First Name:	Last Name:	Institution:	Laboratory (very brief description):	Relation to NASA (very brief description of how research in this laboratory supports Planetary Science Directorate (PSD) objectives):	Laboratory Support (check as appropriate):	My lab is/has recently been funded by the following PSD program(s):	Technical Support (number and very brief description of technical staff working in this laboratory, other than PI):	Technical Support (what model is used to support the technical staff, and is this sustainable?):	Comments:
Jason	Dworkin	NASA Goddard Space Flight Center	Astrobiology Analytical Lab: Study organics from meteorites, returned samples, and analogs	Support OSIRIS-REx, analog sample analysis for SAM/MSL, applied work on future flight instrument concepts, organic analysis to understand the impact of astrochemistry on origin and early evolution of life on Earth or elsewhere.	Research in this laboratory is currently supported by PSD	EW, NAI, ASTEP, PICASO, LASER, NF3. Previously EXO, LARS, COS, MSLPS	The lab is currently short-staffed as PI and DPI are both in full-time management positions. Leaving 1 full time scientist, one technician, and two post docs.	The current model was sustainable via Project work and a continuous supply of ROSES proposals. This has become unsustainable as current Project work closes and both the number of programs and their selection rates have dropped and long-term staff get promoted to managerial positions and are removed from most lab work.	The consolidation of COS/OSS/LASER/EXO for lab work into EW means that we are always competing with ourselves for selection. The ROI for proposals is approaching 0.
Reika	Yokochi	The University of Chicago	Noble gas laboratory (mass spectrometer, experimental apparatus)	Funded by Cosmochemistry program for laboratory experiments	Research in this laboratory is currently supported by PSD	Cosmochemistry	0	N/A	
Richard	Walker	University of Maryland	Thermal Ionization Mass Spectrometry Laboratory	Laboratory is used to make high precision measurements of isotopes of interest to the study of solar system formation and evolution, including for dating purposes, tracing of the mixing of pre-solar nebular components, and for cosmochemical modeling.	Research in this laboratory is currently supported by PSD	Emerging Worlds	1 Laboratory Manager.	~60% state money, with the rest funded from NSF and NASA grants.	
Edward	Young	University of California Los Angeles	Isotope ratio facility including 4 mass spectrometers, laser sampling devices, and a clean laboratory	Our facility is used to investigate meteorite and other extraterrestrial samples (e.g., moon rocks) with the goal of unraveling the processes that shaped the solar system as well as the origin of the solar system in a Galactic context.	Research in this laboratory is currently supported by PSD	Emerging Worlds	We have one lab manager for four mass spectrometers and a clean lab	We support our laboratory manager (PhD-level employee) with NASA grant funds (~70%) and Departmental funds (~30%). The latter University funding is constantly under threat as it is unusual at UCLA. About 10 years ago we had 50% funding from the University and were able to maintain two lab support staff with this mixture of State funding and NASA funding. Decreases in both funding streams required elimination of one position. Any break in NASA funding has the direct consequence that the lab manager position disappears. This in turn results in a complete halt to laboratory-based research programs. We view the current situation as tenuous at best given the rarity of University support for technical/lab manager positions and the current trend in the NASA funding picture.	State-of-the-art laboratory facilities require personnel. These positions cannot be regarded as ephemeral. They are critical for a sound and productive laboratory-based research program. One reason that major innovations in analytical techniques have come out of NASA-funded programs, driven in many cases by the need to analyze rare and precious samples, has been the stable support of University-based laboratories nation wide. What is more, the commitment that these labs make to this specialized research that is so valuable to NASA can often result in their forfeiting research opportunities that are more mainstream (i.e., funding from three-year NSF cycles). As a result, cutting NASA funds to these labs that have made this commitment in effect ends their viability.
David	Williams	Arizona State University	NASA RPIF, archive planetary data, turning into planetary GIS laboratory	Archives image data from PSD missions, supports data usability & research	Research in this laboratory is currently supported by PSD	PG&G program	Data Manager (GIS Specialist), Library tech, several student workers, EPO tech	Data Manager is cost share w/ASU; rest support by PSD funds	Currently well funded by NASA. Looking at other funding options if necessary
David	Williams	Arizona State University	NASA Planetary Aeolian Laboratory	Operates Mars & Titan wind tunnels at Ames Research Center, supports PSD-funded investigators studying aeolian processes	Research in this laboratory is currently supported by PSD	PG&G program	Engineer at ARC to assist guest investigators, minimal admin support at ASU	Fully funded by NASA PSD	Completely funded by NASA, no other funding model has been suggested
Karen	Ziegler	Institute of Meteoritics, UNM, Albuquerque	Stable Isotope Laboratory	Meteorite analyses	Research in this laboratory is currently supported by PSD	MFRP, Cosmochemistry, PME	none	We have access to a departmental electronics engineer, otherwise everything else is done by ourselves. This takes a large chunk of my time away from research and mentoring students.	
Alexander	Krot	Hawaii Institute of Geophysics and Planetology	Keck Cosmochemistry Lab	SIMS measurements of extraterrestrial materials	Research in this laboratory is currently supported by PSD	Emerging Worlds	Kazuhide Nagasima - lab. manager; Aurelian Thomen - tech. support	NASA grant money of PIs in Keck Cosmochemistry group (G. Huss, A. Krot, K. Nagashima); visiting scientists funded by NASA	without adequate funding cosmochemistry in USA will be eliminated
Youxue	Zhang	Univ. Michigan	Experimental petrology and geochemistry lab plus infrared spectrometry lab	We have been investigating water and other volatiles in lunar rocks. The equipment we use include (i) sample preparation facility including cutting, grinding and polishing; (ii) an infrared spectrometer equipped with a microscope and polarized infrared optics; (iii) high-temperature furnaces to rehomogenize melt inclusions hosted in different minerals in lunar rocks; and (iv) high-temperature and high-pressure apparatus to investigate the melting temperature and crystallization sequence of lunar rocks. In addition, we also use the SIMS Cameca IMS 7f-GEO and NanoSIMS 50L at Caltech for chemical and isotopic analyses.	Research in this laboratory is currently supported by PSD	NNX10AH74G; NNX15AH37G	One technician in the lab	The technician is currently supported by (i) Departmental technician fund (40%), (ii) NASA fund (16.7%), and (iii) other sources (various pockets of fund). It has been a struggle to fund the technician.	I know NASA's funding is becoming tighter and tighter, and hence I don't have an easy solution. I hope others would make excellent suggestions.
Kurt	Retherford	SwRI	SwRI UV Reflectance Chamber (SwURC)	Facility is owned and run by SwRI in its entirety. Labor hours for LRO-LAMP project support.	Research in this laboratory is currently supported by PSD	Not applicable	Three scientists and three engineers other than myself, all at a small fraction of time.	Infrequent use, SwRI overhead funds and work orders. Initially created under an internal research and development program grant within SwRI.	We're generally looking to apply the capability of the facility to other projects within and external to SwRI, including Rosetta, New Horizons, JUICE & Europa missions, and future ROSES based icy surface studies at far-UV wavelengths.

Karl	Hibbitts	JHU APL	Solar system optical spectroscopy laboratory. Unique ability to conduct reflectance measurements in relevant environment from vacuum UV to long wave IR under UHV and at temperatures relevant to surfaces of Mercury to the moons of Saturn.	Supports APL grant holders; external grant holders; responds to requests from missions on an as-available basis (for co-authorship)	Research in this laboratory is currently supported by PSD	OPR, PGG, LASER, EW, PME	1 technician part time to full time, various scientists on various grants for specific measurements (see above), interns	share cost and duties with APL. Not effective nor sustainable; need a full time technical person and one full time staff scientist to achieve lab potential.	I am overcommitted and can not afford to spend the time in the lab maintaining it and making measurements (although very enjoyable). R&A funding is just too small, non-integrated, and ephemeral to hire permanent staff. The ability to have even ONE fully supported scientist/technician would be incredibly enabling to productivity but isn't feasible on grants. A program that would provide funding for the hire of a general support person for a lab that supports multiple programs (and thus isn't well funded from any of them) would be enabling. $200-$250K/yr which includes fringe and overhead would suffice.
Everett	Gibson	Emeritus, NASA Johnson Space Center	Light Element Analysis Laboratory, stable isotopes, laser extractions	Understanding history, distributions and abundances of the light elements and their isotopic compositions in extraterrestrial and terrestrial materials.	Research is not presently supported, but has been supported in the past three years	Astrobiology	one full time technician	P.I. funded Research proposals	Long time overdue investigation of funding of laboratories
Alan	Brandon	University of Houston	Thermal Ionization Mass Spectrometer and PGE lab	Primary focus on measuring Nd and Os isotopes on extraterrestrial and planetary materials	Research in this laboratory is currently supported by PSD	Currently Emerging Worlds, Previously NASA Cosmochemistry for 15 years	No technical staff, PI does all training of people using the lab, PI maintains the instruments and provides all labor to keep the lab running	No technical support, not sustainable	My university refuses to provide a cost share so I can have tech support, if I wrote such into a NASA or NSF grant, it would not be funded, my lab is on the verge of collapse without it
Qing-Zhu	Yin	University of California at Davis	Isotope Cosmochemistry	Elemental and Isotopic analyses of planetary materials returned by spacecraft missions and free samples returned by nature (meteorites).	Research in this laboratory is currently supported by PSD	Cosmochemistry program, Origins of Solar Systems program and now by Emerging Worlds program.	Two postdoctoral fellows who help the PI for routine maintenance and daily operations of the clean lab and instruments (Neptune Plus MC-ICP-MS, Triton Plus TIMS, Element XR ICP-MS, and Photon Machines Analyte 193 laser ablation system)	PSD funding provided supports for hiring postdoctoral fellows until now. However, any hiatus in funding would be detrimental to PI's research program. Continues support with a stable stream of funding is essential to maintain the technical superiority in high precision, high sensitivity, low blank measurements that are necessary in isotope cosmochemistry.	*To maintain and develop laboratories with sophisticated analytical instrumentation that are actively carrying forward research; *To develop new instruments that will be necessary for past, current, and future sample return missions; *To retain the technical competence and capability of US to carry forward this research; *To train future students and bring innovative young people into the areas of active and future research; *To ensure the vitality of cosmochemistry research related to the origin and formation of the Solar System and the connection to astrophysical and exoplanet researches; *Viable funding mechanisms need to be found so that the analytical cosmochemistry community can sustain the process of supporting and maintaining the complex laboratory activities. The development of state-of-the-art instrumentation and high precision, high sensitivity analytical techniques often takes many years of dedicated effort and thus requires a basic continuity in funding. Such facilities require highly trained personnel and operating budgets that are significantly higher than average grants for specific science investigations by individual PIs. NASA has made a large investment in such facilities and has succeeded in maintaining the expertise, developed following the Apollo program, in the analysis of precious returned lunar samples and other extraterrestrial materials. Without a commitment from NASA for sustained support and further development of laboratory infrastructure, competitive advantage and young talent will move overseas. The loss of national capability and the choking-off of the pipeline for

Michael	Mellon	Johns Hopkins Applied Physics Laboratory	Planetary Soils Lab - For examining an array of physical properties and processes in soil/regolith analogs and ices for Mars, Moon, Earth, and outer solar system. These include thermal, electrical, gas-transport, and mechanical processes, as well as water and ice microphysics.	This lab characterizes soils and ices under planetary conditions to support mission-data analysis and define physical parameters of soils in order to support mission engineering and surface interactions.	Research in this laboratory is currently supported by PSD	Currently MFRP. Past PGG.	Currently, I have no laboratory staff. Past support has included students, a post doc, and a 10% time technician (for a year, one year ago).	Support for laboratory staff has been entirely through grants. As such each person needs a specific science role that is defensible to peer review. As this lab has grown in size and complexity, the initial staffing model of the PI with grad and undegrad students has become inadequate. But funding is absent to support additional staff. Students require constant retraining and depart after graduation. As such fabrication and retooling tasks require a great deal of PI supervision. Grant competition typically forces trimming the budget as tightly as possible and prevents including technician support. This situation has gotten significantly worse in the recent couple of years, making it difficult to include even student support. I was able to obtain a technician's time at the 10% level 1 year ago. The technician was extremely valuable but was difficult to schedule against outside commitments. I could have easily assigned tasks to utilize 100% time, but lacked funds.	I recently move my lab from Southwest Research Institute to Johns Hopkins. I am working on arranging for a graduate student to work in this lab. No funding is on the horizon for additional staff. Similar concerns apply to instrumentation. Due to proposal competition and funding pressure I typically use the approach of heavily retooling past experiments rather than retaining the past measurement capability for ongoing or future use.
Christine	Floss	Washington University in St. Louis	Micro-analytical capabilities, including NanSIMS, Auger Nanoprobe, FIB-SEM, TEM	Our research is focused on understanding the building blocks of the early solar nebula (presolar grains, interstellar dust, etc) and how they contributed to the formation of the solar system. We are also involved with analysis of samples from Stardust and Genesis.	Research in this laboratory is currently supported by PSD	Emerging Worlds, LARS, earlier also Cosmochemistry and Origins	Currently we have only one technician who is responsible for maintaining all of the instruments in our lab. We have no service contracts or other support for instrument maintenance. Our group consists of one teaching faculty member, several research scientists and students. Except for the teaching faculty, all are 100% soft money (including our technician).	All technical support is currently funded through our research grants, although we are in the process of moving to a user fee model to try to generate additional funding for instrument support from outside users. This model was sustainable and very successful for a long time (and allowed for a lot of innovation in terms of instrument development and creative science), but NASA seems to be trying hard to ensure that it will not be sustainable in the future.	
Nicolas	Dauphas	University of Chicago	My lab comprises a clean lab with all the equipment needed to prepare the samples and a MC-ICPMS for isotopic analyses. The MC-ICPMS is connected to a laser ablation system for in situ analyses.	We study meteorites and planetary materials (terrestrial and lunar samples). We study the chronology of the solar system, mixing of nucleosynthetic anomalies in the protoplanetary disk, and the relationships between planets and meteorites. In the process, we develop methodologies and tools that can be used for future sample return missions from asteroids and planets. Our studies address problems directly relevant to PSD objectives.	Research in this laboratory is currently supported by PSD	LARS (as PI), EW (as co-I). My last 2 proposals as PI to EW were rejected (the last one was not even Selectable).	I have one postdoc, with whom I share the responsibilities of placing orders, fixing the instrument, and making sure that the clean lab is running as it should. I have no technical support per se.	I have used this model (one postdoc who does double duty as lab manager) for the past 12 years. The last two postdocs who worked in my lab and assumed this responsibility (Christoph Burkhardt and then Nicolas Greber) were paid by the Swiss government. This is not ideal as there is no continuity and it takes time to bring the new postdocs up to speed but it is manageable.	My lab, and most labs in the US, are understaffed (an instrument like mine could accommodate a larger group). Funding restrictions may impact NASA in unpredicted ways. For the first time this year, I will accept a chinese PhD student paid by a CSC fellowship from the Chinese government. Under the terms of this fellowship, the student has to go back to China for 2 years after completing his/her PhD. Those students, who will be trained in the US, may never return to the US after going back to China.
Richard	Carlson	Carnegie Institution of Washington	Isotope ratio mass spectrometry, TIMS, MC-ICPMS, LA-ICPMS. Nucleosynthetic isotope anomalies, early solar system chronology, lunar chronology, early Earth chronology and geochemistry	By investigating the conditions in the early solar nebula through the planet forming process into the earliest history of the terrestrial planets and Moon	Research is not presently supported, but has been supported in the past three years	Cosmochemistry	1 chemistry lab manager manages training, supply of laboratory including preparation of ultra-clean reagents, and technique development in the chemistry lab, 1 mass spectrometer lab manager manages training, supervision of users, maintenance and repair of mass spectrometers and laser ablation apparatus.	The two support staff are fully supported by the Institution. This situation is sustainable as long as my Institution recognizes the importance of technical support in advanced laboratory operations, which they currently do.	PSD support for this lab has primarily been used to support postdoctoral training and research. As we have no students, and the PI is currently burdened with administrative activity, PSD-related research will not get done without the assistance at the postdoc level as this is the only avenue we have to add to the personnel in the laboratory.
James	Day	UCSD	Isotope geochemistry lab - thermal ionization and plasma mass spectrometry.	NASA-funded research for understanding accretion, differentiation processes on planetary bodies. Chronology and evolution of Solar System materials.	Research in this laboratory is currently supported by PSD	Emerging Worlds	Clean lab and four mass spectrometers run solely by PI. Since starting as Assistant Prof five years ago, I have never had sufficient funds to have an adequately supported lab (cf technician or post docs). All support goes on students and research. Consequently productivity and output is lower than it could be.	It's unclear how technical support is sustainable to the 'new generation' without realistic mixtures of federal and state/university support. In the current financial climate, this seems unrealistic.	Some of my colleagues, who had technical support 'grandfathered in', often tell me to include funds for such support into grants. This is wholly unrealistic. Grants exceed >$100k/yr for a PhD student, alone. Lack of consistency in funding support makes sustainability still harder. It is impossible to compete with the older, well established labs, despite very hard work (I essentially have two jobs, as a university professor with teaching, service, training students and proposal/paper writing and a lab manager, helping users, fixing instruments and developing techniques). I don't write this for sympathy, but merely to note that few are likely to want to undertake such a job in the future. We are seeing this currently, as new hires no longer seek start up funds to build labs. They want to have a balance of work and family life; arguably a balance I have not had over the past five years.

Gary	Huss	University of Hawaii at Manoa	We have a modified Cameca ims 1280 ion microprobe and supporting SEM in our lab	We are primarily funded by NASA and we do research on NASA returned samples and meteorites. We have active research programs in measuring Genesis and Stardust samples, we have worked on Hyabusa samples, we do research motivated by Astrobiology, and we do basic research to understand the origin and evolution of the solar system and its constituent bodies. We intend to participate in analysis of samples returned by Hyabusa II and OsirisRex. The basis research that I and my colleagues have been doing have served to motivate and inform NASA missions to many planetary bodies.	Research in this laboratory is currently supported by PSD	This is where the questions begin to diverge from what we are doing, making it difficult to answer. Our lab is funded by user fees that are charged to all users, including the lab director and other UH researchers. About 75% of the user fees come from PSD, from programs such as Cosmochemistry, Origins of Solar Systems, Astrobiology, Emerging Worlds, Solar System Workings and probably other programs. About 25% of our users are supported by NSF or funding from other countries, such as Japan, Denmark, Germany, France, England, Singapore, Australia, etc. The fraction of our money that comes from Cosmochemistry/Origins/Emerging Worlds has dropped in the last year. Some of this is probably stochastic year-to-year variation, but some of it is due to the fact that some of our main research collaborators have lost their funding.	The staff for our laboratory consists of me (the Director), Kazu Nagashima (the lab manager), and Aurelien Thomen (the assistant lab manager). Dr. Nagashima keeps the lab running, schedules the use of the machine and, along with Dr. Thomen, helps people to get and reduce their data. Dr. Nagashima is a world-class engineer and does essentially all of the repairs on the ion probe and SEM. Dr. Thomen helps Dr. Nagashima in all aspects of running the lab.	We are currently operating on a fee basis. All measurements, including those made by the laboratory director and other UH researchers, cost $100/hour up to $1000/day (up to 24 hours). The SEM operates the same way and costs $25/hour up to $250/day (up to 24 hours). The user fees pay half of Dr. Nagashima's salary and all of Dr. Thomen's salary. They also pay for our limited service contract, for supplies and expendable parts, and for parts necessary to make major repairs. Until last year, our income was sufficient to cover our expenses. NASA provided this funding model, and although I was not enthusiastic about it when we started, it proved to be a great advantage during the economic downturn a few years ago because our funding came from many sources and was not susceptible to single-point failures. So long as NASA continues to fund sample science at something close to the level of the past decade, this funding model should work. But if half of the NASA money goes away, or my funding and those of other major UH users becomes intermittent, we could be in trouble. We are not permitted to build up a large "rainy day" fund to cover a big drop in user fees.	I am very worried that NASA is going to put all labs like mine into a "facility" model. I can see three ways that this could go. 1) They could decide to provide us with ~$200,000 per year with no strings attached and let us continue to do what we have been doing. 2) They could decide to provide some money (e.g., $150,000 per year) in exchange for direct oversight of what we do and a requirement that we make measurements for anyone with NASA funding who shows up at our door. This might be survivable if not too many people arrive at our door. In this model, the users would primarily be the same people that we had before, but they would not longer have to pay for analysis. 3) They provide us with $150,000, require us to take all NASA funded comers, and we get a major increase in the number of users. If this happens, and we are required to serve those users first (as is the case with NSF-funded labs), we will have to hire additional staff to handle the load and our access to the instruments will be increasingly limited. In this scenario, we would get $150,000, but would spend an addition $125,000 to $150,000 to handle the increased load, leaving us with user fees as the only way to cover basic costs. But our NASA users would not longer be paying user fees, so we would have to find paying clients to make up for the lost user fees. Scenarios 1 and 2 would be survivable, but scenario 3 would be a disaster. Jonathan Raul admitted in a response to my comment at the end of the facilities session at LPSC that the changes taking place at NASA are a cost-cutting measure. There is a flawed premise here. There is no model that will give the same productivity as before but which will cost considerably less. If NASA wants to maintain world leadership in sample analysis, they will have to find the money to pay for it. If they don't want to maintain leadership, then they should just say so and we can
Thomas	See	ARES / Johnson Space Center / NASA	Experimental Impact Lab (EIL) - Investigate and understand cratering process from microscopic to planetary in scale.	EIL addresses questions involving planetary impacts of projectiles into targets intended to simulate materials on the surfaces of the solid bodies of the solar system.	EXO 2010, LASER 2010, MFRP 2012, NSF 2011	All funding in the last 6-plus years has been small amounts associated with external PI awarded grants requesting a limited number of impact experiments.	Engineering Technologist (2) - Handle pyrotechnics, electrical, cryogenics, vacuum systems, pressure systems, hydraulics, machinist, fabricators, gunners.	Grant based funding - currently unsustainable	Since the re-organization of ROSES several years ago, all ARES Research Labs have struggled in achieving adequate funding to staff and maintain these facilities (Ebeam, Petrology, Experimental Impact, Soil Chemistry, etc.).
Aaron	Burton	NASA Johnson Space Center	Analysis of soluble organics in astromaterials samples and analogs, and development of curation methods with respect to organic contamination.	This research helps understand formation and deliver of organics in the early solar system, as well as develop knowledge and methods to mitigate the effects of organic contamination on curated samples.	Research in this laboratory is currently supported by PSD	Astrobiology: Exbobiology and Evolutionary Biology, Early Career Fellowship, Science Innovation Fund	1x Lab manager / gas-chromatography-mass spectrometry expert	Lab manager is funded directly through named roles in ROSES proposals (PI, Co-I etc.), and through Jacobs contract to ARES. We are a newly established lab, so the hope is that in the next few years we will be able to win a sufficient number of proposals to be self-sustaining.	
Scott	McLennan	Stony Brook University	Experimental low temperature geochemistry laboratory	Laboratory carries out experiments that simulate sedimentary, diagenetic and low-temperature alteration conditions on Mars	Research in this laboratory is currently supported by PSD	Mars Fundamental Research; MSL Participating Scientist Program	None - all work is carried out by PI, post-docs and grad students	A plausibly sustainable model would be to have a shared NASA-supported technical resource with other NASA-funded PIs in my department. It is not practical to tie such a technician to a specific grant/research program due to uncertainties in renewal in any given year. But an independent program / sub-program that is based on continued excellence rather than any one or two funded grants would allow for a high-quality technician to be recruited and sustained.	
Justin	Simon	NASA Johnson Space Center	The Center for Isotope Cosmochemistry and Geochronology houses facilities that measure elements and isotopes by thermal ionization and plasma source mass spectrometry. Astromaterials are sampled and prepared for analysis in our dedicated clean labs.	Historically our lab has played a major role in radioisotopic dating of mission returned planetary samples. In addition to chronology, we currently employ state of the art (and develop new) isotopic techniques to study the processes by which planetary materials form planets (e.g., studying martian, lunar, and chondritic rocks).	Research is not presently supported, but has been supported in the past three years		In the past we had a senior researcher who managed the clean lab and a technical person who ran the mass spectrometers. Both (along with the PI) played significant roles in sampling and processing astromaterials. We are in the process of major lab renovations and so technical support for the lab is minimal at this moment (i.e., it was the right time for our senior person to retire and the resources that supported our lab efforts have been migrated to other division needs for the time being).	In short no. Because resources in the research office of ARES JSC are shared among the various labs we can still stay "open for business". We continue forward assuming that we'll be able to return to previous levels of support in a year or two.	We no longer have any center support for technical personnel. In the past, this was at ~ 20%. The remainder was covered by research grants. These were primarily written by the PI, but our senior scientists, rare postdoc/mentored by the PI, and colleagues (in house) also contributed grant funds to cover the lab's support.
Stefanie	Milam	NASA Goddard Space Flight Center	Spectroscopy of Planetary Ices - Infrared to Submillimeter of ices and sublimating species (radiation and thermal processing)	These data provide spectroscopic constants for ice features identified with spacecraft (e.g. Cassini, Herschel, JWST, SOFIA) as well as other ground-based facilities (e.g. ALMA, Keck).	Research is not presently supported, but has been supported in the past three years	CDAP		Technical support is maintained through a post-doc and/or on a "as needed" contract. This is funded through ROSES and is not sustainable.	This lab is co-managed by Milam and C. Anderson (GSFC). We are currently supporting two post-docs through soft money and the NPP program.

Tim	McCoy	Smithsonian	(1) Deltech 1 atm gas mixing, (2) Electron microprobe/SEM	Experimental petrology and sample analyses, including returned samples	Research in this laboratory is currently supported by PSD	Cosmochemistry, Emerging Worlds, Various PSPs and missions	(1) No technical staff, (2) 2 full-time technical staff	Federally-funded positions with service contracts from federal/endowed funds	
Catherine	Dukes	University of Virginia	In the Laboratory for Astrophysics and Surface Physics (LASP-UVa) we study the interaction of energetic particles (ions, electrons) and photons with planetary-type surfaces (ices, lunar soils, meteorites, and minerals). Surfaces and ejecta are characterized by a large number of techniques including optical reflectance and transmission spectroscopies (UV-Vis-IR), mass spectrometry, micro-balance mass measurements, X-ray photoelectron spectroscopy, Auger electron spectroscopy, secondary ion mass spectrometry, and temperature programed desorption, etc. Our objective to to understand the fundamental processes at work in the solar system and interstellar medium by laboratory measurements in combination with astronomical observations.	Within LASP-UVa we focus primarily on the chemical and physical evolution and modification of planetary surfaces and atmospheres by incident solar or magnetosphere radiation, temperature, and pressure. Our work generally falls under the Research Focus Area for NASA's Science Objective 1: Study the processes that determine the characteristics of bodies in our Solar System and how these processes operate and interact.	Research in this laboratory is currently supported by PSD	Solar System Workings (SSW), Lunar Advanced Science and Exploration Research (LASER), Outer Planets Research (OPR), Cosmochemistry (Cosmo), Planetary Atmospheres (PATM), NESSF	One visiting scientist and one post-doc	No permanent technical staff is supported. Transient technical staff is utilized (along with PI) to maintain equipment and train students / post-docs. All staff is supported 100% by NASA PSD grants. We are unable to hire permanent staff as NASA funding fluctuates by year (the PI also provides non-NASA materials characterization to groups within UVa which contributes a fraction of salary when necessary).	The stability and productivity of LASP would be greatly enhanced by longer-term (5 - 10 year) funding of one or two permanent laboratory technical staff members. The tenuous nature of supporting staff on 3-year grants (particularly at the realistic 25 - 30 % level per grant) makes it difficult to retain good professional researchers and technicians, who require positions of greater stability as they move toward retirement. The university system is not set up to retain individuals for periods of time between grants, so long-time employees are frequently lost (to NASA, SWRI, post-docs, other) during periods of decreased funding. Help!!
Brian	Drouin	California Institute of Technology, Jet Propulsion Laboratory	Molecular Spectroscopy Laboratory	Spectroscopic characterization of gases, development of in situ gas sensors	Research in this laboratory is currently supported by PSD	PICASSO, Planetary Atmospheres, ASTID, Origins, Outer Planets	We have 3 Research Scientists, 1 Postdoctoral Scholar and 1 Technician.	Work is primarily ROSES, spread across directorates, with astrophysics, planetary and earth science waxing or waning in any given year. It has been sustainable as long as there is some instrument development in addition to the scientific measurements.	
Mihaly	Horanyi	University of Colorado	Dust Accelerator Facility	The setup enables the study the effects of hypervelocity (v >> 1 km/s) dust impacts into solid, ice, and gas targets,and to test and calibrate space instruments.	Research in this laboratory is currently supported by PSD	NASA NLSI and now SSERVI	1 FTA Professional Research Associate (PRA) to maintain the accelerator, 3 additional coinvestigators with partial academic appointments.	A combination of NASA funds and user fees.	The critical longterm employment of our dedicated PRA remains the biggest concern, as sustainability depends on our continual success in securing funds. We do not have - and cannot build up - any reserves that would enable us to go though funding gaps. In addition to securing a minimal level of continued base funding, the possibility of building up reserves, that carry over beyond the period of funding particular projects, could be very helpful to increase the stability of our lab.
Konstantinos	Kalogerakis	SRI International	Laboratory studies of photochemistry and photophysics applied to planetary atmospheres.	SRI is a not-for-profit research institute in Menlo Park, CA. Several project leaders from its former Molecular Physics Laboratory (MPL) were supported by NASA to perform fundamental laboratory studies of planetary interest. These included kinetics, energy transfer, photochemistry, and other topics. MPL had a long and prestigious history from 1956 until its dissolution two years ago. The lack of funding in the recent years literally decimated the laboratory. Most past PIs either retired, left research entirely, or were laid off due to lack of work. The 3-4 staff left at this point were moved initially to Materials Research and then to another group more relevant to atmospheric science. There is no NASA funding left and minimal NSF funding despite numerous proposal submissions. It is questionable whether it will be possible to recover or stabilize. Given the circumstances, there exists little chance that young scientists can enter the field and survive in such soft money positions.	Research is not presently supported, but has been supported in the past three years	Mars Fundamental Research, Outer Planets Research, Planetary Atmospheres, Geospace Science (ITM SR&T)	1) Two senior PIs presently at half time, who plan to convert to temporary hourly later in the year due to lack of projects; 2) Two mid-career level PIs, still at full-time but with little prospect of being fully employed in 2017 (after at least consecutive 15 proposal declinations in 2014 and 2015), already taking additional vacation and leave without pay, and working part of their time on other projects outside of planetary or atmospheric science. 3) One postdoc who cannot be fully supported by our limited projects and covers half of her time working in a biomedical optics project in SRI's Life Sciences Division. 4) One technician, who converted from full-time to half-time employment, and now is a temporary hourly employee without health insurance or other benefits.	Soft money---this does not seem sustainable at all under the current circumstances.	Indeed, laboratory studies have been hit hard, maybe in part due to their somewhat more peripheral, "support" role. A similar situation has occurred with ab initio theoretical studies (maybe even worse than laboratory studies). This situation has been a problem not just for NASA, but NSF just as well. I recently looked into some relevant information for an NSF Portfolio Review in Atmospheric Sciences. The number of projects in the NSF Aeronomy Program (upper atmospheric science) dropped by roughly 15% between the two 12-year periods 1991-2002 and 2003-2014. In the very same two 12-year periods, the combined number of projects in theoretical and laboratory aeronomy projects awarded by NSF Aeronomy dropped by a factor of no less than five! Nobody has been able renew a project in laboratory aeronomy at NSF. The two most successful laboratory aeronomy PIs for NSF Aeronomy in the period 2003-2014 managed to get funded twice in a decade. The difference in our experience with NASA in the recent past has been that one cannot even get a project funded at all, let alone hoping to renew it later...
Timothy	Glotch	Stony Brook University	Infrared emissivity (ambient and simulated lunar/asteroid environment), reflectance, micro-FTIR, and micro-Raman	Infrared measurements support quantitative remote sensing investigations of Earth, Mars and the Moon. Micro-FTIR and micro-Raman measurements conducted on martian, lunar, and analog materials to understand details of impact shock and other processes.	Research in this laboratory is currently supported by PSD	SSERVI, SSW, PG&G, MFRP, LASER	Part time undergraduate for sample preparation and measurements. Graduate students paid with PSD grant money mostly conduct all of their own measurements.	Hourly or per sample charges for institutional, outside academic, or industrial users. This is semi-sustainable, and depends primarily on the volume of industrial work, for which we charge more. I run a deficit, but for now the university tolerates that.	A dedicated pot of money for laboratory technical support staff would be most welcome, especially as we work to acquire new and more complicated instrumentation that requires constant support and supervision of graduate students.

Matthew	Chojnacki	Lunar and Planetary Laboratory	HiRISE Operations Center Photogrammetry: Here, we extract digital terrain models and orthoimages from HiRISE stereo pairs for team members and the community for PDS release. More informations can be found at http://www.uahirise.org//dtm/about.php	We produce and host HiRISE DTMs for the PDS. Examples can be found at http://www.uahirise.org//dtm/	Not sure, but I do not think so. We are primarily funded by the MRO mission.	Not sure, but I do not think so. We are primarily funded by the MRO mission.	Two professional management staff, five undergraduate technicians, and two support staff.		
Tim	Grove	M.I.T.	(2 labs) experimental petrology and electron microprobe	studies to understand early planetary differentiation and melting within planets	Also support from NSF	Emerging Worlds	no staff in experimental lab, one scientist in the electron microprobe lab	we charge ourselves and other MIT users for electron probe usage - not really sustainable	
Kevin	McKeegan	UCLA	Ion microprobes (1270, 1290) and MegaSIMS. Samples studied include meteorites, cosmic dust, solar wind, lunar, martian, comet dust, impact spherules.	Research in support of missions: Genesis, Stardust, Apollo. Studies of early solar system chronology, lunar chronology, stable isotope anomalies in primitive solar system materials. Isotopic composition of the Sun. Students and postdocs trained in our lab have gone on to faculty positions, and have led their own ion probe laboratories in the US and abroad. We developed the first large radius CAMECA ion probe (1270), which led to newer instruments (ims 1280) supported by NASA programs.	Research in this laboratory is currently supported by PSD	partial support from Emerging Worlds. Existing grant from LARS is ending. Most of lab support is derived from NSF and user facility. The lab is not currently funded for meteorite research.	We are a national facility, supported partially by NSF Instrumentation and Facilities program. We have one lab manager (PhD level); 2 postdocs; one senior electronics engineer, one apprentice electronics technician, several graduate students. We have 2 other postdocs supported by NSF who use the laboratory. We are in danger of losing one postdoc and our senior engineer due to funding shortfalls.	Most lab support is derived from NSF and a significant portion comes from user fees. We have made the facility available to NASA projects, mostly on a collaborative basis. The PI had Cosmochemistry funding that made this possible (in addition to the PI projects proposed and supported by Cosmochemistry). We have been a facility for 20 years, and NASA research has benefited from this stable resource. The current level of support from Emerging Worlds will not enable this level of scientific contribution to be sustained; currently it only funds a postdoc and none of the long-term professional staff.	Many NASA programs have benefited directly or indirectly from the infrastructure (technical and human) developed over a long period of time by this laboratory. This includes not just "cosmochemistry" labelled research, but also a great deal of astrobiology (e.g., early Earth life, martian samples analysis, isotopic analysis of organic matter from primitive samples, etc.). It is penny-wise and pound-foolish to cut the R&A programs that provide scientific rationale for exploration missions. The scientific return from sample analysis is highly cost effective compared to almost all missions and continued support is necessary to ensure training and career opportunities for future generations.
George Cooper	Cooper	NASA-Ames	Exobiology. The analysis of meteorite organic compounds.	Aids NASA's goal of understanding the possible building blocks in the origin of life.	Research in this laboratory is currently supported by PSD	Exobiology	Five - A young researcher (just finished postdoc), two post bachelors and two undergraduate students.	None/No	
gregory	herzog	rutgers university	Chemistry lab and participation in work of argon lab	NASA funded research since 1981	Research in this laboratory is currently supported by PSD	cosmochemistry, origins, stardust ddap	two	post-doc funding; not sustainable without continued NASA support	Any working lab depends on continuity; cut off funds for a year and machines will be shut down and personnel will leave or turn their attention to other subjects. This situation is likely to occur at Rutgers.
Nancy	Chabot	APL	experimental geochemistry	experiments to understand core formation and core evolution; analysis of meteorite samples	Research in this laboratory is currently supported by PSD	Cosmochemistry, Emerging Worlds	0	I don't have any funds to support technical support	Equipment in the lab includes items purchased under the PME program.
Tim Swindle	Swindle	University of Arizona	Noble gas mass spectrometry	Research into chronology of lunar samples and meteorites through Ar-Ar and I-Xe dating; investigation of the evolution of atmospheres through the measurement of noble gas isotopes in Martian meteorites	Research in this laboratory is currently supported by PSD	Cosmochemistry, SSERVI	1 lab manager, 1 grad student	Grants, plus contract Ar-Ar analyses; barely sustainable (lab manager is not full-time)	It has never been possible to get enough support from NASA to have a lab manager and to devote the laboratory solely to NASA projects. So it has always been either shared with other scientists on campus, or there have been analyses done on contract.
Barbara	Cohen	NASA Marshall	Noble-gas lab	Noble-gas analysis for geochronology, cosmic ray exposure, and noble-gas inventories of planetary materials	Research in this laboratory is currently supported by PSD	Solar System Workings	Lab Senior Scientist / Manager/Technician - one person responsible for day-to-day maintenance and analysis	We pay a contractor (through University of Alabama) via competed support. It took 3 tries for this to be successful (3 proposal resubmits). In my view this is not sustainable. We had a gap when we could not fund the person, which hinders science, which works against a successful proposal the next year, etc.	We have worked with Jonathan Rall to implement the SERA model for funding, which also includes overhead costs for the lab, and part of a "floating" technician we share among labs. SERA will also extend our lab manager through 5 years (SSW + 2 years). We still have to propose for sample-specific costs, like microbeam analysis, etc. This is really great for stability in the lab. Since our mission is to do noble gas analysis partly along our own interests and partly for the NASA community of scientists, this mix of competed and directed funding works really well for us and we are grateful to be funded this way.
Robert	Hodyss	JPL	Cryogenic chemistry and physics, spectroscopy	studies of icy moon surface physical and chemical properties	Research in this laboratory is currently supported by PSD	OPR, SSW, ASTID	1 part time technical staff for routine laboratory work	staff funding comes from grant awards; only sustainable at a low level	
Paul	Steffes	Georgia Institute of Technology	Facility for laboratory measurement of the microwave and millimeter - wavelength properties of simulated planetary atmospheres. This includes a range of temperatures from 150-700K, and pressures from 20 mBars to 100 Bars.	Results from this laboratory have been directly applied to interpretation of atmospheric data obtained from radioscientific and radio emission measurements conducted with Mariner, Voyager, Pioneer Venus, Magellan, Venus Express, Cassini missions, and the (upcoming) Juno mission. Laboratory results have also been applied to observations of planetary atmospheres taken with earth-based radio telescopes.	Research in this laboratory is currently supported by PSD	Planetary Atmospheres (now terminated) and Juno mission science.	1-3 graduate students. (Currently only 1, since PATM support has terminated and no funding received (yet) from SSW.	Because of the small levels of support, this lab has always been supported by graduate students. However, even that level of support has become hard to maintain.	

Mark	Cintala	NASA Johnson Space Center	The Experimental Impact Laboratory includes a flat-plate accelerator (for shock-recovery experiments), a vertical gun (for cratering, disruption, etc., experiments), and a light-gas gun (for a wide range of experiments requiring very high speed [>4 km/s or so] projectiles). The laboratory includes a wide range of support equipment (e.g., a machine shop) and instrumentation.	This laboratory has enabled a wide range of experiments for both NASA and non-NASA investigators. Topics have been as varied as testing and certifying aerogels for the Stardust Mission; cratering experiments in materials from sands to ices; determining the effects of shock on visible/near-IR reflectance and far-IR spectra; developing, testing, and refining crater-scaling relationships; examining the effect of impact in the generation and evolution of planetary and cometary regoliths; and many others.	Research is not presently supported, but has been supported in the past three years	PG&G	Two gunners/machinists, who are responsible for operating and maintaining all three accelerators, the vacuum systems, and associated laboratory equipment (machine tools, freezers, ovens, electronics, etc.).	We are required to raise all of this funding through competitive, peer-reviewed proposals to NASA. Given the new trend of ~20% selection rates, this is hardly a guaranteed thing. So, this situation requires more time be spent in writing proposals to increase the chances that some funding will be obtained. Realistically, however, no single such proposal can provide all of the expenses needed to operate the lab.	Thank you for asking for our input. Given that our laboratory is used by so many different investigators, we have been trying for more than 30 years, off and on, to get some sort of proposal-independent, consistent funding for it. Unfortunately, management has never been able to find a way to provide that sort of support. Hopefully, this will be a huge step in helping to remedy the situation.
Daniel	Savin	Columbia University	We have a laboratory where we can generate beams of protons and helium to simulate the solar wind.	We aim to simulate solar wind ion irradiation of regolith-like loose powders. No laboratory in the world is currently capable of irradiating loose powders. These studies are critical to understanding how spectral reflectance of regolith-coated airless bodies changes as a function of solar wind fluence and for how sputtering can produce planetary exospheres (i.e., on Mercury and the Moon).	We are seeking support from PSD to modify our facility to simulate solar wind ion irradiation of regolith-like loose powders.	We have not yet been funded by PSD.	We require one dedicated scientist to build and run the desired facility.	The technical staff is a Ph.D. scientist who will take the lead on building the apparatus, carrying out the proposed measurements, analyzing the data, and writing the results up for publication.	
Gregory	Smith	SRI Internationa;	Laser measurements of low temperature (140-300K) kinetic rate constants, including theoretical calculations for extrapolation to lower pressures and temperatures, and the mechanisms of high altitude aeronomy and auroral emissions of excited states.	Results are used to model and interpret atmosphere species observations and understand the complex photochemistry. Also relevant to possible exoplanet atmospheres, and aurora.	Research is not presently supported, but has been supported in the past three years	Planetary Atmospheres	postdoctoral and undergraduate researchers	not for profit contract R&D	Due to lack of funding our lab and its capabilities are in danger of disappearing. Proposals have received reviews placing them just on the edge of acceptance, E/VG, so we believe this would be a direct result of undersupport of this vital area.
Natasha	Johnson	NASA Goddard Space Flight Center	Goddard Small Venus Pressure Chamber	Allows short term testing of high T/P components or mineralogy experiments	initiated > 6yrs ago	general fund and Venus program (again > 6 years ago)	grad student who is now graduating	soft money from ROSES; possibly sustainable on a pay to use basis.	
Janice	Bishop	SETI Institute	Mars analog characterization; VNIR reflectance spectroscopy	Measuring VNIR spectra of minerals, rocks, Mars analogs, salts, mixtures and alteration products in order to create spectral database for detecting these components on Mars and other solar system bodies.	Research in this laboratory is currently supported by PSD	MFR, PGG, EXO, SSW	2 part-time students and 1 part-time research associate	Current = partial support on research grants. We have concerns about funding the team in the future given constraints on NASA research funding going forward.	Allowing for larger $ amounts for research grants and providing more funds in general for research is essential to keep our lab work in line with the missions. Interpreting mission data relies heavily on this lab work. Frequently it occurs that mission data is only fully understood years after acquisition because lab research is underfunded by NASA.
David	Draper	NASA Johnson Space Center	I lead a collection of experimental and analytical labs at JSC.	Our work centers on the origins of rocky objects in the solar system, especially the Moon, Mars, asteroids, comets, and dust.	We have a long track record of PSD support but have suffered very low success rates in recent years.	(Old structure) Cosmochem, MFR, LASER, PG&G, LARS, Origins. (New structure) Emerging Worlds, SSW, LARS, PDART, Habitable Worlds.	Our labs employ ~20 scientist and technician staff (number fluctuates over time)	Support staff funded solely through competitive R&A awards. Recent changes to R&A structure and imposed 20% success rates have been very damaging; we cannot sustain the support we need with this model.	I applaud the PSS and PSD for seeking this type of information and am ready to assist any way I can.
Paul	Niles	NASA Johnson Space Center	Light Stable Isotope Laboratory	Funded and located on NASA center	Research in this laboratory is currently supported by PSD	Habitable Worlds	1 part time technician/scientist, 1 grad student, 1 postdoc	Technical support is provided via contract with NASA JSC. This is funded partly through R&A grants. 100% coverage is not typical and requires some center level support. This is not currently sustainable in the sense that the center level support is different from year to year.	Typical 3 year R&A proposals are not a reliable or sustainable means for supporting a laboratory at a NASA center. There is strong pressure to make grants cost-competitive and this means that technical support gets reduced to preserve student/post doc labor. Also the size of research grants means that several (>2) are required to support even a modest laboratory. Keeping 3 or more grants funded continuously may be possible for some, but requires unreasonable amounts of effort on the proposal writing side which significantly reduces the amount of work available for doing research.
Meenakshi	Wadhwa	Arizona State University	The Isotope Cosmochemistry and Geochronology Laboratory (ICGL) at ASU is equipped with a Thermo Neptune multicollector inductively coupled plasma mass spectrometer (MC-ICPMS) and an excimer laser ablation system; the ICGL additionally has an associated clean laboratory for ultra low-blank sample preparation.	Research in the ICGL is focused on isotopic and geochemical analyses of planetary materials using state-of-the-art techniques. This work provides new insights into the processes and time scales involved in the formation histories of the earliest solids, the accretion and differentiation histories of planetesimals, and the origin and evolution of planetary bodies such as Moon and Mars. As such, the work directly addresses the strategic science objective of NASA's PSD to "as-certain the content, origin, and evolution of the solar system..."	Research in this laboratory is currently supported by PSD	Emerging Worlds; Cosmochemistry; Origins of Solar Systems; LASER	Laboratory Manager	Thus far, the Laboratory's Manager's salary has been funded from the following sources: 9 months salary is covered by ASU (this position has been renewed annually by ASU since 2006). As such, only 3 months of salary needs to be raised from other sources -- 2 months salary is currently supported by NASA Emerging Worlds program (since 2015; prior to that this was supported by NASA Cosmochemistry program), and 1 month is from other sources.	I have been relatively fortunate thus far since ASU supports a large fraction (9 months) of my Lab Manager's salary and this position has been renewed annually. As such, the burden to NASA R & A programs has so far been minimal for support personnel for my lab. However, with increasing budgetary constraints at state universities such as ASU, it is unclear whether ASU will continue to support this position to the level that it has been in the past.
Andrew	Davis	The University of Chicago	CHILI (a novel resonance ionization mass spectrometer) and a FIB/FESEM with EDS, WDS, EBSD	Isotopic and chemical analysis of meteorites and their components; lunar samples; IDPs; cometary and interstellar dust from the Stardust mission; solar wind from the Genesis mission	Research in this laboratory is currently supported by PSD	Cosmochemistry, Laboratory Analysis of Returned Samples	1 Senior Scientist, 1 Research Scientist	For CHILI, direct support from NASA, since this is a new technique and it is currently not possible to establish a daily fee. As for the FIB/FESEM, it is new and will be supported by user fees; this is expected to be sustainable.	

Will	Grundy	Lowell Observatory	Cryogenic ice lab at Northern Arizona University	We measure various properties of cryogenic materials (pure species, and also mixtures and alloys) found on outer solar system bodies. Primarily, we focus on their near-IR optical constants for use in remote sensing applications, but we are interested in measuring other material properties, too.	Research in this laboratory is currently supported by PSD	Originally OPRP, now SSW.	None. All such tasks fall to the PI or various postdocs and students. This distracts us from our other work, but the time commitment required is modest enough not to be a major problem. There may even be some pedagogical benefit in training successive generations of students to be able to do these tasks.	There is no such support, but so far, we have been doing OK without it.	Small labs like ours may not really need a full-time support person. Maintenance/support type tasks can generally be folded into normal operations.
Rhonda	Stroud	Naval Research Laboratory	High-resolution, analytical electron microscopy facility	We carry out coordinated analysis of planetary materials (returned samples, meteorites, and laboratory analogs) at scales of micrometers to single atoms to better constrain the building blocks of the solar system and the processes leading up and continuing into the early solar system. We have the most sensitive electron microscope for carrying analysis of planetary materials.	Research in this laboratory is currently supported by PSD	Cosmochemistry, Origins, EW, LARS, SSERVI, Astrobiology	3 (two for nanoscience center facility that houses electron microscope, 1 dedicated to electron microscopes)	2 facility managers for entire nanoscience enter are support by the institution; 1 electron microscope support person derives salary through charging hours back to individual projects relying on microscope, ~ 1/3 are PSD project; 2/3 other sources.	The total operating cost of the facility also includes lab space charges, service contract costs, and consumable parts. The service contract costs are split across all internal and externally funded projects making use of the microscope.
Stephen	Mojzsis	University of Colorado Boulder	Early Earth and Planetary Geology Laboratory	Supported directly by Cosmochemistry Program, some (small) support from Exobiology. Over the years, laboratory support for geochemical studies and field work has dried-up from NASA.	Research in this laboratory is currently supported by PSD	Cosmochemistry (now called "Planetary Workings") supports the lab, in part.	One Research Faculty funded by Cosmochemistry & private foundation	Mixed NASA and private money support. NASA support is not a reliable funding stream.	Not clear what the purpose of this is, but I hope it helps, somehow.
Kenneth	Nealson	Univ. S. California	Environmental Microbiology, molecular ecology, microbial physiology	Working on deep subsurface organisms and metabolic innovations	Research in this laboratory is currently supported by PSD	Astrobiology Institute, Exobiology	Lab manager/microbiologist	All staff (and students) supported by grants -- so far it works	In my opinion, NASA lab facilities need upgrading to allow for new things, not just more of the same for the few well-funded folks
Virginia	Gulick	NASA Ames/ SETI Institute	Mineral, Rock and Biosignature samples lab located at NASA Ames	My lab contains ~1200 minerals, rocks, and also biosignatures in rocks and in lab samples and we are constantly getting more samples. We have a dual excitation Raman instrument and an imaging system used to analyze these samples upclose. There is currently no web accessible co-registered Raman and imaging data of rocks or biosignatures available to the PS community with which compare with upcoming mission data. One of the major goals is to provide this to the community. This will become critical when Mars 2020 and ExoMars start returning Raman data of rocks and sediments from Mars. Another of my goals is to develop automated classifiers to determine what minerals and biosignatures are in the rock samples based on the Raman spectra and image analysis. I have also been working with an instrument developer to develop a dual excitation Raman instrument, with close up imaging capability and with a co-registered IR spectrometer that could also provide IR spectra of these samples as a complementary data set and for possible inclusion into the automated classifiers effort. However, this effort was rejected by PICASSO.	SETI's NAI grant	My lab is partly supported by SETI's NAI grant, but our lab and effort remain largely unfunded	I have the occasional intern(s) funded by NASA OSSI or SETI's REU program that work with me	Currently I have interns work with me in the lab, but they are only there for the Summer or for a semester and not on a regular basis. No I don't see this as sustainable. I really need a more experienced lab tech there at least part time each week. I keep submitting proposals through NASA for funding most recently through PICASSO but my proposals have been rejected three years in a row even thought the reviews seem encouraging.	I'm also in need of a petrographic microscope to further analyze the samples. I had submitted a quote for one in my NAI task through the SETI Institute, but the grant budget was reduced and this instrument was cut from the budget. Hopefully the information provided will be helpful and will result in some assistance. Thank you.
Isik	Kanik	Jet Propulsion Laboratory/Caltech	Two Ultraviolet (UV) Emission Spectroscopy Labs and one Astrobiology (Origin of Life-Hydrothermal Vent simulation) Laboratory	Our UV spectroscopy research labs are equipped to measure fundamental physical parameters which are required to model energy input to planetary atmosphres and support spacecraft observations (Cassini, Maven, Hubble etc). The astrobilogy lab is equipped to investigate rock/water interactions and how serpentinization relates to geochemistry/geobiochemical processes in icy worlds (Europa, Enceladus etc) to understand habitabilty of those environments.	Research in this laboratory is currently supported by PSD	Platenary Atmospheres, Mars Fundamental research and NASA Astrobiology programs	We have a group of 6 staff scientists and 2 postdoctoral fellows and 3 students	About half of the support is comes from support through proposals both external and internal to JPL. Some personnel have administrative duties and/or flight projects support which covers their other halftime support. Support just from technical work (i.e. through proposals) is basically not sustainable especially after reorganization of NASA's planetary research programs last year (i.e many programs have disappeared and for those that are still around under a different name, selection rate is exteremely low (typically 10-12%).	
William	Jackson	University of California	Our laboratory has a slice imaging time of flight mass spectrometer connected to a pulsed molecular beam apparatus with two resonance enhanced tunable VUV lasers. This is the only apparatus of its kind in the world.	This apparatus has been used to measure the branching ratios for the photodissociation of N2 and CO as a function of wavelength in the region below 100 nm. Current work includes measuring similar ratios for O2 to determine the quantum yields for the product distributions in this wavelength region. This is exactly the detailed information needed now and in the future to model data taken about comets, planetary atmospheres, extra solar planets, etc.	NSF		Two PhD's, one is a visiting scientist from China and the other is Research Scientist.	Grants. With the climate for grants it will be difficult to continue to do this.	It has taken years to develop this capability and millions of dollars. Now that we have the ability to collect the information needed for precise modeling of planetary atmospheres it is difficult to obtain funds for this purpose.

Stein	Jacobsen	Harvard University	Cosmochemistry laboratory for high-precision isotope ratio determination and chemical composition measurements of extraterrestrial samples. The lab is equipped with two multicollector thermal ionization mass spectrometers, two multicollector ICP mass spectrometers, one quadrupole ICP mass spectrometer and an electron microprobe. Sample preparation is in a clean chemistry laboratory.	The work in the lab is focused on understanding the formation and early evolution of planetary systems, in particular earthlike planets, and the origin of the Moon.	Research in this laboratory is currently supported by PSD	Emerging worlds (current), Cosmochemistry and Origins of Solar Systems	Two senior scientists, two postdocs, three graduate students	All members of the lab participate in both the research as well as the maintenance of the laboratories. Currently the lab is funded both by NASA and the NNSA, part of the time by NSF and the Harvard Origins Initiative. It is essential to have more than one funding source to support the lab.	
Noriko	Kita	University of Wisconsin-Madion	WiscSIMS Laboratory: NSF funded National Facility for Stable Isotope Geochemistry (since 2008), operating IMS 1280 for high precision stable isotopes.	We use IMS 1280 for the analyses of meteorites and returned samples from space-missions for NASA funded researches of myself and my collaborators.	Research in this laboratory is currently supported by PSD	Cosomochemistry, LARS	NSF supports 1 technician (0.5FTE), 1 Assistant Scientist (0.75FTE), and 2 postdocs (0.5FTE each). There are department electronic engineers (2) and thin section technician (1).	NSF-EAR Facility program supports the technical staff as mentioned above. We support NSF-funded users to use IMS 1280 in the laboratory, but do not run sample analyses as a service. User fee covers consumables, repair, and annual service agreement with manufacture. NSF funded users are supported by NSF-funded technical staffs in the lab. NASA collaborators whom I worked with are assisted by myself, as well as assistant scientists and postdocs who are supported from my NASA programs. From July 2016, there will be additional assistance fees charged to NASA collaborators so I can pay a part of salary of an assistant scientist.	In our lab, we operate 12 hours a day when users come to the lab. One week of session (≥60h) can not be assisted solely by myself. Postdocs and Scientists who are supported from my NASA programs are skilled to operate SIMS. They gain significant experiences from assisting external collaborators with different analytical setting and scientific goals. NSF supported technical staff does not assist NASA-funded user's analyses, because they are paid to support NSF research and they are not trained to run meteorite specific analyses. In the current model, there is no fund available to establish new analytical protocols for external NASA program. Most external collaborators come to either O isotopes or Mg isotope analyses, which have been fully established under my NASA funded programs.
Dimitri A.	Papanastassiou	Caltech and JPL	Isotope Cosmochemistry Labs at JPL; three clean labs for sample preparation, chemistry, and mass spectrometry, using a Triton, thermal ionization instrument. Work on lunar samples and on meteorites.	Funded for more than 45 years by NASA for work on lunar samples (starting with Apollo 11) and meteorites, chronology and isotope effects (mass dependent and non-mass dependent, isotope anomalies, for key elements spanning Mg to U, incl. PGEs by negative ion thermal ionization.	Research is not presently supported, but has been supported in the past three years	Cosmochemistry	Dr. James H. Chen, cosmochemistry; Dr. Henry H. Ngo, radiochemistry; research scientists; no technician support. Declined funding by EW has resulted in these senior scientists being laid off by JPL.	Equipment replacement funds have helped maintain the mass spectrometer; laboratory maintenance at JPL is supported by JPL (for example A/C, hoods, plumbing, and anything "bolted down" is supprted by JPL and not charged to a grant. Science staff was supported by Cosmochemistry. The expanded scope of EW and its reduced funding have made this model not sustainable. But this is obviously a short-sighted and irrational decision by NASA PSD, in an era where sample return missions and sample analysis are the high priority areas, identified by the last two Decadal Surveys.	Key science resulting from the Apollo missions depended on sample analyses include on isotope dating and other isotope effects (oxygen isotopes, neutron capture effects, through Gd, Sm, Cd measurements, etc.). The evolution of the Moon as well as Solar System-wide implications of the Lunar Cataclysm were based on sample analyses. When the EW and SSW Programs were put together, we were told explicitly, "NASA has generated these two bigger funding pots; you may now write larger proposals, which will reduce the amount of time spent writing proposals since an single proposal will fund all your proposed work". This statement was disingenuous. EW was created to include more disciplines but its funding was reduced. NASA PSD made an explicit decision NOT to track funds going to the old disciplines included within EW. At the same time NASA PSD did not address the key issue that peer review in different disciplines did not follow a calibrated model. Hence, funds have flowed freely from more "hard-nosed" disciplines to "softer" and more "gentle" disciplines. For the "hard-nosed" disciplines, this has been the perfect storm, with loss of investigators, with a known, distinguished record of achievement. NASA chose to not address any of the management funding issues or the concerns of the PSD science community. Even the instructions to the newly populated Ad Hoc Committee to review the NASA PSD R&A Re-org, will result in an inability to compare the new with the old. NASA PSD simply states that the old model is "unsustainable". If NASA PSD cannot afford to support and help educate the new generation scientists who will contribute to new NASA missions (especially sample return missions), then NASA should get out of this business. There are always funds to sustain what one defines as sustainable. Currently NASA is in the pursuit of life in the
Sarah	Stewart	U. California Davis	Shock compression laboratory	Fundamental equation of state and rheology measurements on planetary materials to understand planetary impact processes	Research in this laboratory is currently supported by PSD	SSW, PG&G, MFRP	1.5 to 2 full time staff: a senior technician/staff scientist (some have had PhD, some Masters) and an entry-level technician (BA)	At least 3 extramural grants (e.g., from NASA, DOE, DOD) are needed to provide minimal technical support for this laboratory (lab safety is a big concern). Trying to fund the lab 100% from NASA is difficult at best and unwise at least.	Funding technical support has always been the foremost concern in funding my overall research program. When NASA has gaps in continuity of grant proposal cycles (which is basically all the time it seems), it is extremely disruptive and stressful and significantly impacts our ability to be productive scientifically at the level that we desire. *** In other words, NASA's actual funding implementation negatively impacts the productivity of NASA's research community. *** My personal solution (which would not work for everyone) is to diversify my research portfolio to include other federal agencies and not rely upon NASA for full funding.

Larry	Nittler	Carnegie Institution of Washington	Cameca NanoSIMS 50L ion microprobe; JEOL 6500F FE-SEM	Research in planetary materials (presolar grains and other chondrite components, interplanetary dust particles, Stardust and Genesis samples, lunar and martian samples/meteorites). Directly relevant to EW, LARS, SSW, SSERVI programs	Research in this laboratory is currently supported by PSD	Cosmochemistry (now EW), Origins of Solar Systems (now EW)	one lab manager	We have strong institutional support for both lab manager and service contracts for SIMS and SEM, but rely on federal grants from NASA and NSF to fully fund both. Currently sustainable, but annual increases in service contract costs are driving increasing reliance on federal grants for partial support	
Angela	Stickle	JHU APL	Planetary impact laboratory, including a 1-stage gas gun and ejecta catapult.	Studying the formation of impact craters from basic physics (gun experiments and ejecta emplacement processes) to more applied impact problems such as momentum enhancement to asteroids or disruption experiments. We can also do materials studies at high rates and pressures to better constrain material models going into impact codes.	We have not yet been supported for the gun through PSD at all; the catapult was built from an MFRP grant	MFRP	4-5 APL scientists doing impact work using the gas gun and 1-2 JHU graduate students	We rely heavily on PSD grants to support our work in the lab. Currently we are underfunded for lab work.	
Lindsay	Keller	NASA Johnson Space Center	I manage the Electron Beam Analysis Labs with 2 TEMs, 2 SEMs, 2 electron microprobes, and a FIB.	We support numerous PIs both inside and outside JSC who are funded by various PSD programs	Research in this laboratory is currently supported by PSD	EW, SSW, Habitable Worlds, SSERVI,	6 contractor support staff that oversee operation and training, but also perform analyses and independent research.	My lab charges a user fee to support the technical staff, purchase consumables, and when we can afford it, service contracts (because big expensive instruments break...). Sustainability is questionable - with falling success rates in research proposals, PIs are cutting back on their lab use, service contracts in my lab is essential and they are getting increasingly more expensive (half of my operating budget), and we have already been forced recently to cut back on the amount of service.	
Friedrich	Horz	NASA Johnson Space Center; ARES	Experimental Impact Laboratory	Investigate the geologic effects of hyper-velocity impact, such as cratering mechanics, shock metamorphism, regolith dynamics etc.; support interested users from the outside community	Research in this laboratory is currently supported by PSD	SSW	2 technical support personnel, i.e. skilled machinists and experienced in electronics to support high speed diagnostic gear.	I do not totally understand this question, yet a safety requirement imposed by NASA mandates that the lab is manned by 2 persons during gun-operations.	I built and managed this lab for 35 years, but I am formally retired from NASA and Dr. Mark Cintala is now Lab Manager; he may already have responded to this survey-call. Nevertheless, I (!) still use this lab with a PGG-funded project and I am in the process to write a proposal to NASA's Exobiology program for continued funding. The laboratory is underfunded in my view; fiscal reality dictates that the 2 laboratory technicians be shared with other labs and projects, i.e. are essentially the department machinists part of their time.
Bethany	Ehlmann	Caltech	Facility for IR spectroscopy for earth and planetary sciences: VSWIR microimaging spectroscopy and outcrop-scale imaging spectroscopy (a unique capability, to my knowledge), VSWIR+MIR reflectance, SWIR+MIR emission, VSWIR goniometry (i,e angle 5-80deg, out-of-plane supported), VSWIR spectroscopy under non-oxidative conditions	Provides fundamental data on the spectroscopic properties of relevant materials to support interpretation of reflectance and emission data from spacecraft; goniometry for study of phase function effects; imaging spectroscopy at outcrop-scale to support compositional stratigraphy and next generation lander/rover instruments, imaging spectroscopy at microscopic scale for non-destructive petrologic investigations, including meteorite studies that can be directly related to telescopic/spacecraft data)	Research in this laboratory is currently supported by PSD	MFRP (planetary major equipment grant for imaging spectrometer); SSW (PI on newly funded proposal to characterize FeII/FeIII/Mg phyllosilicates) MFRP (Co-I on proposal to synthesize and spectrally characterize alunite-jarosite)	0	Lab is underutilized due to lack of technical staff. Under the NASA grants, I have ~25% technician support funded for the specific project work (and it is sufficient for those projects), but this has so far been insufficient to leverage to garner an appropriate staff member for the long term. Typically these funds have been used to support my graduate students or a summer ugrad to make the measurements, and then I do the complex instrument building and maintenance myself. On occasion, I have had postdocs help with discrete tasks for one instrument but noone other than me is an expert on all. I would institute a fee system to allow outsiders to make measurements, but cannot do this until I have a tech in place (no time for me to personally do measurements). I'm not sure if the revenue generated to then fund the tech would be closer to 0% FTE or 50% FTE. It is a chicken and egg problem.	see above. NASA support of technical personnel for technical facilities would be appreciated. The structure for doing so is challenging for me to conceive. Perhaps a model is to trade non-project-specific support for a certain number of samples/hours of measurements from other NASA investigators who may not have their own lab facilities.
Carle	Pieters	Brown Univeristy	I (and my students) have high quality spectroscopic measurements of samples measured in RELAB, a NASA supported facility.	All research is peer-reviewed in the appropriate PDS program. Only the laboratory operations and maintenance is supported as a facility, and data are supplied to NASA users without charge. The type and quality of laboratory spectroscopic measurements obtained at RELAB provide fundamental interpretative information for research and analysis that is enabled with data from modern spectroscopic instruments on NASA exploration missions or on telescopes.	As discussed above, the research is supported separate from the facility.	[PSD Facilities]	One experienced technical operator/manager; one part-time engineer (maintenance and upgrades)	The RELAB operations and technical support is funded directly as a facility, with no charge to users (funded separately through R&A; students). The facility itself is reviewed periodically and normally has a group of external advisors. To add an additional layer of bookkeeping and distributed charges to users increases the total cost and decreases the stability of the facility.	I would be happy to provide any further background. Previously I was the Science Manager of RELAB for several years; Ralph Milliken is the current Science Manager.

Timothy	Livengood	University of Maryland (situated at GSFC)	infrared spectroscopy laboratory for planetary atmospheres	instrument development, instrument operations, laboratory measurements	At least a decade since we had lab funding	planetary atmospheres and planetary astronomy	CS engineer (often), CS scientist (occasionally), 3 scientists on co-op agreements (occasionally)	Divert from other tasks. Not sustainable. We are in survival mode, trying to last until laboratory programs are funded once again.	The question that was asked was about labs supported by PSD. The problem is all the labs that are not supported by PSD but ought to be or once were, quite a while ago. We have not had steady money to run our lab at Goddard for a decade or more. What money we get is targeted for specific narrow scientific projects and is way too tight to provide the sort of general fund that is needed for a lab to stay nimble and to take on new projects and develop background material to support entry into new arenas (for instance: we really ought to be the premier lab for high resolution gas phase spectroscopy). We limp from field observation to field observation but there's not much support for lab measurements or instrument refinement and upgrade in between these events. In general, labs at NASA centers are pitifully behind the times unless they have gotten an infusion from association with a mission. Go too long without such an infusion, and you are simply too antiquated to be a player on any new mission. Chemistry laboratories (our neighbors) get packed into storage until the PI can get a funding proposal to justify pulling their increasingly elderly equipment out of storage and bumping the next poor bastard into limbo. We are starved for reliable support, and the disastrous effects are obvious and wholly predictable.
Farid	Salama	NASA Ames Research Center	The COSmIC Laboratory is located in the Space Science Astrophysics Branch and supports NASA's space science missions and programs. We study the physical and chemical properties of interstellar, cometary, planetary and lunar materials. Among the materials studied are interstellar polycyclic aromatic hydrocarbons (PAHs), aerosols in planetary atmospheres (Titan), ice mantles on interstellar grains and surface ices on comets and on solar system planets. Interstellar and planetary material analogs are produced in simulation chambers under conditions realistically close to space environments and range from molecules and ions in gas-phase interstellar clouds and planetary atmospheres to interstellar, cometary, and planetary ices and dust. COSmIC combines the techniques of matrix isolation spectroscopy (MIS), cavity ringdown spectroscopy (CRDS), pulsed discharge nozzle (PDN) free jet expansion, Reflectron time-of-flight mass spectrometry (ReTOF-MS) and and Scanning electron Microscopy (SEM) to produce and to study and characterize interstellar and planetary analogs. The data generated in the laboratory are compared to astronomical	Research in COSmIC supports PSD through the Titan Haze Simulation (THS) program that is supported by PSD. COSmIC is unique in the sense that it provides data on Titan aerosol analogs formed at low temperature. Titan's atmospheric chemistry is simulated by a pulsed plasma jet expansion at temperature conditions (~150 K) close to those found in Titan's atmosphere in regions where aerosols are formed. The potential of COSmIC/THS for the simulation of Titan's atmospheric chemistry was recently illustrated by successfully comparing the laboratory data to data from the Cassini Ion Neutral Mass Spectrometer (INMS) and Plasma Spectrometer–Ion Beam Spectrometer (CAPS–IBS) instruments.	Research in this laboratory is currently supported by PSD	Solar System Workings (SSW) Program	None - A highly skilled Technician retired earlier this year and is not replaced. This senior technician provided invaluable support to the laboratory.	The current model relies on the availability of R&A funds to support Technical Support on a case-by-case basis. This system is definitely NOT sustainable. It doe snot take into account the need for basic (base-line) support to maintain a laboratory running (instruments maintenance and repairs, lab facilities (dry air, water, electrical connections, etc...).	Planetary and astrophysics laboratory needs increased, stable support for hardware renewal, maintenance and repair. I've been involved in laboratory astrophysics for over 25 years during I have set up and developed a variety of laboratory facilities within NASA to support NASA space missions. I have provided continuous assessments over the past years through my activity with the AAS Laboratory Astrophysics Division (https://lad.aas.org/) and my contribution to the 2010 decadal survey. I support the efforts of the PSS and I'll be happy to provide more feedback if necessary.
Lon	Hood	University of Arizona	Part of Lunar and Planetary Laboratory	Analyze and interpret planetary crustal magnetic fields (Moon, Mars, Mercury)	Research is not presently supported, but has been supported in the past three years	Lunar Advanced Science and Exploration Research (LASER)	None	Research and Analysis Grants; not dependable enough to be sustainable	More funding and a higher percent success rate for R and A grants is needed.

Christopher	Hamilton	University of Arizona	Terrestrial analog laboratory, with staff scientist support for photogrammetry and machine learning tasks.	The terrestrial analog laboratory combines remote sensing with field-based studies to inform geophysical models of planetary surface processes. This is relevant to NASA strategic goals of planetary exploration and understanding the evolution of planetary surfaces and environments.	Research in this laboratory is currently supported by PSD	Planetary Geology and Geophsyics, Mars Data Analysis, Outer Planets Research, and Solar System Workings.	In addition to myself, post-doctoral researchers, graduate and undergraduate students, the laboratory includes two staff scientists specializing in photogrammetry and machine learning techniques as a basis for quantitative geomorphological studies and data-mining.	Currently, funding has been obtained though partial support from a number of grants, combined with cost sharing stategies that involve ovarian partial support for staff scientists who fill gaps in larger projects and though teaching topical courses.	Staff scientists are unlike post-docs in that they typically strive for longer-term positions within an institution to provide the stability for themselves and their families, whereas post-docs generally accept that a position is for a limited period of time (e.g., 1 to 3 years). Staff scientists provide a valuable support role, but also differ from other "soft money" scientists in that they tend to furfill technical roles and are less inclined to lead their own grants as a PI. As such it becomes a challenge for their supervisors to obtain full funding support for them by cobbling together funds from multiple sources. Ideally, a funding source would be available to that could provide base-funding support for staff scientists, as they are often a vital part of a lab and add value to numerous projects, allowing more to be accomplished on a single grant than would otherwise be possible do their their high level of experience and expertise. Restarting training with new students or post-docs for each project greatly reduces the efficiency of a project's work flow and therefore including staff scientists with a lab is a vital to maximize the scientific return from NASA funding sources.
David	Kring	Lunar and Planetary Laboratory	Impact Cratering Laboratory	This laboratory provides petrologic analyses of terrestrial, lunar, and meteoritic samples of impact melts and impact melt breccias. The terrestrial samples analyses are an essential component of the laboratory's work, as it provide "geologic reality" in well-known context that adds significant confidence to interpretations of impact craters and impact-modified surfaces elsewhere in the Solar System. That work has implication, for example, for the collisional evolution of the Solar System and places sharp constraints on the dynamical processes that shaped them. That work also influences a number of astrobiological issues, such as the production of impact-generated hydrothermal systems which are potentially habitats for early life. Currently, the laboratory is supported through a SSERVI cooperative agreement; complementary analytical instruments at JSC are also used. Independent reports of those laboratories are, presumably, being generated by JSC PIs.	Research in this laboratory is currently supported by PSD	SSERVI	No technical support staff; work is conducted by the PI and two postdocs.	n/a	It is important to guard against misleading indicators when evaluating scientific merit. I give two examples of misleading indicators. (a) Be wary of the effects of start-up barriers. It is much easier for someone to propose an analysis of planetary images with a $2k desktop computer than it is to propose an analysis of a Mars meteorite with a $350k laboratory instrument. Thus, NASA may receive a larger number of proposals to do the former, which may only be reflecting lower start-up costs rather than a higher quality or greater importance of the science to be generated. That type of proposal pressure can drive NASA away from analytical projects and choke the system with computational modeling. Computational modeling is essential, but it should not overwhelm the production of data, which is the geologic reality against which models must be judged. Building models on top of models is a sure way to stymie real progress. (b) Be wary of the effects of popular, rather than strategic trends.