

ANNEX  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
AND AMAZON WEB SERVICES, INC.  
UNDER SPACE ACT UMBRELLA AGREEMENT  
NO. SAA8-1929988, DATED 1/6/2020  
ANNEX NUMBER SAA8-1929988.3

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of research and collaboration between NASA and AWS on the discovery, access, and use of high-value NASA science datasets. In February 2018, NASA sponsored the "Enabling Analytics in the Cloud for Earth Science Data" workshop, in part, to assess obstacles in the progress of Earth sciences. The workshop discussed how to enable "science at scale," such that researchers and other users can work with large, multisource data sets with minimal data management and wrangling overheads. The workshop also discussed the need to develop infrastructures that facilitate constructing a robust, scalable, and adaptable data analysis pipeline.

Cloud computing is quickly becoming a viable approach for building such infrastructures that move data out of institutional silos and into a computational platform. NASA and AWS plan to collaborate on enhancing opportunities for the science community to take advantage of new solutions for a collaborative cyberinfrastructure. NASA's research goals include:

- a. Investigate the value of showcasing high-value NASA science datasets on the cloud to support large scale data expeditions for analysis and visualizations; and
- b. Research science data showcase strategies in the cloud to enable quicker access by the scientific community.

AWS will assist NASA with the achievement of their research goals by supporting the storage and sharing of science datasets via the AWS Open Data Sponsorship Program to facilitate timely, open, equitable, and useful public access to high-value, frequently used data. AWS will provide a pre-approved volume of five (5) petabytes of Amazon Simple Storage Service (S3) storage. NASA will identify and provide the datasets that should be made publicly available as part of its pre-approved allocation. All data made available via this mechanism should follow the qualifications listed below:

- a. Data should be considered "write once read many", that is, NASA datasets that require many edits or have a high turnover are not a fit for the Open Data Sponsorship Program;
- b. Data must be available via a native AWS interface (i.e., direct access to S3);
- c. Data must be listed on the Registry of Open Data on AWS; and
- d. Data should be considered "useful by itself", that is, NASA datasets should be a large enough collection of data that is meaningful and valuable to the science community.

Small subsets of datasets used only for demonstration purposes are not a fit for the Open Data Sponsorship Program.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e).

## ARTICLE 2. RESPONSIBILITIES

A. NASA MSFC will use reasonable efforts to:

1. Identify and provide datasets that should be made publicly available as part of its pre-approved allocation in the AWS Open Data Sponsorship Program;
2. Adhere to the data qualifications as stated by AWS for the placement of NASA datasets in the AWS Open Data Sponsorship Program;
3. Provide data stewardship expertise and maintain control over access levels for the datasets admitted to the AWS Open Data Sponsorship Program; and
4. Conduct outreach and promotion activities regarding the availability and use of datasets, which includes use cases involving cloud-based analytics.

B. AWS will use reasonable efforts to:

1. Assist NASA in determining the datasets that will be hosted in accordance with the AWS Open Data Sponsorship Program's qualifications;
2. Host datasets identified by NASA for the term of this Agreement in accordance with the terms and conditions of the AWS Open Data Sponsorship Program;
3. Provide advice and assistance to NASA regarding machine learning techniques in the ordinary course of business, which NASA may use to conduct access pattern and storage strategy studies of access logs for datasets admitted to the AWS Open Data Sponsorship Program; and
4. Conduct outreach and promotion activities regarding the availability and use of datasets on AWS and encourage usage as part of AWS's Open Data Sponsorship Program, all in the ordinary course of business.

## ARTICLE 3. SCHEDULE AND MILESTONES

The planned major milestones for the activities for this Annex defined in the "Responsibilities" Article are as follows:

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|---|-----------------------------------|
| 1. NASA will identify datasets to be hosted in accordance with the AWS Open Data Sponsorship Program's qualifications | As needed or until Agreement ends |
| 2. AWS will identify datasets to be hosted in accordance with the AWS Open Data Sponsorship Program's qualifications  | As needed or until Agreement ends |
| 3. AWS will host datasets in accordance with the terms and conditions of the AWS Open Data Sponsorship Program        | As needed or until Agreement ends |

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|--|-----------------------------------|
| 4. AWS will provide access to the datasets in accordance with the terms and conditions of the AWS Open Data Sponsorship Program                            | As needed or until Agreement ends |
| 5. NASA will provide data stewardship expertise and maintain control over access levels for the datasets admitted to the AWS Open Data Sponsorship Program | As needed or until Agreement ends |
| 6. NASA will conduct outreach and promotion activities regarding the availability and use of datasets  | As needed or until Agreement ends |
| 7. AWS will conduct outreach and promotion activities regarding the availability and use of datasets in the ordinary course of business                    | As needed or until Agreement ends |

#### ARTICLE 4. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, (31 U.S.C. § 1341).

#### ARTICLE 5. TERM OF ANNEX

This Annex becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or two years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

#### ARTICLE 6. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Annex by providing thirty (30) calendar days written notice to the other Party.

#### ARTICLE 7. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Annex.

##### Technical Points of Contact

NASA George C. Marshall Space Flight Center

Amazon Web Services, Inc.  
Joe Flasher

David Hood  
IMPACT Associate Project Manager  
Mail Suite: ST14  
Marshall Space Flight Center, AL 35812  
Phone: 256-961-7482  
david.w.hood@nasa.gov

Open Data Lead  
410 Terry Avenue North  
Seattle, WA 98109-5210  
Phone: 202-442-2963  
jflasher@amazon.com

ARTICLE 8. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and AWS. Modification of an Annex does not modify the terms of the Umbrella Agreement.


ARTICLE 9. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND  
SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE  
FLIGHT CENTER

AMAZON WEB SERVICES, INC.

BY: \_\_\_\_\_  
David M. Burns, Ph.D.  
Manager, Science and Technology  
Office

BY:  \_\_\_\_\_  
Shannon Lowther  
Authorized Representative

DATE: \_\_\_\_\_

DATE: December 30, 2021

