

Pretraining for Dense Prediction Tasks in Earth Observation



FRI

UNIVERSITY OF LJUBLJANA Faculty of Computer and Information Science

Filip Wolf, Blaž Rolih, Luka Čehovin Zajc

University of Ljubljana, Faculty of Computer and Information Science, Slovenia



Remote Sensing Pretraining

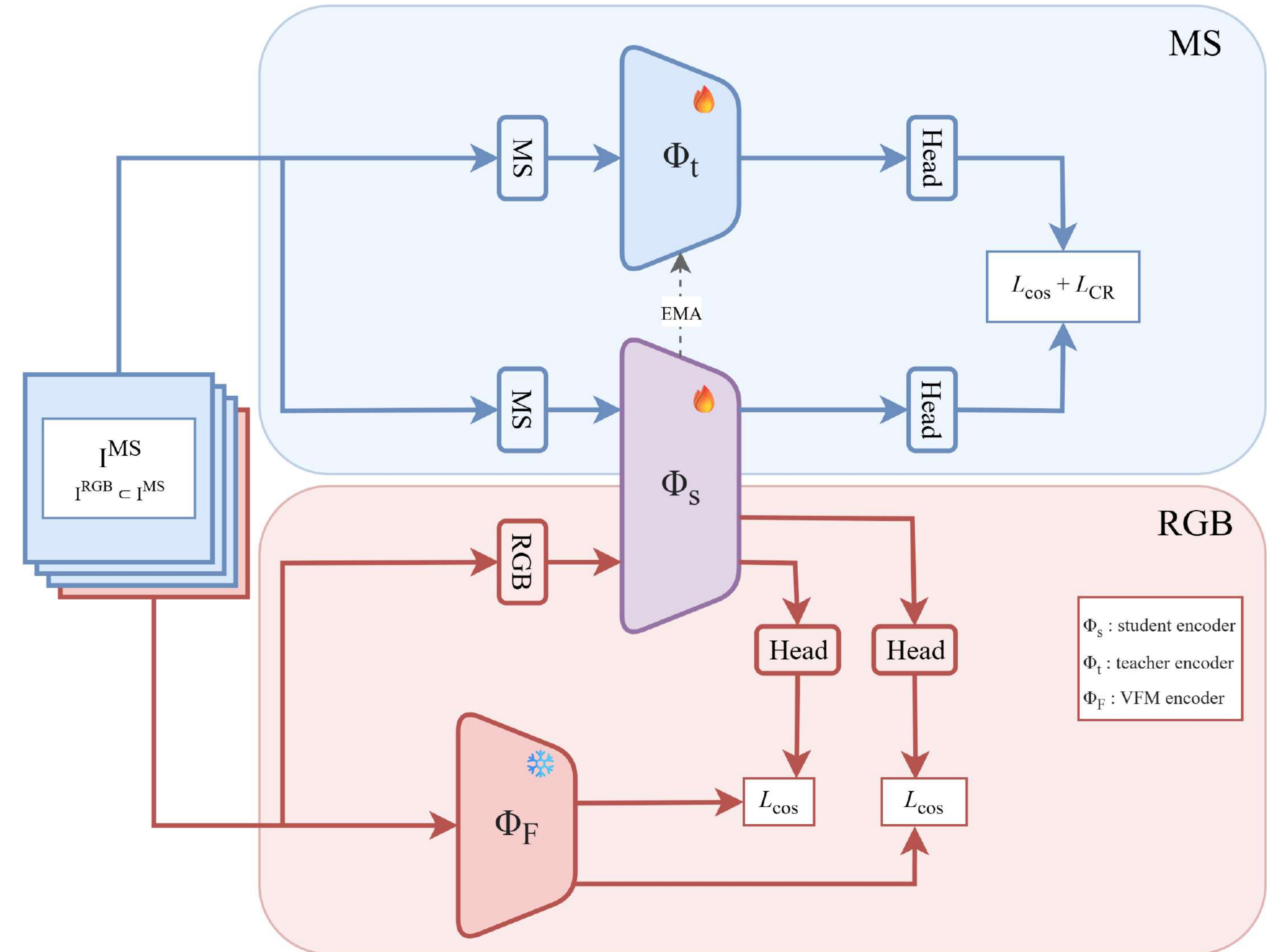
Problem

- Large unlabeled multispectral satellite image datasets
- Most use **MAE** -> **poor dense features**
- Good at MS or RGB, not both

Solution

- **Contrastive-based pretraining**
- Incorporate Visual Foundation Model via dual teacher
- Split loss into RGB and MS losses

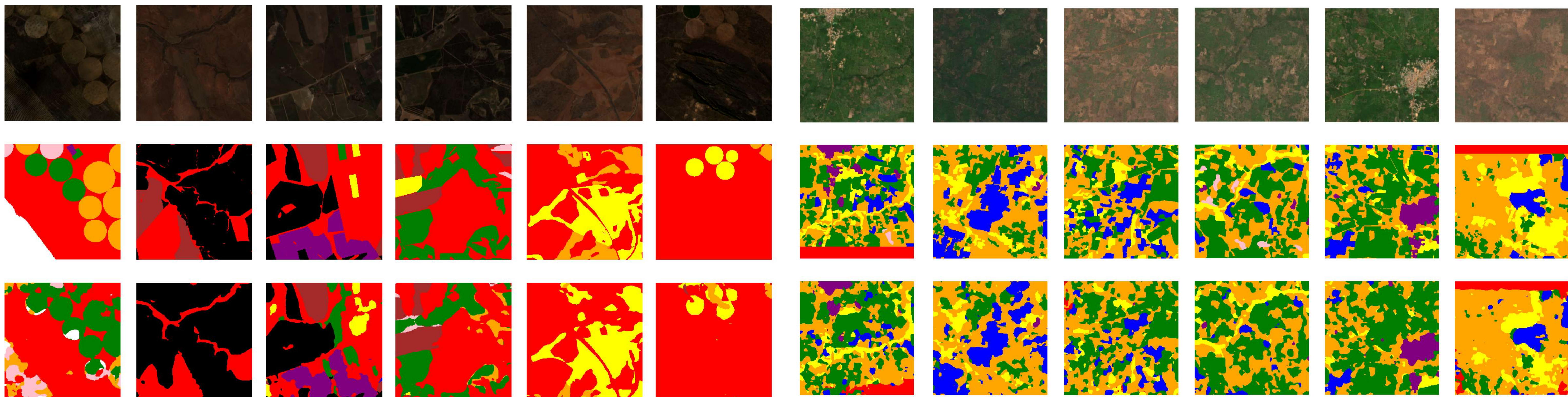
Proposed Model



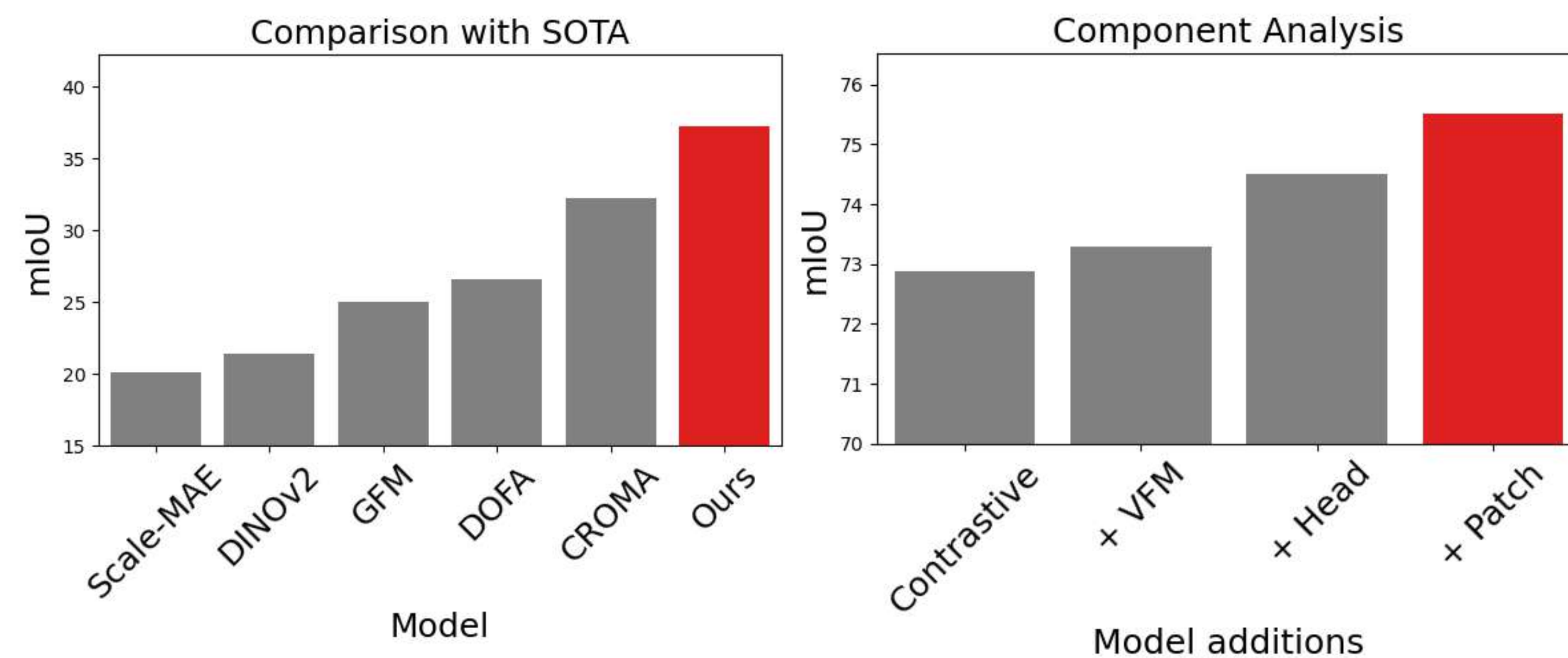
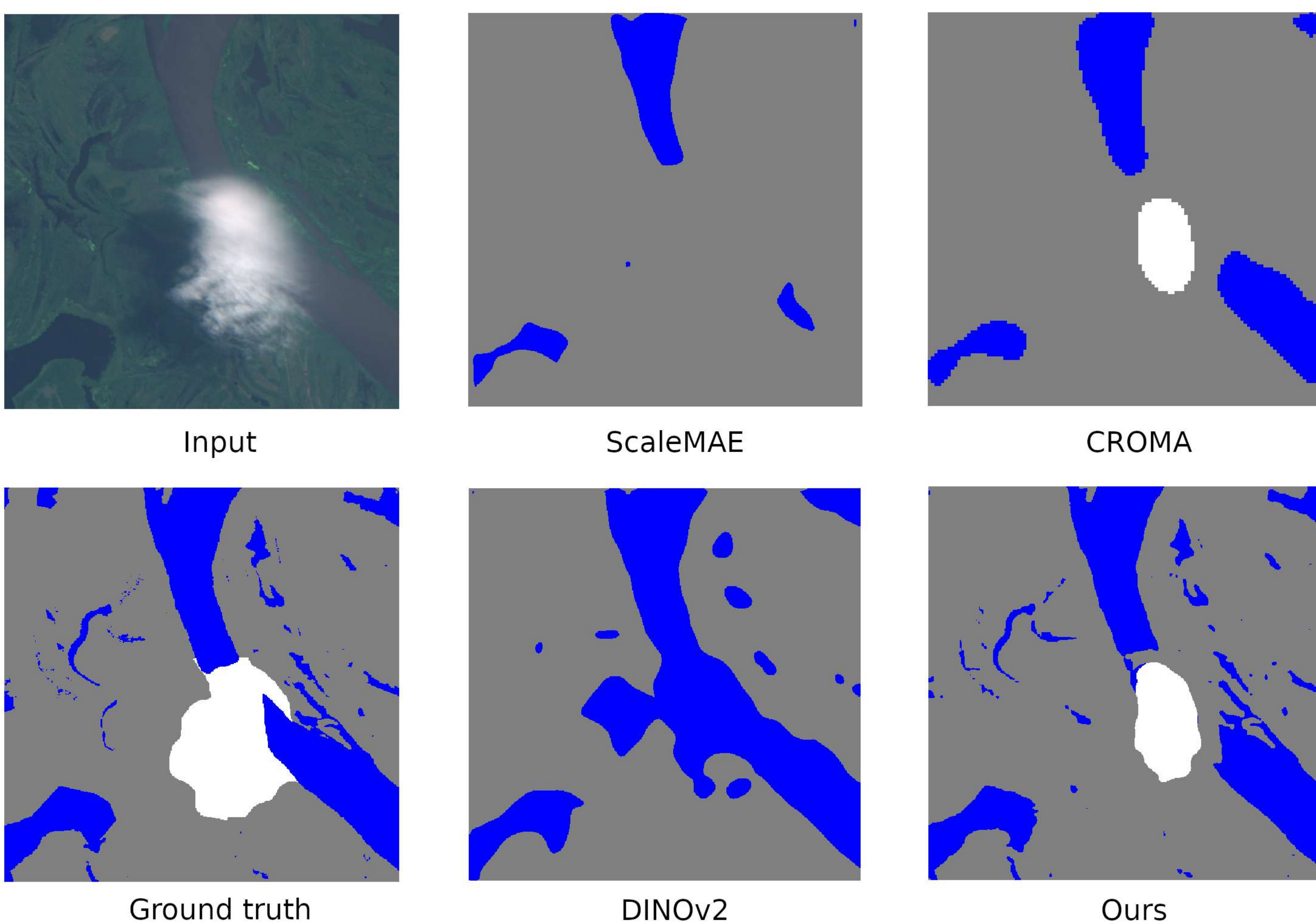
Results

UPerNet finetuning of frozen backbone Φ_s

Crop segmentation



Flood segmentation



Insights

- Contrastive pretraining well-suited for learning dense MS features
- VFMs significantly improve performance

