Fall 2025 GCLab Newsletter

Welcome to the GCLab Newsletter!

Celebrating 20+ Years of Innovation, Collaboration, and Community

At the Global Computing Lab (GCLab), we believe science should educate, inspire, and push boundaries—and for over two decades, that's exactly what we've done.

This year brings exciting news: four newly funded projects expanding our work in AI and data-driven science, and training the next generation of researchers. These projects advance high performance computing as it converges with AI, data, and cloud technologies to tackle increasingly complex challenges.

Taufer at Barcelona Supercomputing Center, Spain, July 2025

I began the year on sabbatical at Lawrence Livermore National Laboratory and Oak Ridge National Laboratory, deepening long-standing collaborations and sparking new ones. Access to ORNL's experimental facilities is already enabling us to explore AI-integrated autonomous labs.

Taufer with Emeritus Professor Jack Dongarra at the ISC 2025 Award Session in Germany, June 2025

Back at GCLab, we've welcomed visiting scholars from Italy and the U.S., whose fresh ideas and curiosity have enriched our work. In July, I was honored to receive the HPDC Achievement Award, and last fall I was named a Fellow of the Joint Laboratory for Extreme Scale Computing (JLESC)—recognitions that reflect the contributions of our entire team.

As we enter 2025–2026, we're energized for the challenges ahead. This newsletter celebrates our progress and invites you to collaborate, connect, and shape the future of high performance computing—together.

Michela Taufer, Ph.D.
Dongarra Professor in High Performance Computing
University of Tennessee, Knoxville, U.S.A.
Electrical Engineering and Computer Science

YouTube in GitHub

https://globalcomputing.group

Project
Spotlight

Fueling Discovery Through Data:
How We're Building the National Science Data Fabric

Data drives AI and scientific discovery—but too often it's hard to find, access, and use. That's why we're building the **National Science Data Fabric** (**NSDF**): to make data FAIR—Findable, Accessible, Interoperable, and Reusable—for everyone, everywhere.

Launched over four years ago with NSF support, NSDF brings together leaders from the University of Tennessee Knoxville, University of Utah, Johns Hopkins University, University of Michigan, and the San Diego Supercomputer Center. We've reimagined the "data fabric" concept for science, creating a flexible software stack and integrated services for data streaming, real-time analysis, and scalable research.

NSDF All-Hands meeting, San Diego, California, May 2025

The impact is already real: supporting dark matter research at the University of Colorado Denver, enabling AI-powered beamline experiments at Oak Ridge National Laboratory, and powering discoveries across disciplines.


GCLab members at Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee, May 2025

But this is just the beginning. We're expanding collaborations, empowering communities, and inviting new partners to join us in making data not just a resource—but a right.

To learn more, read about NSDF in this recent article in HPCwire.

Visit the NSDF website: National Science Data Fabric.

Research supported by the U.S. National Science Foundation, Award No. 2138811

Jay Ashworth
Gabriel Laboy

Researchers' Corner

What's your research about?

JAY: The GCLab has been an incredible place to grow—technically, professionally, and personally. I've worked on real-world problems with industry and national labs, sharpening my skills in communication, code design, and problem solving. Right now, I'm collaborating with scientists at Lawrence Livermore National Laboratory, to develop an emulator of scheduling policies for El Captain – the fastest supercomputer in the world, which has been an amazing, high-energy experience.

GABRIEL: My research enhanced GEOtiled, a tool for computing terrain parameters from Digital Elevation Models, by boosting performance and adding capabilities via the SAGA GIS library. I'm also building a machine learning workflow to create global, high-resolution maps predicting irrigated agriculture—work that directly supports environmental and agricultural research.

Laboy, Taufer and Ashworth at UTK

What's your biggest takeaway from the GCLab?

JAY: How to conduct meaningful, collaborative research that bridges academia, industry, and national labs.

GABRIEL: The value of cross-disciplinary work—building practical tools while learning to communicate across fields.

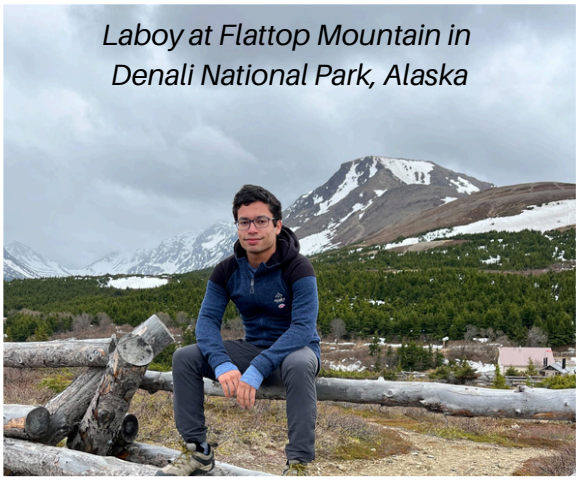
What's next?

JAY:Continue my Ph.D. here at UTK, then pursue a postdoc at a national lab.

GABRIEL: I just graduated and am seeking opportunities to keep creating impactful data science tools.

Ashworth at Matterhorn in the Alps, Swizterland

Laboy at Flattop Mountain in Denali National Park, Alaska



Something we don't know about you?

JAY: I love traveling—recently to Zermatt, Switzerland, to see the Matterhorn.

GABRIEL: I'm a cold-weather hiker; my photo is from Flattop Mountain in Denali National Park, Alaska.

Awards & Recognitions

Read the full story in HPCwire.

Taufer is honored to have been selected as one of **HPCwire 35 Legends Class of 2025** for her lifetime of research dedicated in the area of reproducible High Performance Computing (HPC). The HPCwire Legends award recognizes those individuals who have influenced the HPC community with impactful and innovative research during their careers.

2025 Achievement Award in High Performance Distributed Computing

Michela Taufer has been named the recipient of the 2025 Achievement Award in High Performance Distributed Computing (HPDC) for her contributions to volunteer computing and advancing high-performance computing. Taufer was presented with this prestigious honor at the 2025 ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC), at the University of Notre Dame in Indiana and delivered the keynote address, Designing for Trust, Transparency, and Efficiency in Scientific Computing.

Taufer at HPDC, South Bend, Indiana, July 2025

A previous winner of this award includes Jack Dongarra (2016), an emeritus professor in the Min H. Kao Department of Electrical Engineering and Computer Science, and where Taufer currently holds the title of the Jack Dongarra Endowed Professorship.

Read more in UTK news about the 2025 HPDC Award.

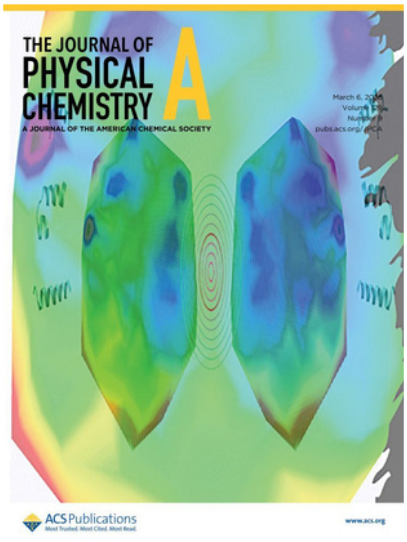
Here are more noteworthy highlights from this past year:

Michela Taufer was elected as Vice Chair of SIGHPC, ACM's Special Interest Group on High Performance Computing.

SIGHPC is an international group within a major professional society that is focused on the needs of high performance computing research community.

https://www.sighpc.org/home

Work from a recent research paper published in the ***Journal of Physical Chemistry,*** **Increasing the Efficiency of Ensemble Molecular Dynamics Simulations with Termination of Unproductive Trajectories Identified at Runtime**, was featured as the issue's cover art image. (volume 129, no. 9).



Last fall, Taufer was selected as the **Joint Laboratory on Extreme Scale Computing (JLESC) 2024 Fellow**.

From August 2024 - February 2025, Taufer spent her sabbatical as a **Visiting Faculty at the Lawrence Livermore National Laboratory** in California.

2025 Winner of the 18th IEEE International Scalable Computing Challenge

Michela Taufer and Nigel Tan (PhD, 2025) were the winners of the 18th IEEE International Scalable Computing Challenge, together with Scott Luedtke and Brian Albright at LANL, with their work on "Achieving Scalable and Portable Performance in Plasma Simulations." The competition is co-located with the IEEE/ACM CCGrid Conference.

2025 Internships

Ty Anderson

Microsoft

Anant Jeet Sahoo

elo TOUCH SOLUTIONS

Abby Worth

OAK RIDGE National Laboratory

Jay Ashworth

Befikir Bogale

Ian Lumsden

Lawrence Livermore National Laboratory

Visiting Scholars

Francesco Antici
Ph.D. student
University of Bologna, Italy

Caleb Han
Undergraduate student
University of North Carolina, Chapel Hill

Alberto Mulone
Ph.D. student
University of Torino, Italy

Meet our Team

2025 -2026 GCLab members

Dr. Michela Taufer,
Director & Professor

Dr. Michael Sutherlin, Associate Director

Dr. Jack Marquez, Research Assistant Professor
Dr. Kin Wei NG, Research Assistant Professor

Kin Hong NG, Research Scientist

Jay Ashworth, Doctoral Student
Befikir Bogale, Doctoral Student
Connor Browne, Doctoral Student
Ian Lumsden, Doctoral Student

Ty Anderson, Master's Student
Chandler Weeks, Master's Student

John Cordwell III, Undergraduate Student
Will Greenwood, Undergraduate Student
Angelina Ju, Undergraduate Student
Anant Jeet Sahoo, Undergraduate Student

Barbara Fossum, Outreach Coordinator
Grace Wisser, Assistant Director

GCLab members at SC, Atlanta, Georgia, Nov. 2024

In the Media

Click on title for the full article.

Project PegasusAI, $5 Million NSF Grant Fueling AI Innovations in National Workflow Management, *Bioengineer.org*

Taufer is named to the 2025 HPCwire 35 Legends for her contributions in reproducible HPC, *HPCwire*

Taufer Receives HPDC Achievement Award, *University of Tennessee*

Taufer elected vice-Chair of SIGHPC , *Association for Computing Machinery*

The Grand Challenge of Sustainable AI, *Inside AI News*

Taufer's New Tool Facilitates Detailed Climatological Research, *University of Tennessee*

Taufer delivers keynote at ICCP, *HPCwire*

Amy An Continues Researching Neural Networks in PhD,*University of Tennessee*

Taufer explains sustainability in AI, *HPCwire*

Year in Review

GCL Recap

Taufer at the Wired Global Center symposium in Calgary, Canada, August 2025

HPDC in South Bend, Indiana, July 2025

ETH Zurich Campus Heilbronn, Heilbronn, Germany, June 2025

Taufer with the SIGHPC travel awardees at PASC, Brugg, Switzerland, June 2025

Oak Ridge National Lab (ORNL), Tennessee, May 2025

Atmospheric Research-Wyoming Supercomputing Center, University of Wyoming, March 2025

AAAS Panel, Boston, Massachusetts, Feb. 2025

Taufer at Computing Research Association's Computing Community Consortium (CCC) council, Snowbird, Utah, August 2024

SC24 Panel, Atlanta, Georgia, Nov. 2024

GCLab
Dr. Michela Taufer

Collaborators

Argonne NATIONAL LABORATORY
Arizona State University
Johns Hopkins University
Lawrence Livermore National Laboratory
Los Alamos NATIONAL LABORATORY EST. 1943
Oak Ridge National Laboratory
RIKEN
Sandia National Laboratories
SDSC San Diego Supercomputer Center
SIB Swiss Institute of Bioinformatics
University of Colorado Denver
University of Delaware
UMassAmherst
The University of New Mexico
University of Michigan
The University of North Carolina at Chapel Hill
UNT University of North Texas
USC University of Southern California
The University of Utah
Weill Cornell Medicine

Sponsors

NSF National Science Foundation
Department of Energy United States of America
IBM
Lawrence Livermore National Laboratory
Los Alamos NATIONAL LABORATORY EST. 1943
Argonne NATIONAL LABORATORY
Sandia National Laboratories

YouTube
GitHub

Recent Publications

2024-2025 Journal Articles

Click the DOI to link to the article

Poczekajlo, P., Moroz, L., Deelman, E., Taufer, M., Gepner, P., Krawiec, J. (2025). **Low Latency Recoding CORDIC Algorithm for FPGA Implementation**. In: Lees, M.H., et al. Computational Science – ICCS 2025. ICCS 2025. Lecture Notes in Computer Science, vol 15905. Springer, Cham. **https://doi.org/10.1007/978-3-031-97632-2_6**

Jack Marquez, Michel Cuendet, Silvina Caino-Lores, Trilce Estrada, Ewa Deelman, Harela Weinstein, and Taufer, Michela. **Increasing the Efficiency of Ensemble Molecular Dynamics Simulations with Termination of Unproductive Trajectories Identified at Runtime**. Journal of Physical Chemistry, 2025. **https://doi.org/10.1021/acs.jpca.4c05182**.

Stefano Markidis, Michela Taufer, and Lucio Grandinetti. **Special Collection on Advances in Quantum Computing: Methods, Algorithms, and Systems**. Future Gener. Computer Systems, 163:107503, 2025. **https://doi.org/10.1016/j.future.2024.107503**.

Taufer, Michela. **Mirror, Mirror on the Wall, What is the Best Topology of Them All?** Commun. ACM, 67(12):96, November 2024. **https://doi.org/10.1145/3656181**.

Michela Taufer, Daniel Milroy, Todd Gamblin, Andrew Jones, Bill Magro, Heidi Poxon, and Seetharami Seelam. **HPC and Cloud Convergence Beyond Technical Boundaries: Strategies for Economic Sustainability, Standardization, and Data Accessibility**. IEEE Computer, 2024. **https://doi.org/10.1109/MC.2024.3387013**. (open access)

Connor Scully-Allison, Ian Lumsden, Katy Williams, Jesse Bartels, Michela Taufer, Stephanie Brink, Abhinav Bhatele, Olga Pearce, and Katherine E. Isaacs. **Design Concerns for Integrated Scripting and Interactive Visualization in Notebook Environments**. IEEE Transactions on Visualization and Computer Graphics, pages 1–13, 2024. **https://doi.org/10.1109/TVCG.2024.3354561**.

Chaitanya Afle, Patrick Miles, Silvina Caino-Lores, Collin Capano, Ingo Tews, Karan Vahi, Ewa Deelman, Michela Taufer, and Duncan Brown. **Reproducing the Results for NICER Observation of PSR J0030+0451**. IEEE Computing in Science and Engineering (CiSE), pages 1–13, 2024. **https://doi.org/10.1109/MCSE.2024.3381080**. (open access)

2024-2025 Refereed Conferences, Symposiums and Workshops

Dewi Yokelson, Stephanie Brink, Jason Burmark, Michael McKinsey, Befikir Bogale, Ian Lumsden, Michela Taufer, Tom Scogland, and Olga Pearce. Cross-Architecture Performance Analysis Using the . In Proceedings of the 54th International Conference on Parallel Processing (ICPP),San Diego, CA, USA, September 2025. ACM. (Acceptance Rate: 23.65%).

Recent Publications

2024-2025 Refereed Conferences, Symposiums and Workshops

Gabriel Laboy, Ian Lumsden, Jack Marquez, Kin Wai NG Lugo, Rodrigo Vargas, and Michela Taufer. A Modular, Cross-Platform Toolkit for High-Resolution Terrain Parameter Analysis. In Proceedings of the 21st IEEE International Conference on eScience (eScience), Chicago,IL, USA, September 2025. IEEE Computer Society. (Acceptance Rate: 33/98, 33.6%).

Zackary Malkmus, Nigel Tan, Ian Lumsden, Kevin Assogba, M. Mustafa Rafique,Bogdan Nicolae, and Michela Taufer. On Optimizing Checkpoint Restoration for HPC Applications: Leveraging Merkle Trees and Asynchronous I/O. In Proceedings of the 34th International Symposium on High-Performance Parallel and Distributed Computing (HPDC), pages 1–2, Notre Dame, IN, USA, July 20–23 2025. ACM. (Short Paper).

Gabriel Laboy, Paula Olaya, Jack Marquez, Michael Sutherlin, Rodrigo Vargas, and Michela Taufer. Advancing the GEOtiled Framework Through Scalable Terrain Parameter Computation. In Proceedings of the 34th International Symposium on High-Performance Parallel and Distributed Computing (HPDC), pages 1–2, Notre Dame, IN, USA, July 20–23 2025. ACM. (Short Paper).

W. Jay Ashworth, Ian Lumsden, Jim Garlick, Mark Grondona, Olga Pearce, Stephanie Brink, Dewi Yokelson, Daniel Milroy, Tapasya Patki, Thomas Scogland, and Michela Taufer. Flux Emulator: First Insights into Optimizing Scheduling for Exascale HPC. In Proceedings of the 34th International Symposium on High-Performance Parallel and Distributed Computing (HPDC), pages 1–2, Notre Dame, IN, USA, July 20–23 2025. ACM. (Short Paper).

Befikir Bogale, Ian Lumsden, Dalal Sukkari, Dewi Yokelson, Stephanie Brink, Olga Pearce, and Michela Taufer. Surrogate Models for Analyzing Performance Behavior of HPC Applications Using RAJAPerf. In Proceedings of the International Conference on Computational Science (ICCS), page 1–8, Singapore, July 7–9 2025. Springer.

Kin Wai Ng, Orcun Yildiz, Tom Peterka, Florence Tama, Osamu Miyashita, Catherine Schuman, and Michela Taufer. Energy-Efficient Neural Network Training for Scientific Datasets with Advanced Similarity Analytics and Orchestration. In Proceedings of the International Conference on Computational Science (ICCS), page 1–15, Singapore, July 7–9 2025. Springer.

Raül Sirvent, Rocio Carratala-Saez, Amal Gueroudji, Tanzima Islam, Line Pouchard, and Michela Taufer. Reproducibility for HPC and Distributed Environments: Committees, Nondeterminism, Performance and Workflows. In Proceedings of the 3rd ACM Conference on Reproducibility and Replicability (ACM REP '25), Vancouver, Canada, July 2025. ACM.

Aashish Panta, Amy Gooch, Giorgio Scorzelli, Michela Taufer, and Valerio Pascucci. Scalable Climate Data Analysis: Balancing Petascale Fidelity and Computational Cost. In Proceedings of the 25th IEEE International Symposium on Cluster, Cloud and Internet Computing Workshops (CCGridW), pages 1–3, Gjøvik, Norway, May 12–15 2025. IEEE Computer Society. (TCSC SCALE Challenge Paper Finalist).

Nigel Tan, Scott V. Luedtke, Michela Taufer, and Brian J. Albright. Achieving Scalable and Portable Performance in Plasma Simulations. In Proceedings of the 25th IEEE International Symposium on Cluster, Cloud and Internet Computing Workshops (CCGridW), pages 1–3, Gjøvik, Norway, May 12–15 2025. IEEE Computer Society. (TCSC SCALE Challenge Paper).

GCLab
Dr. Michela Taufer

Recent Publications

2024-2025 Refereed Conferences, Symposiums and Workshops

Aashish Panta, Amy Gooch, Giorgio Scorzelli, Michela Taufer, and Valerio Pascucci. Scalable Climate Data Analysis: Balancing Petascale Fidelity and Computational Cost. In Proceedings of the 25th IEEE International Symposium on Cluster, Cloud and Internet Computing Workshops (CCGridW), pages 1–3, Gjøvik, Norway, May 12–15 2025. IEEE Computer Society. (TCSC SCALE Challenge Paper Finalist).

Nigel Tan, Scott V. Luedtke, Michela Taufer, and Brian J. Albright. Achieving Scalable and Portable Performance in Plasma Simulations. In Proceedings of the 25th IEEE International Symposium on Cluster, Cloud and Internet Computing Workshops (CCGridW), pages 1–3, Gjøvik, Norway, May 12–15 2025. IEEE Computer Society. (TCSC SCALE Challenge Paper).

Ali Khan, Nigel Tan, Jack Marquez, Sanjukta Bhowmick, and Michela Taufer. ParaDyMS: Parallel Dynamic Motif Counting at Scale. In Proceedings of the 25th IEEE International Symposium on Cluster, Cloud and Internet Computing (CCGRID), Tromsø, Norway, May 2025. IEEE Computer Society. (Acceptance Rate: 55/219, 25%).

Paula Olaya, Sophia Wen, Jay Lofstead, and Michela Taufer. PerSSD: Persistent, Shared, and Scalable Data with Node-Local Storage for Scientific Workflows in Cloud Infrastructure. In Proceedings of the 2024 IEEE International Conference on Big Data, Washington DC, US, December 2024. IEEE Computer Society. (Acceptance Rate: 600/124, 18.8%).

Nigel Tan, Kevin Assogba, Jay Asworth, Befikir Bogale, M. Mustafa Rafique, Franck Cappello, Michela Taufer, and Bogdan Nicolae. Towards Affordable Reproducibility Using Scalable Capture and Comparison of Intermediate Multi-Run Results. In Proceedings of the 25th ACM/IFIP International Middleware Conference (Middleware), Hong Kong, Chiana, December 2024. ACM. (Acceptance Rate: 167/39, 23.3%).

Michela Taufer, Heberth Martinez, Aashish Panta, Paula Olaya, Jack Marquez, Amy Gooch, Giorgio Scorzelli, and Valerio Pascucci. Leveraging National Science Data Fabric Services to Train Data Scientists. In Proceedings of the 2024 Workshop on Education for HighPerformance Computing (EduHPC)-Workshops of The International Conference on High Performance Computing, Network, Storage, and Analysis (SC24), Atlanta, GA, USA, November 2024. IEEE Computer Society.

Olga Pearce, Jason Burmark, Rich Hornung, Befikir Bogale, Ian Lumsden, Michael McKinsey, Dewi Yokelson, David Boehme, Stephanie Brink, Michela Taufer, and Tom Scogland.
RAJA Performance Suite: Performance Portability Analysis with Caliper and Thicket. In Proceedings of the 2024 International Workshop on Performance, Portability, and Productivity in HPC (P3HPC)-Workshops of The International Conference on High Performance Computing, Network, Storage, and Analysis (SC24), Atlanta, GA, USA, November 2024. IEEE Computer Society.

Hariharan Devarajan, Ian Lumsden, Konstantia Georgouli, Chen Wang, Tom Scogland, JaeSeung Yeom, and Michela Taufer. DYAD: Locality-aware Data Management for accelerating Deep Learning Training. In Proceedings of the IEEE/SBC 36th International Symposium on Computer Architecture and. High Performance Computing (SBACPAD), Hilo, HI, USA, November 2024. IEEE Computer Society.

Ian Lumsden, Hariharan Devarajan, Jack Marquez, Stephanie Brink, David Boehme, Olga Pearce, Jae-Seung Yeom, and Michela Taufer. Empirical Study of Molecular Dynamics Workflow Data Movement: DYAD vs. Traditional I/O Systems. In Proceedings of the 19th International Parallel and Distributed Processing Symposium (IPDPS) – Workshop Proceedings (HiCOMB). San Francisco, CA, USA, May 2024. IEEE Computer Society.

Recent Publications

2024-2025 Reports

Click the URL to link to the report

Taufer, M., Mihalcea, R., Turk, M., Lopresti, D., Wierman, A., Butler, K., Koenig, S., Danks, D., Gropp, W., Parashar, M. and Gil, Y., 2025. Now More Than Ever, Foundational AI Research and Infrastructure Depends on the Federal Government. **https://doi.org/10.48550/arXiv.2506.14679.**

Ferreira Da Silva, R., Moore II, R., Mintz, B., Advincula, R., Alnajjar, A., Baldwin, L., Bridges, C. A., Coffee, R., Deelman, E., Engelmann, C., Etz, B., Firestone, M., Foster, I., Ganesh, P., Hamilton, L., Huber, D., Ivanov, I. N., Jha, S., Li, Y., ... Vogiatzis, K. (2024). Shaping the Future of Self-Driving Autonomous Laboratories Workshop. **https://doi.org/10.2172/2481197**.

Rafael Ferreira da Silva, Milad Abolhasani, Dionysios A. Antonopoulos, Laura Biven, Ryan Coffee, Ian T. Foster, Leslie Hamilton, Shantenu Jha, Theresa Mayer, Benjamin Mintz, Robert G. Moore, Salahudin Nimer, Noah Paulson, Woong Shin, Frédéric Suter, Mitra Taheri, Michela Taufer, and Newell R. Washburn. A grassroots network and community roadmap for interconnected autonomous science laboratories for accelerated discovery. June 20 2025. **https://arxiv.org/abs/2506.17510**.

Michela Taufer, Valerio Pascucci, Christine R. Kirkpatrick, and Ian T. Foster. Sustainable Data Democratization: A Multifaceted Investment for an Equitable Future, 2024. **https://arxiv.org/abs/2408.14627**.

2024 - 2025 Keynotes & Invited Talks

Michela Taufer, Enabling Autonomous Labs: The NSDF-ORNL Partnership for Real-Time Scientific Discovery. Smoky Mountain Conference (SMC). Chattanooga, TN, USA. Aug 2025.

Michela, Taufer, Enabling Autonomous Labs: The NSDF-ORNL Partnership for Real-Time Scientific Discovery. ORNL Neutron Sciences Conferences (Indico). Knoxville, TN, USA. Aug 2025.

Michela Taufer, Empowering Autonomous Laboratories with the National Science Data Fabric. WIRED Grid Resilience Symposium. Calgary, Canada. Aug 2025.

Michela Taufer, Designing for Trust, Transparency, and Efficiency in Scientific Computing. 34th ACM International Symposium on High-Performance Parallel and Distributed Computing. Notre Dame, IN, USA. July 2025. (Keynote)

Michela Taufer, Empowering Autonomous Laboratories with the National Science Data Fabric. Data, Workflows, Agents, Reasoning, and Frameworks (DWARF) Track at Trillion Parameter Consortium (TPC) Conference. San Jose, CA, USA. July 2025.

Michela Taufer, AI is More Than Just Models: From Provenance to Pattern Mining to Energy-Efficient Training. ISC High Performance Conference. Hamburg, Germany. June 2025.

Recent Publications

2024 - 2025 Keynotes & Invited Talks

Michela Taufer, Maximizing Returns on Investment of the National Science Data Fabric: Steering Autonomous Experiments: from Zoom to Science in 5 Months. 1st Advancing Autonomous Scientific Discovery Workshop. Hamburg, Germany. June 2025.

Michela Taufer, Overview of the National Science Data Fabric and its Achievements. All-Hands Meeting. San Diego Supercomputer Center. San Diego, CA, USA. May 2025.

Michela Taufer, Reimagining Performance and Reproducibility in the Post-Moore Era: Innovations in Checkpointing and Workflow Management. JLESC Meeting. Argonne National Laboratory. Lemont, IL, USA. May 2025.

Michela Taufer, Overcoming Access and Utilization Challenges with a Unified Data Fabric for Scientific Discovery. University of California Merced. Virtual. Apr 2025.

Michela Taufer, Flux Fiction: Simulating HPC Scheduling Without Running a Single Job. HPC Conference. Salishan, OR, USA. Apr 2025.

Michela Taufer, Overcoming Access and Utilization Challenges with a Unified Data Fabric for Scientific Discovery. University of Wyoming. Laramie, WY, USA. Mar 2025.

Michela Taufer, On the Need for Solutions to Address Scientists' Pain Points. Lawrence Livermore National Laboratory. Livermore, CA, USA. Jan. 2025.

Michela Taufer, On the Need for Solutions to Address Scientists' Pain Points. INTERSECT Seminar Series. Oak Ridge National Laboratory. Oak Ridge, TN, USA. Dec 2024

Michela Taufer, Reimagining Performance and Reproducibility in the Post-Moore Era: Innovations in Checkpointing and Workflow Management. Workshop on Co-Design of NextGeneration HPC Systems, AI and Mixed-Analytics, Atlanta, GA, USA. Nov., 2024. (Keynote)

Michela Taufer, On the Need for Solutions to Address Scientists' Pain Points. Rosen Center for Advanced Computing (RCAC) Cyberinfrastructure Symposium. October 2024.

Michela Taufer, Addressing Scientists' Pain Points: Data Solutions from the National Science Data Fabric. Workshop on Clusters, Clouds, and Data for Scientific Computing (CCDSC). Chemin de Chanzé, France. Sep 2024.

Michela Taufer, Analytics4NN: Accelerating Neural Architecture Search through Modeling and High-Performance Computing Techniques. 15th International Conference on Parallel Processing & Applied Mathematics (PPAM). Ostrava, Czech Republic. Sep 2024. (Keynote)

Michela Taufer, Advancing Scientific Discovery with the National Scientific Data Fabric: Democratizing Data Access and Use through Reproducibility, Analytical Tools, and User-Focused Services. 53nd International Conference on Parallel Processing (ICPP), Gotland, Sweden. August 2024. (Keynote)

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Dr. Michela Taufer

Recent Publications

2024 - 2025 Keynotes & Invited Talks

Michela Taufer, Optimizing Dataflow Pipelines from Self-Driving Labs to the Cloud. Mini-symposium on "Innovations Unleashed: The Future of Scientific Research with Cloud Labs and Self-Driving Labs." Platform for Advanced Scientific Computing (PASC) Conference, June 3-5, 2024, Zurich, Switzerland.

Michela Taufer, Reimagining Performance and Reproducibility in the Post-Moore Era: Innovations in Checkpointing and Workflow Management, "Challenges and Opportunities for Next-Generation Research Applications and Workflows."
Platform for Advanced Scientific Computing (PASC) Conference, June 3-5, 2024, Zurich, Switzerland.

Michela Taufer, The National Science Data Fabric: Democratizing Data Access for Science and Society. High Performance Computing Conference 2024, Cetraro, Italy. June 2024

Michela Taufer, National Science Data Fabric: A Platform Agnostic Testbed for Democratizing Data Delivery. HPC ISC Conference, Hamburg, Germany, May 2024

Michela Taufer, Composable Workflow for Accelerating Neural Architecture Search Using In Situ Analytics – A Use Case for 2D Protein Diffraction (PD) Patterns. Joint Laboratory
for Extreme Scale Computing (JLESC), Osaka, Japan. April 2024.

Michela Taufer, Advancing Science with the National Scientific Data Fabric: Democratizing Data Access and Use through Reproducibility, Analytical Tools, and User-Focused Services. SOS'26, Cocoa Beach, FL, USA. Mar 2024.

Michela Taufer, An Introduction to the National Science Data Fabric. The Fourth National ScienceData Fabric (NSDF) in-person meeting, San Diego, CA. Feb 2024.

Michela Taufer, Analytics4NN: Accelerating Neural Architecture Search through Modeling and High-Performance Computing Techniques. The 6th R-CCS International Symposium,
Kobe, Japan. Jan 2024.

2024 - 2025 Posters & Abstracts
(not in proceedings)

Gabriel Laboy, Endalkachew Abebe Kebed, Paula Olaya, Holly A Michael, Kyle Frankel Davis, and Michela Taufer. High-resolution (30m) Mapping of Irrigated Areas Using Machine Learning.In American Geophysical Union Conference (AGU) Fall Meeting 2024, pages 1–1, Washington DC,USA, December 2024.

Ian Lumsden, Olga Pearce, Jae-Seung Yeom, Tom Scogland, and Michela Taufer. Benchmarking and Modeling of Producer-Consumer Data Movement Performance in Scientific Workflows. In Poster at the 33rd ACM/IEEE International Conference for High Performance Computing andCommunications Conference (SC). IEEE Computer Society, November 2024.

Befikir Bogale, Olga Pearce, Tom Scogland, and Michela Taufer. Cluster-Based Methodology for Characterizing the Performance of Portable Applications. In Poster at the 33rd ACM/IEEE International Conference for High Performance Computing and Communications Conference (SC). IEEE Computer Society, November 2024.

Recent Publications

2024 - 2025 Posters & Abstracts *(not in proceedings)*

Walter Jay Ashworth, Julian Uran, Michela Taufer, and Paola Buitrago. Improvement of Bridges-2 Resource Utilization Through User Optimization. In Poster at the 33rd ACM/IEEE International Conference for High Performance Computing and Communications Conference (SC). IEEE Computer Society, November 2024.

Dhroov Pandey, Sanjukta Bhowmick, and —bf Michela Taufer. Identifying Regions of NonDeterminism in HPC Simulations Through Event Graph Alignment. In Poster at the 33rd ACM/IEEE International Conference for High Performance Computing and Communications Conference (SC). IEEE Computer Society, November 2024. (Best Undergraduate Poster Candidate).

2024 - 2025 Expert Panels

November 2025 Rethink Computing: Pioneering Next-Level Architectures for Sustainable AI and HPC. The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC25), St. Louis, MO, USA.

February 2025 Computing is Eating the World – Will saving the planet destroy it? 2025 AAAS Annual Meeting, Boston MA, USA. (Moderator)

November 2024 Computing is Eating the World – Will saving the planet destroy it? The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC24), Atlanta, GA, USA. (Moderator)

November 2024 Creating Inclusive Scientific Communities in the Information Age: Can Equity Democratize Data-Intensive Research, from Experimental Facilities and HPC to Scientific Discovery? The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC24), Atlanta, GA, USA. (Moderator)

June 2024 Science as a Team Sport: How Do We Win Together? Platform for Advanced Scientific Computing (PASC). Zurich, Switzerland. (Panelist)

February 2024 Equity and Education in NDC-C. National Discovery Cloud for Climate (NDC-C) Workshop. Sand Diego, CA, USA. (Moderator)

January 2024 Synergy between Classical Computing, Quantum Computing, and AI: Current state, challenges, and future prospects. The 6th R-CCS International Symposium, Kobe, Japan. (Moderator)