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Guide to FY2015 Research Funding at NOAA

http://research.noaa.gov/

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This document provides succinct insights into the various NOAA funding opportunities for University research, with special attention to changes anticipated in FY2015. More information is provided at the Central Desktop "Mission Agency Program Summary" (MAPS) website, including the charts cited in the text below.

NOAA is the only federal agency with operational responsibility to protect and preserve ocean, coastal, and Great Lakes resources and to provide critical and accurate weather, climate, and ecosystem forecasts that support national safety and commerce. NOAA has no basic research funds; the applied/development programs are reported here. The sources of the NOAA R&D funding are: the Oceanic & Atmospheric Research (OAR), the National Ocean Service (NOS), the National Environmental Satellite, Data & Information Service (NESDIS), the National Weather Service (NWS) and National Marine Fisheries Service (NMFS). The University opportunities from the last four groups tend to address specific program concerns and are limited in scope/locale. The majority of University funding is distributed through NOAA partnership institutions (e.g., the National Sea Grants and the Cooperative Research Institutes), but some is available through competitions open to all Institutes for Higher Education (IHE).

Overview
NOAA is the only federal agency with operational responsibility to protect and preserve ocean, coastal, and Great Lakes resources and to provide critical and accurate weather, climate, and ecosystem forecasts that support national safety and commerce. (see MAPS NOAA Charts 3-6)

NOAA has Research and Development (R&D) efforts in each of the following line offices:
http://nrc.noaa.gov/CouncilProducts/ResearchPlans.aspx

- Oceanic & Atmospheric Research (OAR)
  Focus: scientific underpinnings necessary to improve climate, weather, coastal and ocean services.
- The National Ocean Service (NOS)
  Focus: healthy, resilient coastal communities; sustainable, robust coastal economies; productive oceans and coasts; accurate positioning in mapping activities
- The National Environmental Satellite, Data & Information Service (NESDIS)
  Focus: procure, launch, and operate civil operational environmental satellites.
- The National Weather Service (NWS)
  Focus: weather, water, and climate forecasts and warnings
- The National Marine Fisheries Service (NMFS)
  Focus: management and conservation of living marine resources

The University opportunities from the last four of those line offices tend to address specific program management concerns and are limited in scope/locale. (see MAPS NOAA charts 25-32)

NOAA has a generic Broad Agency Announcement, Funding Opportunity Number: NOAA-NFA-NFAPO-2014-2003949 for FY 2014 – 2015 addressing:

Climate Adaptation and Mitigation and responding to climate and its impacts
Weather-ready Nation
Healthy Oceans
Resilient Coastal Communities and Economies

The solicitation is caveated to note a dependence on potentially available appropriations.

According to the NSF report "Federal Funds for Research and Development" (NSF 13-326), NOAA has only applied research and development funds (the NOAA budget lines do not distinguish applied research and development). In that NSF report, NOAA is not one of the selected agencies with details on the University investment distributions. So Table 1 shows some disciplinary funding information with only a total for University specific. The majority of University funding is distributed to NOAA partnership institutions, but some is available through open competitions.

Oceanic and Atmospheric Research (OAR)
http://research.noaa.gov/
The Office of Oceanic and Atmospheric Research contributes to the research foundation for understanding the complex systems that support our planet. Its role is to provide unbiased science to better manage the environment, nationally, and globally. The primary components of OAR are:

- Climate Program Office (CPO)
- Office of Ocean Exploration and Research (OER)

- Office of Weather and Air Quality (OWAQ)
- Ocean Acidification Program (OAP)
- Unmanned Aircraft Systems (UAS)
- National Sea Grant College Program
- The Research Laboratories

Climate Program Office
http://www.cpo.noaa.gov/
http://cpo.noaa.gov/GrantsandProjects.aspx
The Climate Program Office (CPO) manages competitive research programs in which NOAA funds high-priority climate science, assessments, decision support research, outreach, education, and capacity-building activities designed to advance our understanding of Earth's climate system, and to foster the application of this knowledge in risk management and adaptation efforts. (see MAPS NOAA charts 11-17) It provides a unique and highly flexible climate research enterprise that focuses on:

- Competitive grant programs that advance and extend our research capabilities;
- Partnerships with academia, businesses and other agencies to develop and deliver targeted research and data products; and
- Knowledge and information to improve public climate literacy and decision-making needed to maintain resilient economies and environmental services

CPO-supported research is conducted in regions across the United States, at national and international scales, and globally. There is one annual solicitation that spans all of the CPO extramural efforts.

Regional Integrated Sciences and Assessments (RISA)
http://cpo.noaa.gov/ClimatePrograms/ClimateandSocietalInteractions/RISAProgram.aspx
CPO's Climate and Societal Interactions (CSI) division oversees the Regional Integrated Sciences and Assessments (RISA) program supports research teams that conduct innovative, interdisciplinary, user-inspired, and regionally relevant research that informs resource management and public policy. There are eleven different RISA teams across the United States (US) and Pacific Islands.

Office of Ocean Exploration and Research (OER)
http://explore.noaa.gov/about-oer/
http://explore.noaa.gov/about-oer/funding/
http://explore.noaa.gov/about-oer/strategic-plan/
A competitive peer review process seeks bold, innovative proposals with interdisciplinary approaches and objectives, which fall within one (or more) of three categories: Ocean Exploration, Marine Archaeology, and Ocean Exploration Education. The OER 2011– 2015 strategic plan outlines four goals:

- Conduct scientific baseline characterizations of unknown or poorly-known ocean basin boundaries, processes, and resources
- Transition ocean exploration discoveries to new research areas and research results to new applications to benefit society
- Increase the pace, scope, and efficiency of exploration and research through advancement of underwater technologies
- Engage audiences through innovative means by integrating science, education and outreach

(see MAPS NOAA Charts 20-21)

Office of Weather and Air Quality (OWAQ)
http://www.research.noaa.gov/Labsamp;Programs/OARPrograms/OfficeofWeatherAirQuality.aspx
http://research.noaa.gov/Labsamp;Programs/OARPrograms/OfficeofWeatherAirQuality/GrantsandProjects.aspx
OWAQ manages the NOAA U.S. Weather Research Program (USWRP) and funds collaborative research between NOAA scientists, federal and state partners, and academia. OWAQ also manages the NOAA Earth System Prediction Capability (ESPC), which enables improved global environmental prediction. OWAQ supports extreme precipitation research that focuses on understanding the physical processes associated with extreme precipitation and developing new decision support tools to help forecast these events at NWS forecast offices and national centers. A list of existing OWAQ grants can be found at the URL above. (see MAPS NOAA Chart 22)

Ocean Acidification Program (OAP)
http://www.oceanacidification.noaa.gov/AboutUs.aspx
OAP fosters and maintains relationships with scientists, resource managers, stakeholders, policy makers, and the public in order to effectively research and monitor the effects of changing ocean chemistry on economically and ecologically important ecosystems and species. Research and engagement activities are conducted according to six different focus areas or themes:

1. Monitoring the changes in ocean chemistry
2. Measuring the biological response of ecologically and economically important species
3. Assessing the socio-economic impacts of the changes and responses
4. Monitoring data streams & management
5. Assisting to create and implement adaptation strategies
6. Coordinating and conducting education & outreach

(See MAPS NOAA Chart 23)

Unmanned Aircraft Systems (UAS)
http://uas.noaa.gov/
UAS will revolutionize NOAA observing strategies comparable to the introduction of satellite and radar assets decades earlier. OAR's Unmanned Aircraft Systems program is an initiative that accelerates the research, development, and transition of innovative new observational platforms and forecast tools to advance NOAA's Earth-system product, service, and information enterprise. The program works with academia to develop and test a UAS observing strategy for regional river flood monitoring suitable to address the real-time observing needs of the National Weather Service. The program goals are:

1. Increase UAS observing capacity
2. Develop high science-return UAS missions.
3. Transition cost-effective, operationally feasible UAS solutions into routine operations

(See MAPS NOAA Chart 24)

Research Partnerships / Centers
In addition to the CPO RISA partnerships (see above) OAR has:

a) National Undersea Research Centers (NURP)
http://www.nurp.noaa.gov/index.htm
The National Undersea Research Program and its centers were planned to terminate in FY2014 and are not mentioned in the FY2015 budget. NURP is comprised of a network of

regional centers of undersea science and technology excellence located primarily at major universities. This extramural network facilitated collaborations with programs outside NOAA, leveraged external funds and infrastructure and provided access to world-class expertise and students.

b) Cooperative Research Institutes

http://www.ci.noaa.gov/

The Cooperative Research Institutes bring together the resources of a research-oriented university or institution, OAR and other branches of NOAA in order to develop and maintain a center of excellence in research relevant to understanding the Earth's oceans, the Great Lakes, inland waters, Arctic regions, solar terrestrial environment, intermountain west and the atmosphere. The NOAA Cooperative Institutes are academic and non-profit research institutions that demonstrate the highest level of performance and conduct research that supports NOAA's Mission Goals and Strategic Plan. Currently, NOAA supports 16 Cooperative Institutes consisting of 42 universities and research institutions across 23 states and the District of Columbia. In FY 2011, NOAA provided $176M to these Cooperative Institutes.

c) Sea Grant Programs (SG)

http://www.seagrant.noaa.gov/

The National Sea Grant College Program engages the nation's top universities and research institutions in conducting scientific research, education, and extension projects designed to better understand and use our ocean, coastal, and Great Lakes resources. Sea Grant focuses on three major areas:

- Conducting research to tackle priority problems identified by coastal residents, state and local governments, and NOAA and other federal agencies.
- Recruiting and training undergraduate and graduate students and employing senior researchers who form a national brain trust for dealing with coastal economic and environmental challenges.
- Making scientific results available and understandable to resource managers, business people, teachers, and coastal residents through K-12 education, communication, and extension projects.

The 32 Sea Grant Programs are a dynamic, national network of participating institutions that study aquaculture, aquatic nuisance species, coastal hazards, fisheries and seafood safety, coastal community development, and water quality. Sea Grant activities exist at the nexus of local, state, national and sometimes international interests. (see MAPS NOAA Charts 18-19) USC has a sea grant program led by Dr. Linda Duguay (http://www.usc.edu/org/seagrant/).

NOS

http://oceanservice.noaa.gov/about/

The National Ocean Service (NOS) is the primary Federal agency that is responsible for enabling and promoting the sustainable, safe, and efficient use of coastal resources and coastal places. It has three sub-programs under an Operations, Research and Facilities account: Navigation, Observations and Positioning, Coastal Science and Assessment, and Ocean and Coastal Management and Services. It has programs - such as Geospatial Modeling, Marine Debris Research, and a Marine Biodiversity Observation Network - that engage academe. (see MAPS NOAA Charts 25-26)

National Oceanographic Partnership Program (NOPP)
http://www.nopp.org/
http://www.nopp.org/funding-announcements/
NOS leads the NOAA participation in the National Oceanographic Partnership Program. NOPP facilitates interactions among federal agencies, academia and industry; increases visibility for ocean issues on the national agenda; and achieves a higher level of coordinated effort across the broad oceanographic community. On average, 11 new projects are started by NOPP each year.

NESDIS
http://www.nesdis.noaa.gov/about_nesdis.html
The National Environmental Satellite, Data, and Information Service (NESDIS) is dedicated to providing timely access to global environmental data from satellites and other sources to promote, protect and enhance the Nation's economy, security, environment and quality of life. It has programs engaging academe such as research in satellite data assimilation for numerical environmental prediction. (See MAPS NOAA Charts 27-28)

NWS
http://www.weather.gov/about
NWS' mission is to provide forecasts and warnings for the protection of life and property, especially in the provision of Impact-Based Decision Support Services (IDSS). NWS is fundamentally dependent on environmental observations from the surface of the sun to the bottom of the sea to meet its forecast and warnings mission. NWS programs include upper air, radar observations, surface observations, and marine (including tsunami). NWS has a Collaborative Science, Technology, and Applied Research (CSTAR) program that involves academia. (See MAPS NOAA Charts 29-30)

NMFS
http://www.nmfs.noaa.gov/
The National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ)—the area extending from three to 200 nautical miles offshore. By understanding the complex ecological and socioeconomic environments in which living marine resources exist, managers may be able to better anticipate and predict the effects of management actions on a given coastal or marine ecosystem. It has programs - such as bycatch reduction engineering, and a marine fisheries initiative - that engage academe. (See MAPS NOAA Charts 31-32)

Education
While some NOAA programs continue education efforts, STEM education is largely eliminated as part of the Federal program to consolidate STEM education into NSF, ED and Smithsonian.

Resources
The DC Office of Research Advancement has created Federal Mission Agency Program Summaries (MAPS) websites to:

- connect PIs with appropriate funding agency programs/program officers
- assist in development of white papers/charts/elevator speeches

The Central Desktop MAPS site has:

- Under "Wiki" Tab - how to use the site
- Under "Files/Discussion" Tab select the appropriate left hand tabs
  Mission Agency (DHS, DOD, DOE, ED, EPA, NASA, NIST, NOAA, USDA and cross-agency programs in Adv Manuf, Sustainability, STEM education
  Guide to Agency Funding for FYXX
  Agency Research Program Charts
  Agency Planning Documents
  Program Officer Data sheets (with contact info, biosketch, program descriptive, personal pubs)
  Program Officer presentations (when available)
- Under "Database" Tab
  USC MAPS - table of all program officers / programmatic interest

Contact Natasha Walker (nlwalker@usc.edu) for username and password to gain access.

In addition to the more extensive Central Desktop site, there is a MAPS website that can be accessed using one's USC NetID and Password: http://web-app.usc.edu/web/ra_maps. At that website one can do keyword searches to locate the mission agency (DHS, DOD, DOE, ED, EPA, NASA, NIST, NOAA and USDA) programs and program officers associated with those keywords.

Chart numbers in the text above reference a file in the MAPS Central Desktop *Agency Research Program Charts* folder

Assistance in Locating Funding and Preparing Proposals

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Table 1: 2010 / 2012 NOAA funding ($M) for Applied Research

	2010		2012	
	Applied	**Development**	**Applied**	**Development**
Total at Universities	126	29	124	32
Total for NOAA	**458**	**67**	**490**	**85**
Physical Sciences	**15**		**19**	
Astronomy				
Chemistry				
Physics				
Other				
Environmental Sciences	**347**		**351**	
Atmospheric				
Geological				
Oceanology				
Other				
Mathematics and Computer	**4**		**4**	
Computer Sciences				
Mathematics				
Other				
Engineering	**6**		**11**	
Aeronautical				
Astronautical				
Chemical				
Civil				
Electrical				
Mechanical				
Metal/Materials				
Other				
Life Sciences	**66**		**89**	
Agriculture				
Biological				
Environmental				
Medical				
Other				
Psychological	**0**		**0**	
Social Sciences	**15**		**10**	
Other Sciences	**5**		**5**	

From NSF "Federal Funds for Research and Development: FY2010-2012"
NSF 13-326, July 2013

Applied Research	2010	Tables 38, 42 and 45-48
Development	2010	Table 49
Applied Research	2012	Table 40 and 44
Development	2012	Table 51

Table 2: NOAA Budget ($M) for FY13 (actual), FY14 (estimated) and FY15 (PBR)

		FY2013 (actual)	FY2014 (Est.)	FY2015 (PBR)
National Ocean Service				
	Navigation, Observations and Positioning	173	189	192
	Coastal Science & Assessment	71	79	88
National Marine Fisheries Service				
	Protected Species Res & Management	166	177	186
	Fisheries Research and Management	414	426	437
Office of Oceanic & Atmospheric Research				
	Climate Competitive Research	45	60	60
	Weather and Air Chemistry Research	64	81	85
	Ocean Exploration and Research	21	26	19
	Sustained Ocean Observations/Monitoring	41	41	41
	Integrated Ocean Acidification	6	6	14
	National Sea Grant Program	58	63	61
	High Performance Computing Initiatives	11	12	12
National Weather Service				
	Operations and Research	871	953	926
National Environmental Satellite, Data & information Service				
	National Environmental Info Office	65	67	69
NOAA Education Program		25	27	16

Appendix 1: New project or significant change for FY2015

OAR

Regional Integrated Sciences and Assessments (RISA) From $6M in FY2014 to $11M

Two new regions, adding to the current number of 11, would be competitively awarded funding under this augmentation. The regions would include the Mid-Atlantic (e.g. Virginia, Maryland, Delaware, and the District of Columbia) and the Midwest (e.g. Iowa, Missouri, Illinois, Indiana, and Ohio).

Integrated Ocean Acidification From $6M in FY2014 to $15M

The program increase will enable NOAA to better inform both national and regional stakeholders and state agencies about the consequences of enhanced coastal and shelf ocean acidification (OA) for water quality and ecosystem resilience, allowing coastal resource managers to better develop adaptive strategies and inform policy. This increase will also enable NOAA to lead both national and international coordination efforts necessary to achieve maximum leverage and cost efficiency.

- Announce competitive RFPs for modeling, species impacts research, observing optimization studies, and synthesis product development. Some direct scientific assistance to regional partners provided. Leveraged partnerships with other NOAA divisions will be used whenever possible (IOOS, NCCOS, Sea Grant).
- Award grants to impacted industry/stakeholder capacity building projects identified through FY13/14 competitive RFP with IOOS. Scientific capacity increased for these industries as new technologies are developed.
- Award grants for model development projects identified through FY14/15 competitive RFP process with NCCOS/NOS.
- Implement NCRMP Class III coral reef monitoring at two additional sites.

NOS

IOOS Marine Sensor Innovation From $4M in FY2014 to $5M

NOS requests an increase of $1,000,000 and 0 FTE for a total of $5,330,000 and 0 FTE to develop and improve marine sensors for ocean chemical, biological, and physical parameters at multiple spatial and temporal scales to monitor changing conditions in the oceans, coasts, and Great Lakes. NOAA will use this increase to support additional extramural competitive awards to teams from IOOS Regions, industry, academia, and Federal partners for the development, demonstration, testing, and evaluation of marine sensor technologies.

Ecological Forecasting From $ 72M in FY2014 to $76M

NOAA requests an increase of $4M for the National Centers for Coastal Ocean Science to develop and operationalize ecological forecasts for harmful algal blooms (HABs), hypoxia, pathogens, and species distributions. This program activity provides funding for extramural research grants in support of NOS's Coastal Science, Assessment, Response, and Restoration program activity. Detailed objectives are spelled out in the PBR justification.

Competitive Research: From $9M in FY2014 to $15M

NOAA requests an increase of $6M to expand competitive research grants that address accelerating threats of Harmful Algal Bloom (HAB), hypoxia, sea level and land use change, and to better understand and predict the combined effects of environmental stressors on

coastal communities, ecosystems, and economies. Detailed objectives are spelled out in the PBR justification.

Opportunity, Growth, and Security Initiative (OGSI)

The OGSI is a supplemental request in the PBR whose cost is offset by new income – not likely to be passed by Congress. The OGSI will provide $180 million to NOAA for expanded weather, climate, and oceans observations and research. Specifically, it would fund:

- Sustained observations and data gathering capabilities by constructing a NOAA ocean survey vessel;
- Improved understanding of drought impacts on industries, ecosystems, and human communities through the National Integrated Drought Information System (NIDIS) "Coping with Drought" initiative;
- Expanded products and services related to sea level rise and coastal inundation events;
- Studies on the impacts of changing ocean conditions on living marine resources; and
- Improved heat advisories and more confident projections for heat stress probabilities.

Appendix 2: Illustration of a NOAA program manager data sheet

Dr. Nancy Beller-Simms
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Biosketch:
2001 – Present Program Manager, Sectoral Applications Research Program, NOAA

Skills & Expertise:
- Climate Change Adaptation
- Climate Change
- Geography
- Environmental Policy

Education
Ph.D., Geography University of Maryland College Park in 2001
M.S., Geography from University of Michigan in 1981
B.S., Geography from University of Maryland College Park in 1978

Program: Sector Applications Research Program (SARP)
http://www.cpo.noaa.gov/cpo_pa/sarp/
NOAA's Climate Program has recently established a Regional Decision Support (RDS) effort to accelerate the Program's interaction with users of climate information and forecasts at multiple spatial and geographical scales. The RDS portfolio helps NOAA identify and serve the nation's needs for climate information to support decision making through an integrated program of: 1) research and assessment related to impacts and decision making needs; 2) transition of research to operations; and 3) operational production and delivery of local and regional climate services that can be utilized to enhance adaptive management options.

Illustrative Publications Reflecting Personal Research Interests:
Early Responses to Climate Change: An Analysis of Seven US State and Local Climate Adaptation Planning Initiatives
Poyar, Kyle Andrew; Beller-Simms, Nancy
WEATHER CLIMATE AND SOCIETY 2(3), 237-248 JUL 2010

Planning for El Nino: The stages of natural hazard mitigation and preparation
Beller-Simms, N
PROFESSIONAL GEOGRAPHER 56(2), 213-222 MAY 2004

Appendix 3: Acronym glossary

Agency specific

CDR	Climate Data Record
COD	Climate Observations & Monitoring Division (in CPO)
CORS	Continuously Operating Reference Stations (program in NGS)
CPO	Climate Program Office (in OAR)
CRI	Cooperative Research Institutes
CSI	Climate & Societal Interactions Division (in CPO)
CSTAR	Collaborative Science, Technology, and Applied Research (program in NWS)
ESS	Earth System Science Division (in CPO)
GOOS	Global Ocean Observing System
HPCC	High Performance Computing and Communication
IOOS	Integrated Ocean Observing System (program in NOS)
IPCC	Intergovernmental Panel on Climate Change
IRAP	International Research and Applications Project (part of CSI)
MAPP	Modeling, Analysis, Predictions & Projections (part of CPO)
NCCOS	National Centers for Coastal Ocean Sciences
NESDIS	National Environmental Satellite, Data & Info Service (NOAA Line Office)
NGEA	National Spatial Reference System (in NGS)
NGS	National Geodetic Survey (part of NOS)
NGSP	Next Generation Strategic Plan
NMFS	National Marine Fisheries Service (NOAA Line Office)
NOPP	National Oceanographic Partnership Program (in NOS)
NOS	National Ocean Service (NOAA Line Office)
NWS	National Weather Service (NOAA Line Office)
OAR	Oceanic and Atmospheric Research (NOAA Line Office)
OAP	Ocean Acidification Program (part of OAR)
OER	Office of Ocean Exploration and Research (part of OAR)
OWAQ	Office of Weather and Air Quality (part of OAR)
RDS	Regional Decision Support
RISA	Regional Integrated Sciences and Assessments teams (part of CSI)
ROP	Regional Ocean Partnerships
SARP	Sectoral Research Applications Program (part of CSI)
SG	Sea Grants
UAS	Unmanned Aircraft Systems
USGCRP	US Global Change Research Program

General

BAA	Broad Agency Announcement
CFDA	Catalog of Federal Domestic Assistance Number
CMOS	Complementary Metal Oxide Semiconductor (electronics)
COE	Center of Excellence
DHS	Department of Homeland Security
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DoEd	Department of Education (alternative)
DoI	Department of Interior
ED	Department of Education

EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FFO	Federal Funding Opportunity
FFDRC	Federally Funded Research and Development Center
FY	Fiscal Year
HTM	Hierarchical Temporal Memory
IHE	Institutions of Higher Education
IMI	Institute for Manufacturing Innovation
MAPS	Mission Agency Program Summary (provided by USC Res. Adv.)
MEMS/NEMS	Micro- Nano-ElectroMechanical Systems
MRL	Manufacturing Readiness Level
NASA	National Aeronautics and Space Administration
NDI/E	Non-Destructive Inspection/Evaluation
NIST	National Institute for Standards and Technology (in DOC)
NNMI	National Network for Manufacturing Innovation
NOAA	National Oceanic and Atmospheric Administration (in DOC)
NRI	Nanoelectronics Research Initiative
NSF	National Science Foundation
NTIA	National Telecommunications and Information Administration
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PBR	President's Budget Request (submitted to Congress)
PCAST	President's Council of Advisors on Science and Technology
PTSD	Post-traumatic Stress Syndrome
RDT&E	Research, Development, Test and Evaluation
RF	Radio-frequency
RFA	Request for Application
SBIR	Small Business Innovative Research
S&T	Science and Technology
STEM	Science, Technology, Engineering and Mathematics (education)
TBA	To be announced
TBI	Traumatic Brain Injury
TRL	Technology Readiness Level
USDA	US Department of Agriculture