



High Quality Labeling

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Mantle Labs

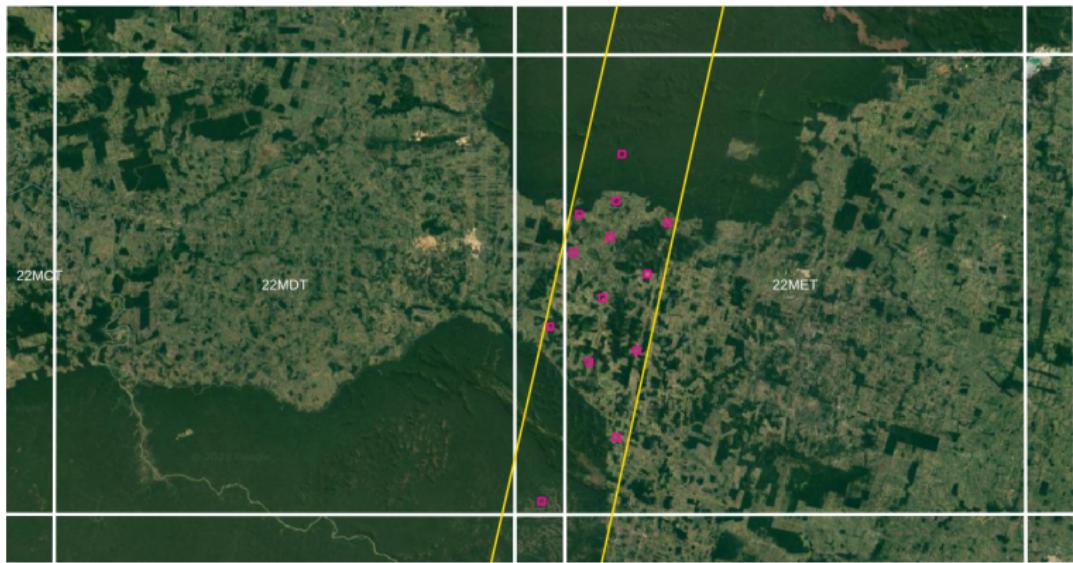


Figure 1: All polygons over area of interest: 22MET overlap.



An aerial satellite photograph of a coastal region. The landscape is a mix of green agricultural fields, some with distinct grid patterns, and brown, undeveloped land. A network of roads cuts through the terrain, with a major highway running along the coast on the right. In the lower center, there's a cluster of industrial or institutional buildings with red roofs and large parking lots. To the far right, a strip of coastline meets the ocean, showing a sandy beach and some small structures. The overall scene is a blend of rural and semi-urban development.

Dataset

Implementation details

| Dataset | |
|-----------------------------|--------------------------|
| Tiles | 22MET |
| Number of polygons | 12 |
| Time range | 2021-05-01 2021-09-30 |
| Total number observations | 61 |
| Number with HQ observations | 34 |

Table 1: Description of the dataset.

| Classes | |
|----------------|----|
| Fully Cloudy | FC |
| Partly Cloudy | PC |
| Full Shadow | FS |
| Partly Shadow | PS |
| Low quality | LQ |
| Medium quality | MQ |
| High quality | HQ |

Table 2: Description of labels.



An aerial satellite photograph of a coastal region. The landscape is a mix of green agricultural fields, some with irrigation patterns, and brown, dry land. A network of roads cuts through the terrain, with a prominent highway running along the coast. On the right side, there's a developed area with several buildings, including what looks like a resort or industrial complex. The coastline is visible on the far right, showing the transition from land to sea.

Labeling

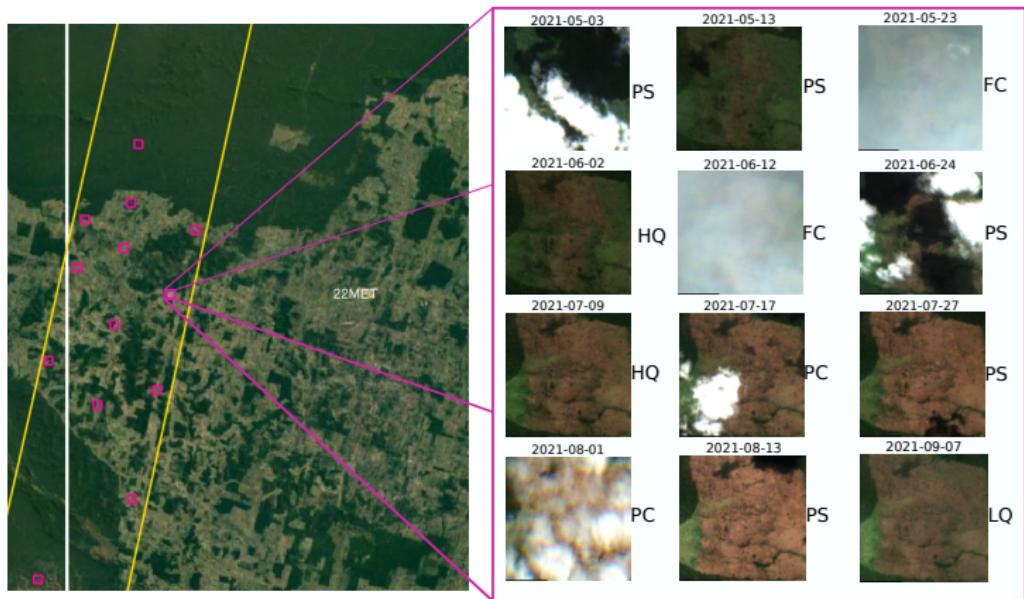


Figure 2: Polygon 1. Examples of some observation/labels.

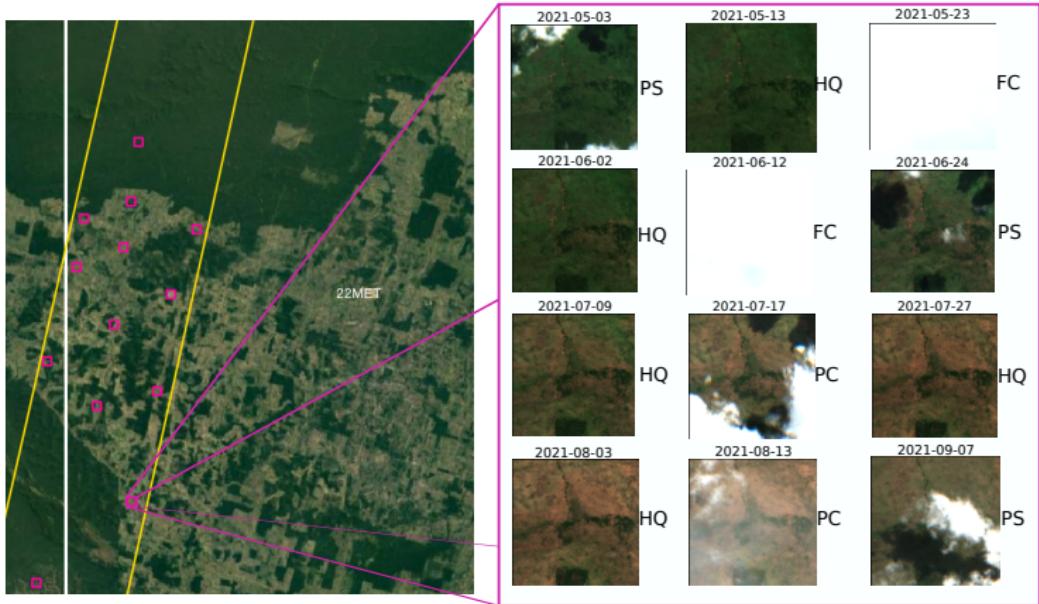


Figure 3: Polygon 2. Examples of some observation/labels.

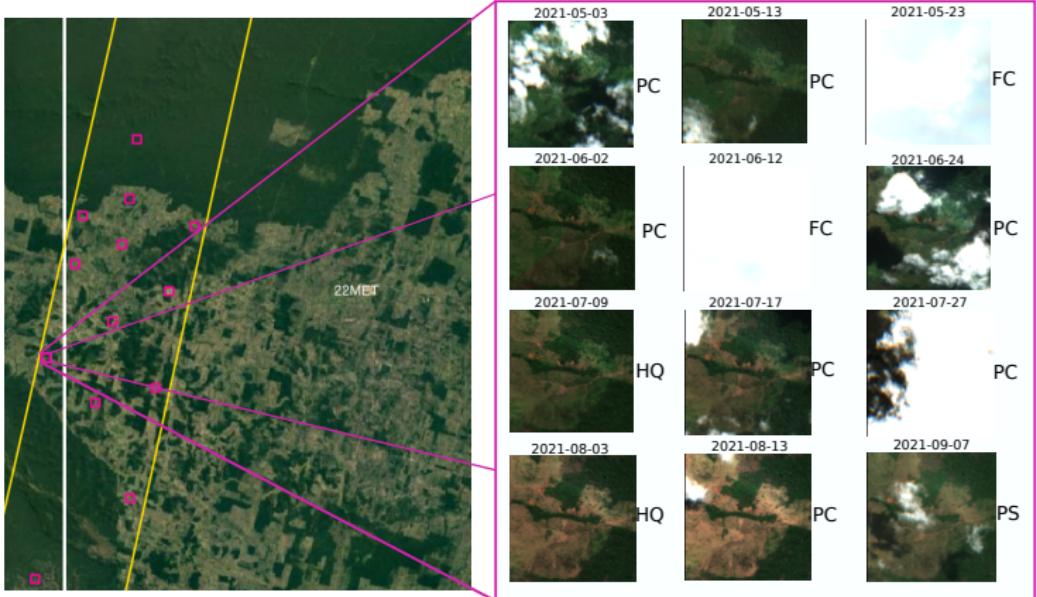


Figure 4: Polygon 3. Examples of some observation/labels.

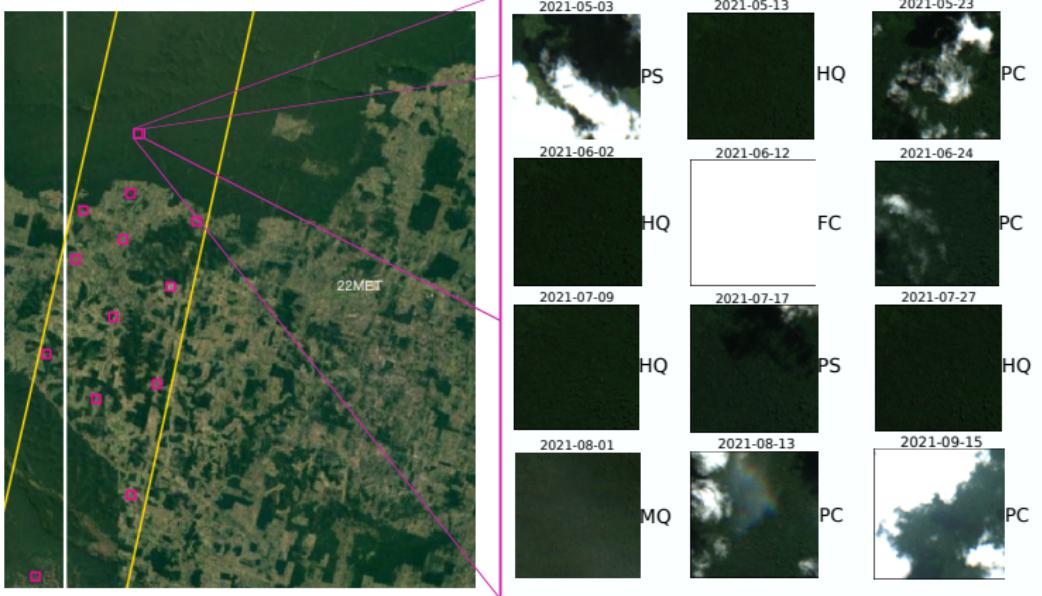


Figure 5: Polygon 4. Examples of some observation/labels.

This is a high-resolution satellite or aerial photograph of a coastal region. The image shows a mix of agricultural fields, some with distinct grid patterns, and areas of dense urban development. A major highway runs diagonally across the frame, intersected by several smaller roads and roundabouts. In the lower-left foreground, there is a large industrial complex with several buildings, including one with a prominent red roof and others with grey or white facades. To the right of the industrial area, a long, sandy beach meets the deep blue sea. The overall scene is a blend of rural and urban landscapes.

Training

Implementation details of the AE

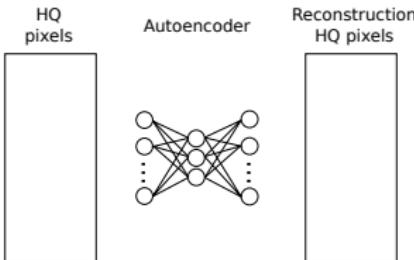


Figure 6: Workflow of training.

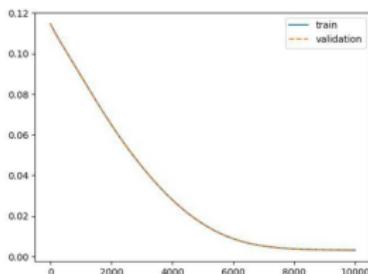


Figure 7: Loss function.



| Hyperparameters | |
|------------------------|-------|
| Training size | 90% |
| Validation size | 10% |
| Epochs | 10000 |
| Batch size | 0.1 |
| Units in hidden layers | 3 |
| Learning rate | 1e-5 |
| Optimizer | Adam |
| Loss | MSE |

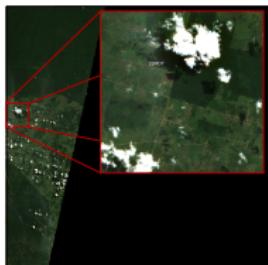
Table 3: Setting up of the Autoencoders hyperparameters.

An aerial satellite photograph of a coastal region. The landscape is a mix of green agricultural fields, some brown and dry land, and a network of roads. A large industrial or construction site with several large buildings and parking lots is visible in the lower-left foreground. To the right, a long stretch of coastline features a sandy beach and a line of buildings, possibly a resort or residential area. The water is a deep blue.

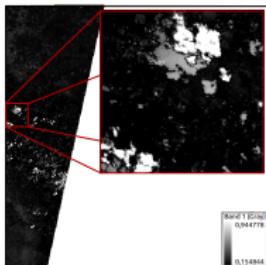
Results

Date: 2021-05-13

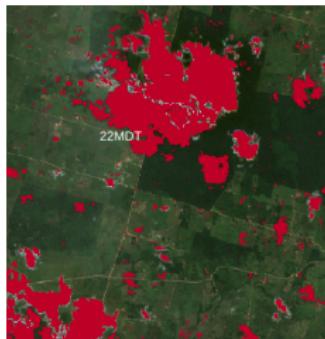
TCI



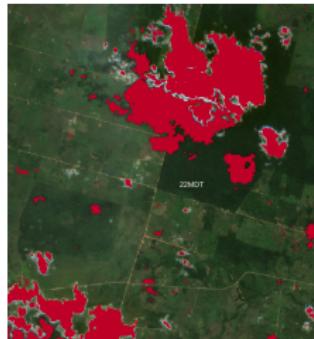
Error map



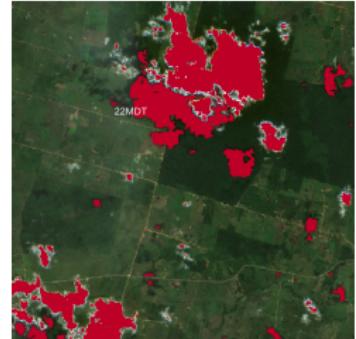
threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5



Cinvestav



BOKU



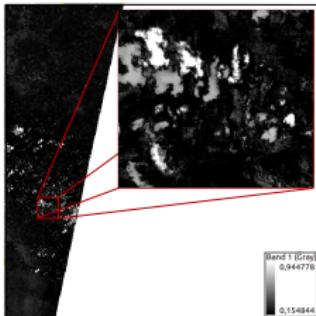
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Date: 2021-05-13

TCI



Error map

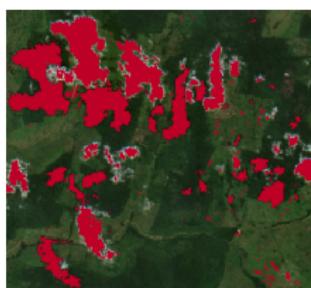


Binary masks

threshold = 0.3



threshold = 0.4



threshold = 0.5

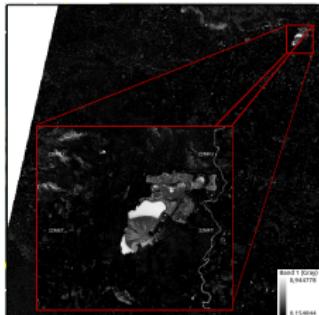


Date: 2021-05-25

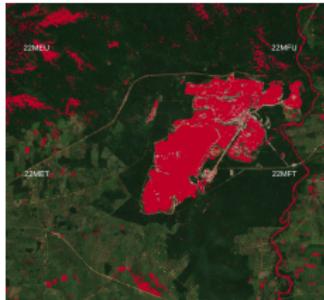
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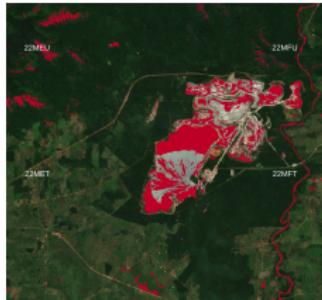
Error map



threshold = 0.3



threshold = 0.4



threshold = 0.5



Cinvestav



BOKU



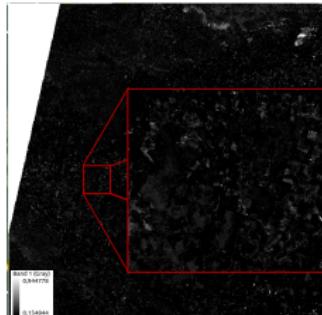
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Date: 2021-05-25

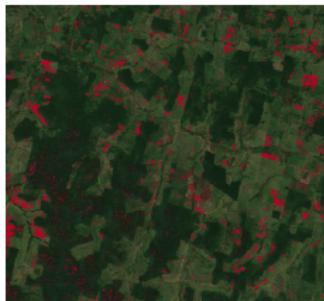
TCI



Error map



threshold = 0.3



Binary masks
threshold = 0.4

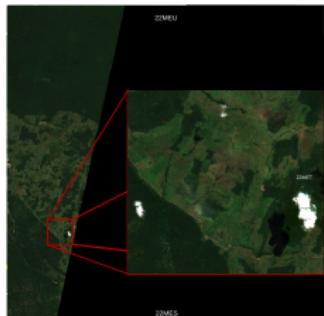


threshold = 0.5

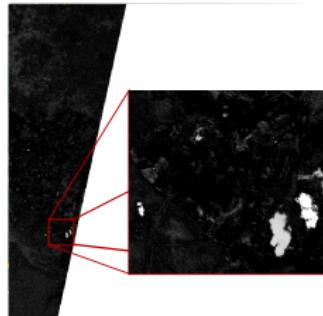


Date: 2021-05-28

TCI



Error map



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Binary masks
threshold = 0.4



threshold = 0.5



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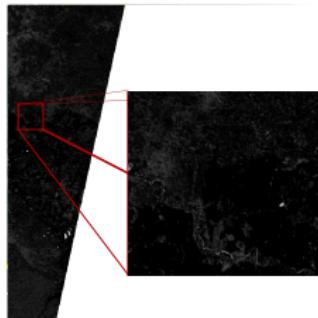


Date: 2021-05-28

TCI



Error map



threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5

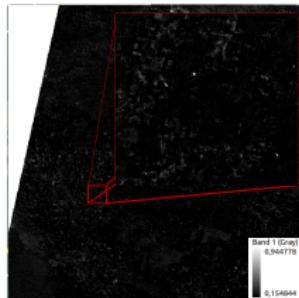


Date: 2021-05-30

TCI



Error map



threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5



Date: 2021-05-30

TCI



Error map



threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5

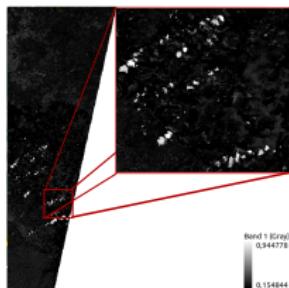


Date: 2021-06-02

TCI



Error map



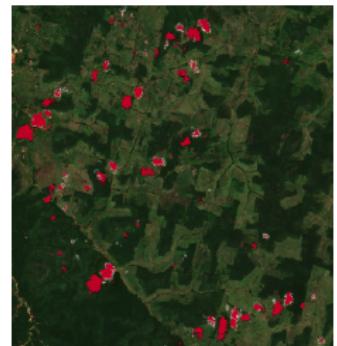
threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5

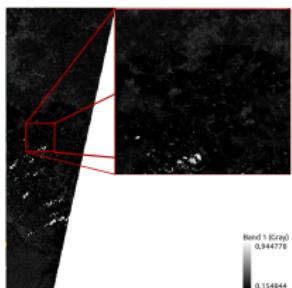


Date: 2021-06-02

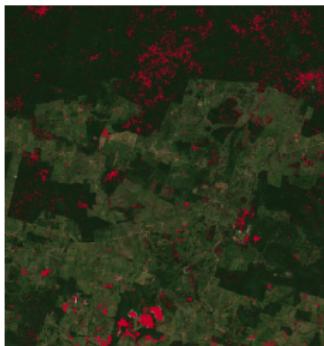
TCI



Error map



threshold = 0.3



Binary masks
threshold = 0.4



threshold = 0.5

