JULIANE MAI

Applied Mathematician,
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Project Manager

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Environmental Models

Project Management

Data Management

Open Data Portals

Machine Learning / AI

SUMMARY

Results-driven project manager and data scientist with 20+ years of experience leading analytical, computational, and cross-functional initiatives. Trained in applied mathematics with a specialization in operations research and optimization, and fluent in German, I bring a strong foundation in large-scale data management, machine learning, and stakeholder-focused tool development. I have led the design and delivery of platforms such as CaSPAr (Canada's national weather forecast archive), Hydrohub, and Poseidon — transforming complex data into accessible insights for decision-makers. Skilled in Python (16 yrs), SQL (5 yrs), Fortran (16 years), C/C++ (20 years), with deep experience across cloud data pipelines, modeling workflows, and collaborative project delivery in both research and industrial settings.

EXPERIENCE

Software Developer II, Digital Team, Innovation Center, ATS Corporation; Cambridge, ON — 2026-present

- Team member developing software supporting **industrial automation**

Research Associate Professor, University of Waterloo; Waterloo, ON — 2023-2025

- Lead developer of **operational system predicting water quality** across North America incorporating latest datasets and novel data driven approaches
- Lead developer of **data dissemination portal** Poseidon (more than 300 users in 2024)

Team Lead and Research Scientist, Center for Scalable Data Analytics and Artificial Intelligence; Leipzig, Germany — 2022-2023

- Lead of **North American model inter-comparison** of 7 models across 2575 watersheds
- Lead developer of data-driven **model predicting streamflow across North America**

Research Assistant Professor, University of Waterloo; Waterloo, ON — 2019-2022

- **Project manager** of Great Lakes Runoff Intercomparison project (GRIP-GL) leading international team of more than 30 researchers for two years
- Lead developer of **data dissemination platform** HydroHub (more than 1.7k users to-date)
- Development of novel "blended" modeling approach allowing to simultaneously determine optimal model parameters and structures

Post-Doctoral Fellow, University of Waterloo, Waterloo; ON — 2016-2019

- **Project manager** of Great Lakes Runoff Intercomparison project (GRIP-E) leading international team of more than 35 researchers for four years
- Lead backend developer, user engagement, and maintenance of **Canadian Surface Prediction Archive** CaSPAr disseminating all of Environment and Climate Change Canada's weather predictions to the public (2016-present; >1 PB data archived; >500 users; >20 million files processed for users)
- Member of Raven hydrologic modeling framework developers team

Post-Doctoral Fellow, Helmholtz Centre for Environmental Research; Leipzig, Germany — 2011-2016

- **Lead of developer team** for mesoscale Hydrologic Model mHM leading more than 15 developers modernizing and operationalizing mHM which is now Europe's most successfully deployed model for hydrologic predictions
- Analyses of land-surface models (CLM, Noah-MP)
- Development of **institute-wide coding standards** including development and maintenance of Fortran, Python, and bash library

EDUCATION

Friedrich-Schiller University Jena, Germany — PhD Applied Mathematics, 2011
University of Applied Science Leipzig, Germany — MSc Applied Mathematics, 2007
University of Applied Science Leipzig, Germany — Diploma Business Math, 2005

SKILLS

Operating System:	MacOS, Linux, Windows
Programming:	Python, Fortran, C/C++, bash, JavaScript, HTML, Git, Excel, LaTeX, PowerBI
General:	Microsoft Office, Presentations, Workshop Planning and Implementation, Data Science, Data Engineering, Data Dissemination, Data Visualization, Data Management, Project management, Machine Learning, Data-driven modeling.