



NUMFOCUS

OPEN CODE = BETTER SCIENCE

ANNUAL REPORT

2019

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# LETTER FROM THE BOARD CO-CHAIRPERSON

**NumFOCUS was founded in 2012 to provide a fiscal umbrella for many open-source software projects that have become essential for science and research. Our sponsored projects benefit from a range of services: fiscal, legal, operational, and more.**

Each year, we welcome new member projects: in 2019, eight new sponsored and nine new affiliated projects joined. We also support project members and users with our educational programs, networking at social and technical events, and our diversity and inclusion efforts. PyData, the signature NumFOCUS event, is hosted around the world with many organizing local volunteers who help channel financial support for the projects and technical support for their users. PyData was held in 58 countries last year! Other project-focused events included FEniCS Con, JuliaCon, rOpenSci Unconference, Python in Astronomy, StanCon and JuMP-dev Workshop.

NumFOCUS fiscally sponsored projects achieved record funding success in 2019 including a major grant from the Gordon and Betty Moore Foundation to Astropy, a large National Science Foundation award for Cantera, and grants from the Chan Zuckerberg Initiative to six projects. The commitment of our corporate sponsors has been crucial to the sustainability of the tools that are driving so much phenomenal innovation in data science and beyond. We celebrate the enlightened leaders of these corporations! Support from individual donors and members continues to grow, an endorsement of our community's trust and optimism. As a volunteer member of the NumFOCUS Board for the last five years, I have never been more proud of the organization's achievements and convinced of its mission. Join me in wonderment and respect of the amazing value generated by volunteers and dedicated open-source developers around the world!



**LORENA BARBA**

**NumFOCUS Co-Chairperson**



# PROJECTS



# NEW SPONSORED PROJECTS

In 2019, NumFOCUS welcomed 8 new projects to our fiscal sponsorship program, which brings us to 33 fiscally sponsored projects in total. Our newest sponsored projects are:



## Blosc

a very high performance meta-compressor specially designed for compressing binary data



## Dask

provides advanced parallelism for analytics, enabling performance at scale for the tools you love



## ITK

an open source, cross-platform library that provides developers with an extensive suite of software tools for image analysis. ITK builds on a proven, spatially-oriented architecture for processing, segmentation, and registration of scientific images in two, three, or more dimensions



## MathJax

a JavaScript library for displaying mathematics in web pages and making it accessible for those using assistive technology



## mlpack

a fast, flexible machine learning library suitable for both data science prototyping and deployment



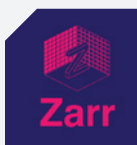
## PALISADE

an open-source project that provides efficient implementations of lattice cryptography building blocks and leading homomorphic encryption schemes. PALISADE is designed for usability, providing simpler APIs, modularity and cross-platform support.



## SciPy

a foundational building block for scientific and numerical computing in Python. It provides fundamental numerical algorithms for scientific computing: statistics, numerical optimization, linear algebra, special functions, integration, interpolation, signal and image processing, and more.



## Zarr

scalable storage of tensor data for scientific computing



# PROJECT HIGHLIGHTS FROM 2019



## Astropy:

- ▶ Received a \$900,000 grant from the Gordon and Betty Moore Foundation to support Astropy's transition to a fully sustainable project
- ▶ Worked with the American Astronomical Society to develop a new Time Series subpackage
- ▶ Released v3.2 and started working on the next major release, v4.0



## Blosc:

- ▶ Blosc received a NumFOCUS Small Development Grant (\$5000) for getting Blosc2 out of alpha
  - 4 beta releases delivered already!
  - Enlargeable 64-bit containers (in-memory, on-disk): should be stable
  - Metalayers: should be stable
  - Still missing some small, non-mandatory, parts of the format (fingerprint)



## Bokeh:

- ▶ Released Bokeh 1.4, last Python 2 compatible release
- ▶ Introduced app security and authentication features
- ▶ Raised over \$1,100 in its successful first dedicated fundraiser in July, covering operating expenses for a year
- ▶ 400 total contributors and 4 significant minor release series: 1.1.x, 1.2.x, 1.3.x, and 1.4.0



### Cantera:

- ▶ Received a \$2.3M award from the NSF CSSI program to enhance sustainability and grow the community
- ▶ Held the annual Steering Committee meeting and elected Connie Gao to the Committee
- ▶ Hosted a new users workshop at the US National Combustion Meeting, in March



### conda-forge:

- ▶ Began building packages for two new platforms, Power and 64-bit ARM
- ▶ Can now build packages that use CUDA (for NVIDIA GPUs) and HIP (for AMD GPUs)
- ▶ All packages are now built with conda-forge infrastructure (self-hosting on Linux and OS X platforms)
- ▶ Build capacity has been greatly expanded by moving to Azure pipelines



### Dask:

- ▶ Joined NumFOCUS
- ▶ Welcomed integrations with new projects like XGBoost, NVIDIA RAPIDS, and Prefect
- ▶ Pushed out twenty releases over the past year with contributions from two hundred contributors



### Econ-ARK:

In 2019, Econ-Ark welcomed new contributors Shauna Gordon-McKeon, Sebastian Benthall and Mridul Seth. The project also had two major releases, in May (0.10.1) and October (0.10.2), and participated in its first developer sprints at PyCon and SciPy.



### FEniCS:

The FEniCS Project has continued its journey towards a new major release in 2020, with many code improvements and refactoring in FEniCS-X. Several new developers have been enabled to join the project due to industrial collaborations. A highlight of the year was the FEniCS'19 conference, which took place in Washington DC in June.



### ITK:

- ▶ Joined NumFOCUS!
- ▶ This year featured the major 5.0.0 release. This release marked migration to GitHub, major improvements to the Python interface, a refactoring of the threading backends, refactoring of the spatial object architecture, and modernization of the C++ interface.



### Julia:

- ▶ Multiple releases, with the latest including a first-of-its-kind composable multithreading system.
- ▶ Alan Edelman received the Sidney Fernbach Award from the IEEE Computer Society
- ▶ Jeff Bezanson, Stefan Karpinski and Viral Shah received the James H. Wilkinson Prize for Numerical Software.
- ▶ Held the biggest JuliaCon to date!



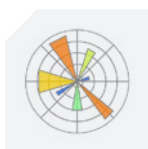
### JuMP:

- ▶ Released JuMP 0.19 and 0.20, completing a major rewrite of JuMP's solver abstraction layer.
- ▶ Hosted over 70 attendees at the third annual JuMP-dev workshop in Santiago, Chile.
- ▶ Mentored two successful GSOC projects.



### MathJax:

After more than two years of work, MathJax released version 3.0, a complete rewrite from the ground up. This brings MathJax's 10-year-old codebase into alignment with modern practices, with an emphasis on speed, flexibility, assistive technology, and ease of use both on servers and in browsers.



### Matplotlib:

Matplotlib was awarded \$250,000 from the Chan Zuckerberg Initiative, published 5 bug fix releases, 2 feature releases, and launched a discourse forum, a blog, and an Instagram account.



### mlpack:

10 successful GSoC projects; new website (almost!); Julia bindings; availability from pip and conda; new methods: kernel density estimation, bidirectional RNNs, more reinforcement learning environments; efficiency improvements; and acceptance to NumFOCUS!

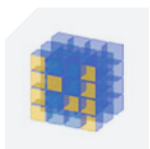


### nteract:

It was an exciting year for the nteract ecosystem. Several major features shipped:

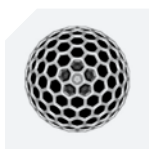
- ▶ Support for ipywidgets in the nteract desktop, web apps, and core SDK
- ▶ The official v1 of the [papermill project](#)
- ▶ The incubation and release of the new [bookstore project](#)





## NumPy:

- ▶ NumPy 1.17 was our most significant release in years. Highlights include:
  - A new extensible random number generator module
  - NumPy's FFT module was completely rewritten
  - Overriding NumPy functions is now possible by default
- ▶ Core team held 3 in-person sprints this year
- ▶ 3 full-time developers are now supported by grants



## Open Journals:

In 2019 the Journal of Open Source Software received more than 500 submissions and published nearly 350 papers. 21 new editors were added to the team as well as adding additional editors-in-chief to help the project scale. Open Journals also significantly updated its documentation and website and welcomed new contributors to the project.



## PALISADE:

- ▶ Released v1.6 of PALISADE with general improvements to the software
- ▶ Rewrote and improved the documentation of the library, which was posted on a new website, <https://www.palisade-crypto.org>
- ▶ Became involved with the NumFocus community
- ▶ NJIT contributors to PALISADE were funded by IARPA to support the development of programming languages that use PALISADE as an encrypted computing framework



## Pandas:

Pandas had two major releases in 2019: 0.24 (337 contributors) and 0.25 (230 contributors). Highlights include new data types—including integers with missing values—, dropping Python 2, and a new API for groupby aggregation. Additionally, the project laid the groundwork for 1.0, due in early 2020.



## PyMC3:

- ▶ Released versions 3.7 in May and 3.8 in December
- ▶ Google Summer of Code was once again stellar, with Symbolic PyMC, Bayesian additive trees, and differential equations all being added to the project as a result
- ▶ Broke significant ground on the development of the next major version, PyMC4



## Project Jupyter:

- ▶ JupyterLab 1.0, the next-generation web frontend and successor to Jupyter Notebook, was released in July
- ▶ JupyterHub 1.0, the best way to serve Jupyter notebooks for multiple users, was released in May
- ▶ Jupyter Enterprise Gateway 2.0, which enables Jupyter Notebook to launch remote kernels in a distributed cluster, was released in September



## PyTables:

- ▶ Two major releases
  - 3.5.0 (March 2019)
    - Better support for padding in compound types within native HDF5 files
  - 3.6.0 (October 2019)
    - Full Python 3.8 support
    - Dropped 2.7 support
    - Wheels produced for all major architectures (big accomplishment!)



## QuantEcon:

QuantEcon made an initial release of jupinx, an open source tool for converting ReStructuredText source files into notebooks, a website, or pdf files via Jupyter Notebooks and Sphinx. These tools are now used to build all of the [QuantEcon lecture projects](#). QuantEcon hopes to release a stable version early in 2020.



## rOpenSci:

- ▶ Secured \$1.5M in new funding from Sloan and Moore Foundations to improve the scientific package ecosystem for R and expand software peer review
- ▶ Gained 306 citations of 122 rOpenSci software packages
- ▶ Delivered 6 Community Calls attended by 325 people in 13 countries



## SciPy:

- ▶ Became a fiscally sponsored project of NumFOCUS.
- ▶ Released versions [1.3.0](#) and 1.4.0.
- ▶ Used in the production of the [first-ever image of a black hole](#).
- ▶ Received a [Chan Zuckerberg Initiative \(CZI\)](#) grant to enhance SciPy's statistics capabilities.
- ▶ Became a part of the [Tidelift](#) Subscription.



## Shogun:

- ▶ Had a very successful collaboration on reproducible workflows with the Alan Turing Institute.
- ▶ Had a great time participating in GSoC
- ▶ Completed a number of major modernisation milestones- partly during the 2019 Berlin workshop
- ▶ Two new contributors have joined the team: Gil and Ahmed.



## Stan:

- ▶ Stan's developer community elected a new board
- ▶ Added a new HTTP-server based PyStan, new command-line based wrappers CmdStanPy and CmdStanR, and completely updated Stan.jl (Julia)
- ▶ Hired dedicated developers to work on dev ops and improved our automatic testing



### SunPy:

The SunPy project released the first stable version of the core package, won a grant from NASA, and published a paper about the project and package in the Astrophysical Journal and the Journal of Open Source Software. SunPy also wishes a fond farewell to Nabil Freij!



### SymPy:

- ▶ 9 [successful GSoC projects](#) this summer.
- ▶ Participated in the new Google Season of Docs program; where technical writer, Lauren Glattly, created a new [style guide for SymPy's documentation](#).
- ▶ SymPy 1.5 was released; it contains [many new features](#) and will be the last version of SymPy to support Python 2.



### Xarray:

- ▶ Added support for NEP18 compliant numpy-like libraries (e.g. sparse, pint),
- ▶ New high-level utilities for parallelization (e.g. map\_blocks),
- ▶ Many performance and usability improvements,
- ▶ Three new core developers added to the team



### yt:

This year, yt has seen several releases, both major and minor, and added support for new data formats such as AMRVAC. yt has been focusing its efforts on releasing a major new version of yt, yt 4.0, with support for bitmap indexing of discrete and particle datasets. This year, yt also worked to revise its governance procedures, focusing on improving community interactions.



### Zarr:

- ▶ [The 2.3.x line of releases](#) (cloud store integrations, database backend implementations, performance improvements)
- ▶ Applying for and being accepted to CZI's EOSS grant; becoming a NumFOCUS project!
- ▶ Integration with NetCDF, talks at SciPy, BOSC, PyData Miami, and more.



# PROJECT EVENTS



Several projects held events and conferences this year:

- ▶ FEniCS Con - FEniCS
- ▶ JuliaCon - Julia
- ▶ rOpenSci Unconference, Ozunconf - rOpenSci
- ▶ Python in Astronomy - Astropy
- ▶ StanCon - Stan
- ▶ JuMP-dev Workshop- JuMP

# CASE STUDIES

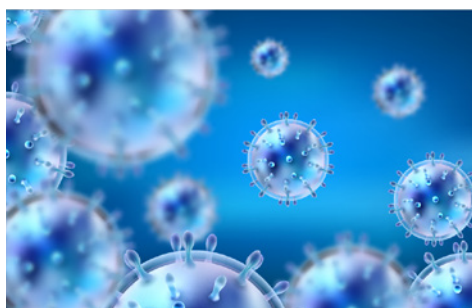
This year we published our first set of case studies examining the applications and impact of our sponsored projects.



## The First Photograph of a Black Hole

(made with the NumFOCUS Python stack)

Tools maintained by six NumFOCUS Sponsored Projects were used as an integral part of the effort to produce the first-ever photograph of a black hole. These tools accelerated the processing and analysis of the data gathered, allowing researchers to focus on their own analysis algorithms and experiment-specific problems rather than the implementation of underlying dependencies.



## Curing Disease with NumFOCUS Tools

(How CellProfiler runs on NumFOCUS)

CellProfiler, a biomedical research tool, was developed and is maintained with help from five NumFOCUS-supported open source projects. CellProfiler enables researchers to quantitatively measure the size of cells, contributing significantly to advancements in the detection and treatment of various diseases.



## Ethics in AI and Machine Learning

(NumFOCUS tools help promote accountability and ethics)

Several NumFOCUS Sponsored Projects play a crucial role in helping to ensure the ethical use and development of artificial intelligence and machine learning systems. The Institute for Ethical AI & Machine Learning employs multiple NumFOCUS tools to evaluate the explainability and accountability of various AI and ML systems.

To read the full case studies, visit [numfocus.org/case-studies](https://numfocus.org/case-studies)



## AFFILIATED PROJECTS



Our [affiliation program](#) also grew substantially in 2019. This year we welcomed 9 new affiliated projects, bringing our total to 32 projects in the affiliation program.



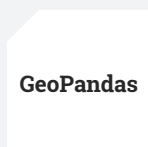
Clawpack



Colour



Effective Quadratures



GeoPandas



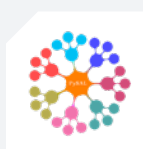
ObsPy



Policy Simulation Library (PSL)



Pvlib



PySAL



Signac



# NumFOCUS SERVICES TO PROJECTS

NumFOCUS provides community, funding, and promotional benefits to our fiscally sponsored and our affiliated projects.

NumFOCUS fiscally sponsored projects receive a number of additional services including financial administration, operational, and legal support.



## Legal

Licensing  
Trademark Registration  
& Ownership  
Contracts &  
Agreements



## Financial

Accounts Payable  
& Receivable  
Grant Administration  
Independent  
Contractors  
Taxes & Reporting



## Operational

Infrastructure  
Management Tools  
Conference &  
Event Planning  
Administrative Tools



## Promotional

Marketing Collateral  
Digital Media  
Case Studies

70,000 project stickers were distributed throughout 2019!



# PROGRAMS



# PyData

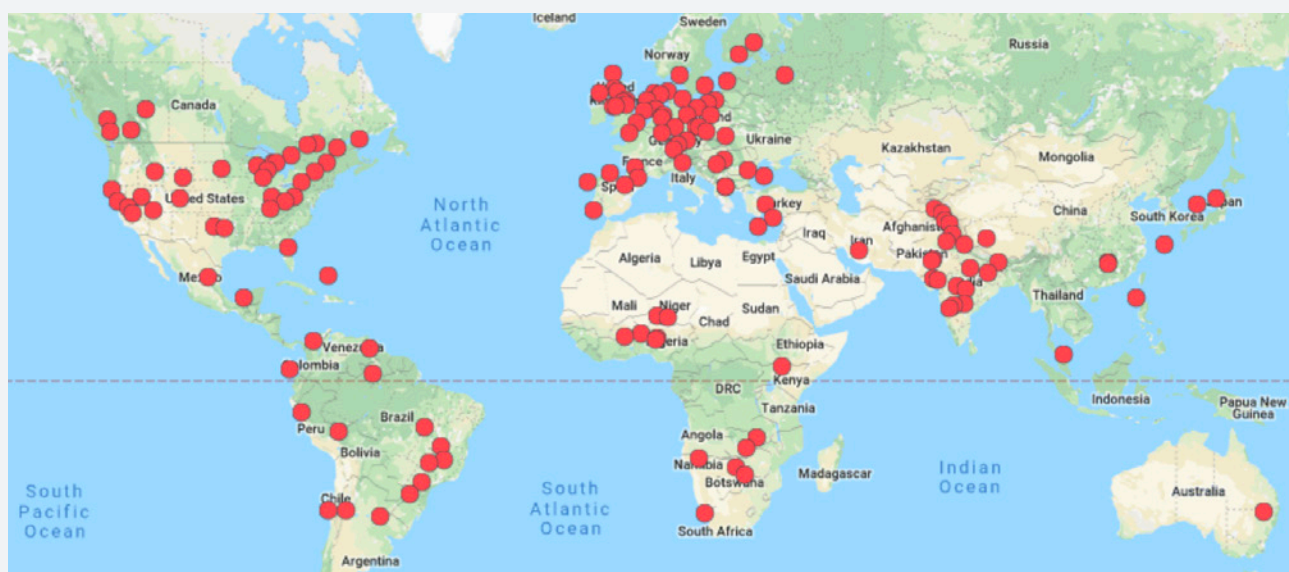
## Our flagship educational program, PyData, had an outstanding year of growth in 2019!

The global PyData network promotes discussion of best practices, new approaches, and emerging technologies for data management, processing, analytics, and visualization. PyData communities approach data science using many languages, including (but not limited to) Python, Julia, R, and Stan.



### PyData Meetups:

PyData Meetups provide a forum for the international community of users and developers of data analysis tools to share ideas and learn from each other.



YEAR	MEMBERS	CHAPTERS	COUNTRIES
2018	100,000+	126	49
2019	150,000+	159 (+33)	58 (+9)

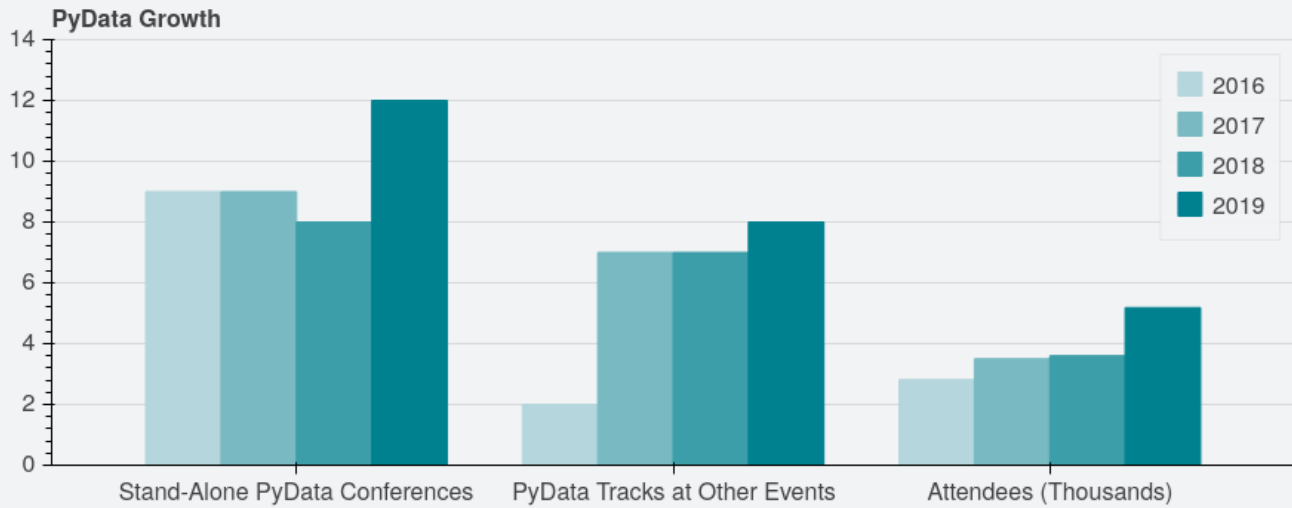
► Events Hosted:  
**1,529**

► RSVPs:  
**110,605**



## PyData Conferences:

PyData expanded to four new cities: Miami, Cambridge, Eindhoven & Austin.



Talks Presented:

**415**

Tutorials Presented:

**95**

Diversity Scholarships Awarded:

**242**



## PyData Videos:

YEAR	TOTAL SUBSCRIBERS	VIEWS (PER YEAR)	HOURS WATCHED (PER YEAR)
2018	+62,000	1.7M	205.5K
2019	+85,000	2.1M	275K

This year we offered the community over 300 new videos for a total of 1,950 on the PyData Youtube channel. NumFOCUS is proud to offer this free educational resource which gives everyone, no matter where they're located, access to these outstanding presentations.

### [@PyData on Twitter](#)

We grew the PyData Twitter following from 35,000+ to 45,000+ in 2019. We also achieved the milestone of over 1 million impressions per month!

► Impressions:

**5,214,012**

► New Subscribers:

**10,501**

► Mentions:

**1,985**





# SMALL DEVELOPMENT GRANTS TO NumFOCUS PROJECTS






**NumFOCUS awards small development grants to help our sponsored and affiliated projects improve usability, grow their communities, and speed up the time to major releases.**

In 2019 we awarded \$76,310 in small grants of up to \$5,000 each. The average single grant amount was \$3,816. An additional \$9,000 was awarded in off-cycle grant requests. This is the most money that NumFOCUS has been able to dedicate to the Small Development Grants program since its inception—largely thanks to the generosity of our individual and corporate donors.

## **2019 Awards:**

PROJECT	PROPOSAL TITLE
 <b>ArviZ</b>	Create educational material and give workshops related to exploratory analysis of Bayesian models with ArviZ
 <b>Astropy</b>	Developing Spectroscopic Reduction Tools
 <b>Blosc</b>	Document Blosc2 frame format and freeze API
 <b>Bokeh</b>	Websocket Optimization for Tornado (for Bokeh)



	<b>Cantera</b>	<ul style="list-style-type: none"> <li>• Cantera Packaging and CI Infrastructure Upgrades</li> <li>• The 4th Annual Kinetics Code Conference</li> </ul>
	<b>conda-forge</b>	Unified Recipe Regenerator
	<b>Gensim</b>	Organize Gensim Documentation & Improve Discovery
	<b>Julia</b>	JuliaImages developer meeting
	<b>MathJax</b>	Improved Dyslexia Support via Fine Grained Synchronized Highlighting
	<b>Matplotlib</b>	Matplotlib Cheatsheets
	<b>pandas</b>	<ul style="list-style-type: none"> <li>• Encourage contributors from minority groups to lead efforts in improving pandas documentation</li> <li>• Improving and modernizing the introductory “Getting Started” pages of the pandas documentation</li> </ul>
	<b>rOpenSci</b>	Create an open online rOpenSci Community Contributing Guide
	<b>SciPy</b>	<ul style="list-style-type: none"> <li>• Enhanced LAPACK Support in SciPy</li> <li>• Complete the SciPy special functions documentation</li> <li>• SciPy Development Documentation Overhaul</li> </ul>
	<b>Spyder</b>	<ul style="list-style-type: none"> <li>• Content and design improvements to the Spyder documentation</li> <li>• Creating the ultimate terminal experience in Spyder with Spyder-terminal</li> </ul>
	<b>SymPy</b>	Expanding ODE Module

The complete list of grants, from the start of the program in 2017, is available [on our website](#).

# INAUGURAL VISITING FELLOW

**In 2019, NumFOCUS welcomed Two Sigma engineer Sam Brice as our inaugural NumFOCUS Visiting Fellow.**

Sam made a number of impactful contributions to the organization, including supporting our transition to a new donor database system and helping define and create a default governance framework for our projects. The systems and processes he helped to implement will foster the healthy growth of a diverse and inclusive contributor community.

Thank you to our Gold level Corporate Sponsor Two Sigma for helping to kick off this program!



## DIVERSITY AND INCLUSION IN SCIENTIFIC COMPUTING (DISC)

**In 2019, the DISC Steering Committee welcomed 4 new members:**

- ▶ Hannah Aizenman
- ▶ Melissa Ferrari
- ▶ Katrina Riehl (NumFOCUS Board of Directors)
- ▶ Ana Ruvalcaba

**They join existing Steering Committee members:**

- ▶ Samuel Brice
- ▶ Leonie Mueck
- ▶ Madicken Munk
- ▶ Gina Helfrich (chair)

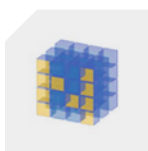
This year, the [DISC Program](#) continued its work on the [DISCOVER Cookbook](#) and assessment of inclusivity and diversity at our events. They also started initial work towards developing more resources for open source project leaders looking to make their contributor communities more inclusive. Finally, they launched an initiative to evaluate effective ways to incorporate more community volunteers in work led by the DISC Steering Committee.

# GOOGLE SEASON OF DOCS

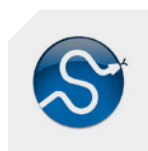
Four NumFOCUS projects participated in the inaugural cohort for [Google Season of Docs \(GSoD\)](#):



[MDAnalysis](#)  
(Lilly Wang)



[NumPy](#)  
(Anne Bonner)



[SciPy](#)  
(Maja Gwozdz)



[SymPy](#)  
(Lauren Glattly)

These projects worked with technical writers who helped to improve project documentation through the creation of user surveys, style guides, user guides, and quickstart guides. So far, all of the projects have been very pleased with the work achieved through the GSoD program!

# GOOGLE SUMMER OF CODE

2019 marked the fifth year NumFOCUS has participated as an umbrella organization for Google Summer of Code. We had [22 students working with 11 open source projects](#) under the NumFOCUS umbrella, plus a few other projects who participated in the program independently.

## NumFOCUS projects who mentored GSoC students this year:

- |  |                  |               |
|--|------------------|---------------|
| ▶ ArviZ                                  | ▶ Data Retriever | ▶ PyMC3       |
| ▶ Astropy & SunPy<br>(as Open Astronomy) | ▶ FEniCS         | ▶ QuTiP       |
| ▶ Cantera                                | ▶ JuMP           | ▶ Shogun      |
| ▶ Chainer                                | ▶ MDAnalysis     | ▶ SymPy       |
| ▶ CuPy                                   | ▶ mlpack         | ▶ YellowBrick |

# SUSTAINABILITY PROGRAM

Nearly 100 project members and NumFOCUS stakeholders came together in early November for the [NumFOCUS Summit](#), our yearly gathering focused on promoting sustainability for our open source scientific computing projects.

The event was hosted in New York City by Microsoft, a NumFOCUS Platinum Corporate Sponsor. This year's program focused on two themes: Funding and Project Leadership.

In conjunction with the Summit, we recognized members of the community who have made substantial contributions to our projects, to our ecosystem, and to the open source scientific computing movement at the [second annual NumFOCUS Awards Dinner](#).

Community Leadership Awards	Project Sustainability Award	Corporate Stewardship Award
<b>Reshama Shaikh</b> <b>Matti Lyra</b>	<b>Marc Garcia</b>	<b>Matt Greenwood</b>

Additionally, we honored outstanding new contributors to our community; these contributors were selected by the leaders of their project for particular recognition.

<b>Astropy:</b> Brigitta Sipöcz	<b>Julia:</b> Logan Kilpatrick	<b>Project Jupyter:</b> Saul Shanabrook	<b>Scipy:</b> Kai Striega
<b>Blosc:</b> Aleix Alcacer	<b>Julia:</b> Mosè Giordano	<b>PyMC3:</b> Demetri Pananos	<b>Scipy:</b> Peter Bell
<b>Cantera:</b> Ingmar Schoegl	<b>MathJax:</b> Volker Sorge	<b>PyMC3:</b> Luciano Paz	<b>Shogun:</b> Gil Ferreira Hoben
<b>conda-forge:</b> Sophia Castellarin	<b>Numpy:</b> Inessa Pawson	<b>rOpenSci:</b> Melina Vidoni	<b>SymPy:</b> Oscar Benjamin
<b>FEniCS:</b> Igor Baratta	<b>Numpy:</b> Kevin Sheppard	<b>rOpenSci:</b> Will Landau	<b>SymPy:</b> S.Y. Lee



# GRANTS



# MAJOR GRANTS TO SPONSORED PROJECTS THROUGH NumFOCUS

**NumFOCUS fiscally sponsored projects were very successful in securing grant funding this year. The following grants are being managed by NumFOCUS on behalf of our sponsored projects:**

## Gordon and Betty Moore Foundation

The **Astropy Project**, which provides software tools and infrastructure to facilitate research by professional astronomers, [received a \\$900,000 grant](#) from the Gordon and Betty Moore Foundation. This is the largest grant NumFOCUS has managed to date.



## Chan Zuckerberg Initiative

Six of our fiscally sponsored projects [received grant funding](#) from the Chan Zuckerberg Initiative (CZI) during the first cycle of their Essential Open Source Software for Science program:

- ▶ **pandas**
- ▶ **Matplotlib**
- ▶ **NumPy**
- ▶ **Project Jupyter (JupyterHub & Binder)**
- ▶ **SciPy**
- ▶ **Zarr**



Proposals from NumFOCUS sponsored projects accounted for nearly 20% of round-one grants. Two proposals by NumFOCUS affiliated projects (one for scikit-learn and one for scikit-image and Dash) were also selected for funding.



## Alfred P. Sloan Foundation

**PALISADE** was awarded a grant from the Alfred P. Sloan Foundation to develop and test privacy-protection techniques for encrypting, linking, and analyzing sensitive data.

The Alfred P. Sloan Foundation [gave \\$30,000 to support travel](#) for up to two representatives from each of our projects to attend the annual NumFOCUS Summit, a gathering focused on promoting sustainability for our open source scientific computing projects.

This year the Alfred P. Sloan Foundation also graciously awarded \$20,000 for **JuliaCon** 2019 diversity efforts. The funding was used to support the travel of attendees coming from underrepresented groups, such as gender and racial/ethnic minorities who are users of and contributors to the Julia programming language.



## NASA - Heliophysics Data Environment Enhancements Program

The one-year grant, entitled “*Supporting and extending SunPy for the heliophysics community*,” will create a spectral datatype and provide more coordinate systems in SunPy. In addition, code snippets demonstrating the use of SunPy and other heliophysics-focused Python packages will also be created. Finally, an extensive analysis of the codebase will be performed in order to improve SunPy’s long-term maintainability.





# SUPPORT



# 2019 NumFOCUS CORPORATE SPONSORS

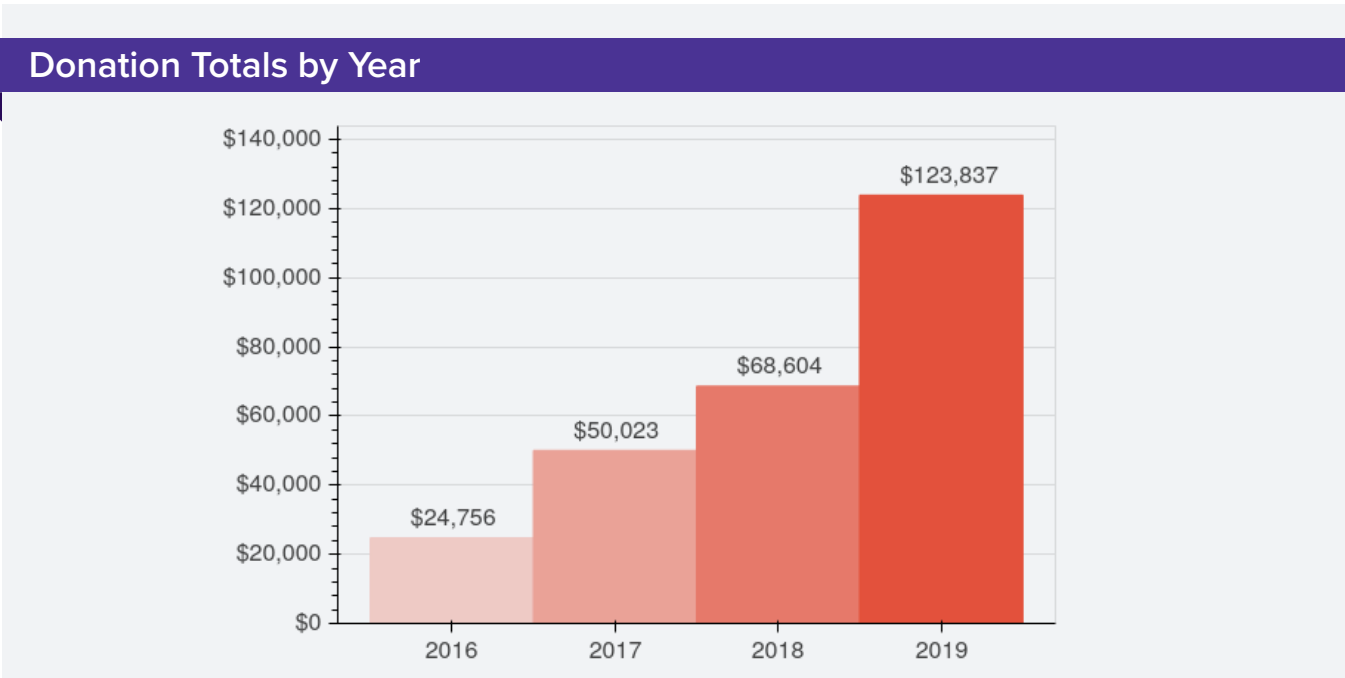
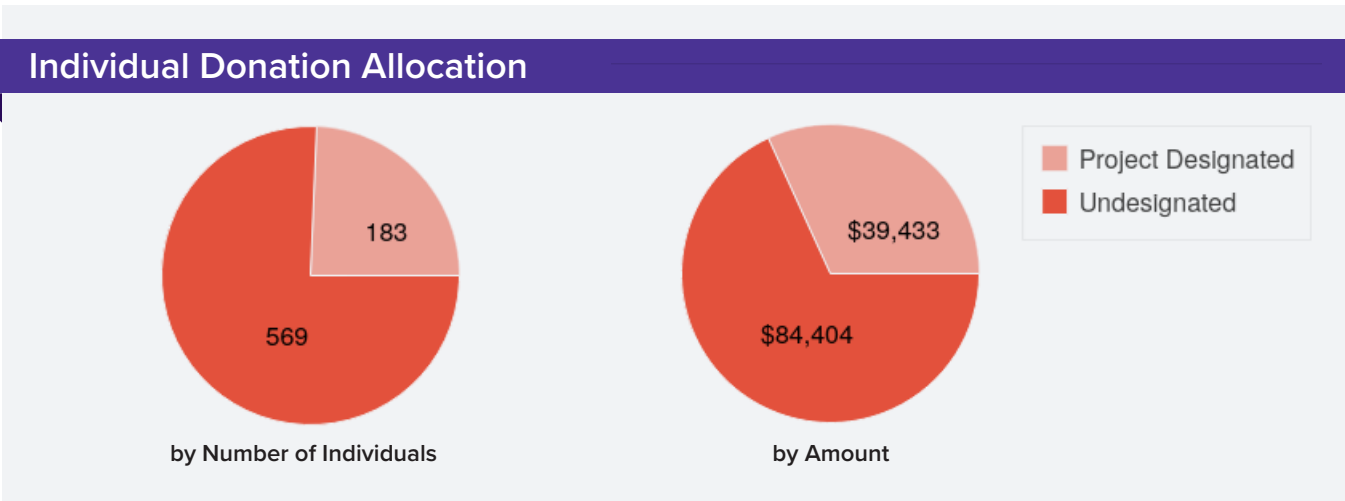
Our Corporate Sponsors invest in the development and sustainability of the open source scientific data stack through their financial support of NumFOCUS.

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Support from individual donors has grown substantially in recent years—a trend that continued in 2019. NumFOCUS values the generosity of our community and celebrates each donation we receive.

Designated donations fund the development and sustainability of a specific Sponsored Project. Undesignated donations benefit all Sponsored and Affiliated Projects through NumFOCUS programs and initiatives.










# DONOR LIST

**NumFOCUS would like to extend special recognition to the following donors who provided gifts of \$1,000 or more in 2019.**












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Below is a list of individuals who contributed in 2019. Sustaining Donors who have made an ongoing monthly commitment to our mission are demarcated with 













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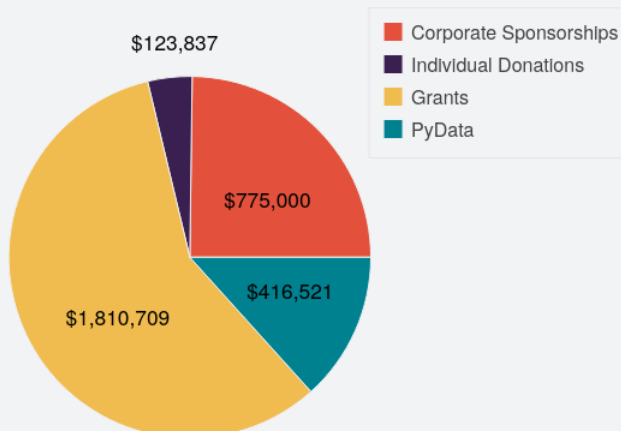
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# REVENUE & EXPENSES

## Revenue

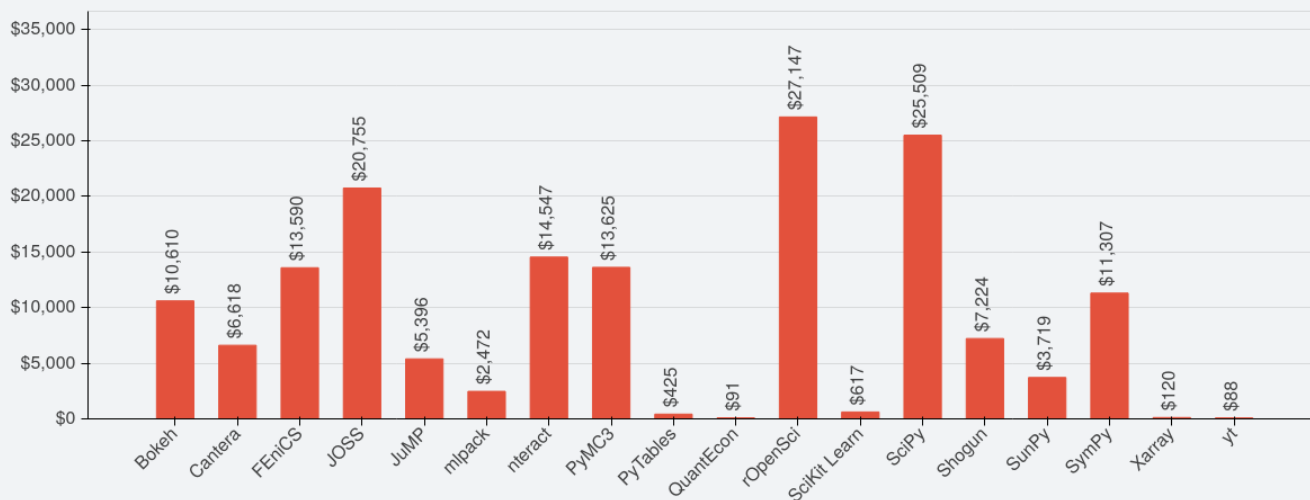


## Expenses

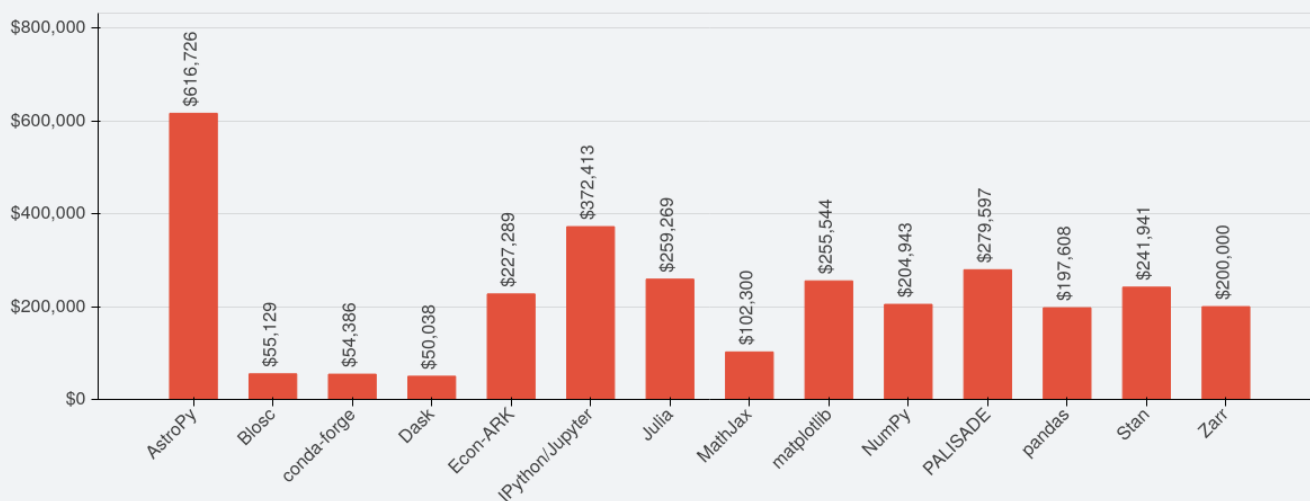
TOTALS	
<b>Project Direct Expenses</b>	<b>\$1,326,366</b>
Total of all project expenses including equipment, travel, events, testing, documentation, server space, infrastructure, and developer time.	
<b>Project and Core Mission Support</b>	<b>\$1,025,863</b>
PROJECT & CORE MISSION SUPPORT DETAIL	
Bank Fees	\$8,195
Diversity Scholarships (External Events)	\$14,500
External Events	\$15,628
Insurance	\$3,702
Legal, Accounting, & Other Professional Services	\$109,325
Office Space, Equipment, & Supplies	\$53,846
Promotional Services & Fundraising	\$13,401
Shipping	\$4,000
Small Development Grants	\$85,310
Software & Subscriptions	\$30,713
Staff Salary/Benefits	\$558,337
Sustainability & Summit	\$116,118
Travel	\$12,788

# PROJECT INCOME DETAIL

## Total 2019 Income: Up to \$50,000

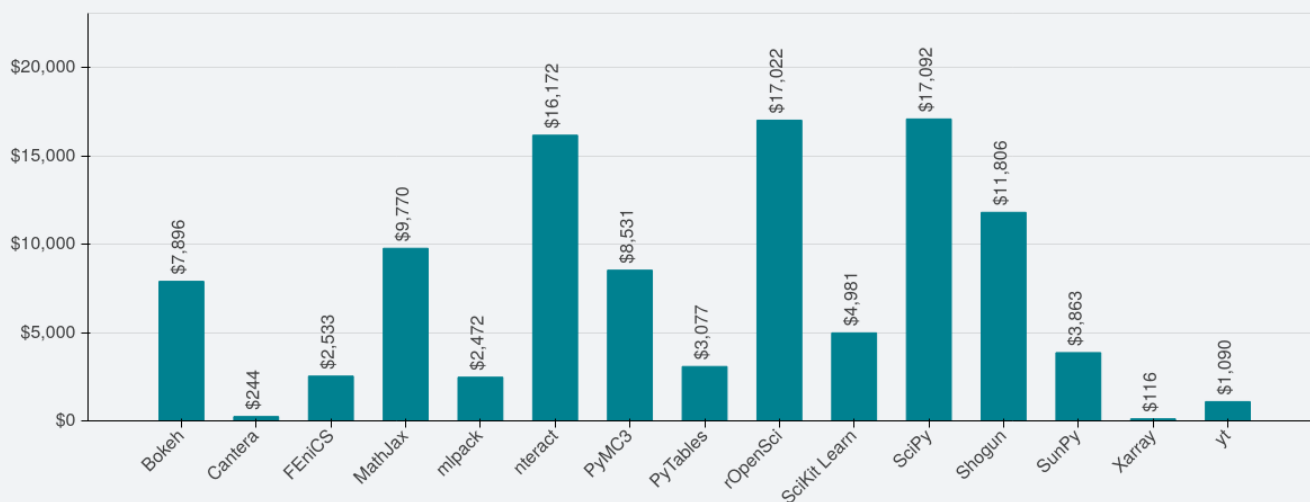


## Total 2019 Income: Over \$50,000

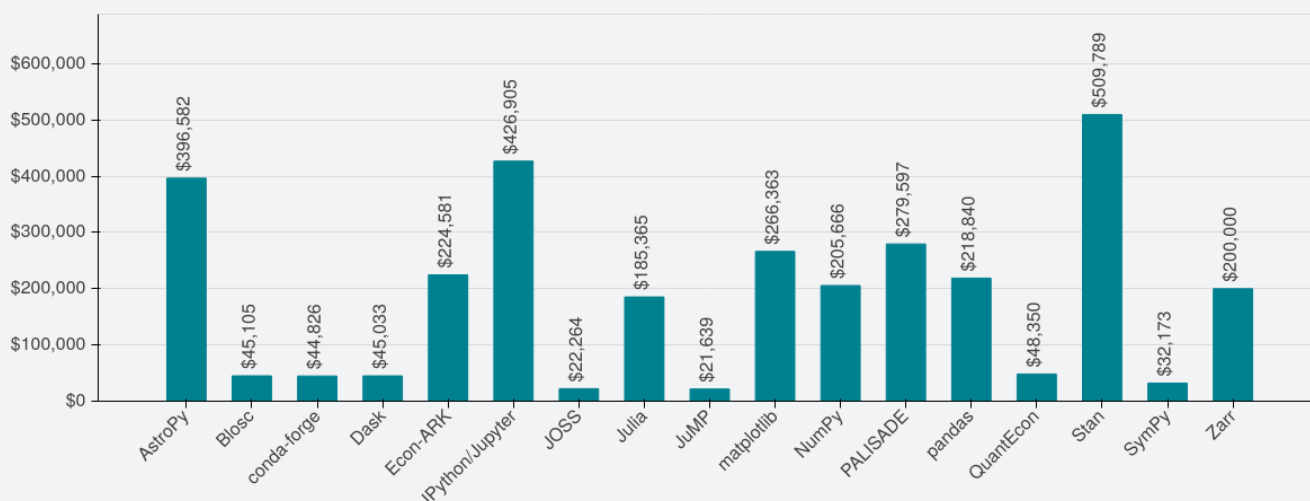


# PROJECT EOY BALANCE DETAIL

## Project EOY Balance: Up to \$20,000



## Project EOY Balance: Over \$20,000



A special thanks to Bokeh for providing us with these excellent data visualizations!

# PEOPLE





# NumFOCUS GOVERNANCE

NumFOCUS doubled our staff in 2019! These hard-working individuals provide many critical services to our projects and our community. This year we welcomed Walker, Nicole, Lisa, and Terry to the team—joining Jim, Lynn, Gina, and Leah.

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OPEN CODE = BETTER SCIENCE

The mission of NumFOCUS is to promote sustainable high-level programming languages, open code development, and reproducible scientific research. We accomplish this mission through our educational programs and events as well as through fiscal sponsorship of open source scientific computing projects. We aim to increase collaboration and communication within the data science and scientific computing community.

NumFOCUS is a 501(c)3 public charity in the United States.

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