FAQs – AI-Informed High-Resolution Fuel Mapping

Last updated October 10, 2024

How does the Department of Defense (DoD) 2-year project relate to this project? Is it a continuation? Is the proponent required to use what was developed? Can the details of the DoD work be provided?

This project is the DoD 2-year project.

Can you provide a detailed list of the specific features to be extracted and attributes? What features are to be inferred? For example, an estimate of Above Ground Biomass (AGB), dead or alive tree, wood fuel estimate, or tree attributes such as position, height, crown area...

- Above ground biomass
- Species-level land cover
- Digital terrain model
- Canopy height model
- Ecotype
- Duff layer
- Down woody debris

Can you provide details on the available data? For example, what is imagery resolution? What is multispectral? What is the LiDAR density?

- MAXAR optical imagery, .5m
- LiDAR Collections, 8 pts/m
- ArcticDEM, .5m
- Ecotype classifications, 30m
- Other available datasets are still under investigation

Is there a confidence level expected with the extraction of features?

No specific confidence level. The higher the better.

Can the model be an existing model such as open-source model (e.g. Unet), or does it have to be a novel or newly developed model?

It can be an existing model.

Does the model need to be AI-based or can it be combination of AI with numerical methods?

It must be AI-based.

Can you provide a list of functional requirements?

- AI model
- Hosted on Permafrost Discovery Gateway and software adapted for use in ArcGIS Pro
- Takes optical imagery, LiDAR, and ground-truth datasets as inputs
- Output is at least 1m in resolution

Has there been any label data developed for training the model? If so, can this be provided?

No. Data development and labeling are being worked on and will be part of this effort.

Is there a separate budget for data acquisitions, or only publicly available data imagery and LiDAR point clouds sources can be used in the project?

There is no budget available for data acquisition. All data must already exist.

Is the $400,000 the total for all awards or a single award? Can the same institution apply for multiple awards?

It is the total for all awards. The same institution may apply for any number of the objectives.

Is high-resolution data available from the U.S. Army or commercial remote sensing companies?

Both

For the current fuel mapping, what fuel types does the Army use in its forest fire models? What is the resolution of the fuel maps, and is there a designated region of interest for performance evaluation?

The region of interest is Interior Alaska training lands. Current fire management on Alaskan training lands are co-managed by USAG Alaska and Alaska Fire Service, which uses the Canadian Forest Fire Danger Rating System and models, which are 30m.

Could you provide a specific example of a feature to be extracted by the feature-extraction backbone, and clarify who the "researchers" are for coordinating communication with the "wildland fire community?"

- Species-level vegetation cover is one example.
- This solicitation is looking for someone to be the coordinator between the research and wildland fire professionals.