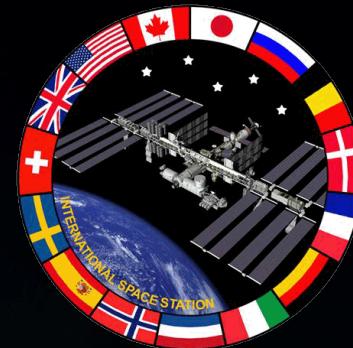


NRC Decadal Microgravity Midterm Review Committee Briefing on the ISS Toolbox Data



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Agenda

- PSO Database Overview and Use
- NRC Decadal Mapping in the PSO Toolbox Project Status
- Discussion of data fields requested and considerations for use.
- Products developed with use of the PSO Toolbox
- Space Station Research Explorer on NASA.gov (PSO Toolbox Update).



ISS Program Science Office (PSO) Toolbox Overview



How do we share your science with the world?

National Aeronautics and Space Administration





PSO Toolbox Preflight Inputs

- Principal Investigator (PI)/Payload Developer (PD) provide all info requested via NASA standard input points (RIFD, ORBIT, *EMBARK? others?*)
- Data about flights and associated details comes in through the Payload Manifesting and Integration process.
- Program Science Office (PSO) works with PI/PD and Science Writers to populate Program Science Toolbox with info and make it understandable by all levels of public audiences (8th grade reading level requirement for public fields).
- Program Science Toolbox feeds many users including public media and outreach. It is the starting point for the development of many additional products.



Post Flight Updates

- Through image curation tasks we collect payload imagery. PI's and PD's are also free to submit imagery for consideration. We link the best of that imagery to the investigation
- Lead Increment Scientists request 30 day reports from the PI/PD, however, we only receive a small number of responses (20-30%). Those received are linked to the investigation.
- ISS Program Science Office Librarians scour Journal Publications for ISS Results. Those found are linked to the investigation. Results are also sent to a freelance science writer to compile in the "Science Results for Everyone" section.
- If and when an investigator identifies they have completed an investigation including anticipated publications the Investigation record is marked as completed.



Progress on NRC Decadal Tracking

- Started a project in 2016 to gather the data on the NRC Decadal categories and recommendations associated with ongoing NASA sponsored research on the ISS
- Decadal Survey Recommendations field added to the toolbox.
- Summer Intern dedicated project to coordinate and update the toolbox entries with data.



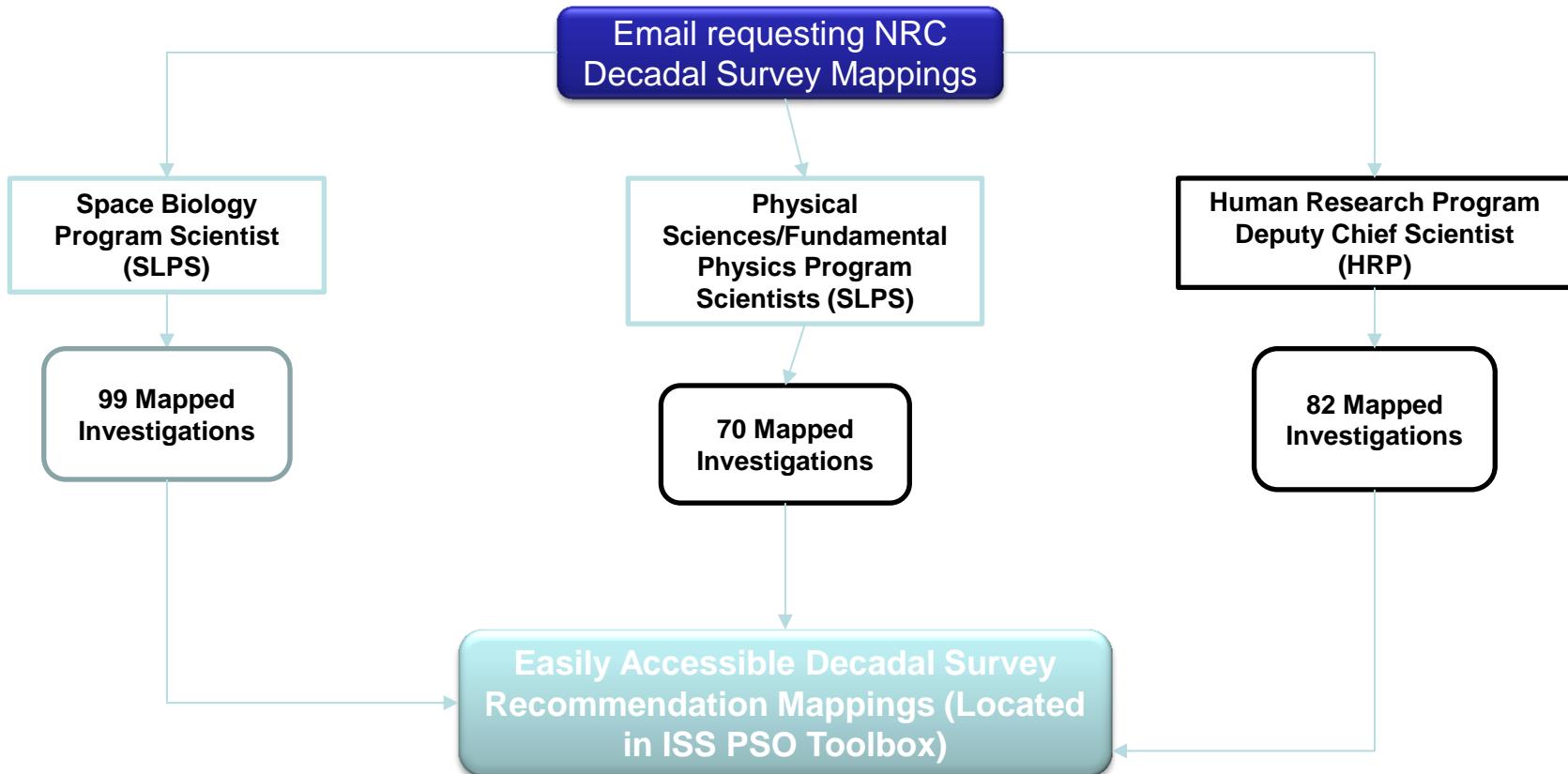
Decadal Survey Research Categories



- Plant and Microbial Biology (P1 – P3)
- Behavior and Mental Health (B1 – B4)
- Animal and Human Biology (AH1 – AH16)
- Crosscutting Issues for Humans in the Space Environment (CC1 – CC11)
- Fundamental Physical Sciences in Space (FP1 – FP4)
- Applied Physical Sciences in Space (AP1 – AP11)
- Translation to Space Exploration Systems (TSES1 – TSES16)

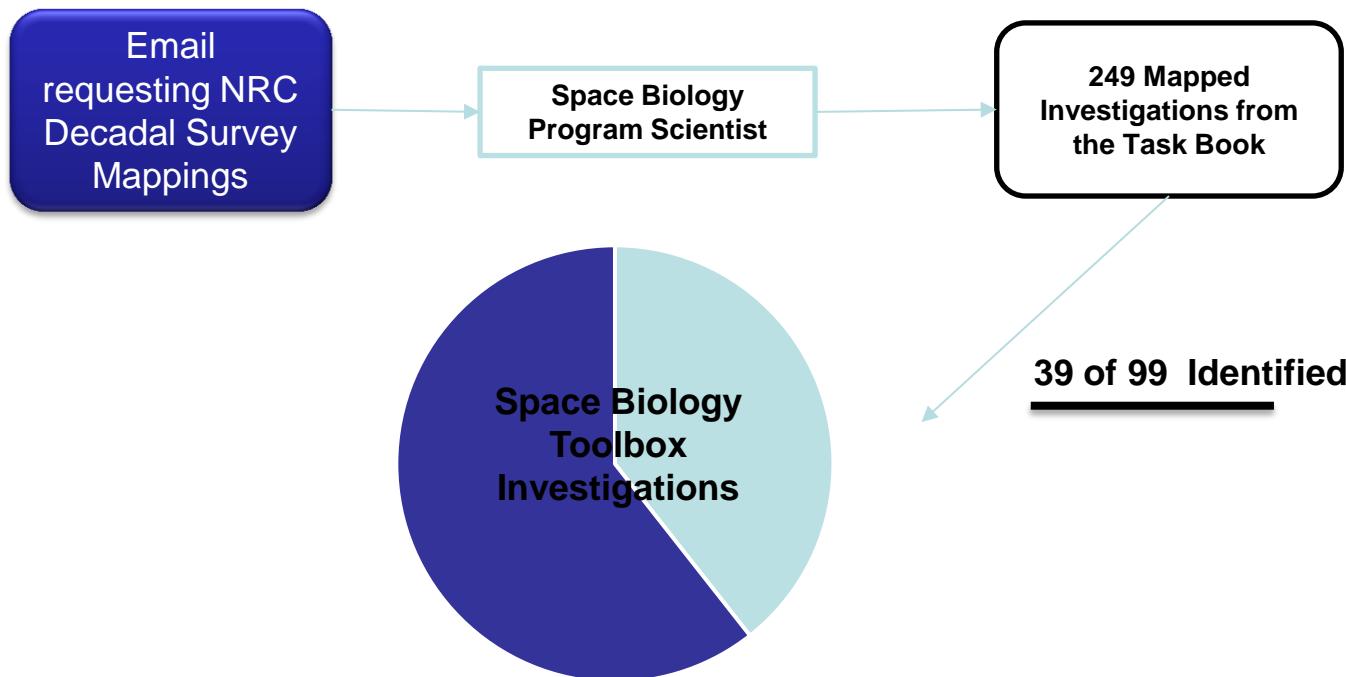


Task: Update the ISS PSO Toolbox to include “Decadal Survey Recommendations”





Space Biology Mapping

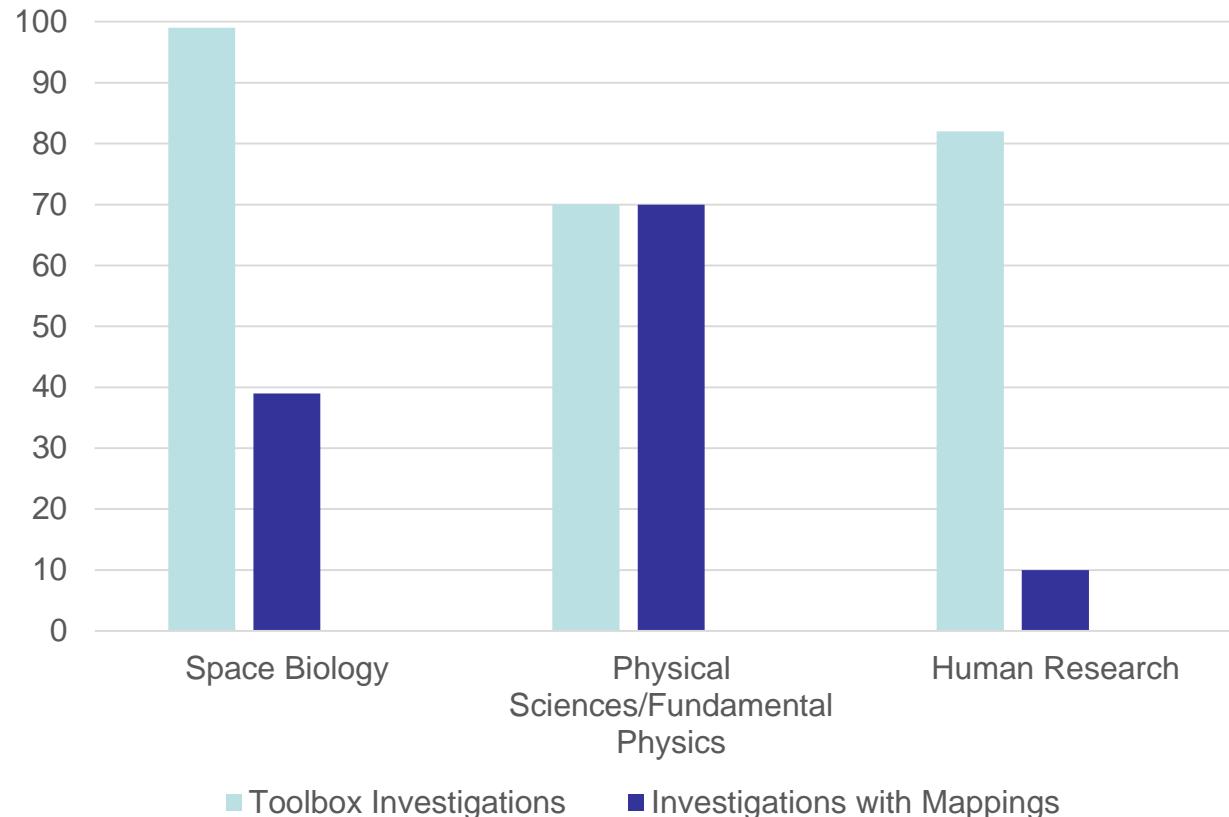




Toolbox Title (OPNOM)	=	NASA Task Book (SLPS Title)
APEX-03-1	=	Utilizing the Advanced Biological Research System (ABRS) on the International Space Station (ISS) to Uncover Microgravity's Impact on Root Development and Cell Wall Architecture
APEX-03-2 TAGES-Isa	=	Molecular Biology of Growth and Cell Remodeling within the Spaceflight Environment
BRIC-19	=	BRIC-Plant Mechanical Signaling During Spaceflight
BRIC-20	=	Proteomics Analysis of Arabidopsis Seedlings in Microgravity
BRIC-21	=	Global Transcriptome Profiling to Identify Cellular Stress Mechanisms Responsible for Spaceflight Induced Antibiotic Resistance
CBTM-3-Vascular Atrophy	=	Hypogravity Induces Vascular Atrophy Leading to Bone Loss and Delayed Fracture Healing
Seedling Growth	=	Novel Explorations into the Interactions Between Light and Gravity Sensing in Plants



Mapped Toolbox Investigations





Further Steps:

Physical Sciences

- Receive validation from SLPS on mappings
- Update the Toolbox

Biological Sciences

- SLPS to identify the 60 unmapped investigations
- Receive mappings of those 60 investigations
- Update the Toolbox

Human Research

- HRP to identify the 72 unmapped investigations
- Receive mappings of those 72 investigations
- Update the Toolbox



Outcomes

- Researched **326 investigations** which were located in our database
 - Highlighted and clarified inconsistencies in the naming process
 - Identified communication disconnects between ISS PSO and SLPS
- Updated **119 investigations** in the Toolbox
- Identified **132 investigations** in the ISS PSO Toolbox that need to be mapped to Decadal Survey Recommendations

Decadal Survey Recommendations:	Category	Reference
	Animal and Human Biology	AH11
	Animal and Human Biology	AH16
	Crosscutting Issues for Humans in the Space Environment	CC8
	Crosscutting Issues for Humans in the Space Environment	CC10



Data Fields Requested

- **Sponsoring Agency:** CSA, ESA, JAXA, NASA, RFSA, Unknown
- **Sponsoring Org:** NASA (SLPS, HRP, STMD, SMD, HEOMD, EDU), NL (EDU, OGA), ASI, ESA, JAXA
- **Grant Number:** Only known if provided by PD, some NASA internal researchers are not on a NASA Grant, this can be true especially in HRP investigations.
- **Related Websites:** Listed as provided by the PD. These links can get stale if not updated. Improvements in the next release of the toolbox will identify and weed out bad links.
- **PI name Fir mid last:** As provided by the PD. New Toolbox enhancements will allow for the collection of ORCID's too.
- **Inv Title:** As provided by the PI/PD – these are not guaranteed to match investigation titles used in the NASA Taskbook or press releases/publications issued by the investigator.
- **Inv Name:** Short name provided for the Payload integration process. Provided by the PD/PI. Once these are provided to the integration team they become very difficult to change. There is no guarantee that these map to the NASA Task Book names.



Data Fields cont.

- **Decadal Category:** Selected from those shown earlier. Will be collected from PI/PD but waiting on implementation of the EMBARK tool to do this.
- **Decadal Reference:** Will be collected from PI/PD but waiting on implementation of the EMBARK tool to do this.
- **Institution Name for PI**
- **Project Funding Type:** Obtained from ORBIT
- **Increments** – The official historical mapping of increments to dates can be found here: <https://iss-www.jsc.nasa.gov/nwo/mio/riit/fpwg/web/docs/HistoricalFP.pdf>
- **PAO Summary:** This summary is originally provided by the PI/PD and then sent to a freelance science writer for massaging and to ensure standards for the release to the general public. Any rewording is coordinated with the PI.



Data Fields cont.

- **Detailed Research Description:** Provided by the PI/PD. Responsibility to update this data is dependent on them.
- **Space Applications:** Is originally provided by the PI/PD and then sent to a freelance science writer for massaging and to ensure standards for the release to the general public. Any rewording is coordinated with the PI.
- **Earth Applications:** Is originally provided by the PI/PD and then sent to a freelance science writer for massaging and to ensure standards for the release to the general public. Any rewording is coordinated with the PI.
- **PI Credentials:** Supplied by PI/PD
- **Results summary:** Provided by ISS PSO Results team initially and then sent to freelance science writers for compliance. In the future toolbox enhancements, Abstracts from publications will be captured in full.
- **Category:** Biology and Biotechnology, Earth and Space Science, Educational Activities and Outreach, Human Research, Multipurpose, Physical Science, Technology Development and Demonstration
- **Subcategory:** Various.



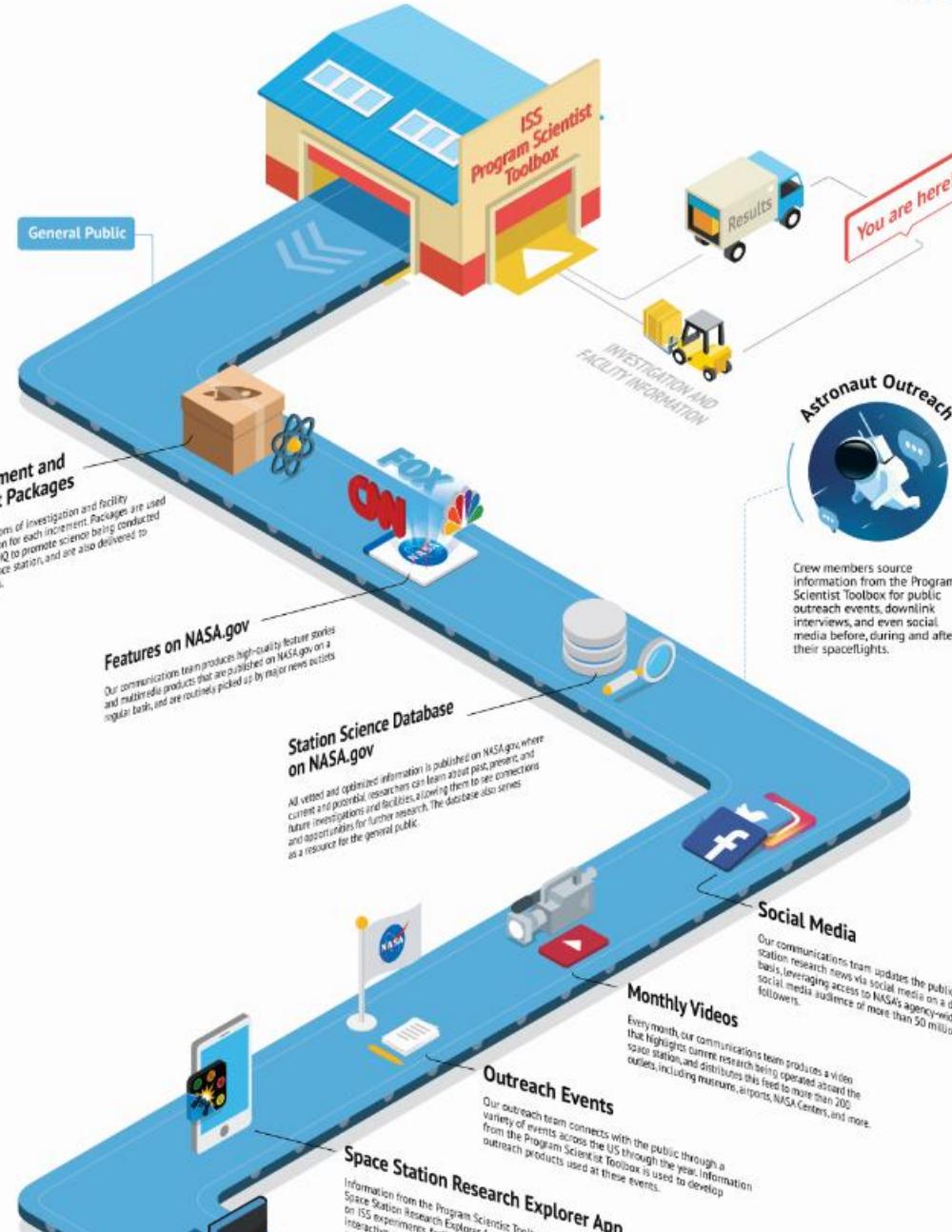
PSO Toolbox Data

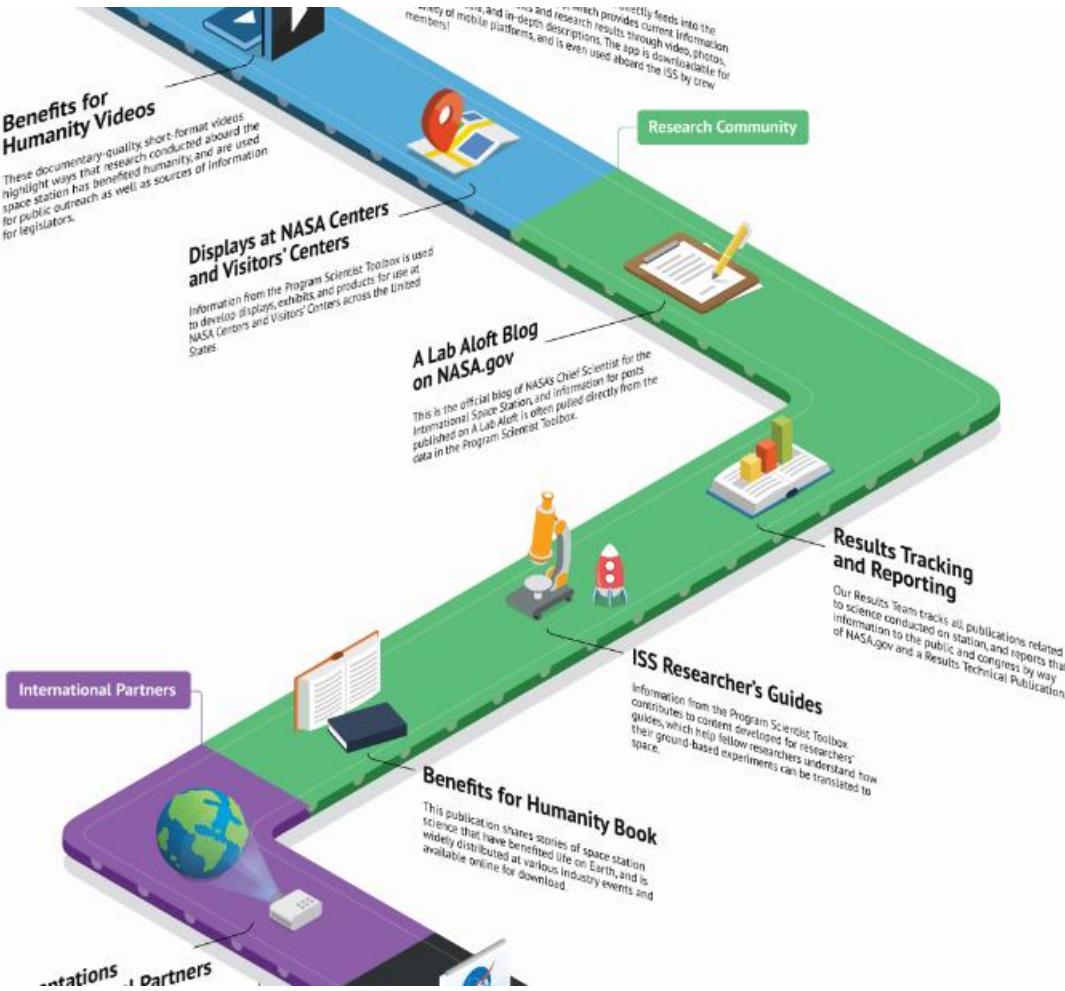
- Feeds many products including:

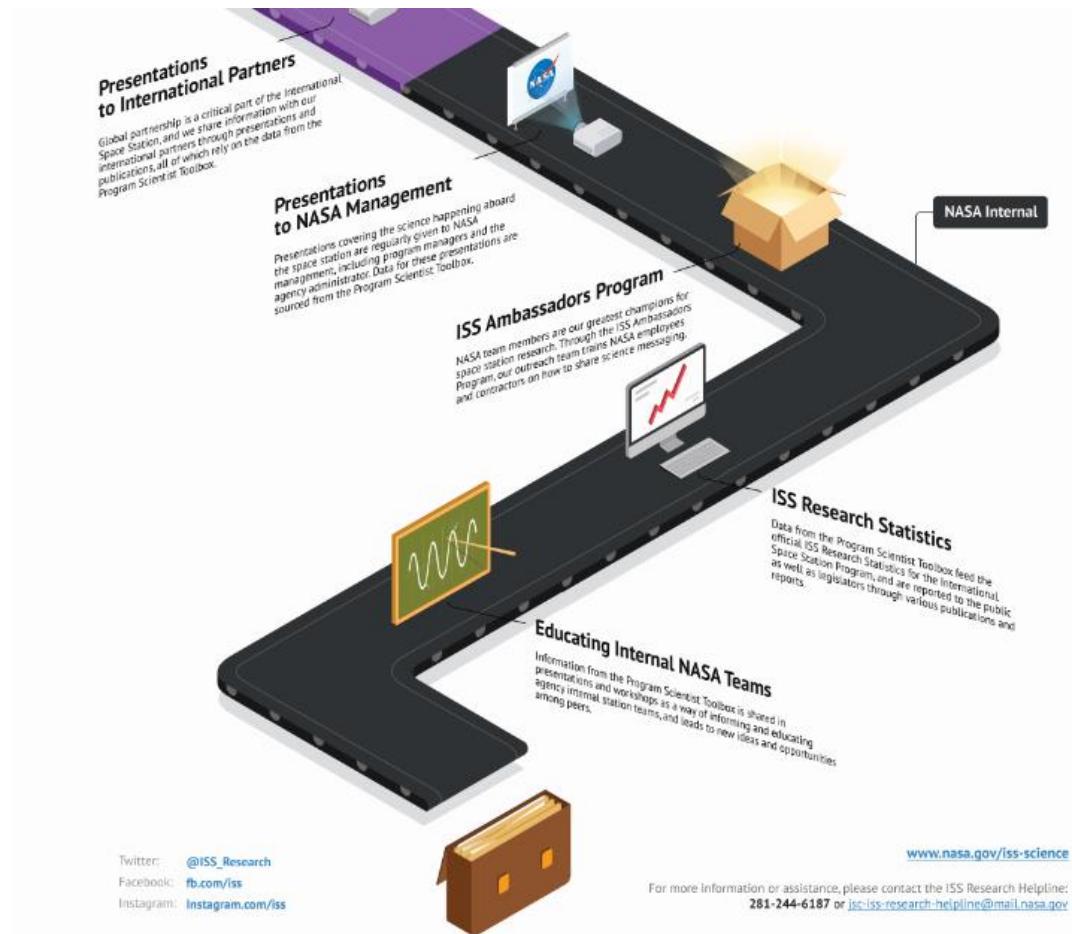


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National Aeronautics and Space Administration









Space Station Research Explorer on NASA.Gov

Enhancements Going Live Nov. 1, 2017 (PST 4.0)

COMING November 2017! (Improved)

Space Station Research Explorer

on NASA.gov

Let's Explore Science Together!

At any given time on board the space station, a large array of different experiments are underway, within a wide range of disciplines. Here, you can search the database of experiments to learn more about each experiment's objective, descriptions, results, and images, as well as find links to additional information beyond this database.

Search Experiments, Facilities and Publication Results

or browse by category, payload selection, partner/developer/organization



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www.nasa.gov/iss-science

Enhanced Search



All Search results

EXPEDITION	
0	1
5	6
10	11
15	16
21/22	23/24
25/26	27/28
29/30	

INVESTIGATIONS

Advanced Diagnostic Ultrasonography (ADUS) by NASA Honey, I shrunk the papaya! by NASA Sedimentation, particle properties on the ISS by NASA

Modern Design



ISS STAGE: High School Students Build Flight Hardware Brings Test Satellites

ISS STAGE: NASA's Launch Services Program's Successful Lighting Strike

ISS STAGE: A NASA team from the Johnson Space Center in Houston, Texas, has developed a new way to measure the amount of water in the soil

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Backup