

# B55D-1016 - Toward Automated Data-Model Calibration for the Arctic Terrestrial Ecosystem Model



Friday, 16 December 2022



13:45 - 17:15



McCormick Place - Poster Hall, Hall - A

## Abstract

Permafrost contains a significant amount of frozen carbon that could release into the atmosphere due to continued warming. Terrestrial Ecosystem Models are effective tools for predicting terrestrial processes driving the permafrost carbon feedbacks to the climate system. Timely and accurate predictions require flexible model-data calibration tools that reduce systematic biases and errors, and facilitate more rapid model advancements and simulations. To address this, we used the Model Analysis and Decision Support (MADS) software package and the DVM-DOS-TEM, a process-based biosphere model that couples a dynamic vegetation model, a dynamic organic soil model, and a biogeochemical model. This model-data calibration tool estimates multiple model parameters by better matching model outputs with measurements. In this study, we address technical and scientific challenges associated with automated model calibration for parameters that the model state variables are the most sensitive to. We use measurements from sites in Alaska to calibrate DVM-DOS-TEM parameters and further explore the model parameter sensitivity which will contribute to better harness the power of the unprecedented amount of ecological observations to inform models in the future.

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## First Author



**Elchin E Jafarov**

Woodwell Climate Research Center

## Authors



G

[Helene Genet](#)

University of Alaska Fairbanks

V

[Velimir monty V Vesselinov](#)

Los Alamos National Laboratory

B

[Valeria Briones](#)

Woodwell Climate Research Center

R

[Ruth Rutter](#)

University of Alaska Fairbanks

R

[Brendan M Rogers](#)

Woodwell Climate Research Center

N

[Susan Natali](#)

Woodwell Climate Research Center

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