Wildland fires and related hazards are increasing globally. A common observation across these large events is that fire behavior is changing to be more destructive, making applied fire research more important and time critical. Significant improvements toward modeling of the extent and dynamics of evolving plethora of fire related environmental hazards, and their socio-economic and human impacts can be made through intelligent integration of high-resolution big data and advanced computing technologies with techniques for knowledge management, machine learning and next generation fire modeling. WIFIRE Lab builds federated open data systems and AI-based technologies to enable next generation fire science. In addition, through use-inspired convergence research, WIFIRE works with a diverse community of public and private sector users and decision makers in development of well-adopted practical tools for fire mitigation and response. This talk will overview these end-to-end management infrastructure from the data sensing and collection to artificial intelligence and fire modeling efforts using a continuum of computing methods, and summarize the WIFIRE programs enabling scientific, municipal, and educational use.

Dr. İlkay Altıntaş, a research scientist at the University of California San Diego, is the Chief Data Science Officer of the San Diego Supercomputer Center as well as a Founding Fellow of the Halıcıoğlu Data Science Institute. She is the Founding Director of the Workflows for Data Science (WorDS) Center of Excellence and the WIFIRE Lab. The WoRDS Center specializes in the development of methods, cyberinfrastructure, and workflows for computational data science and its translation to practical applications. The WIFIRE Lab is focused on artificial intelligence methods for an all-hazards knowledge cyberinfrastructure, becoming a management layer from data collection to modeling efforts, and has achieved significant success in helping to manage wildfires. She has been a principal investigator and a technical leader in a wide range of cross-disciplinary projects. With a specialty in scientific workflows, she leads collaborative teams to deliver impactful results by making computational data science work more reusable, programmable, scalable, and reproducible. Her work has been applied to many scientific and societal domains including bioinformatics, geoinformatics, high-energy physics, multi-scale biomedical science, smart cities, and smart manufacturing. She is also a popular MOOC instructor in the field of “big” data science and has reached more than a million learners across the globe. Among the awards she has received are the 2015 IEEE TCSC Award for Excellence in Scalable Computing for Early Career Researchers and the 2017 ACM SIGHPC Emerging Woman Leader in Technical Computing Award. Dr. Altıntaş received a Ph.D. degree from the University of Amsterdam in the Netherlands.