



# NASA KY EPSCoR & KY Space Grant Consortium

## ***NASA Kentucky Program Overview***

KY Academy of Science webinar – Oct 22, 2021

Dr. Alexandre Martin, NASA KY Director

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## 2020-2021 NASA KY Project Summary

Projects	Recipient Institutions	Total Funding
45	13	\$1,334,250

UNIVERSITIES	KCTCS	SCIENCE CENTERS
UK, UofL, Murray, Morehead, WKU, NKU, Bellarmine, UK-Paducah	Owensboro CTC, West Kentucky CTC (Challenger Center)	KY Science Center (Challenger Center), Living Arts & Science Center, Aviation Museum of KY

Previously funded projects list available at:

[nasa.engr.uky.edu](https://nasa.engr.uky.edu)

## NASA KY Programs

### NASA KY EPSCoR

#### Program objectives:

- Research partnerships with NASA
- Strengthen NASA-related research capacity and research infrastructure within the state

### KY Space Grant Consortium

#### Program Objectives:

- Workforce development and STEM engagement
- Student-focused individual and team projects
- Support for grad and undergrad research assistants
- Support for pre-college outreach

## *NASA Kentucky EPSCoR*

[nasa.engr.uky.edu/epscor](https://nasa.engr.uky.edu/epscor)

## NASA Kentucky EPSCoR Funding Programs

- **Research Infrastructure Development Grant (RIDG) - \$45,000**
- **Workshop / Conference / Seminar (WCS) – up to \$2,000**
- **Faculty Research Travel Awards (RT) – up to \$1,500**

Annual request for proposals timeline varies

Program descriptions available at:

[nasa.engr.uky.edu/epscor](https://nasa.engr.uky.edu/epscor)



## NASA EPSCoR National Funding Programs

- **Competitive Research Award (CRA)** - \$750,000 + state match
- **Rapid Response Research (R3)** – \$100,000
- **ISS Flight Opportunities (ISS)** – \$100,000
- **Suborbital Flight Opportunities (SFO)** – \$200,000 + flight cost
- **Special Opportunities**

Annual request for proposals timeline varies

Program descriptions available at:

[nasa.engr.uky.edu/epscor](https://nasa.engr.uky.edu/epscor)

## Current Opportunities

- **Competitive Research Award (CRA)** - \$750,000 + state match
  - Request for pre-proposals open
  - Researcher telecon: Nov 4, 2021
  - Pre-proposal deadline: Dec 1, 2021
- **Faculty Research Travel Awards (RT)**
- **ISS Flight Opportunity** – Request for pre-proposals coming soon

Program announcements available at:

[nasa.engr.uky.edu/epscor](https://nasa.engr.uky.edu/epscor)

## Previous NASA EPSCoR CRA Awards

2021	Solar Activity and Space Weather	Emslie, Er, Novikov, Liang	WKU, ECU, UK	Solar Flare Prediction
2019	Modeling of High-Speed Transitional and Turbulent Flows over Ablative Surfaces	Brehm, Martin, Bailey, Hannemann	UK, KSU	Hypersonics & Thermal Protection Systems
2017	Coordinated Position and Attitude Control for Formations of Small Satellites	Seigler, Hoagg	UK	Satellite Guidance and Control
2014	Influence of Gravity on Electrokinetic and Electrochemical Colloidal Self-Assembly for Future Materials	Williams, Willing, Rathnayake	UL, WKU	Microfluidics
2013	Improving Heat Shields for Atmospheric Entry: Numerical and Experimental Investigations for Modeling Ablative Thermal Protection System Surface Degradation Effects on Near-Wall Flow	Martin, Bailey, Winter, Shen	UK, KSU	Hypersonics & Thermal Protection Systems
2012	A Paradigm-Shifting Therapy for Mitigating Cellular and Tissue Damage in Humans Exposed to Radiation	Soucy, Keynton, O'Toole	UL	Radiation Mitigation
2011	Shape Memory Alloys for High Temperature and Surface Morphing Applications in Aerospace Industry	Karaca, Cheng	UK	Materials Science
2010	The CubeLab Standard for Improved Access to the International Space Station for Scientific Payloads	Lumpp	UK	Microgravity Research



## *NASA Kentucky Space Grant*

[nasa.engr.uky.edu/space-grant](https://nasa.engr.uky.edu/space-grant)

## Kentucky Space Grant Consortium Funding Programs

- **Graduate Fellowship (GF)** - \$45,000
- **Research Experience for Undergraduates (REU)** - \$8,000
- **Faculty Research Initiation Awards (RIA)** - \$40,000
- **Team Projects (TP)** - \$15,000
- **Enhanced Mini-Grants (EMG)** - \$25,000
- **Mini-Grants (MG)** - \$7,500

Annual request for proposals in January

Program descriptions available at:

[nasa.engr.uky.edu/space-grant](https://nasa.engr.uky.edu/space-grant)

## NASA KYSGC Strategic Themes

Strategic themes chosen by KY Space Grant Consortium affiliate members:

1 Data + Science	2 Earth + Space	3 Aerospace + Innovation
Multidisciplinary Data Science	Earth & Space Discovery	KY Engineering, Technology & Workforce Development

Proposals to KY Space Grant should align with one or more of these strategic themes and/or research priorities of NASA Mission Directorates and Centers.

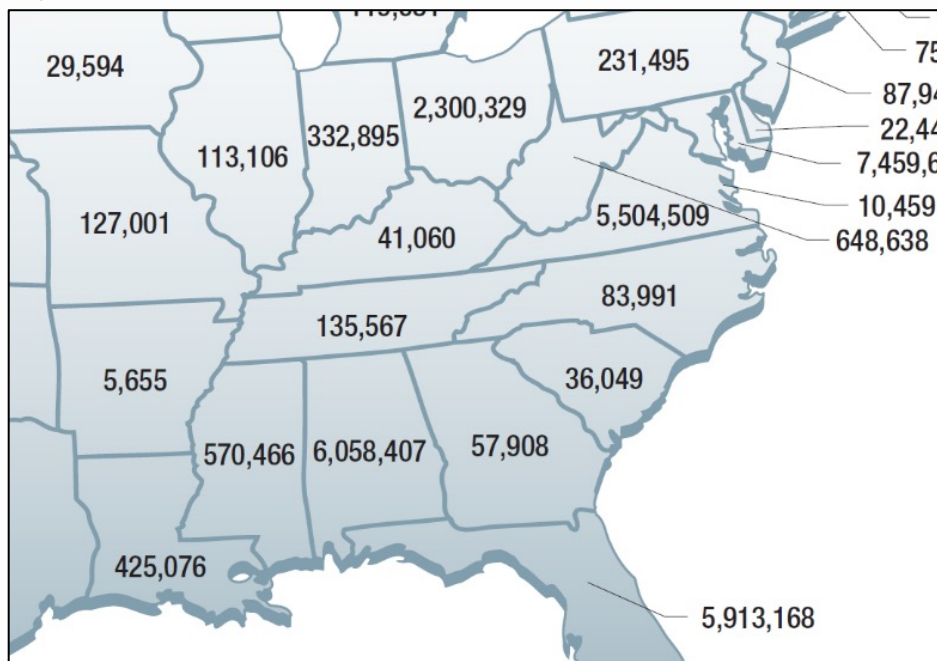
# *NASA Kentucky Program Outcomes*

## Recent Follow-On Projects

- **NASA Space Technology Research Institute:** ACCESS (Advanced Computational Center for Entry System Simulation) (CU, UI-UC, UK, UMN, UNM)
- **NASA University Leadership Initiative:** WINDMAP (Real-time Weather Awareness for Enhanced UTM Safety) (Oklahoma, Kentucky, Nebraska, Virginia)
- **NASA SMD Nationwide Eclipse Ballooning Project** (Montana, Idaho, Kentucky, Oklahoma)
- **4 NASA Flight Opportunities Awards** for suborbital rocket and high-altitude balloon missions (UK, UofL)
- **International Space Station** KRUPS capsule orbital re-entry (UK)

## FY19 NASA Economic Impact in KY

- \$41 million KY output impact
- 261 KY jobs
- \$1.4 million in KY tax revenue



### 6.19. Economic Impacts on the State of Kentucky

#### 6.19.1. NASA Impacts

In 2019, 23 NASA civil service employees (11 FTEs) residing in Kentucky earned more than \$1 million in labor income. NASA contracts sourced in Kentucky in the same year totaled \$13.7 million. The total economic impact resulting from these activities is 261 jobs, \$15 million in labor income, and \$41 million in economic output. These economic activities generate nearly \$1.4 million in tax revenues for the state and local governments in Kentucky (Table 121).

**Table 121: Summary of NASA Impacts by Types of Impact, Kentucky.**

Impact Type	Employment	Labor Income (\$ thousands)	Value Added (\$ thousands)	Output (\$ thousands)	Tax (\$ thousands)
Direct	11	1,087	2,187	4,574	32
Indirect	158	9,670	10,508	22,552	613
Induced	93	4,255	7,203	13,935	746
<b>Total</b>	<b>261</b>	<b>15,012</b>	<b>19,899</b>	<b>41,060</b>	<b>1,391</b>
<i>Multiplier</i>	<i>24.7</i>	<i>13.8</i>	<i>9.1</i>	<i>9.0</i>	<i>n.a.</i>



## Funding for NASA EPSCoR and Space Grant has increased

Greater than 25% increase in 4 years

Agency Program	FY18 Enacted	FY19 Enacted	FY20 Enacted	FY21 Enacted
<b>NASA EPSCoR</b> 28 jurisdictions	\$18.00	\$21.00	\$24.00	<b>\$26.00</b>
<b>NASA SPACE GRANT</b> 52 Consortia	\$40.00	\$44.00	\$48.00	<b>\$51.00</b>
			<i>\$ amounts in millions</i>	

## Support for KY Students under NASA KY Programs (2010-2020)

19	KY colleges, community colleges and universities
500	Fellowships and internships for KY students
1,500	KY college students in technical team design projects and competitions
1,000s	KY college and pre-college students engaged via classroom and educational activities

## NASA KY Contacts

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### NASA KY Email List

Sign-up Form:

<http://eepurl.com/dukmoV>