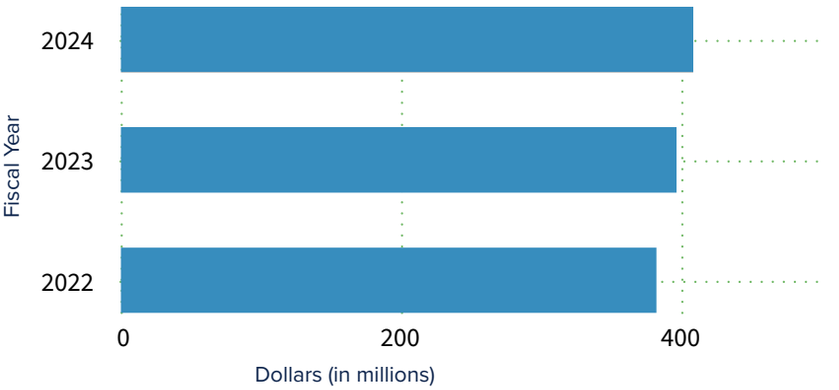
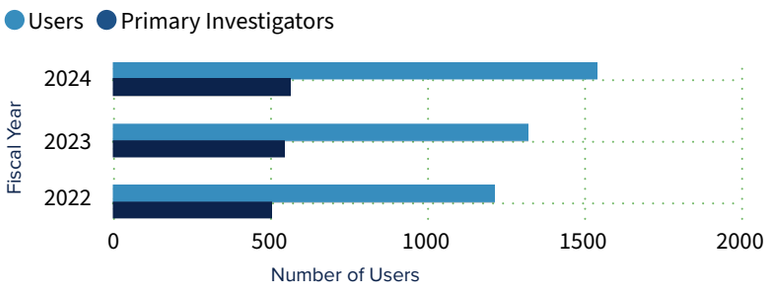
The University of Arizona Research Computing FY24 Highlights

Research & Discovery Technologies provides high performance computing (HPC) resources to research faculty at no cost. With well managed time allocations, these resources operate at 100% capacity, ensuring research faculty have access to extensive processing capabilities.

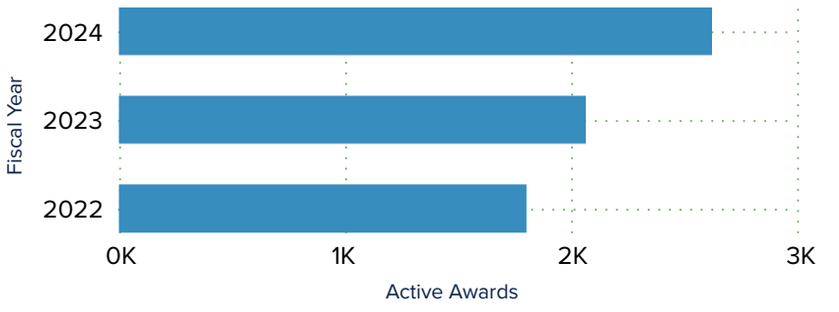
Research Expenditures by HPC Users



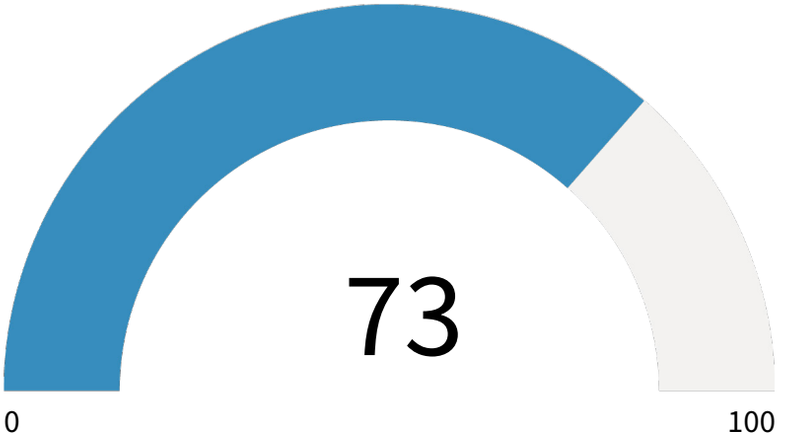
Users and Primary Investigators Using the HPC



Active Awards by Researchers With HPC Accounts



Number of Top 100 Researchers Using HPC FY24



From one of our Researchers

"I'm running hundreds of models to find the best fit and to develop the the best set of predictors, this is something where the the use of the HPC is really important. It lets me run things in parallel and at a magnitude that's basically impossible on a local machine."

Milestone Unlocked: UITS Puma HPC Accelerates Toward the Future of Research

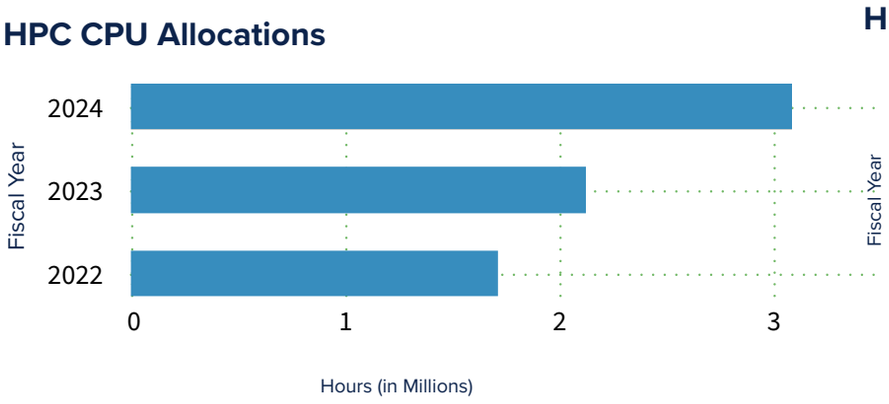
By Alana Talkington

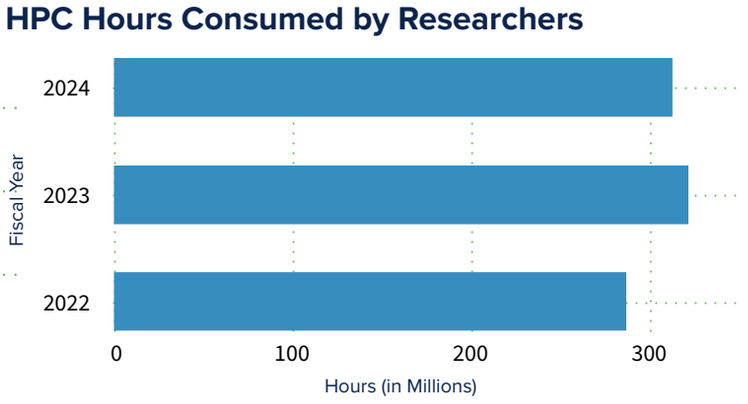
In the rapidly advancing field of technology, the University Information Technology Services (UITS) High-Performance Computing (HPC) system, Puma, stands as a prominent example of modern computational power. Developed in 2020, Puma has swiftly become an indispensable asset for pioneering scientific research. Among its notable contributions is its role in supporting the NEO-Surveyor Space Mission, a critical initiative aimed at enhancing planetary defense through the detection and study of Near-Earth Objects (NEOs).

Over the past four years, Puma has been a vital resource for researchers at the University of Arizona, recently reaching a significant milestone by processing its 10 millionth computational job. To put this achievement into perspective, if each job represented a single step, the distance covered would be equivalent to walking to Niagara Falls and back, highlighting the remarkable scale of Puma's computational contributions.

David Castellano, postdoctoral research associate, studies evolutionary processes that generate the complex networks that comprise life and was the researcher who was able to push Puma to this milestone. “Understanding the relationship between DNA mutation rates and fitness effects is central to evolutionary biology. My work is investigating this relationship in three species: Homo sapiens, Mus musculus, and Arabidopsis thaliana.” As for how a High Performing Computing Device is essential to his work, Castellano explains “The inference of fitness effects from population genomics data requires intensive computation which could not be possible without Puma.”

Puma has established itself as an indispensable High-Performance Computing resource, driving research innovation with no indication of slowing down. This milestone is just one of many anticipated achievements as it continues to support cutting-edge scientific endeavors.





Number of HPC PI Patents 2021-2023

28

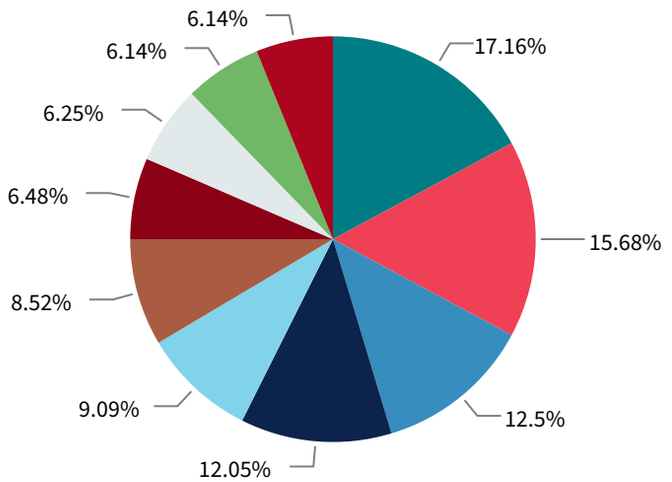
Number of HPC PI Publications 2021-2023

3173

Citation of HPC PIs 2021-2023

91K

Top Publication Topics 2021-2023

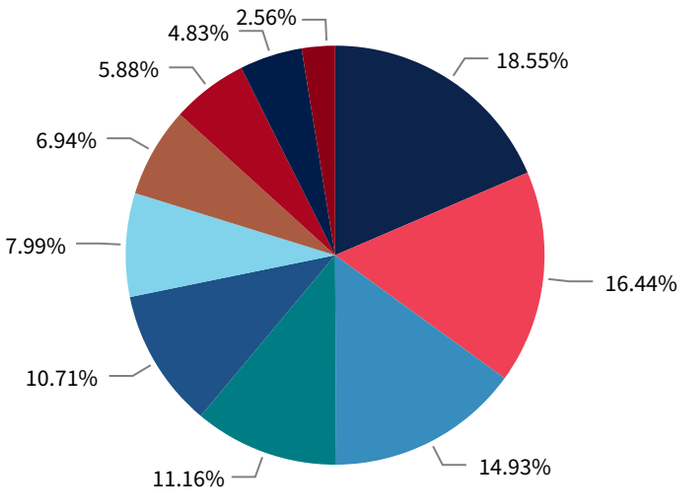


Publication Topic

- machine learning
- space exploration
- astrophysics
- astronomy
- planetary science
- data analysis
- materials science
- remote sensing
- fluid dynamics
- neuroscience

Publication Topic	Publications
machine learning	151
space exploration	138
astrophysics	110
astronomy	106
planetary science	80
data analysis	75
materials science	57
remote sensing	55
fluid dynamics	54
neuroscience	54

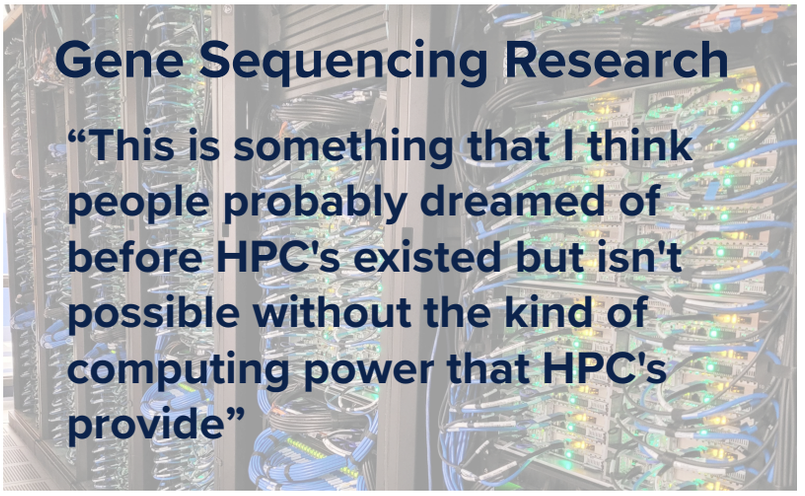
Top Sponsored Research Funding Sources 2021-2023



Funding Agency

- Through Non-Profits
- Department of Health and Human Services
- National Science Foundation NSF
- NASA
- Through Other States
- Other Non-Profit Sponsors
- For Profit
- Through For-Profits
- State Govt-Arizona
- Department of Army DA

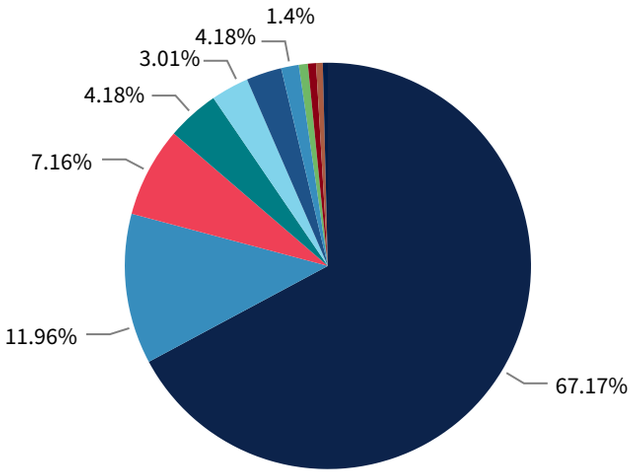
Funding Agency	Grants
Through Non-Profits	123
Department of Health and Human Services	109
National Science Foundation	99
NASA	74
Through Other States	71
Other Non-Profit Sponsors	53
For Profit	46
Through For-Profits	39
State Govt-Arizona	32
Department of Army	17



Number of Active Departments

Fiscal Year	Active Departments
2024	86
2023	83
2022	78

Total Compute Time by College FY24

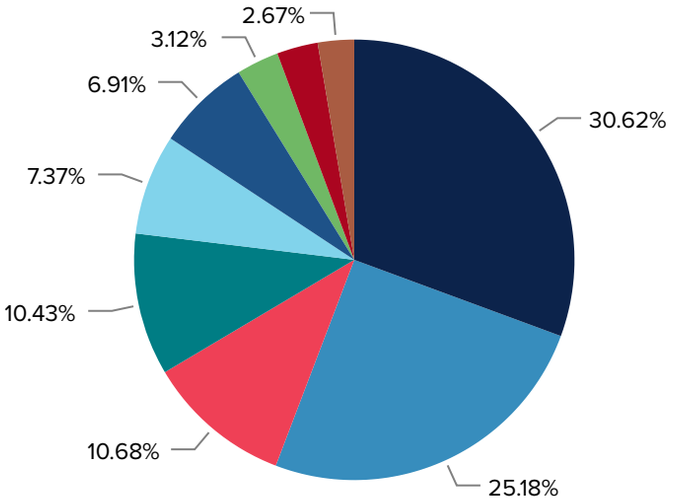


College

- College of Science
- Eller College of Management
- Coll of Ag Life & Env Sci
- College of Engineering
- James C Wyant Coll Optical Sci
- College of Medicine - Tucson
- Remaining 13 Colleges
- RII Centers & Institutes
- R Ken Coit College of Pharmacy
- College of Public Health
- Non-College Users

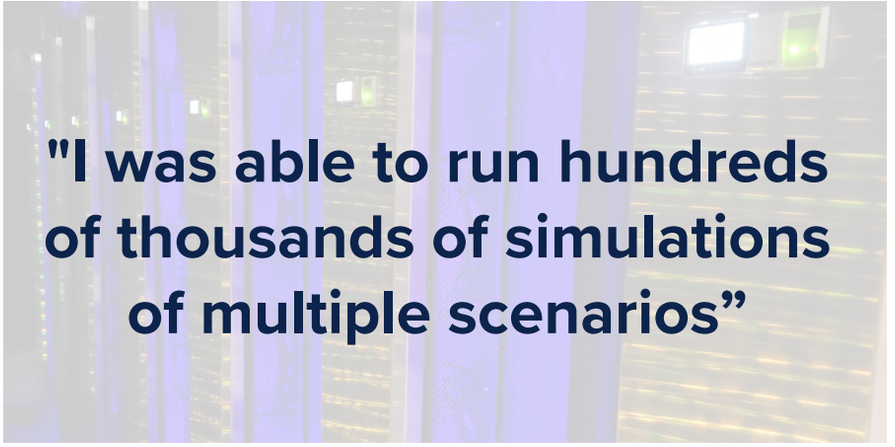
College	Compute Hours
College of Science	9,971,528.92
Eller College of Management	1,775,584.65
Coll of Ag Life & Env Sci	1,062,754.93
College of Engineering	620,124.20
James C Wyant Coll Optical Sci	447,265.20
College of Medicine - Tucson	418,042.19
Remaining 13 Colleges (Other)	208,426.11
RII Centers & Institutes	107,011.73
R Ken Coit College of Pharmacy	95,583.68
College of Public Health	78,604.73
Non-College Units	59,399.07

Total Compute Time by Department FY24



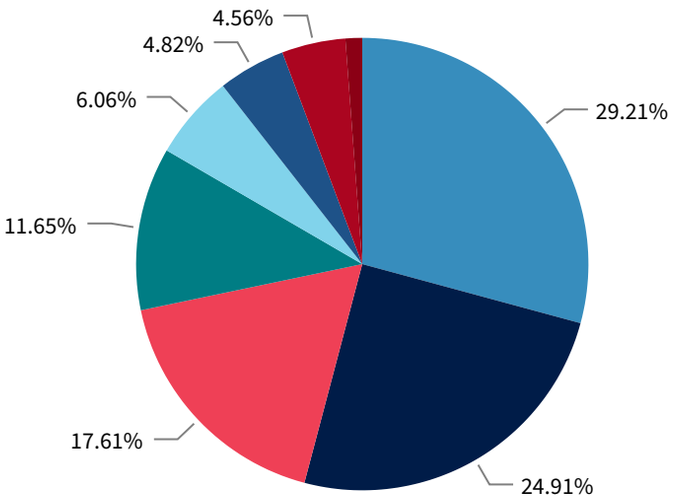
Department

- Remaining 77 Departments (Other)
- Chemistry & Biochemistry - Sci
- Economics
- Ecology & Evolutionary Biology
- Cognitive Science
- Astronomy
- Lunar and Planetary Laboratory
- James C Wyant Coll Optical Sci
- Physics



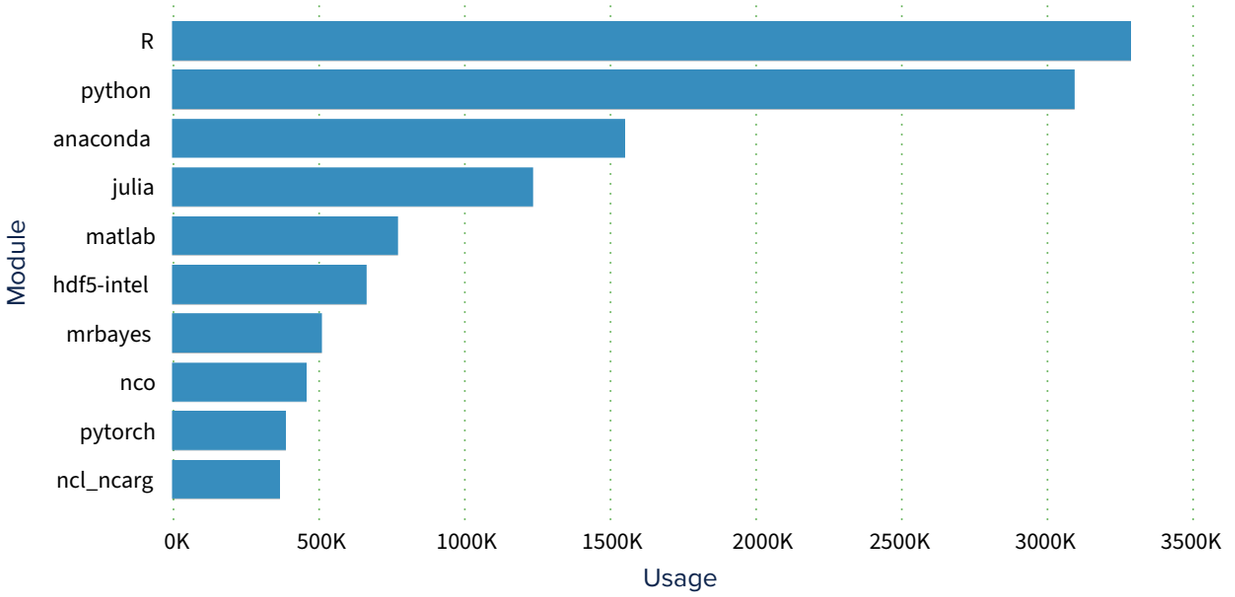
Department	Compute Hours
Remaining 77 Departments (Other)	4,545,779.36
Chemistry & Biochemistry - Sci	3,737,634.53
Economics	1,584,972.81
Ecology & Evolutionary Biology	1.548.982.45
Cognitive Science	1,094,633.29
Astronomy	1,025,123.05
Lunar and Planetary Laboratory	463,842.06
James C Wynat Coll Optical Sci	447,265.20
Physics	396,092.66

Consult Types FY24



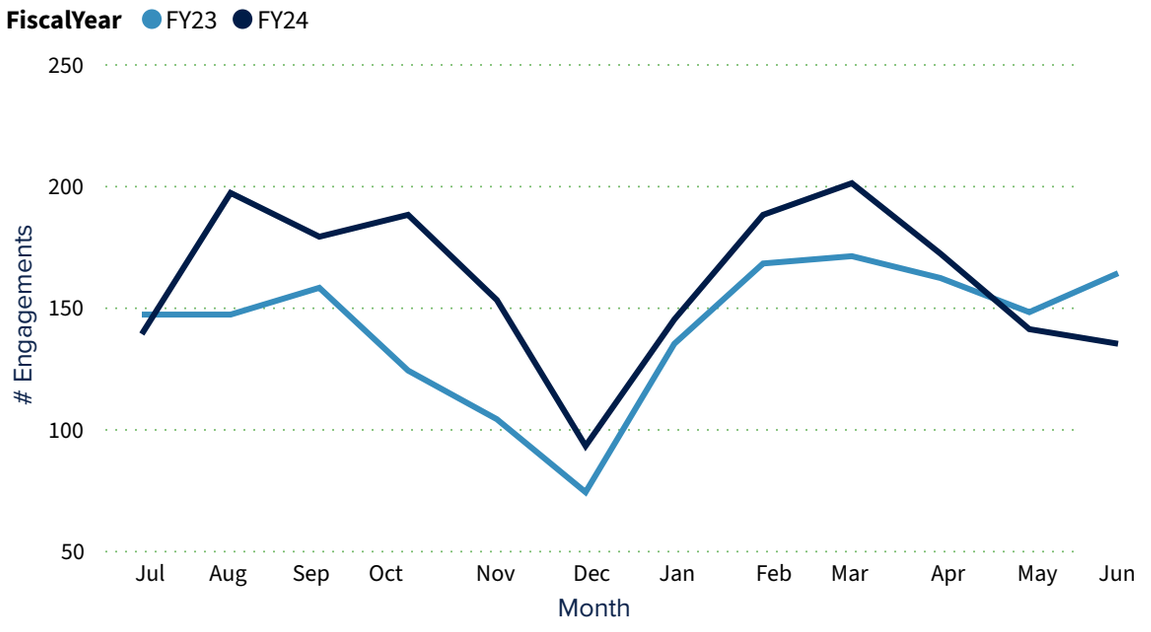
Type of Consult	Count of Users
App	564
Data	481
Slurm	340
Access	225
New PI	117
Consult	93
System	88
BuyIn	23

Top 10 Software Usage FY24



Software	Usage
R	3,285,142
python	3,093,285
anaconda	1,549,589
julia	1,236,438
matlab	770,430
hdf5-intel	662,885
mrbayes	510,388
nco	458,313
pytorch	386,860
ncl_ncarg	364,955

Support Engagements FY24 vs FY23



Month	FY23	FY24
Jul	147	139
Aug	147	197
Sep	158	179
Oct	124	188
Nov	104	153
Dec	74	93
Jan	135	145
Feb	168	188
Mar	171	201
Apr	162	172
May	148	141
Jun	164	135
Total	1,702	1,931