Results

Comparison of the different models tested. Each one was trained for 8 epochs and evaluated using Global Dice Score.

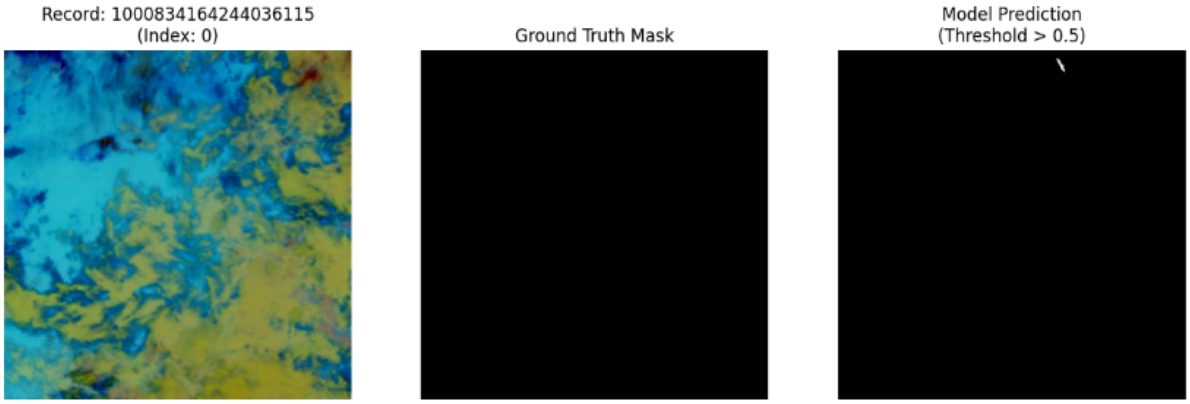
Method	Global Dice Score
3D CNN	0.252
3D U-Net + ConvLSTM	0.529
3D U-Net + ViT	0.468
3D U-Net + ConvLSTM + Attention Gate	0.509
3D U-Net + ConvLSTM + Small Transformer	0.423
3D U-Net + ConvLSTM + Data Augmentation	0.422

The best performer was 3D U-Net + ConvLSTM, so I used this one for training. The model was trained for 15 epochs with a combined loss function of 0.5 × BCEWithLogitsLoss + 0.5 × Dice Loss, on Kaggle's GPU T4 x2. Training lasts approximately 6 hours.

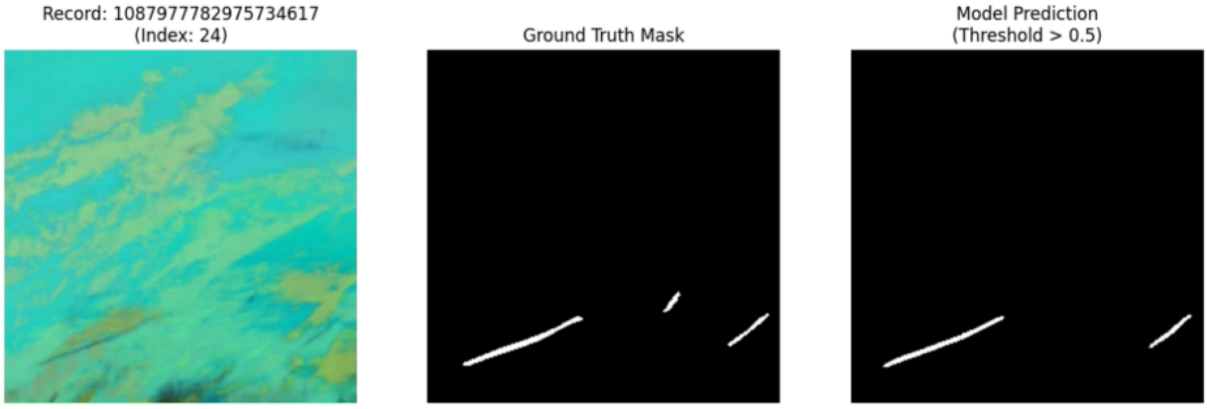
The following are examples of predictions of the satellite images with the ground truth to see the performance.

The main image is the original image with ash color scheme, the following images are the binary masks where white is a contrail and black is the background.

Visualization of prediction of an image with no contrails



Visualization of prediction of an image with contrails



Competition Score: 0.54733

Submission and Description	Private Score	Public Score	Selected
CAP6415_Contrail_Project_Submission - Version 1 Succeeded (after deadline) · 9m ago	0.54733	0.53749	☐