

## **Special Session: Arctic Environmental and Engineering Data and Design Support System (Arctic-EDS)**

**Speakers: Scott Rupp, Margaret Darrow, Sveta Stuefer, and Charles Parr**

At high latitudes, rapid ongoing climate change is resulting in significant challenges for engineering and infrastructure design, particularly in the context of widespread permafrost thaw, changing ice dynamics, altered hydrology, and dramatic seasonal shifts. Reliable Arctic environmental datasets – including metrics representing uncertainty, range, and variability -- are a core information need. The Arctic-EDS is a new online hub for up-to-date data, interactive tools, and flexible modules that provide a modern alternative to the antiquated Environmental Atlas of Alaska (last revised in 1984). System elements are designed to aid in engineering decisions related to Alaska and other cold regions. These include web-based maps of historical and projected climate variables; vetted downloadable datasets; and modules and notebooks offering users the opportunity to undertake specialized site-specific or region-specific engineering calculations by creating and sharing code in web applications. The system has been co-developed and progressed through pre-beta and beta testing with engineering community engagement and iterative feedback. The user interface is built upon a robust structure consisting of data ingest adaptors, a geospatial data server, and an Application Programming Interface (API), and provides for future opportunities to support increases in environmental data resolution. This special session will provide an overview presentation of the Arctic-EDS, a real-time demonstration highlighting key components of the system, and elicit input and feedback from session attendees; a brief session wrap-up will describe opportunities for users to provide additional input and feedback prior to a final release scheduled for fall 2024.