<u>**SUPPORTING STATEMENT**</u>

TITLE OF INFORMATION COLLECTION: Generic Clearance for NASA Citizen Science and Crowdsourcing Projects

TYPE OF INFORMATION COLLECTION: New

A. JUSTIFICATION

    1.   **Explain the circumstances that make the collection of information necessary.**

Citizen science and crowdsourcing: Innovative research methods that engage the public

Citizen science and crowdsourcing are tools that engage, educate and empower the public to apply their curiosity and contribute their talents to a wide range of scientific and societal issues. Citizen Science is a form of open collaboration where the public can participate actively in the scientific process through methods that include asking research questions, collecting and analyzing data, interpreting results, or engaging in problem solving. Crowdsourcing is a process where individuals or organizations submit an open call for contributions of information from a large group of individuals ("the crowd").

NASA's mission to reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind

NASA uses the vantage point of space to achieve with the science community and our partners a deep scientific understanding of our planet, other planets and solar system bodies, the interplanetary environment, the Sun and its effects on the solar system, and the universe beyond. Citizen science and crowdsourcing can support NASA's mission and purpose by providing new opportunities to explore our solar system and our own home planet like never before, producing critical data that expands our knowledge of the universe, and advancing our ability to provide societal benefit through the synergy of satellite and ground based observations.

Benefits of research using citizen science and crowdsourcing approaches in NASA research

Citizen science and crowdsourcing can create engaging opportunities for the public to experience their environment and see space in new dimensions, contribute data at a more local level, and provide opportunities to analyze large space or Earth-based datasets. These methods give people the ability to easily share data they encounter in their communities and environments and what they

learn about through looking at the cosmos. Whether it is an individual reporting on a landslide or flood extent in their neighborhood, or examining the potential for exoplanets in distant galaxies, crowdsourcing and citizen science provide people a fun, educational and accessible way to contribute to science or foster a greater appreciation of the Earth, space, the sun, and their own communities. In addition, citizen science and crowdsourcing projects promote greater openness in the scientific process by actively encouraging participation in various aspects of research. Researchers using citizen science and crowdsourcing are committed to the dissemination of data and results back to the public.

Many federal and non-federal organizations are already using innovative citizen science and crowdsourcing tools to advance their missions. These tools are especially valuable where data are distributed across space and time or when projects rely on large datasets. Successful citizen science and crowdsourcing projects usually result from iteration of the design based on feedback from the participants.

NASA affiliated projects have already successfully demonstrated the willingness and interest of the public to participate in these types of initiatives, including projects such as Disk Detective (https://www.diskdetective.org/), Aurorasaurus (http://www.aurorasaurus.org/), and GLOBE Observer (*http://observer.globe.gov*). Speed and flexibility are beneficial to develop, test, and implement good citizen science and crowdsourcing projects to allow, for example, internet-based activities to evolve with technology and variable participation over time. An expedited approval process could facilitate incorporation of citizen science and crowdsourcing methods into NASA's research and scientific initiatives, which will provide large datasets with diverse information that can provide a more thorough understanding and foster new discoveries in Earth and space sciences It is recognized that each project will pursue an individual submission based on the Terms of Clearance provided by the generic agreement. The growth and success of citizen science and crowdsourcing is tied closely with advances in technology. Enhanced tools and methods are constantly making citizen science and crowdsourcing more feasible and effective. NASA researchers want to respond to and interact with industries through technology development. For example, the ability to quickly involve new technologies could allow NASA researchers to contribute to low-cost sensor testing and use during disaster response to power grid monitoring during solar storms. In addition, an expedited approval process is consistent with OMB Memo M-10-06[1], which promotes the use of new technologies and greater openness in government.

Federal support for citizen science and crowdsourcing

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[1] OMB Memo M-10-0. Open Government Directive. December 8, 2009.
https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf

In the 2013 Second Open Government National Action Plan[2], President Obama called on agencies to harness the ingenuity of the public by accelerating and scaling the use of open innovation methods such as citizen science and crowdsourcing. Citizen science and crowdsourcing are in line with the Paperwork Reduction Act's intent to "ensure the greatest possible public benefit from and maximize the utility of information created, collected, maintained, used, shared, and disseminated by or for the Federal Government.[3]"

Design principles for citizen science and crowdsourcing projects

Citizen science and crowdsourcing projects under this generic ICR will include the following design principles:

1. Participants have a meaningful role in the research project, and can act as contributors or collaborators.
2. Projects have a genuine scientific question or goal.
3. Projects are low-burden for participants.
4. Projects include active management of data and data quality, including a data quality assurance plan and ongoing evaluation of data quality and data management.
5. Projects are opt-in and participants have full control over the extent that they participate.
6. The data gathered and/or analyzed are shared with participants and generally made publicly available, unless there are security or privacy concerns that prevent this.
7. Participants receive feedback on how their contribution adds to the project, e.g. how their data will be used and what the research findings are.
8. Project leads will evaluate scientific output, data quality, and the impact on participants.
9. Projects are designed to contribute to research and science, not to inform Agency regulations or policies.

2.   Indicate how, by whom, and for what purpose the information is to be used.

NASA relies on scientific information. Citizen science and crowdsourcing techniques will allow the Agency to collect qualitative and quantitative data that might help inform scientific research, new missions, or support societal needs; validate existing models, algorithms or tools; or enhance the quantity and quality of data collected across the country's diverse communities to support the Agency's mission. Information gathered under this generic clearance will be used by the Agency to support the activities listed above and might provide unprecedented avenues for conducting breakthrough research.

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2 https://www.whitehouse.gov/sites/default/files/docs/us_national_action_plan_6p.pdf
3 OMB Memo M-11-07. Facilitating Scientific Research by Streamlining the Paperwork Reduction Act Process. December 9, 2010.

Collections will be from participants who actively seek to participate on their own initiative through an open and transparent process (the Agency does not select participants or require participation); the collections will be low-burden for participants; collections will be low-cost for both the participants and the Federal Government; and data will be available to support the scientific research (including assessments, environmental screening, tools, models, etc.) of the Agency, states, tribal or local entities where data collection occurs. NASA may, by virtue of collaborating with non-federal entities, sponsor the collection of this type of information in connection with citizen science projects. To the extent applicable, all such collections will accord with Agency policies and regulations related to human subjects research and will follow the established approval paths through the Human Subjects Research Review Official. Finally, personally identifiable information (PII) will only be collected when necessary and in accordance with applicable federal procedures and policies. If a new collection is not within the parameters of this generic ICR, the Agency will submit a separate information collection request to OMB for approval.

As with any scientific endeavor at NASA, citizen science and crowdsourcing projects will have approved data quality and data management plans as part of their project design before implementation. NASA provides employees resources for developing data quality and data management plans.

The popularity and application of citizen science and crowdsourcing methods continues to grow with new and low-cost portable technologies. Therefore, the modes of data collection under this generic clearance may include: paper or digital questionnaires, data forms, surveys, focus groups or interviews; new and existing online collaboration tools; fields in a cell or smart phone applications (apps); online web-based forms or interactive computer interfaces that elicit information; social media platforms; text or SMS messages; readings from sensors (personal, mobile, stationary or portable) or other mobile, portable or stationary instruments– readings either sent back to the Agency in real-time, through an online data collection site, or through another acceptable mode listed here; analog or digital audio or video recordings; digital or analog photographs; and information collected automatically through an app, computer, the metadata accompanying a digital photograph, or a mobile sensor.

Information may be actively collected and actively submitted information (such as descriptions, measurements, photographs, etc.) as well as passively submitted information (such as the metadata accompanying actively submitted information, e.g. date, time, and location stamps automatically included with apps and digital photographs, etc.).

Citizen science and crowdsourcing collections submitted under this generic clearance can be stand-alone projects or the methods may be incorporated into an

existing or new project, including, but not limited to, projects in the following typology[4]:

- **Data gathering projects.** These projects may include 1) observation, characterization and documentation of natural phenomena or general environmental health observations, opinions, or preferences or 2) surveying participants or screening environmental conditions, including using specialized equipment provided by project leaders to record and submit data, or submitting samples plus descriptors (e.g. of air or water) for testing. Data may be collected using technologies mentioned above, through structured data forms, surveys, focus groups or interviews, submitting photographs or other media, surveys or questionnaires, or providing written observations.

- **Classification/problem solving projects.** Participants' tasks may include: 1) observation of recorded materials provided by project organizers (images, video, etc.) through structured data submission forms, surveys or questionnaires in an online or computer program, clicking boxes, highlighting parts of text or image, and providing comments and/or annotations; 2) Classification of images or sounds using structured data submission forms or clicking boxes in an online or computer program; 3) Transcribing information, by typing handwritten logs or notes; 4) Performing a function meant to generate human behavior data; or 5) Problem-solving or manipulation of data. Tasks 1-5 may be conducted via structured actions or instructions or through the use of "human-based computational game" or "game with a purpose", a human-based computational technique in which a computational process performs its function by presenting certain steps to humans in an entertaining way.

Data gathering and classification/problem solving projects may include participants providing opinions or observations about a research subject's environmental surroundings, or classifications of imagery/data.

Citizen science and crowdsourcing collections under this generic clearance may include the following types of questions or requests of participants:

- **Profile/Preference information.** Projects may request a username and/or password as well as user preference information to facilitate or customize the user experience. Participants may be asked to submit an email address, name, and zip code, as well as acknowledge a privacy policy or terms agreement. Participants may also be presented with an opportunity to be placed on a mailing list for the project. This includes projects administered through a web form or mobile application.

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4 Typology adapted from: Teresa Scassa and Haewon Chung. 2015. Typology of citizen science projects from an intellectual property perspective: Invention and Authorship Between Researchers and Participants. Wilson Center, Commons Lab, Case Study Series, Vol. 5.

- **Personal and Contact Information.** Citizen science and crowdsourcing projects may solicit contact information. This information may be necessary to organize and analyze data (i.e., it may be necessary to know which data points are from the same observer). Projects may request contact information (name and email address, zip code, address and phone number) to provide participants with project updates and share data. Participants would be made aware that the publically available data on contact information will be anonymized and aggregated, for example, by census tract, zip code, city, or some other higher level than individual addresses.
- **Experience and Expertise.** For data quality purposes, citizen science and crowdsourcing projects may request information to evaluate the skill level of the participant by asking about their experience with the project topic. Questions may be about a person's age range, level or topic of education, participation in organizations, or professional experience.
- **Information about Observations.** Projects may request accompanying information, such as the date and time of the activity, the location (e.g., GPS coordinates, address, zip code, etc.), the weather (e.g., temperature, precipitation, wind, humidity, visibility, etc.), and a description or characterization of the location (e.g., vegetation type, type of water body, environmental condition, etc.) or personal senses (e.g. smell, visual cues, sound, etc.).
- **Project Evaluation.** Citizen science and crowdsourcing projects may collect information on the participant's experience for project evaluation and development. This may include questions on how the participant found out about the project, the amount of time spent, distance traveled, how difficult the task was for the participant, whether the participant enjoyed the experience, and if they will participate again. Projects may also request information to evaluate participant outcomes, such as changes in the participant's understanding of the scientific process or project topic, through survey questions before and after participation.
- **Training.** Citizen science and crowdsourcing projects may need to train participants for the purpose of soliciting quality data and increasing participant benefits including education and engagement. Participants may be asked to read materials, watch training videos, or attend training sessions in-person or virtually via a webinar. To ensure that participants understand the training, they may be assessed through testing instruments like a questionnaire or survey, which may be administered online or through a computer program, on paper, in cell a phone app, or in-person.

Each project under the generic clearance will provide their own system of records notice (SORN) and privacy policies **if the project requires the collection of personally identifiable information**. Otherwise, the generic clearance will cover projects or data collection efforts that

do not request the collection of personally identifiable information, and therefore would not trigger the requirement for a SORN.

3. **Describe whether, and to what extent, the collection of information involves the use of information technology.**

   In order to encourage participation and reduce burden on participants, citizen science and crowdsourcing efforts often utilize information technology that is available to a number of potential participants (cell phones, personal computers, tablets, etc.). The projects submitted under this generic clearance may collect information electronically through new and existing online collaboration tools, cell phone applications (apps) or SMS, web-based forms, web applications, online computer programs or forms, social media platforms, or sensors (personal, mobile, stationary or portable).

4. **Describe efforts to identify duplication.**

   No similar data are gathered or maintained by the Agency or are available from other sources known to the Agency.

5. **If the collection of information impacts small businesses or other small entities, describe the methods used to minimize burden.**

   The collection tools for citizen science activities will be presented in a way that is quick and simple for users to enter in data. All activities will be voluntary and thus respondents will not face any burden if the activity does not interest them.

6. **Describe the consequence to federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.**

   If unable to collect information through citizen science or crowdsourcing methods under a generic ICR, the Agency would be unable to adapt and utilize these innovative tools in a timely manner to engage the public in Agency science. It would also potentially slow down the advancement of NASA science. For example, most of the known comets were discovered by a NASA-funded citizen science project. With these methods, NASA benefits from the public's knowledge, expertise, and willingness to contribute to scientific endeavors that rely on large and geographically comprehensive datasets. The public and other organizations are beginning to capture and organize data with smartphones and portable sensors; the Agency's involvement will allow for publically-generated data to effectively support NASA research, including initiating data collection, developing innovative methods for data processing, and managing data quality. NASA research innovation significantly benefits by NASA researchers having

access to the newest technologies affording the opportunity to contribute meaningfully to low-cost sensor testing and use. Moreover, members of the public enjoy participating in citizen science and crowdsourcing projects, which are fun, educational, engaging, and will allow for more open communication between NASA and the public; citizen science projects in other agencies have gathered millions of data points contributed by hundreds of thousands of interested individuals. These projects are always voluntary, low-burden, and rely on the interest and self-motivation of the participants. Finally, projects under this generic clearance will allow Agency researchers to test ideas more quickly, respond to the project's needs as they evolve, and incorporate feedback from participants for flexible, innovative research methods that involves the public in a variety of aspects of scientific research.

7.   Explain any special circumstances.

NASA does not have any special circumstances that would cause an information collection to be conducted in any manners noted above. With regards to user privacy information, NASA protects the information's confidentiality to the extent required by law. Also, see the NASA SORNs at: https://www.nasa.gov/content/nasa-privacy-act-system-of-records-notices-sorns

8.   Provide the date and page number of publication in the Federal Register for the 60-day and 30-day federal register notices required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB.

On 11/01/2017, Document Citation: 82 FR 50691, Document number 2017-23744, pages 50691-50692 (2 pages), the 60-day federal register notice associated with this information collection was published in the Federal Register. Comments were not received. URL: https://www.federalregister.gov/documents/2017/11/01/2017-23744/notice-of-information-collection

On 01/18/2018, FRN Number 83 FR Vol. No. 2677, Document number 2018-00780, pages 2677 to 2678 (2 pages), the 30-day federal register notice associated with this information collection was published in the Federal Register. Comments were not received. URL: https://www.federalregister.gov/documents/2018/01/18/2018-00780/notice-of-information-collection

9.   Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

NASA currently does not provide any payment or gift to respondents for information collected, but there may be opportunities to provide unique

compensation for participants through NASA's challenge activities.

10. **Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.**

If a confidentiality pledge is deemed useful and feasible, the Agency will only include a pledge of confidentiality that is supported by authority established in statute or regulation, that is supported by disclosure and data security policies that are consistent with the pledge, and that does not unnecessarily impede sharing of data with other agencies for compatible confidential use. If the agency includes a pledge of confidentiality, it will include a citation for the statute or regulation supporting the pledge.

NASA's NVMS meets the privacy requirements listed in Federal Information Processing Standards. This includes the assignment of a senior agency official for privacy in accordance with NASA NPD 1382.17H, the completion of a comprehensive Privacy Impact Assessment, and a published document containing a listing of all information types collected. The Privacy Impact Assessment is reviewed periodically as a part of the risk management framework process for NVMS.

11. **Provide additional justification for any questions of a sensitive nature.**

No questions will be asked that are of a personal or sensitive nature as defined by OMB.

12. **Provide estimates of the hour burden of the collection of information.**

A variety of platforms and media will be used to collect information from respondents. We expect that there will be a range of burden hours depending on the details of the citizen science and crowdsourcing method employed. The total range of annual burden hours requested is 325,416 to 433,916 hours based on the number of collections we expect to conduct over the requested period for this clearance.

The total dollar value of the annual burden hours is based on the National Compensation Survey: Occupational Wages in the United States May 2017 published by the Bureau of Labor Standards Occupation and Wages, May 2017 (http://www.bls.gov/oes/current/oes_nat.htm). We use the value for All Occupations, average hourly wage of $24.34 multiplied by 1.4 to account for benefits, $34.08

A. **Data gathering projects:** We estimate 10,000 unique participants per year per data gathering collection under this generic clearance that accounts for current and potential projects developed in the future. The time it takes to

complete the registration, classification and submission of these citizen science projects varies tremendously depending on the type of project, from 5 to 30 minutes. For this purpose, we estimate the range of annual burden for the collection of data gathering projects to be 325,416 to 433,916 hours per year.

B. **Classification/problem-solving project**: We estimate 100,000 participants per year per classification/problem solving data collection under this generic clearance based on estimates from an example of a classification/problem-solving project at USGS, the citizen science program iCoast (OMB Control Number 1028-NEW). iCoast estimated 10 minutes for registration, login and reading guidelines. We estimate 10 data classification/problem-solving projects annually under this generic clearance. For projects that require a pre-participation training, we estimate the number of participants completing training will be 80% of registrants. Training modules will vary by data collection; the range is 5 minutes to 1 hour. The estimated number of participants that will spend time on the website, app, or computer program engaged in the activities will vary, and it is difficult to predict. Participants will continue to engage with the site based on their interest and submit data until the task is complete. For this estimate, we assume data collection tasks (classification/problem solving) will be completed with 50% of the trained participants engaged by the sites for 8 hours per month or 96 hours per year. The estimated range of annual burden for 3 classification/problem solving projects is 295,250 to 313,250 hours.

Burden of information collection request table

Estimated Annual Reporting Burden			
Type of Collection	**Number of Participants**	**Estimated Time per Participant (hours unless otherwise noted)**	**Total Annual Burden Hours**
A. Data gathering projects			
Participant registration, initial login & reading guidelines	10,000	10 minutes	1667 hours

Participant training (estimate 80% of those who register will undergo training)	8,000	5 min to 60 minutes	667 to 8,000 hours
Participants contributing observations (estimate all "trained")	8,000	20,000 observations at 15 minutes each (37.5 minutes)	5,000
Total burden hours			7334 to 14667 hours
Total annual labor costs		hourly rate including. benefits, $34.08	$249,943 to $499,851

B. Classification/problem-solving projects			
Type of Collection	**Number of Participants**	**Estimated Time per Participant**	**Total Annual Burden Hours**
Participant registration, initial login & reading guidelines	100,000	10 minutes (*10.2 minutes)	17,000
Participant training	80,000	30 min – 60 minutes	40,000 - 80,000
Participants completing data collection tasks	60,000	10	10,000
Total burden hours			67,000 to 107,000 hours
Total annual labor costs		hourly rate including. benefits, $34.08	$2,283,360 to $3,646,560
Grand total, annual burden hours			74334-121667
Grand total, annual labor costs			$2,533,303-$4,146,411

13.   **Provide an estimate of the total annual cost burden to respondents or record keepers resulting from the collection of information.**

There will not be fees associated with participation in the data collections under this generic clearance. Participants will not be required to purchase any equipment to collect data, but some low-cost sensors or other technical or low-tech supplies may be necessary to complete all of the data collection tasks should the participants decide to complete all tasks. The costs to participants for materials will vary based on the data collection type (data gathering, classification/problem solving, or research subject participation) and medium (i.e. sensors, apps, or paper forms). The Agency does not expect participants to make purchases specifically for citizen science and crowdsourcing projects under this generic clearance. However, the table below reflects an annual 3-year estimate for Operations and Maintenance Costs (O&M) that participants might incur should they decide to purchase equipment to fully participate in a citizen science or crowdsourcing collection under this generic clearance. The estimate is based on the following assumptions: one eighth of the expected participants in the "data gathering projects" purchases low-tech equipment with a maximum cost of $25 per person (i.e. use of already owned internet or data plans; or purchase of low-technology equipment like water monitoring kits) and one eighth of the expected participants in the "data gathering projects" purchases high-tech equipment (i.e. personal health monitors, portable/personal air sensors, or other higher-technology equipment) with a maximum cost of $500 per person.

Operations & Maintenance (O&M) Costs			
	Estimated maximum cost per participant	Estimated number of participants expected to use	O&M costs
Low-tech equipment	$25.00	1000	$25,000
Low-cost personal or portable technology	$500.00	1000	$500,000
Total annual non-labor burden cost			$525,000
O&M costs over 3 years			$1,575,000

14.   **Provide estimates of annualized cost to the federal government.**

These projects leverage funding mechanisms already in place, therefore there would not be additional costs to the federal government based exclusively on these projects. Rather they would be funded through research, applications, and education funding sources. The anticipated cost to the Federal Government is approximately $542,980 annually. These costs are comprised of: project administration and estimated contractor payments. NASA person-costs are estimated using an hourly rate for a GS-14 (Step 1) $68.51 per hour including an

additional 60% for benefits based in Washington, DC. Time spent on each step may vary, as well as the GS-level of the employees involved. The estimate for project administration is based on 10 projects per year at 10% time given 2,087-hour divisor[5] for an employee's annual rate of pay ($142,984.54) and approximately $40,000 in contractor costs per project. The estimated contractor costs is assumed to be approximately 30% of time for one mid-level contractor to conduct site administration, user engagement, maintenance, etc. The estimate is for a mid-level support scientist contractor with a fully loaded rate of $133,333 per year, which is commensurate with many of the NASA support contracts.[6]

Task	Rate of pay/hour	Percent of time	Total hours	Total
NASA Civil Servant	$ 68.51	10%	208.70	$ 14,298
Support scientist contractor	$63.89	30%	626.1	$ 40,000
Total for 1 project/year				$ 54,298
Total for 10 projects/year				$ 542,980

15. Explain the reason for any program changes or adjustments.

This is a new collection.

16. For collections of information whose results will be published, outline plans for tabulation, and publication.
The tabulation, timeline, analysis, and publication of information collected under this generic clearance will vary by submission.

In accordance with the Presidential Memorandum on Transparency and Open Government[7], information collected under this generic clearance will disclose information rapidly in forms that the public can readily find and use and in compliance with the data policies outlined on Data.Gov[8].

Each project submitted under this generic clearance will specify the tabulation, timeline and analysis of the information collection. The information collected is for Agency scientific purposes, thus a number of projects are likely to publish the results of analyzed data, in peer-reviewed scientific journals, white-papers,

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5 http://www.opm.gov/policy-data-oversight/pay-leave/pay-administration/fact-sheets/computing-hourly-rates-of-pay-using-the-2087-hour-divisor/

6 Support contract rates are proprietary and competition sensitive for each contract; therefore, this represents an average estimate across several primary contracts that support NASA for a mid-support scientist rate.

7 FR Doc. E9-1777, Presidential Memorandum for the Heads of Executive Departments and Agencies 01/26/2009.

8 https://www.data.gov/data-policy

Agency reports, or Agency strategic research plans, which will be available for public consumption.

17. **If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.**

Not applicable for this request.

18. **Explain each exception to the "Certification For Paperwork Reduction Act Submissions," per OMB Form 83-I as listed below.**

The NASA information collection sponsor (civil service employee) must address the certification below, and enter their name and position title. The NASA Office of the Chief Information Officer must concur on any exceptions requested by the information collection sponsor, or the package will not be forwarded to OMB.

The proposed collection of information –
(a) is necessary for the proper performance of the functions of NASA, including that the information to be collected will have practical utility;
(b) is not unnecessarily duplicative of information that is reasonably accessible to the agency;
(c) reduces to the extent practicable and appropriate the burden on persons who shall provide information to or for the agency, including with respect to small entities, as defined in the Regulatory Flexibility Act *(5 U.S.C. 601*(6)), the use of such techniques as:
> (1) establishing differing compliance or reporting requirements or timelines that take into account the resources available to those who are to respond;
> (2) the clarification, consolidation, or simplification of compliance and reporting requirements; or
> (3) an exemption from coverage of the collection of information, or any part thereof;
(d) is written using plain, coherent, and unambiguous terminology and is understandable to those who are targeted to respond;
 (e) indicates for each recordkeeping requirement the length of time persons are required to maintain the records specified;
 (f) has been developed by an office that has planned and allocated resources for the efficient and effective management and use of the information to be collected, including the processing of the information in a manner which shall enhance, where appropriate, the utility of the information to agencies and the public;
(g) when applicable, uses effective and efficient statistical survey methodology appropriate to the purpose for which the information is to be collected; and

(h) to the maximum extent practicable, uses appropriate information technology to reduce burden and improve data quality, agency efficiency and responsiveness to the public; and

(i) will display the required PRA statement with the active OMB control number, as validated on www.reginfo.gov

The NASA office conducting or sponsoring this information collection certifies compliance with all provisions listed above.

Name: _Dalia Kirschbaum
Title: __Research Scientist
Email address or Phone number: dalia.kirschbaum@nasa.gov
Date: _8/3/2018_____

(Certifying individual must be a civil service employee)

APPENDIX

Policy support

- 2013 Second Open Government National Action Plan - encourages Federal Agencies to harness the ingenuity of the public by accelerating and scaling the use of open innovation methods such as citizen science and crowdsourcing: https://www.whitehouse.gov/sites/default/files/docs/us_national_action_plan_6p.pdf
- OMB Memo M-11-07. Facilitating Scientific Research by Streamlining the Paperwork Reduction Act Process. December 9, 2010. Citizen science and crowdsourcing are in line with the Paperwork Reduction Act's intent to "ensure the greatest possible public benefit from and maximize the utility of information created, collected, maintained, used, shared, and disseminated by or for the Federal Government."
- OMB Memo M-10-06. Open Government Directive. December 8, 2009. Promotes open government and the use of new technologies.
- H.R.1806 - America COMPETES Reauthorization Act of 2015 — 114th Congress (2015-2016) https://www.congress.gov/bill/114th-congress/house-bill/1806
- 15 U.S. Code § 3724 - Crowdsourcing and citizen science: It is the sense of Congress that—
  - (1) the authority granted to Federal agencies under the America COMPETES Reauthorization Act of 2010 (Public Law 111–358; 124 Stat. 3982) to pursue the use of incentive prizes and challenges has yielded numerous benefits;
  - (2) crowdsourcing and citizen science projects have a number of additional unique benefits, including accelerating scientific research, increasing cost effectiveness to maximize the return on taxpayer dollars, addressing societal needs, providing hands-on learning in STEM, and connecting members of the public directly to Federal science agency missions and to each other; and
  - (3) granting Federal science agencies the direct, explicit authority to use crowdsourcing and citizen science will encourage its appropriate use to advance Federal science agency missions and stimulate and facilitate broader public participation in the innovation process, yielding numerous benefits to the Federal Government and citizens who participate in such projects.