

Arctic Methane and Permafrost Challenge

Winter/Spring 2024 Updates

- AMPAC Science Team Meeting, AGU Conference Center, Washington, US Oct 2023
- AMPAC Presentations, AGU Fall Meeting, San Francisco, US Dec 2023
- AMPAC-Net Workshop, Statistical and ML-based Upscaling of Arctic-Boreal Carbon Fluxes, SE Mar 2024
- AMPAC Presentations, US3 EDI "Bridging the Scales: The Arctic Methane and Permafrost Challenge", EGU, Vienna, AT Apr 2024. Leading experts and guest speakers: Merritt Turetsky (Arctic Methane), Ted Schuur (Permafrost Carbon and Climate Change), Annett Bartsch (AMPAC)

Upcoming Activities

- ABoVE Science Team Meeting, Boulder, CO, US May 2024
- AMPAC Team Meeting, European Polar Science Week, Copenhagen, DK Sep 2024
- AMPAC Summer School, Svalbard, NO Sep 2024

Published
 Treat, C., et al. [Permafrost Carbon: Progress on Understanding Stocks and Fluxes Across Northern Terrestrial Ecosystems](#)
 Gay, et al. [Investigating permafrost carbon dynamics in Alaska with artificial intelligence](#)
 Lenton, Poulter, et al. [Remotely sensing potential climate change tipping points across scales](#)
 Liu, Watts, et al. [Widespread deepening of the active layer in northern permafrost regions from 2003 to 2020](#)
 Miller, et al. [The ABoVE L-band and P-band Airborne SAR Surveys](#)

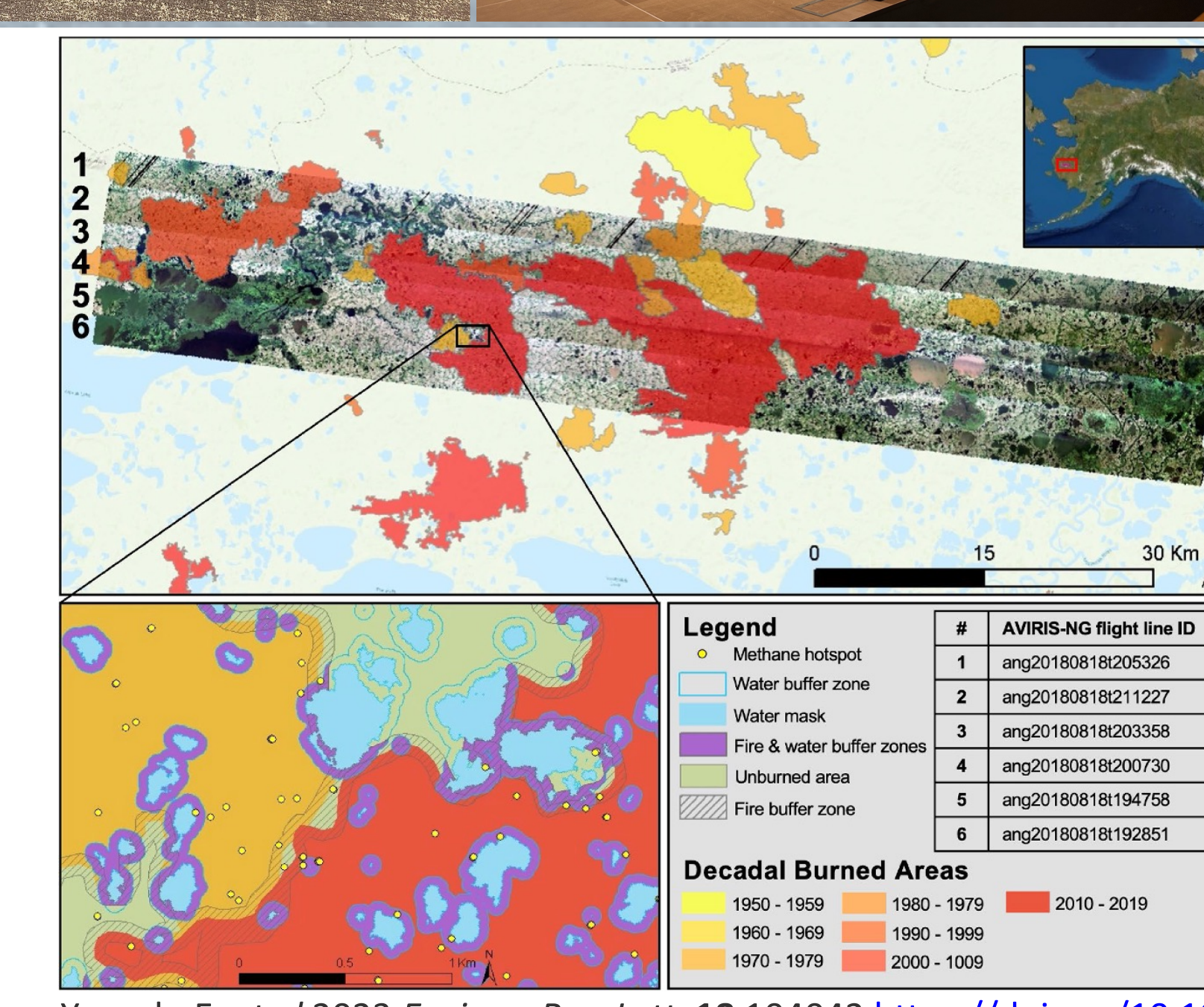
Under Review, In Revision

Miner, et al. Frozen no more: Permafrost impacts of oil and gas withdrawal above the Arctic Circle. *In Revision.* (NSR)
 Gay, et al. Forecasting permafrost carbon dynamics in Alaska with GeoCryoAI. *In Revision.* (JGR-MLC)
 Gay, et al. Assessing Earth System Responses to Climate Mitigation and Intervention with Scenario-Based Simulations and Data-Driven Insight. *Under Review.* (NCE)
 Gay, et al. Navigating Risks in AI-Driven Climate Geoengineering. *Under Review.* (Perspectives)
 Miner, et al. Non-traditional climate data review. *Under Review* (NSR)

Bartsch, Efimova, et al. Circumarctic land cover diversity considering wetness gradients. *Under Review.* (EGU)

In Preparation

Miner, et al. Emerging permafrost carbon dynamics: Critical knowledge gaps. *In Preparation.* (Earth's Future)
 Gay, et al. Rising to the Challenge: How remote sensing can inform Arctic methane and permafrost climate feedbacks. *In Preparation.* (Eos)
 Gay, et al. Circumarctic zero-curtain maps with GeoCryoAI. *In Preparation.* (NMI)
 Gay, et al. Methane-guided harmonic modeling. *In Preparation.* (RSE)
 Malina, et al. AMPAC Methane Perspective. *In Preparation.* (FRS)
 Miller, et al. Shoulder seasons. *In Preparation.* (ERL)
 Miner, et al. Chemical mapping in Alaska. *In Preparation.* (NCC)
 Watts, Poulter, et al. Arctic CH4 upscaling. *In Preparation.* (ESSD)



JGR Biogeosciences
 Permafrost Carbon: Progress on Understanding Stocks and Fluxes Across Northern Terrestrial Ecosystems
 COMMISSIONED MANUSCRIPT
 OPEN ACCESS
 ENVIRONMENTAL RESEARCH LETTERS
 Investigating permafrost carbon dynamics in Alaska with artificial intelligence
 Earth to Mars: A Protocol for Characterizing Permafrost in the Context of Climate Change as an Analog for Extraplanetary Exploration
 Tundra fire increases the likelihood of methane hotspot formation in the Yukon-Kuskokwim Delta, Alaska, USA

Additional information on the Arctic Methane and Permafrost Challenge (AMPAC) NASA-ESA collaborative community initiative may be found at:

https://cse.nasa.gov/methane_challenge.html
<https://eo4society.esa.int/communities/scientists/arctic-methane-and-permafrost/>

