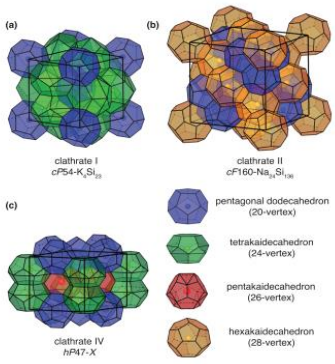
CornellCAC

Cornell Research & Education Impact (FY23)

Research Impact

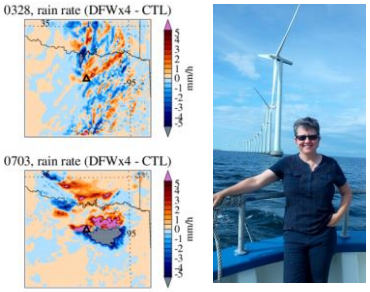
- **384 research projects** supported
- **1,545 faculty and student users** from Cornell's colleges and schools, research centers, institutes, and laboratories
- **6,884,613 hours computing on Red Cloud**, Cornell's on-premise cloud for research. Red Cloud's CPU/GPU exploratory accounts are available for free to Cornell faculty and student researchers.
- **25 private faculty compute clusters** hosted/maintained for Applied Physics, Astronomy, BEE, BioHPC, CCSS, Chemistry, CBE, CEE, CS, ECE, Human Ecology, MAE, MSE, Nutrition, Physics, Plant Science, Praxis, and WCM
- **12,118 hours consulting** provided to researchers
- **360TBs Red Cloud storage/709TBs archival storage** used



Julia Dshemuchadse, Materials Science & Engineering, used a targeted computational approach to discover more than 20 new self-assembled crystal structures. "The GPUs in our CAC-hosted cluster and the degree of access were essential to being able to do our exploratory project."

Grant Impact

- **New NSF grants in FY23:** $2.1M integrated framework for atmospheric and climate modeling (CAC PI; Pryor, EAS, co-PI); $3.5M grant to connect multi-messenger astrophysics research worldwide (CAC co-PI)
- **Other grants:** IntBIO: Pollinator-Pathogen Dynamics – CAC PI; Multi-Host Parasites – McArt, Entomology, PI (CAC co-PI); NANOGrav – Cordes, Astronomy, co-PI (CAC CI co-Lead); IRIS-HEP – Wittich, Physics (CAC software engineering for High-Luminosity Large Hadron Collider); Fusion Energy – Bindel, CS (CAC stellarator software optimization)
- **National Cyberinfrastructure sub-awards:** Jetstream2 Regional Cloud at Cornell; Frontera supercomputer and Horizon Leadership-Class Computing Facility partner



Sara C. Pryor, Earth and Atmospheric Sciences, will benefit from a 4-year grant awarded to CAC. The I-WRF project will implement a new multi-node containerized framework for the Weather Research and Forecasting model and Pryor, 3 funded postdocs, and Cornell students will scale studies on the impact of climate change on wind power generation and air quality in Northeast cities.

Education Impact

- **17 research computing webinars** delivered; 1,063 attendees
- **28 instructional videos** available on demand (CAC YouTube)
- **Cornell Virtual Workshop** roadmaps created and AI training
- **3 eCornell Certificates** maintained by their CAC instructors: Python for Data Science; Data Science with SQL & Tableau; Data Visualization (generated $6.9M eCornell revenue since launch)
- **Classroom lectures/mentoring** of grad students and postdocs

Steve Lantz lectured a CS5220 class on software that he and Cornell physicist Peter Wittich are developing for the HL-Large Hadron Collider. This year's "One Cornell" CAC/WCM Scientific Computing Training Series 17 webinars drew 1,063 attendees.

The Cornell Center for Advanced Computing (CAC) services impact Cornell researchers by accelerating insights and discovery, strengthening grant proposals, and helping researchers meet grant deliverables faster and more effectively. Contact CAC today to learn how we can help: **Rich Knepper, PhD, CAC Director, 607-255-0313 or rich.knepper@cornell.edu**. Learn more at www.cac.cornell.edu.