Dr. Joseph H. Kennedy

+1 206 714 3375 | me@jhkennedy.org | jhkennedy.org | publications | @jhkennedy

Senior Research Software Engineer

I am a Scientist and Software Engineer with extensive multi-institutional project leadership and management experience. I specialize in bridging the gap between scientists and software engineers, building ground-up Cloud and HPC data processing/analysis platforms for users, managing global-scale processing campaigns, working with PB-scale Big Data, and generating analysis-ready Earth Observing/Modeling data. I have expertise in open-source development, packaging, and distribution of scientific software, especially within the scientific python ecosystem.

Highlights

Lead the transformation of internally and externally developed science (algorithm and processing) prototypes into Cloud and HPC production services, and effectively managed $800K (2022) to execute multiple global-scale processing campaigns.

- ◇ Executed the ITS_LIVE global glacier velocity campaign, processing ≈25 million scene-pairs in two months, covering every available ice-intersecting Landsat 4-9, Sentinel-2, and Sentinel-1 scene.
- ◇ Productionized the HydroSAR flood monitoring service for the Hindu Kush Himalayas (HKH) region and successfully transitioned the service to ICIMOD, our local partners in Nepal.
- ◇ Transitioned the JPL ARIA processing system to an open-source, serverless framework resulting in 10x reduction in cost per product, significantly growing the ARIA-S1-GUNW archive.

Lead the ground-up redesign and development of ASF's HyP3, an on-demand SAR data processing system making analysis-ready RTC and InSAR data products. *Anyone* may request HyP3 products for free. HyP3 is deployed in NASA's Earthdata Cloud environment and integrated directly into ASF's main data search portal Vertex.

Created LIVVkit, an ice-sheet model verification and validation toolkit, to provide a wide range of validation analysis covering atmosphere-ice and land-ice interactions as well as ice sheet dynamics. These analysis exercise the entire data science pipeline, from data wrangling and cleaning to reporting, and incorporate everything from point measurements (e.g., weather stations and ablation stakes) to airborne radar altimetry (e.g., NASA IceBridge) and satellite observations (e.g., RADARSAT, NASA GRACE).

Professional Experience

Alaska Satellite Facility, Fairbanks, Alaska, USA
Geophysical Institute, University of Alaska Fairbanks — **September 2019 – present**

Engineering Supervisor — *march 2023 – present*

As an Engineering Supervisor, I currently manage 5 engineers across all levels and am involved in recruiting candidates across the organization. I am responsible for setting performance targets, developing and implementing strategies to achieve them, and monitoring progress to make sure that they are meeting or exceeding expectations. I communicate regularly with employees to provide feedback, guidance, and support as needed, and work to create a positive and productive work environment. I ensure that my employees are properly trained and equipped with the necessary tools to perform their jobs effectively.

Senior Research Software Engineer — *July 2021 – present*

As a Senior RSE, I specialize in transforming internally and externally developed science (algorithm and processing) prototypes into Cloud and HPC production services, and manage $800K to execute multiple global-scale processing campaigns. I lead the ground-up redesign and development of ASF's HyP3, an on-demand, Analysis-Ready SAR data processing system freely available to *anyone*. I Build and maintain open-source scientific tools and services to meet ASF's mission of "Making Remote-Sensing Data Accessible" including Custom HyP3 deployments for customers, STAC Catalogs, Esri Image Services, and SAR toolboxes. I curate global datasets, from inception to dissemination, such as the ARIA-S1-GUNW archive and the GLO-30 HAND dataset. I also contribute to and maintain community open-source SAR processing tools, including MintPy, ISCE2, RAiDER, autoRIFT, and more.

Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA
Climate Change Science Institute **January 2015 – September 2019**

Computational Scientist in Glaciology *December 2016 – September 2019*

Perform research tasks using DOE's Earth system model E3SM and ice sheet models (e.g., MPAS-LI, BISICLES, PISM, CISM); coordinate the verification and validation of E3SM, MPAS-LI, and BISICLES simulations; development of the Land Ice Verification and Validation toolkit (LIVVkit), a python-based toolkit for robust evaluation of ice-sheet models; and develop an extended V&V evaluation tool (EVE) for statistical climate reproducibility testing of ESMs.

Postdoctoral Research Associate *January 2015 – December 2016*

Perform research tasks using the Community Ice Sheet Model (CISM) and coordinate the development of the Land Ice Verification and Validation toolkit (LIVVkit) — a python-based toolkit for robust evaluation of ice-sheet models.
Advisor: Dr. Katherine J. Evans

Education

University of Alaska Fairbanks, Department of Physics, Fairbanks, Alaska, USA
Ph.D., 2015, Dissertation Topic:
"Linking climate history and ice crystalline fabric evolution in polar ice sheets."
Advisor: Dr. Erin C. Pettit

Western Washington University, Department of Physics, Bellingham, Washington, USA
B.S., 2008, Physics
Minors: Astronomy, The Study of Religion

Selected Publications

Kennedy, J.H., F.F. Williams, et al. (In Prep). HyP3: The Alaska Satellite Facilities Hybrid Pluggable Processing Pipeline. Journal of Open Source Software.

Osmanoglu B., F.J. Meyer, *J.H. Kennedy*, A. Albayrak, A. Johnston, E. Macorps, J. Smale, J. Zhu, M. Jo, J. Herrmann, J. Kristenson, J. Rine, and F.F. Williams. (In Prep.) An Updated Global, 30m Height Above Neartest Drainage (HAND) dataset. Nature Scientific Data.

Bekaert, D., N. Arena, M. Grace Bato, M. Govorcin, E. Havazli, K. Hogenson, H. Hua, A. Johnston, M. Karim, J.H. Kennedy, Z. Lu, C.Z. Marshak, F.J. Meyer, S. Owen, S. Sangha, G. Short, J. Wang, R. Zinke (In Review). IGARSS 2023 – 2023 IEEE International Geoscience and Remote Sensing Symposium, Pasadena, CA, USA, 2023.

Wang, J., Z. Lu, D. Bekaert, C. Marshak, Marin Govorcin, S. Sangha, *J.H. Kennedy*, P. Gregg (In Review). Along-arc volcanism in the western and central Aleutian from 2015 to 2021 revealed by cloud-based InSAR processing. Geophysical Research Letters.

Evans, K.J., *J.H. Kennedy*, D. Lu, M.M. Forrester, S. Price, J. Fyke, A.R. Bennett, M. Hoffman, I. Tezaur, C.S. Zender, and M. Vizcaino. (2019). LIVVkit 2.1: Automated and extensible ice sheet model validation. Geoscientific Model Development, 12, 1067–1086.
DOI: 10.5194/gmd-12-1067-2019

Mahajan, S., K.J. Evans, *J.H. Kennedy*, M. Xu, M.R. Norman, M.L. Branstetter (2019) Ongoing solution reproducibility of Earth system models as they progress towards exascale computing. Special Issue for Computational Reproducibility at Exascale Workshop 2017, Super Computing 2017, Int. J. High Perf. Comp. Apps..
DOI: 10.1177/1094342019837341

Lipscomb, W.H., S.F. Price, M.J. Hoffman, G.R. Leguy, A.R. Bennett, S.L. Bradley, K.J. Evans, J.G. Fyke, *J.H. Kennedy*, M. Perego, D.M. Ranken, W.J. Sacks, A.G. Salinger, L.J. Vargo, and Patrick H. Worley. (2019). Description and evaluation of the community ice sheet model (CISM) v2.1. Geoscientific Model Development, 12, 387–424.
DOI: 10.5194/gmd-12-387-2019

Goelzer, H., S. Nowicki, T. Edwards, M. Beckley, A. Abe-Ouchi, A. Aschwanden, R. Calov, O. Gagliardini, F. Gillet-Chaulet, N. Golledge, J. Gregory, R. Greve, A. Humbert, P. Huybrechts, *J.H. Kennedy*, E. Larour, W. Lipscomb, S. Le clec'h, V. Lee, M. Morlighem, F. Pattyn, T. Payne, C. Rodehacke, M. Ruckamp, F. Saito, N. Schlegel, H. Seroussi, A. Shepherd, S. Sun, R. van de Wal, F. Ziemen. (2018). Design and results of the ice sheet model initialization experiments initMIP-Greenland: An ISMIP6 intercomparison. The Cryosphere, 12, 1433–1460.
DOI: 10.5194/tc-12-1433-2018

Kennedy, J.H., A.R. Bennett, Evans, K.J., S. Price, M. Hoffman, W.H. Lipscomb, J. Fyke, L. Vargo, A. Boghozian, M. Norman, P.H. Worley. (2017). LIVVkit: An extensible, python-based, land ice verification and validation toolkit for ice sheet models. Journal of Advances in Modeling Earth Systems, 9(2), 854–869.
DOI: 10.1002/2017MS000916

Price, S., M. Hoffman, J. Bonin, T. Neumann, I. Howat, J. Saba, J. Guerber, D. Chambers, K.J. Evans, *J.H. Kennedy*, J. Lenaerts, W.H. Lipscomb, M. Perego, A. Salinger, R. Tuminaro, M. van den Broeke, and S.M.J. Nowicki. (2017). An ice sheet model validation framework for the Greenland ice sheet. Geoscientific Model Development, 10, 255–270.
DOI: 10.5194/gmd-10-255-2017

Kennedy, J.H., and E.C. Pettit (2015). The response of climate induced fabric variations to simple shear and migration recrystallization. Journal of Glaciology, 61(227), 537–550.
DOI: 10.3189/2015JoG14J156.

Kennedy, J.H., E.C. Pettit, and C.L. Di Prinzio (2013). The evolution of crystal fabric in ice sheets and its link to climate history. Journal of Glaciology, 59(214), 357–373.
DOI: 10.3189/2013JoG12J159.

Gusmeroli, A., E.C. Pettit, *J.H. Kennedy*, and C. Ritz (2012). The crystal fabric of ice from full-waveform borehole sonic logging. J. Geophys. Res., 117, F03021.
DOI: 10.1029/2012JF002343.

Funded Grant Proposals

NASA Earth Surface and Interior (ESI) Program (2023)
Co-PI, pending: *A one-stop shop of analysis-ready coseismic displacement products to advance the understanding of fault rupture processes and improve downstream rapid response products*
$755K total; $147K over 3 years to UAF

NSF Geosciences Open Science Ecosystem (GEO OSE) Program (2023)
Co-PI: *Enhancing usability of the Parallel Ice Sheet Model (PISM) to accelerate innovative sea-level research*
$638K over 3 years to UAF

NASA Making Earth System Data Records for Use in Research Environments (MEaSUREs) Program (2022)
Co-I: *Next Generation - Inter-mission Time Series of Land Ice Velocity and Elevation (ITS_LIVE_NG)*
$2.5M total; $869K over 5 years to UAF

NASA Advancing Collaborative Connections for Earth System Science (ACCESS) Program (2020)
Co-I: *Training Data for Stream Flow Estimation*
$447K total; $273K over 3 years to UAF

NASA Advancing Collaborative Connections for Earth System Science (ACCESS) Program (2020)
Co-I: *Enabling Cloud-based InSAR Science for an exploding NASA InSAR data archive*
$1.02M total; $316K over 2 years to UAF

DOE E3SM phase II project (2018)
Co-I: *The energy exascale Earth system modeling project scientific focus area renewal*
$4.5M over 5 years to ORNL

DOE BER next-gen development project (2018)
Co-I: *Climate reproducibility tests for E3SM model components and stand-alone kernels*
$1.44M over 3 years to ORNL

DOE BER/ASCR sea-level projections (2017)
Co-I and V&V task lead: *Probabilistic sea-level projections from ice sheet and Earth system models*

$1.33M over 5 years to ORNL

DOE BER ACME-SM project (2016)
Co-I: *A Global climate model software modernization surge*
$1.35M over 3 years to ORNL

ORNL/NOAA performance project (2016)
Co-I: *Performance analysis of climate workflows*
$336K over 1 year to ORNL

Significant Reports and White Papers

Kennedy, J.H., B.W. Mayer, K.J. Evans, J. Durachta (2017). Performance analysis of large scale HPC worflows for Earth system models. ORNL Technical Memo, ORNL/TM-2017/540. DOI: 10.2172/1439154

Allen, M.R., H.M.A. Aziz, M.A. Coletti, *J.H. Kennedy*, S.S. Nair, and O.A. Omitaomu (2017). Workshop on human activity at scale in Earth system models. ORNL Technical Memo, ORNL/TM-2017/24. DOI: 10.2172/1343540

Kennedy, J.H., B. Debusschere, K. Sargsyan, F.M. Hoffman, K.J. Evans (2016). Full-system evaluation of Earth system models. Ideas paper 51 in E. Ng, K.J. Evans, et al. (Authors), Advancing Cross-Cutting Ideas for Computational Climate Science, Workshop Report, Rockville, MD, September 12-13, 2016. ORNL/TM-2016/717. DOI: 10.2172/1341564.

Law, K., R. Archibald, *J.H. Kennedy* (2016). Data assimilation for ice-sheet models. Ideas paper 22 in E. Ng, K.J. Evans, et al. (Authors), Advancing Cross-Cutting Ideas for Computational Climate Science, Workshop Report, Rockville, MD, September 12-13, 2016. ORNL/TM-2016/717. DOI: 10.2172/1341564.

Software

Lead the ground-up redesign and development of the Alaska Satellite Facility's Hybrid Pluggable Processing Pipeline (HyP3; pronounced "hype"). HyP3 consists of:

- *The platform*: A cloud-native, serverless job orchestration engine in AWS with a friendly, OpenAPI and Swagger-based API.
- *Science plugins*: Container-based science algorithms and processing software. When invoked, they marshal input data, generate an output product, and upload the product to the cloud. Plugins are self-contained and independent of the platform so they can be used anywhere.
- *Science products*: The data our users are after – typically GeoTIFF and netCDF based data, with associated metadata, documentation, and usage guides.
- *Tools*: ArcGIS plugins, python packages for working with the HyP3 API and HyP3 products, and other packages useful for HyP3 development.
- *Documentation*: How we help our users, and ourselves. This includes product/software/tool documentation, examples and guides, and everything that goes into making documentation usable and look great.

The entire HyP3 ecosystem is open-source and openly-developed within the ASFHyP3 organization on GitHub.

Contributor to open-source software projects:

- autoRIFT
- MintPy
- PyAPS
- PySolid
- RAiDER
- dem-sticher
- ISCE2
- EarthAccess

Conda-forge recipe maintainer for:

- ASF Tools
- EVV
- HyP3lib
- HyP3 Metadata
- HyP3 SDK
- ILAMB
- JSON tricks
- LIVVkit
- MPAS-Analysis
- MPAS-Tools
- TempestRemap

Past:

Technical and visionary lead of the Land Ice Verification and Validation toolkit (LIVVkit); a python-based, extensible verification and validation suite for land-ice models.
https://github.com/LIVVkit/LIVVkit

Creator of the ISMIP6 Atlas submission validation tool; an extension to LIVVkit which checks submissions to ISMIP6 experiments for correct file names, paths, metadata, etc. and produces a large variety of diagnostic plot. https://github.com/LIVVkit/Atlas

E3SM (Energy Exascale Earth System Model) core developer (infrastructure group) for phase 2; DOE's E3SM is a state-of-the-science Earth system model development and simulation project to investigate energy-relevant science using code optimized for DOE's advanced computers.
https://e3sm.org/

Developer on DOE's E3SM ecosystem projects

- MPAS-Analysis: Analysis for simulations produced with Model for Prediction Across Scales (MPAS) components and DOE's E3SM.
  https://github.com/MPAS-Dev/MPAS-Analysis
- A-Prime: Python based scripts to generate coupled priority metrics for DOE's E3SM.
  https://github.com/ACME-Climate/a-prime
- EVV: Extended verification and validation for Earth system models.
  https://github.com/LIVVkit/evv4esm

Developer and integrator for the joint DOE/NSF Community Ice Sheet Model (CISM); an open-source, next-generation ice sheet model used for predicting ice sheet evolution and sea level rise in a changing climate. https://github.com/ESCOMP/cism

Allocation Proposals

Energy Research Computing Allocations Process (ERCAP) for NERSC (2016)
Co-I, accepted, *Predicting ice sheet and climate evolution at extreme scales*, 10M hours on Edison

OLCF Director's Discretion Allocation (2015)
Co-I, accepted, *Earth system modeling collaborative*, 10M hours on Titan

Awards

2022 Richardson Medal by the International Glaciology Society
Contributing member of the ISMIP6 Team which was ecognized for its academic and leadership activities in the design and production of future sea-level projections.
https://www.igsoc.org/about/awards/richardson-medal/the-ismip6-team-2022

2016 CCSI Professional Development Award, $100,000
Co-I: *Understanding the links between neighbourhood level human activity and global climate change by developing an integrative methodology using data analytics, agent-based modelling and Earth system modelling.* Project PI: Dr. Melissa R. Allen.
Climate Change Science Institute, Oak Ridge National Laboratory

2013–2014 Thesis Completion Fellowship, $15,000 + tuition
University of Alaska Fairbanks Graduate School

2011–2012 CASE GK-12 Fellow, $45,000
NSF Graduate STEM Fellow in K-12 Education, Changing Alaska Science Education

Certifications

- **Certified Scrum Product Owner®** *Scrum Alliance*, 09/30/2022. Expires 9/30/2024.
- **Certified ScrumMaster®**, *Scrum Alliance*, 9/28/2022. Expires 9/28/2024.

Synergistic Activities

2022–present	Serve on the NASA's ESDS Community Development Best Practices Working Group.
2018	Organized a minisymposium on computational methodologies for next-generation climate models at the European Seminar on Computing (ESCO) 2018 conference in Pilzen, Czech Republic.
2017	Organized an international workshop on human activity at scale in Earth system models at Oak Ridge National Laboratory.

Teaching Experience

IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Pasadena, CA, USA

Co-instructor with Dr. Forrest F. Williams (ASF), Alex Lewandowski (ASF), and Dr. Franz J. Meyer (UAF)

SAR at Scale: Working with Large Volumes of Synthetic Aperture Radar Data **July 16, 2023**

4-hour course that provided an overview of using advanced SAR remote sensing data and methods within a cloud-computing ecosystem to advance the community's capacity to process large volume SAR data at scale. We explored two scientific use cases in depth, using freely-available open SAR data, services, and tools.

Oak Ridge Institute for Continued Learning at Roane State Community College, Oak Ridge, Tennessee, USA

Co-lecturer with Dr. Melissa R. Allen (ORNL)

Climate Change Science **June 2016**

We presented four lectures, one and a quarter hours in length, on the topics: 1) global warming and the carbon cycle, 2) indicators of climate change, 3) impacts of climate change on human life and 4) global and regional climate modeling and uncertainty.

University of Alaska Fairbanks, Fairbanks, Alaska, USA

Graduate Teaching Assistant

Geology & Geophysics Department **August 2014 – December 2014**

I taught the computational portion of the graduate level geophysics course Foundations of Geophysics and was responsible for lectures, homework assignments, and grades. Further duties included holding weekly office hours.

- ◇ GEOS 631/431 – Foundations of Geophysics, Fall 2014

Guest Lecturer

GEOS 631/431 — Foundations of Geophysics (Oct. 25 and Oct. 30, 2012): I gave two lectures, one and a half hours in length, on general conservation laws, conservation of energy, and heat transfer. The first lecture started with the general form of the conservation laws, derived the conservation of momentum equation the students were familiar with, and then discussed the definition and forms of energy. The lecture concluded with a discussion on the first law of thermodynamics as well as a derivation of the conservation of energy equation. The second lecture discussed Fourier's law and solved practical heat flow problems; some of which were taken from Chapter 4 of Turcotte and Schubert's Geodynamics textbook.

Guest Lecturer

GEOS 636/436 — Beyond the Mouse: Computer Programming and Automation for Geosciences (Sept. 11 and Nov. 15, 2012): The September lecture was 1 hour in length and focused on an introduction to variables and data types. We discussed what a computer is, how a computer thinks, what a program is, and what a programming language is. The students were then taught how to create variables and store different types of data. The November lecture was a demonstration of live programming and was 2 hours in length. I demonstrated how to use common command line tools, a scripting language, and good file structure to create a manuscript preparation work-flow. I developed scripts to help create a LaTeX document and introduced tools such as a distributed version control system to keep track of changes and share work with collaborators.

Graduate Teaching Assistant

Geology & Geophysics Department **August 2012 – December 2012**

I taught the computational portion of graduate level geophysics courses and was responsible for lectures, homework assignments, and grades. Further duties included holding weekly office hours.

- ◇ GEOS 631/431 — Foundations of Geophysics, Fall 2012
- ◇ GEOS 636/436 — Beyond the Mouse: Computer Programming and Automation for Geosciences, Fall 2012

NSF GK-12 Fellow

Denali Elementary School **May 2011 – May 2012**

I taught 4 science lessons a week in two first grade classrooms of 30 students (10 contact hours per week). We covered a variety of subjects, including: the scientific method, the five senses, plants, birds of prey, migratory birds, caribou, weather, glaciers, heat transfer, food science, rockets, pressure-volume-temperature, volcanoes and how to design a testable question. I primarily designed the lesson plans, homework, and experiments for the students. At the end of the year, the classes

worked on a joint science fair project in which the students designed and conducted the entire experiment. The classes won a first place ribbon and a $50.00 prize for *Exceptional Women in Science* at the Fairbanks Northstar Borough School District Science Fair.

Graduate Teaching Assistant
Physics Department **August 2008 – May 2009**
I taught the laboratory portion of introductory physics courses and was responsible for lectures, homework assignments, and grades. Further duties included holding weekly office hours and staffing the homework help office.

- ◇ PHYS 103 – College Physics I, Fall 2008, 2 sections
- ◇ PHYS 104 – College Physics II, Spring 2009
- ◇ PHYS 115 – Physical Science I, Spring 2009

Western Washington University, Bellingham, Washington, USA
Undergraduate Teaching Assistant **September 2006 – June 2008**
I taught the laboratory portion of the introductory physics courses and was responsible for lectures, homework assignments and grades.

- ◇ PHYS 131 — Physics with Calculus I Lab, Fall 2006, 2007
- ◇ PHYS 132 — Physics with Calculus II Lab, Winter 2007, 2008
- ◇ PHYS 133 — Electricity and Magnetism Lab, Spring 2007, 2008

Invited Talks (last 5 yrs)

Kennedy, J.H.
OSL and HyP3 synergies: How they can be used across multiple sensors and disciplines
NASA ESDS Working Group Meeting, Baltimore, MD, March 23, 2023

Kennedy, J.H., T. Logan, A. Johnston, H. Kristenson, F.F. Williams, J. Zhu, J. Smale, J. Herrmann
ASF HyP3: Cloud-native SAR Processing for everyone
NASA ESDIS Technology Spotlight, Online, July 25, 2022

Kennedy, J.H., R. Grapenthin, Y. Cheng, M. Angarita, D. Tan, F.J. Meyer, D. Fee
Volcano Suprise: Rapid discovery thorugh analysis in the cloud
NASA Hyperwall Exhibit, Living Planet Symposium, Bonn, Germany, May 26, 2022

Kennedy, J.H.
Accelerate Your Science With On Demand InSAR Processing From ASF
NASA EOSDIS Webinar, Online, July 28, 2021

Kennedy, J.H.
ASF HyP3 for SAR Data Processing
Mini-Workshop for Community Capabilities and Best Practices on Large-scale and Automated Processing of SAR and Optical Data Products, Online, August 27, 2020

(Plenary) Mahajan, S., K.J. Evans, *J.H. Kennedy*, M. Norman, M. Xu
A Multivariate Approach to Ensure Statistical Reproducibility of Climate Model Simulations
Platform for Advanced Scientific Computing (PASC) Conference, ETH Zurich, Switzerland, June 13, 2019

Kennedy, J.H., K.J. Evans
Reproducible verification and validation testing with LIVVkit 2.0+
Climate, People and the Environment Seminar, University of Wisconsin–Madison, April 3, 2018

Conference Presentations (last 5 yrs)

Kennedy, J.H., et al.
A new Global 30m HAND dataset to support hydrological services and applications
AGU Fall Meeting, Abtract H42F-1362, December 15, 2022

Kennedy, J.H., F.J. Meyer
Cloud-native SAR Processing for everyone
CEOS Working Group on Calibration and Validation, Synthetic Aperture Radar Subgroup meeting, October 19, 2022

Kennedy, J.H., et al.
ASF's Custom Cloud Processing Services
NISAR Community Workshop, August 31, 2022

Kennedy, J.H., et al.
Get HyP3! Cloud-native SAR processing for everyone
NISAR Community Workshop, August 31, 2022

Kennedy, J.H., et al.
Search and On Demand Processing in Python
NISAR Community Workshop, August 30, 2022

A. Gardner, M. Fahnestock, C. Greene, A. Johnston, *J.H. Kennedy*, et al.
The NASA MEaSUREs ITS_LIVE project: Accelerating glacier science through satellite data synthesis
Living Planet Symposium, May 20, 2022

Kennedy, J.H., et al.
Get HyP3! Cloud-native SAR processing for everyone
Living Planet Symposium, May 20, 2022

Kennedy, J.H., et al.
Get HyP3! SAR processing for everyone
AGU Fall Meeting, Abtract G45B-0395, December 16, 2021

Kennedy, J.H., et al.
Get HyP3! SAR processing for everyone
EGU Fall Meeting, Abtract EGU21-8973, April 28, 2021

Kennedy, J.H., et al.
Science Support: From Prototype to Production
NASA ESDS Working Group Meeting, February, 2021

Kennedy, J.H., et al.
Get HyP3! SAR processing for everyone
AGU Fall Meeting, Abstract IN001-0003, December 7, 2020

Kennedy, J.H., et al.
Automated verification of Earth system models with EVV
SIAM conference on Mathematical and Computational Issues in the Geosciences, March 14, 2019

Kennedy, J.H., et al.
LIVVkit: Now and into the future
CESM land-Ice working Group Meeting, February 4, 2019

Kennedy, J.H., et al.
Efforts toward evaluation and reproducibility for ice sheet modeling
SIAM Conference on Mathematics of Planet Earth, September 14, 2018

Kennedy, J.H., et al.
A Look at the challenges of, and some solutions to, evaluating next-generation Earth system models
6th European Seminar on Computing (ESCO), June 6, 2018

Kennedy, J.H., et al.
A tour of ORNL's Earth system model assessment tools
ORNL Software Expo, May 16, 2018

Field Work

Dome C, East Antarctica. Deploying a sonic probe down the Dome C ice core borehole and prepping ice core samples. 3 weeks.
Valdez, AK, USA. Deploying sea temperature moorings. 3 days.
Yakutat Glacier, AK, USA. Taking GPS measurements, ablation stake measurements, and deploying time laps cameras. 5 days.
Icy Bay, AK, USA. Deploying hydro-acoustic mooring, taking CDT casts, and hydro-acoustic recordings. 5 days.

Affiliations

AGU	American Geophysical Union
APS	American Physical Society
IGS	International Glaciological Society
SIAM	Society for Industrial and Applied Mathematics

Technical Skills

Languages:	Python, Julia, R, C++, FORTRAN, Matlab, SQL, Bash, LaTeX
Operating Systems:	Unix/Linux (desktops to HPCs), Windows, OSX
DevOps:	GitHub Actions, GitLab CI/CD, Docker, Git
Data formats:	Zarr, Cloud Optimized GeoTIFFs, HDF5, NetCDF4, CF-conventions, Parquet
SAR processing:	ISCE2/3, RAiDER, MintPy, PyAPS, GAMMA, Xarray-Sentinel
Math/Science Packages:	conda/mamba, Scikit-learn, Pandas, Xarray, Numpy, Scipy
Climate/GIS Tools:	GDAL, QGIS, NCO, PyNIO/PyNGL, NCL, GMT
Data Science:	PCA, multivariate testing, regression analysis
Frameworks/Skills:	Agile software development, test-driven development, verification and validation, unit and integration testing, continuous integration, containerization

Other Skills and Activities

- ◇ Wilderness experience including a continuous 700 mile, 33 day, canoe trip down the Yukon River
- ◇ Enjoy outdoor recreation: canoeing, biking, hiking, camping, etc.
- ◇ Trained in bear safety