National Aeronautics and
Space Administration

EXPLORE
SOLAR SYSTEM&BEYOND

Dr. Stephen Rinehart
Director, Planetary Research Programs

PAC Meeting
November 15, 2021

ROSES-21 is nearly complete

- Remaining programs:
  - OREx-PSP

- The general drop in proposal pressure was also seen for LDAP (since the PAC in February)

- First year of NoDD is nearly complete (more on that later)

Planetary Science Division ROSES 21 Program	Step-1 Due Date	Step-2 Due Date	Panels Held	Selections/ Proposals	Selection Dates	Days from Step-2 to Select
Planetary Protection Research	04/12/2021	05/13/2021	Yes	5/10 (50%)	10/15/2021	155
Exoplanets Research Program	04/02/2021	05/27/2021	Yes	22/183 (12%)	10/6/2021	132
Development and Advancement of Lunar Instrumentation	04/16/2021	06/16/2021	Yes	5/44 (11%0	1/21/2022	219
Yearly Opportunities for Research in Planetary Defense	04/22/2021	06/17/2021	Yes	12/23 (52%)	10/19/2021	124
Cassini Data Analysis Program[1]	05/07/2021	07/09/2021	Yes	15/38 (39%)	10/8/2021	92
Hot Operating Temperature Technology	06/01/2021	08/03/2021	Yes	7/38 (18%)	11/12/2021	101
Juno Participating Scientist Program	06/14/2021	08/13/2021	Yes	10/27 (37%)	11/12/2021	91
VIPER Mission Co-Investigator Program	07/02/2021	08/31/2021	Yes	8/50 (16%)	12/21/2021	112
Planetary Science and Technology Through Analog Research	07/23/2021	10/07/2021	Yes	xx/49		
New Frontiers Data Analysis Program[1]	09/03/2021	11/04/2021	Yes	7/21 (33%)	1/24/2022	81
Mars Science Laboratory Participating Scientist Program[1]	09/15/2021	11/05/2021	Yes	25/50 (50%)	1/21/2022	77
Mars Data Analysis[1]	09/24/2021	11/18/2021	Yes	20/66 (30%)	5/10/2022	173
Discovery Data Analysis[1]	09/28/2021	11/23/2021	Yes	9/31 (29%)	3/26/2022	107
Planetary Science Early Career Award	N/A	12/08/2021	Yes	5/27 (19%)	4/17/2022	130
Payloads and Research Investigations on the Surface of the Moon		12/20/2021	Yes	2/29 (7%)	6/7/2022	169
Lunar Data Analysis[1]	12/01/2021	02/24/2022	Yes	7/35 (20%)	6/16/2022	112
Martian Moons eXploration Participating Scientist Program	MOVING TO ROSES-22					
Future Investigators in NASA Earth and Space Science and Technology	N/A	02/11/2022	Yes	32/230 (14%)	6/15/2022	124
OSIRIS-REx Sample Analysis Participating Scientist Program		04/26/2022	Yes	xx/58		

1: DAPR Program

Highlighted in Yellow = Cross-Divisional
Not solicited this year: MatISSE, ICAR, Habitable Worlds

Proposal pressure

Not much new data, but the reduction in proposal pressure appears to be continuing:

- LDAP proposal pressure down significantly

- XPR proposal pressure flat

Program Officers are also reporting that it is becoming more difficult to recruit reviewers

- Are these things correlated?

FINESST

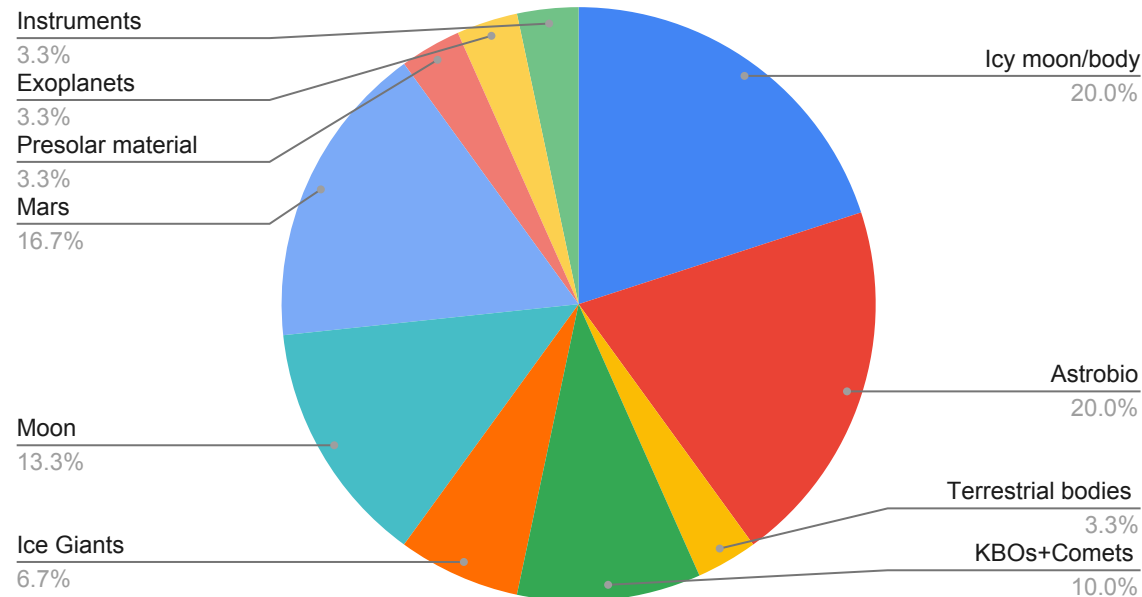Selections for FINESST21 are well distributed, based on proposal topic

The percentage of female students has steadily increased from 2019 to 2022 to nearly parity this year

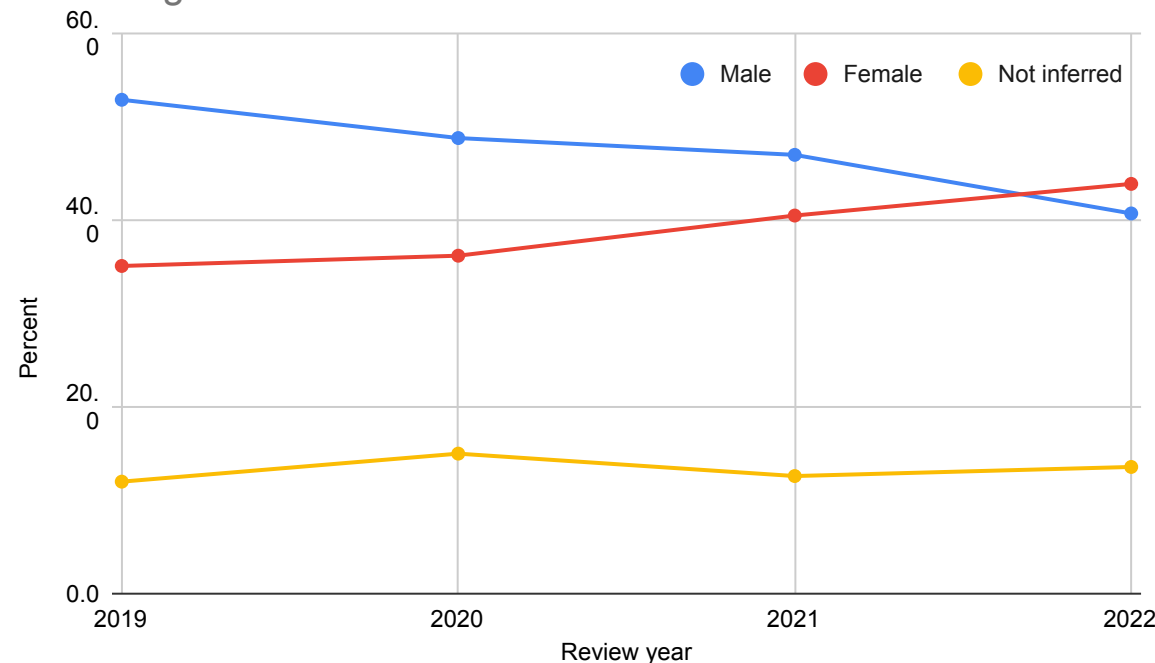- Female PIs also increased, but up to ~30%

Unified FINESST funding within the R&A Portfolio this year

- DAPs (mission lines) still fund their own awards
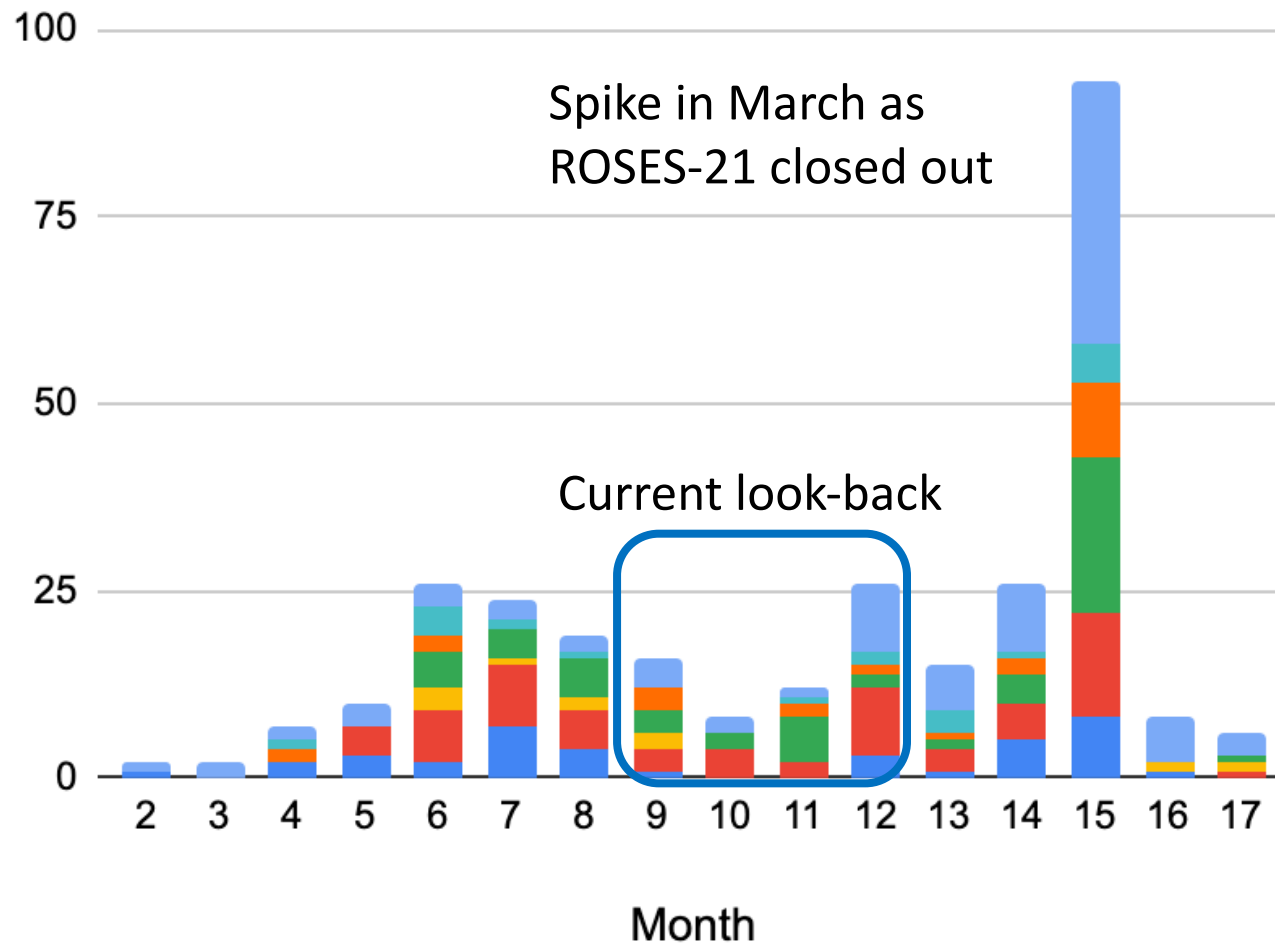
Subject of study

- Instruments 3.3%
- Exoplanets 3.3%
- Presolar material 3.3%
- Mars 16.7%
- Icy moon/body 20.0%
- Astrobio 20.0%
- Moon 13.3%
- Ice Giants 6.7%
- Terrestrial bodies 3.3%
- KBOs+Comets 10.0%

Inferred gender FIs

Gender inferred from first name at 90% confidence from https://gender-api.com

NoDD Submissions

Spike in March as
ROSES-21 closed out

Current look-back

Total Number of proposals submitted under NoDD	
SSW	91
SSO	19
PICASSO	23
PDAR	54
LARS	10
EXO	65
EW	38

Received ~30% of the proposals we might have normally expected.

Month

NoDD programs

We will be reporting NoDD statistics, in general, for the past year.

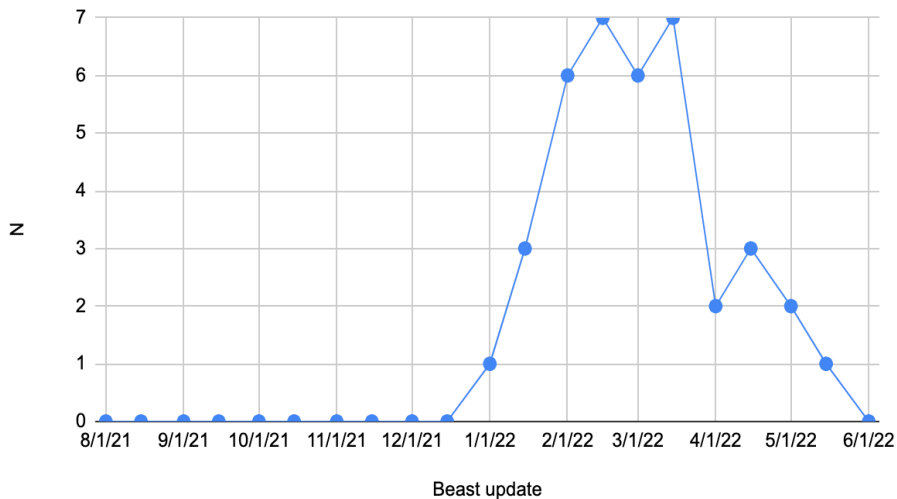| Program		Total ROSES21-22	Within the Last year						Proposals 5-12 months old					
			Submitted	Pending	Declined	Selected	Selectable	Selection Rate	# Props	Still pending	Older than 12 months	#props in 270 days prior to 2/1/22	# of these notified	50% notification time as of 2/1/22
C.2	EW	38	32	16	9	7	0	44%	20	4	0	20	18	180
C.3	SSW	91	82	59	16	7	0	30%	30	9	1	33	25	165
C.4	PDAR	54	51	37	8	4	2	29%	26	14	1	28	14	200
C.5	EXO	65	57	23	25	8	1	24%	38	5	0	45	41	139
C.6	SSO	19	18	12	2	2	2	33%	12	8	0	12	4	Not achieved
C.12	PICASSO	23	21	13	6	2	0	25%	10	2	0	9	8	192
C.16	LARS	10	8	2	3	2	1	33%	6	1	0	8	7	163

Notes:

Selection rates are good!

Proposals are still meeting high standards.

It is taking us too long to get proposals reviewed and notified
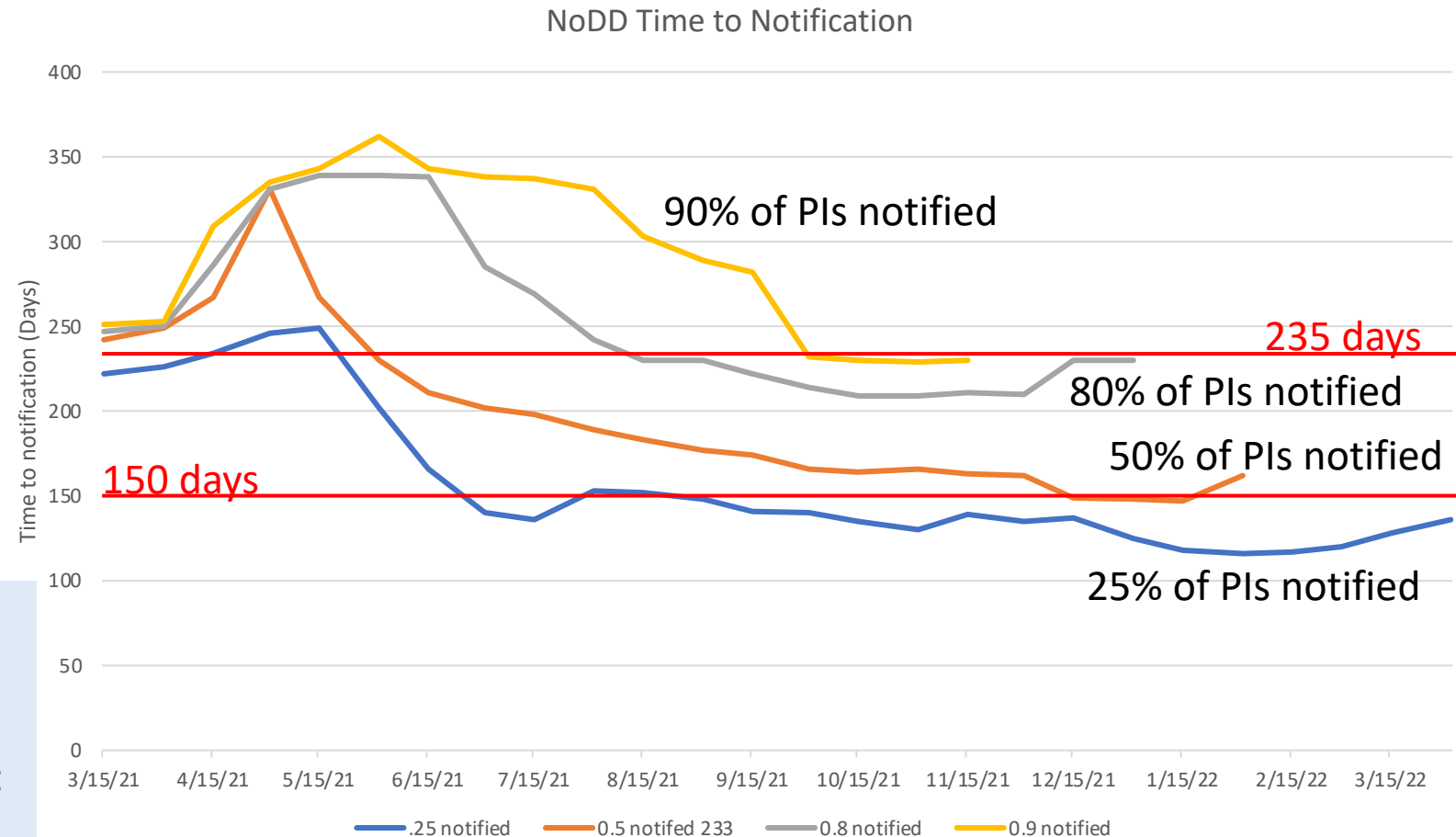
But we're getting better!

NoDD Time to Notification

Number of proposals pending >270 days

NoDD Time to Notification

- 90% of PIs notified
- 235 days
- 80% of PIs notified
- 50% of PIs notified
- 150 days
- 25% of PIs notified

Legend: .25 notified — 0.5 notifed 233 — 0.8 notified — 0.9 notified

Beginning: some proposals languished while we waited for additional proposals

Now: Time to notification is improving. Goals: 50% of PIs notified in <150 days; 90% in <235 days. (Target is 80% within 180 days)

NoDD: Informal Feedback after 1 year

Community Feedback:

The majority of feedback from the community has been very positive

Program Officer Feedback:

NoDD is more work

Reminder: We decided to do a three-year trial of NoDD, and we knew that the first year would be the toughest as everything transitions.

Concerns:

Low proposal pressure

Time to notification

No-Budget Experiment with DDAP

DDAP did a "no budget" experiment this year:

	FY21	FY22
Small	<$75k	<$125k
Medium	<$175k	<$175k
Large	<$300k	<$300k

- Proposers were only asked to identify their proposal as "small", "medium", or "large"

- Work effort tables still required, justification for major expenses still required, but detailed institutionally-approved budgets not required

- Successful!
  - No evidence for "gaming" of the size boundaries
  - No evidence of bias in scoring based on proposal size
  - Budgets coming in low enough that additional selections may be possible
  - Very positive feedback from proposers

DAPR Status for PSD

Completed:

- Habitable Worlds (ROSES-2020)

- Exoplanet Research Program (ROSES-2021)

- Five Data Analysis Programs (DAPs; Cassini, Discovery, Lunar, New Frontiers, and Mars; ROSES-2021)

- Mars Science Laboratory Participating Scientist Program (MSL PSP; ROSES-2021)

In-progress/ Future:

- OSIRIS-REx (ROSES-2021)

- Habitable Works, Exoplanet Research Program, MMX-PSP, and five DAPS (ROSES-2022)

DAPR Status for SMD

- A dedicated SMD-wide DAPR lead is in the process of being identified.

- DAPR will become standard practice for SMD reviews in the future, with an opt-out option. SMD is currently bolstering technical capabilities in order to facilitate this expansion of DAPR.

DAPR Success Metrics

(1) Most programs continue to have high levels of compliance, but some recent solicitation responses have had higher levels of non-compliance. 2nd iterations show clear improvement!

99% OF PROPOSALS SUBMITTED ARE COMPLIANT

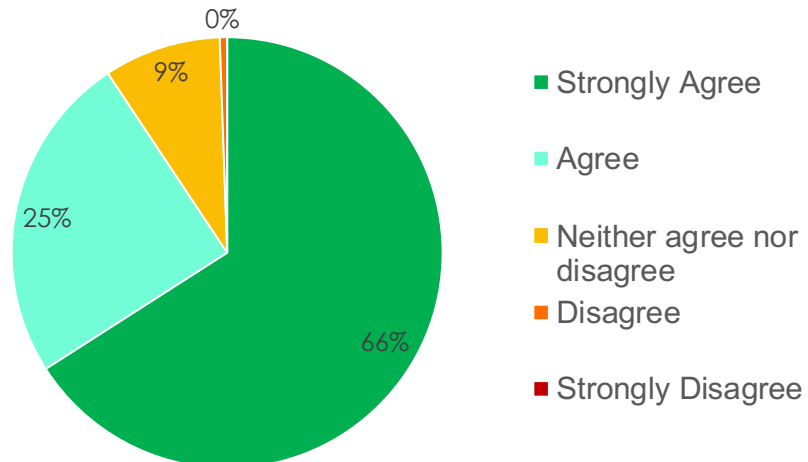Q: Would an additional DAPR Town Hall(s) for PSD be welcome?

(2)

POSITIVE REVIEWER SURVEYS

Only 2% of respondents responded negatively about the quality of the peer review under DAPR and whether it should be for the program being reviewed in the future. [>83% positive]

(3)

CONSULTANTS SAY REVIEWS ARE FOCUSED ON SCIENCE

The Dual-Anonymous Peer Review process led to panel discussions being focused on the science rather than on the identities of the team members.
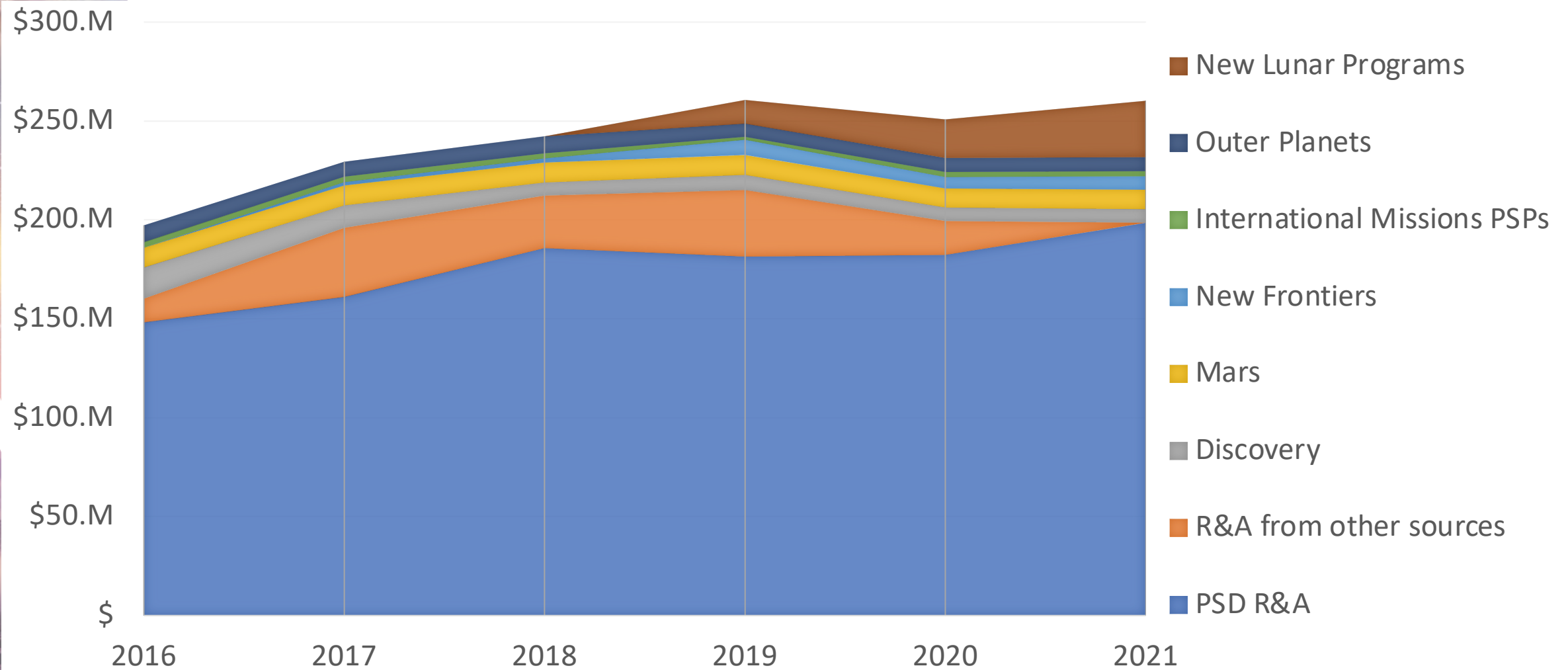
- Strongly Agree — 66%
- Agree — 25%
- Neither agree nor disagree — 9%
- Disagree — 0%
- Strongly Disagree

(4)

REDUCTION IN GENDER GAP MEASURED OVER ~3 CYCLES

Data is still being collected from reviews in the last several months. A comprehensive study from the DAAR is forthcoming.
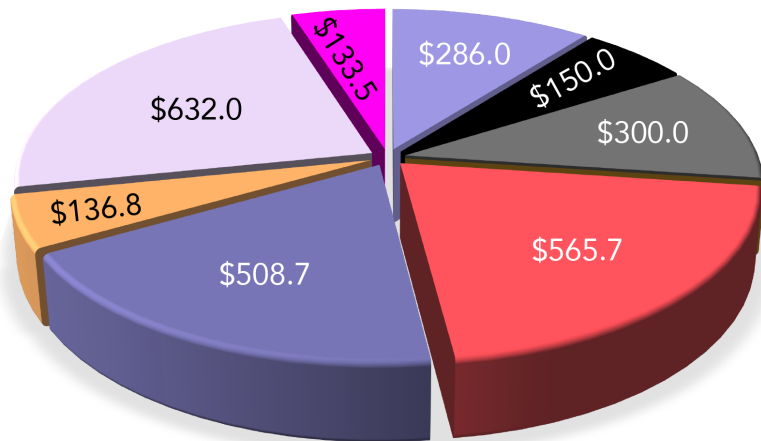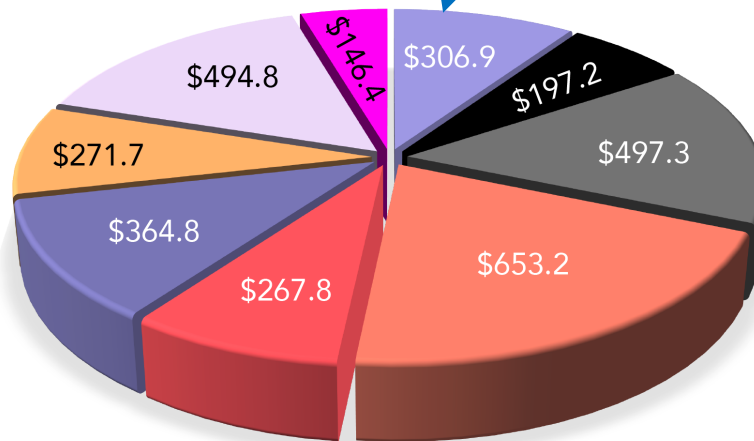
FY21 Budget

RESEARCH BUDGETS OVER TIME

Legend:
- New Lunar Programs
- Outer Planets
- International Missions PSPs
- New Frontiers
- Mars
- Discovery
- R&A from other sources
- PSD R&A

Repeat of slide from last PAC

FY22 Budget

R&A lives here, along with AMMOS, PDS, etc.

FY20 Actual (Total: $2,712.6M)

$286.0, $150.0, $300.0, $565.7, $508.7, $136.8, $632.0, $133.5

FY22 Request (Total: $3,200.0M)

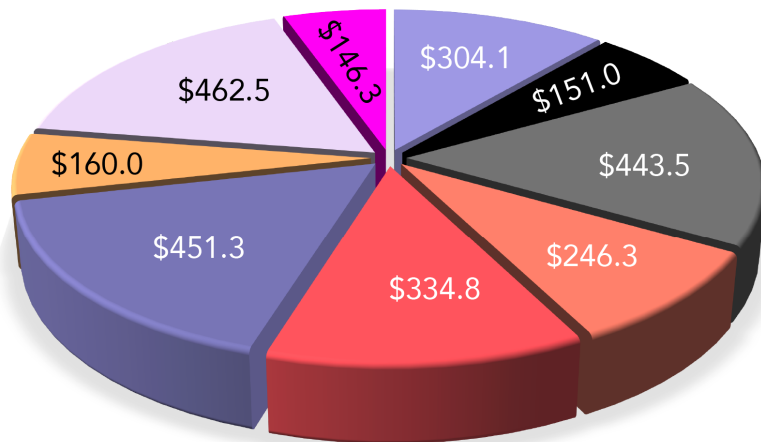$306.9, $197.2, $497.3, $653.2, $267.8, $364.8, $271.7, $494.8, $146.4

Enacted FY22 budget is $79.6M less than the PBR

Awaiting approval of operating plan

R&A Protected!

FY21 Operating Plan (Total: $2,699.8M)

$304.1, $151.0, $443.5, $246.3, $334.8, $451.3, $160.0, $462.5, $146.3

Legend:
- Planetary Science Research/Other
- Planetary Defense
- Lunar Discovery and Exploration
- Mars Sample Return
- Mars Exploration
- Discovery
- New Frontiers
- Outer Planets & Ocean Worlds
- Radioisotope Power

Reminders on ROSES 22

- Continuations from ROSES21
  - No-Budget experiment with DDAP
  - Dual-Anonymous Peer Review for all Data Analysis Programs (DAPs)
  - No Due Date (NoDD) programs (open now!)
    - https://science.nasa.gov/researchers/NoDD

- Remember rules on duplicate proposals (see C.1)

- Compliance: We are checking and strictly enforcing compliance rules. Non-compliant proposals may be returned without review or be declined on this basis *regardless of intrinsic merit score from the panel.*
  - Please remember, compliance rules exist in part to ensure readability and accessibility.

ROSES22: Some changes

- PMEF turning into PSEF (as already mentioned)

- Some calls to watch for:
  - Apollo Next Generation Sample Analysis 2 (ANGSA-2)
  - Analog Activities to Support Artemis Lunar Operations
  - Artemis III Geology Team
  - Martian Moons eXploration (MMX) PSP
  - Preparatory Science Investigations for Europa

- PDART: under ROSES22, PDAR will not accept any proposals for development or validation of tools
  - Reason: The Planetary Data Ecosystem review highlighted some weaknesses in how tools are developed *and supported*. We need to change how this is done moving forward.

Talking about Money: Definitions

We are continuing work to improve transparency in the R&A budget. As part of this, introducing two definitions:

- The Planetary R&A Portfolio (R&A): This includes all activities funded under the R&A budget line.

- The Planetary Research Program (PRP): This includes all research activities
  - Includes activities funded under R&A and those funded through mission lines
  - Includes both openly-competed and closed-competition research

A Word about "Openly-Competed"

PSD defines a program as openly-competed if it is announced publicly and available for proposals.

- An openly-competed program **may** have restrictions on who can apply
  - Early Career Awards have strict eligibility requirements
  - A call could have a stated preference for awards from particular institutional types (e.g. MSIs)
- What is not "openly-competed"?
  - Work that is directly funded at the Centers (e.g. ISFMs)

Planetary R&A Portfolio

Core	Astrobiology	Technology	Directed (incl. ISFM)	Support
Emerging Worlds	Exobiology	MatISSE	SERA - Centers	Astrobiology Support
Exoplanet Research Program	Habitable	PICASSO	ISFM	Stratcomm
Laboratory Analysis of Returned Samples	Worlds		SERA - USGS	Decadal Support
Lunar Data Analysis Program	ICAR			R&A Program
Solar System Observations	PSTAR			Support
R&A Discretionary Activities**	NAI*			Admin Support
Planetary Major Equipment				External Support
ANGSA		These programs are all part of the Planetary Research Program as defined on the next slide.		PSD Support
Planetary Science Enabling Facilities				NRESS Support
SSERVI***				AG Support
Early Career Award				Travel
Citizen Science				
FINESST****		Openly-competed	Not openly-competed	Not included in the PRP
Student Data Science Initiatives				

All programs in the R&A Portfolio budget line are included here if they have funding in FY22 or beyond

*: NAI has residual funding on tasks into FY23 but not beyond

**: Discretionary Activities support research activities that do not fit into other programs

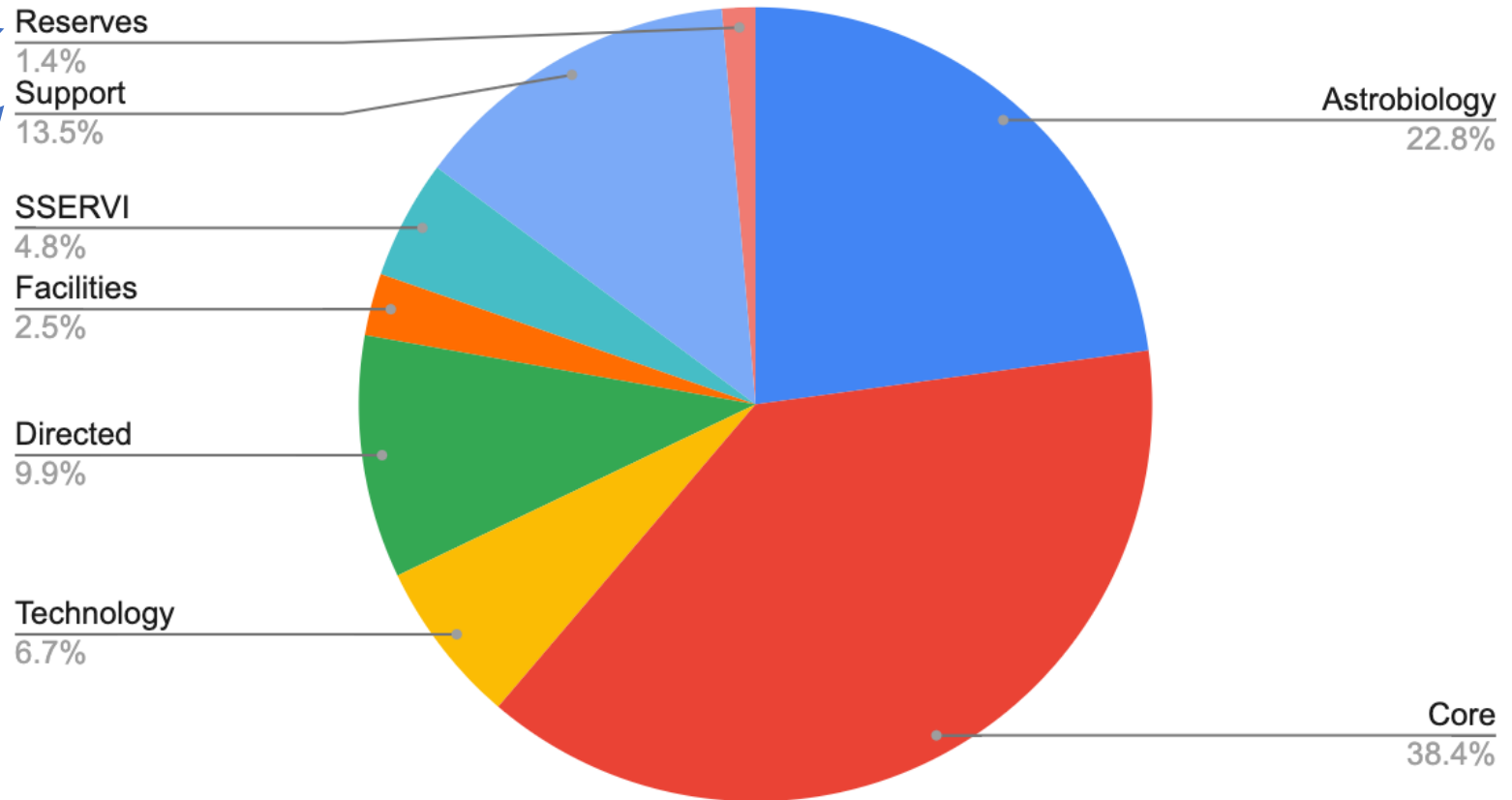***: SSERVI is bookkept under JRPA (Joint Robotics Program for Exploration)

****: FINESST is funded from both R&A and from mission lines

A Snapshot of the Planetary R&A Portfolio

Reserves: Allocated to programs over the course of the year to meet unexpected needs

The fraction of the budget that goes to support is very low! (Compare it to your institutional overheads!)

Breakdown of Research funding in 811073 (2022)

Reserves
1.4%

Support
13.5%

SSERVI
4.8%

Facilities
2.5%

Directed
9.9%

Technology
6.7%

Astrobiology
22.8%

Core
38.4%

Planetary Research Program

Portfolios' contribution to the Planetary Research Program				
From the R&A Portfolio	Core Programs	Astrobiology Programs	Technology Programs	
Discovery Program	DDAP	PSPs (InSight, VIPER, Lucy…)	FINESST*	Contributions**
New Frontiers	NFDAP	PSPs	FINESST*	Contributions**
Outer Planets and Ocean Worlds	CDAP	Preliminary Science Investigations – Europa (PSI-E)	FINESST*	Contributions**
Mars Program	MDAP	PSPs		
Planetary Defense	YORPD***			
ESSIO	DALI	Contributions****		

*: FINESST funding comes from multiple lines

**: Program lines sometimes contribute to R&A solicitations for specific items

***: YORPD is a mix of activities and may need some additional breakdown

****: ESSIO is planning to expand research funding in coming years, but it is TBD how that will be implemented

A Snapshot of the PRP

Some of the numbers here are estimates

Mars
7.4%
PDCO
2.5%
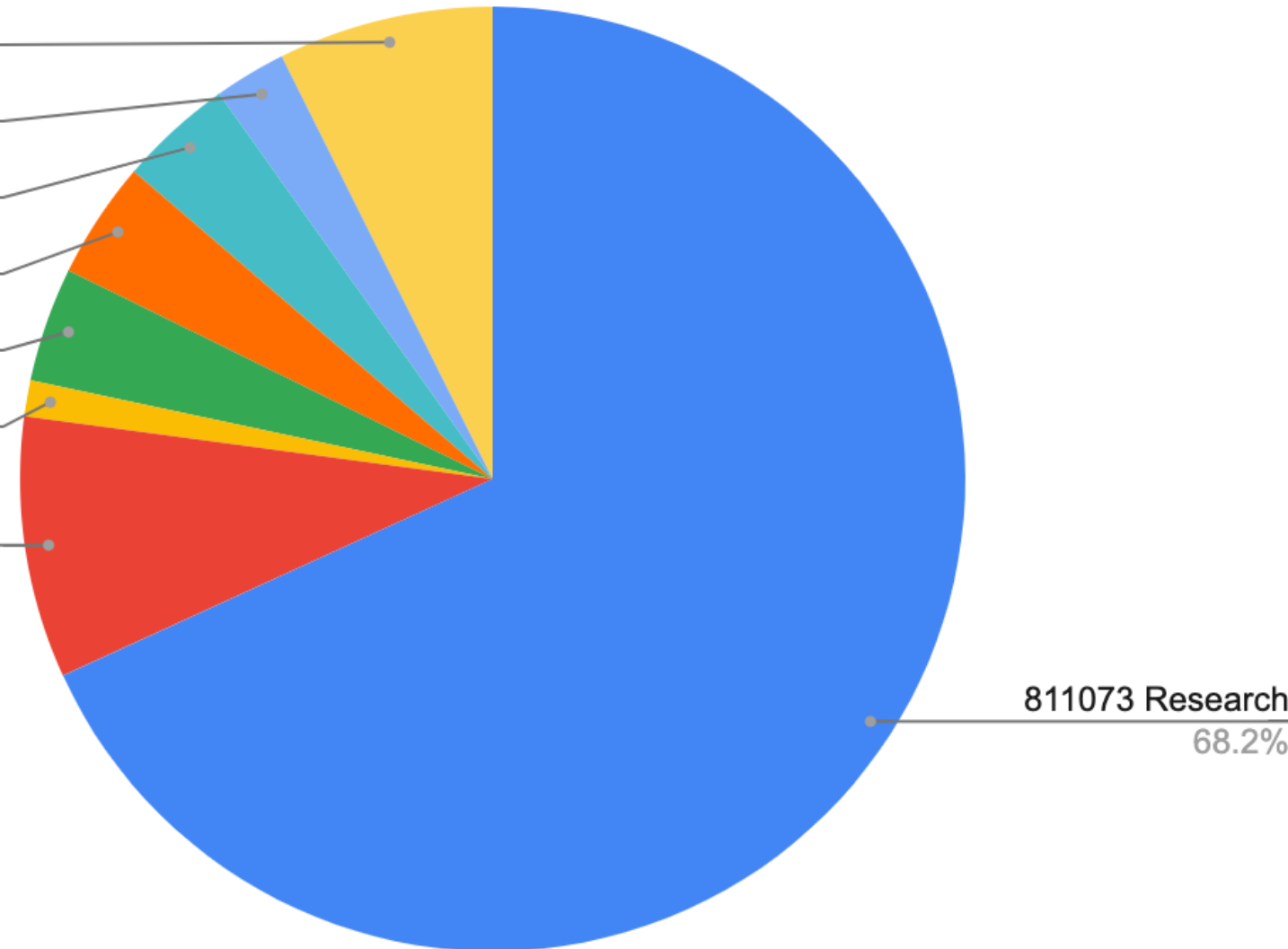New Frontiers
3.9%
OP & OW Research
4.0%
Discovery
3.9%
Reserves
1.2%
ISFM/Directed
9.0%
811073 Research
68.2%

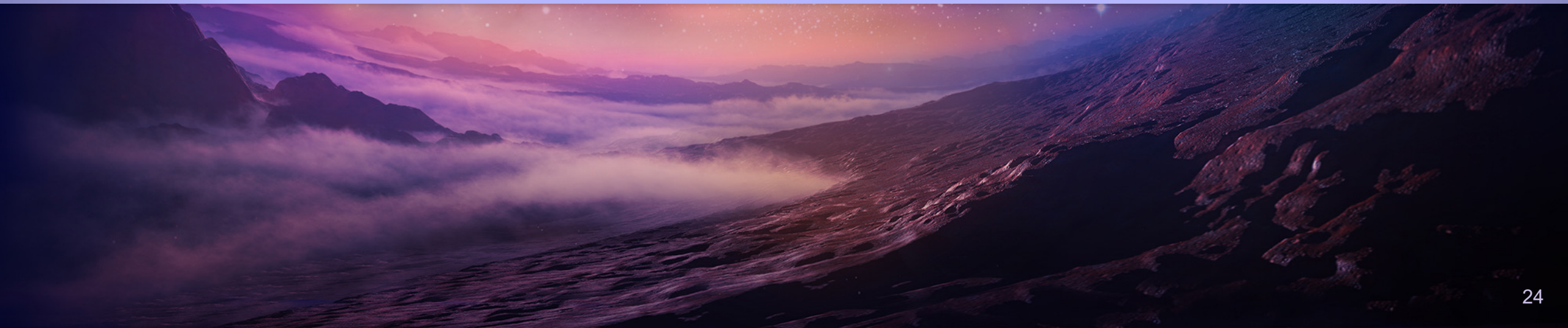|	Budget	Fraction of PSD Total
Research (no ISFM)	$222.5M	6.95%
Research (w/ISFM)	$244.4M	7.64%
All (incl. support)	$274.2M	8.57%

Some notes on future work:

There is still work to do:

- Some activities are a mix (e.g. Astrobiology Support includes both support activities and openly-competed research). Continuing to try to separate out these activities while maintaining clarity in budget lines.

- IDEA: We want to weave IDEA throughout all of our programs, rather than have IDEA in a silo. Depending on how this is implemented, it *could* result in mixing of research and non-research activities.
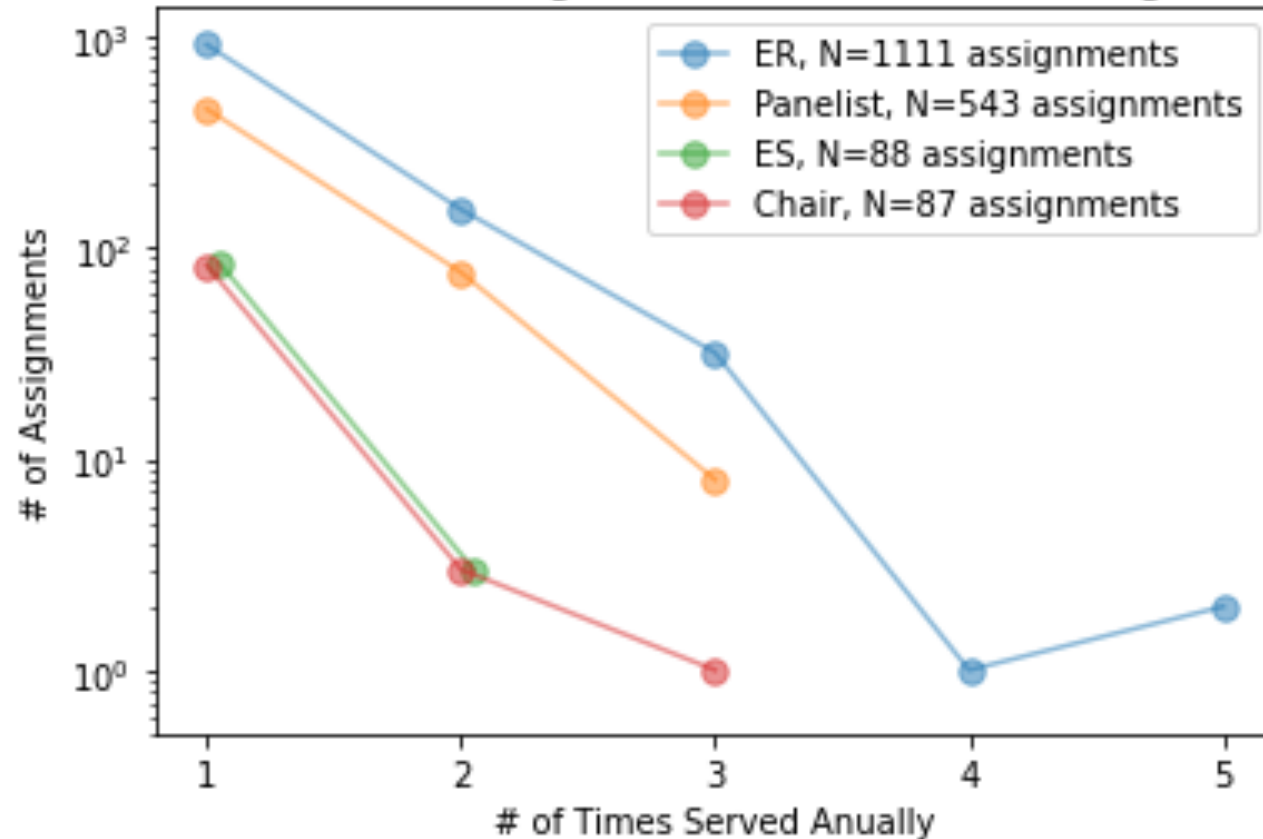
Backup Slides

Reviewers: A little bit of data