutions to compete for NASA research and development work.

The two main components of NASA EPSCoR are:

--NASA EPSCoR Research Infrastructure Development

The Research Infrastructure Development (RID) Cooperative Agreements enable jurisdictions to build and strengthen relationships with NASA researchers. The RID has a three-year base period of performance with a potential single, two-year renewable period of performance. Awards are \$125,000 per year. A one-to-one match (cash or in-kind) is required for every NASA dollar awarded. The most recent RID was announced and awarded in 2007. NASA intends to announce the RID opportunity every three to five years, pending funding availability.

--NASA EPSCoR Research

The Research Cooperative Agreements address topic-specific, high-priority NASA research and technology development needs. Awards are up to \$750,000 for a three-year performance period. A one-to-one match (cash or in-kind) is required for every NASA dollar awarded. NASA intends to announce the EPSCoR CAN for Research Awards yearly, pending funding availability.

## PROJECT ACCOMPLISHMENTS

*Accomplishments in 2008-2009:*

### NASA EPSCoR Research Infrastructure Development Cooperative Agreements

<b>Cooperative Agreements Reporting</b>	<b>22</b>
<b>Faculty/Post-docs</b>	<b>220</b>
<b>Students</b>	<b>279</b>
<b>Peer Reviewed Publications Accepted / Published</b>	<b>93</b>
<b>Other Publications Accepted / Published</b>	<b>77</b>
<b>Talks/Presentations at Professional Meetings</b>	<b>209</b>
<b>Collaborations (NASA)</b>	<b>89</b>
<b>Collaborations (Other)</b>	<b>247</b>
<b>Number of New Grants Awarded</b>	<b>73</b>
<b>Value of New Grants Awarded</b>	<b>\$22,523,912</b>

### NASA EPSCoR Research Cooperative Agreements 2007 Awards Year 2 Report

<b>Cooperative Agreements Reporting</b>	<b>19</b>
<b>Faculty/Post-docs</b>	<b>120</b>
<b>Students</b>	<b>119</b>
<b>Peer Reviewed Publications Accepted / Published</b>	<b>53</b>
<b>Other Publications Accepted / Published</b>	<b>68</b>
<b>Number of Talks/Presentations at Professional Meetings</b>	<b>155</b>
<b>Collaborations (NASA)</b>	<b>33</b>
<b>Collaborations (Other)</b>	<b>97</b>
<b>Number of New Grants Awarded</b>	<b>43</b>
<b>Value of New Grants Awarded</b>	<b>\$15,472,630</b>

2008 Awards Year 1 Report

<b>Cooperative Agreements Reporting</b>	<b>11</b>
<b>Faculty/Post-docs</b>	<b>53</b>
<b>Students</b>	<b>90</b>
<b>Peer Reviewed Publications Accepted / Published</b>	<b>26</b>
<b>Other Publications Accepted / Published</b>	<b>17</b>
<b>Number of Talks/Presentations at Professional Meetings</b>	<b>46</b>
<b>Collaborations (NASA)</b>	<b>20</b>
<b>Collaborations (Other)</b>	<b>30</b>
<b>Number of New Grants Awarded</b>	<b>12</b>
<b>Value of New Grants Awarded</b>	<b>\$5,974,335</b>

PROJECT CONTRIBUTIONS TO PART MEASURES

The data below are a list of the number of different institutions that participate in NASA Office of Education projects, including Space Grant, MUREP, and GSRP, in those states served by EPSCoR.

<b>State</b>	<b>Institutions</b>	<b>State</b>	<b>Institutions</b>
Alabama	8	Nevada	2
Alaska	3	New Hampshire	4
Arkansas	12	New Mexico	7
Delaware	3	North Dakota	1
Hawaii	8	Oklahoma	9
Idaho	5	Puerto Rico	8
Kansas	7	Rhode Island	10
Kentucky	12	South Carolina	9
Louisiana	6	South Dakota	3
Maine	6	Tennessee	13
Mississippi	18	Vermont	4
Montana	5	West Virginia	11
Nebraska	14	Wyoming	6
		<b>Total</b>	<b>194</b>

This table shows the amount of the awards and the match provided by the jurisdictions in the two EPSCoR Programs in FY2008:

<b>EPSCoR 2008 Awards and Cost-Share</b>			
	<b>Award</b>	<b>Cost-Share</b>	<b>Total</b>
<b>RID 08</b>	<b>\$1,499,982</b>	<b>\$513,583</b>	<b>\$2,013,565</b>
<b>FY 08 Research</b>	<b>\$6,782,548</b>	<b>\$6,866,703</b>	<b>\$13,649,251</b>
<b>Totals</b>	<b>\$8,282,530</b>	<b>\$7,380,286</b>	<b>\$15,662,816</b>

## PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

NASA science and engineering personnel are associated with all NASA EPSCoR Research Cooperative Agreements. Each task has a Technical Monitor (TM) who provides guidance and technical advice, reviews annual reports, and provides feedback to the EPSCoR staff at headquarters. These TM's, most of whom are located at NASA Centers, are nominated by the Education Liaison of the appropriate Mission Directorate.

### **Examples of benefits in addition to the accomplishment of the research objectives**

#### *Vermont:*

Presidential Early Career Award for Scientists and Engineers (PECASE) for James C. Iatridis, December 19, 2008. Award by the Executive Office of the President of the United States via the National Institutes of Health for his multidisciplinary biomedical engineering research to prevent intervertebral disc degeneration and promote its repair; and for his mentorship of undergraduate and graduate students, as well as postdoctoral fellows.

#### *Oklahoma:*

Four EPSCoR RID Student Internships provided funding for internships at Oklahoma companies involved with NASA research or contracts. Following his internship, Chad Nimmo, University of Oklahoma, was offered a full-time permanent position with Scientific Applications International Corporation, which he accepted.

#### *Nebraska:*

Researchers have been successful in securing funding from other sources for their research. To date, 13 proposals have been submitted elsewhere for funding, with \$874,000 secured from these proposals, including funding from Nebraska Economic Development agency. A major accomplishment for this time period is the start-up established by Dr. Gogos and his colleagues. Agricultural Flaming Innovations (AFI) interacts with University of Nebraska - Lincoln, two fabrication companies, and the Propane Education and Research Council, an entity of the U.S. propane industry's trade organization. This has led to the creation of one new job.

*Kansas:*

One PI has developed a sustainable and promising relationship with two US Geologic Survey (USGS) researchers and NSF. Another has established connections with ADMRC, NSF, AFOSR and three (3) aircraft companies: Hawker-Beechcraft, Spirit Aero-Systems and Cessna. Similarly two other PI's have been working with the Kansas Department of Transportation (KDOT) and NSF and a fifth with Boeing.

*Idaho:*

NASA Idaho EPSCoR has funded projects that focus on Idaho-related issues, such as projects studying the Snake River Plain and Idaho forests. One related project examines the impacts of disturbance and climate change on forest species in Idaho. Other projects have contributed to the economic development of the state through startup companies or transfer of technology.

*Hawaii:*

The Hawaii Space Flight Laboratory, in cooperation with Hawaii NASA EPSCoR, has participated with NASA Ames to develop a 70-kg satellite bus that will support the CRESPO mission on the second HSFL launch. CRESPO consists of two miniature hyperspectral imagers (manufactured by Headwall, LLC) that will allow for the UH-Ames joint science team to map 25% of the world's coral reefs in two years.