



Knowledge Transfer and Tool Development (KTTD): 3B-2024

○ **Journal Publication:**

- Cao, Y., Coops, N. C., Murray, B. A., Sinclair, I., Geordie, R. (2026) M3FNet: Multi-modal multi-temporal multi-scale data fusion network for tree species composition mapping, ISPRS Journal of Photogrammetry and Remote Sensing, 231 797-814,
- Cao, Y., Coops, N. C., Murray, B. A., and Sinclair, I., (2025) Enhancing tree species composition mapping using Sentinel-2 and multi-seasonal deep learning fusion. International Journal of Remote Sensing. 46, no. 24, 9538–9564,
- A manuscript titled “Assessing the Transferability of Multi-Source Deep Learning Models for Tree Species Composition Prediction across Boreal Forests,” has been submitted to the International Journal Applied Earth Observation and Geoinformation journal, and is under review.

○ **Tutorials and Workshops**

- Deep Learning for EFI: This is an introductory workshop for deep learning techniques for Enhanced Forest Inventories (EFIs) presented at the Canadian Cross-Country EFI Checkup. This workshop covers a basic end-to-end deep learning workflow for EFI applications, covering an introduction into deep learning, to data preparation, and finally a demo of model training, evaluation, and deployment. There are some examples of real-world forest inventory deep learning applications showcasing some of the possibilities there are with these techniques.
 - Tutorial: <https://brent-murray.github.io/DeepLearningEFI/>
- Three workshops were conducted, focusing on remote sensing data management, machine learning in forestry modeling, and cloud computing and deep learning applications in forestry. These workshops facilitated direct engagement and knowledge sharing with participants.
 - Tutorial: https://yuwei-cao-git.github.io/DRI-EDIA-F4A/src/tree_species_classification/tree_species_classification.html
 - Workshop records: <https://www.youtube.com/watch?v=2cCBOlj36oA&t=459s>

○ **Code**

- Data fusion: <https://github.com/yuwei-cao-git/M3F-Net>
- Super-resolution: <https://github.com/yuwei-cao-git/SRS-Net>
- Deep Learning for EFI: <https://github.com/yuwei-cao-git/DeepLearningEFI/tree/main/src>