Microsoft Research
Summit 2022

FarmVibes.AI
SpaceEye

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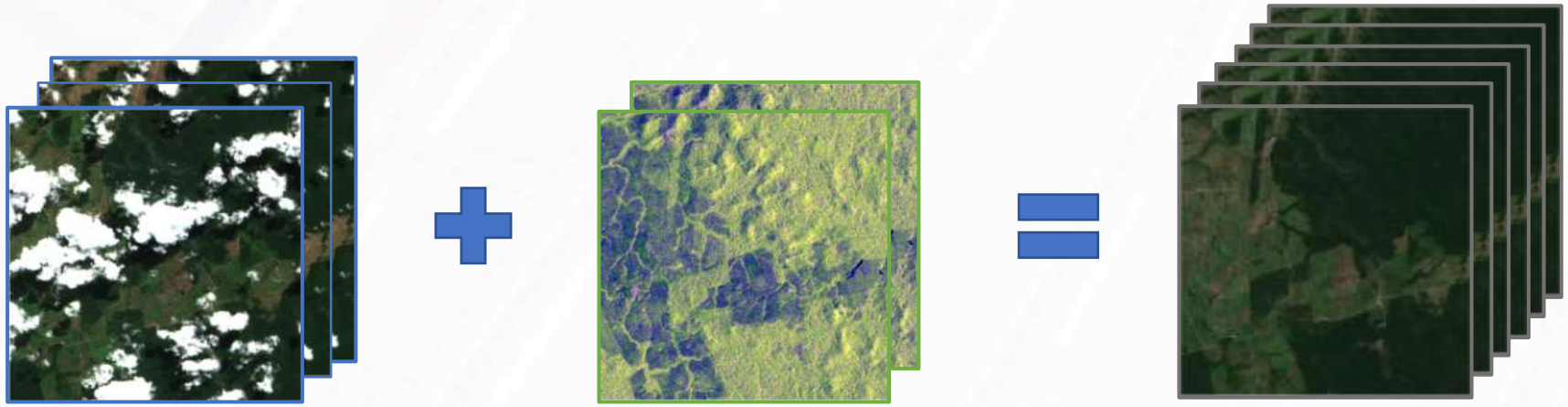
Obtain Daily Cloud-free Satellite Imagery with FarmVibes.AI

SpaceEye

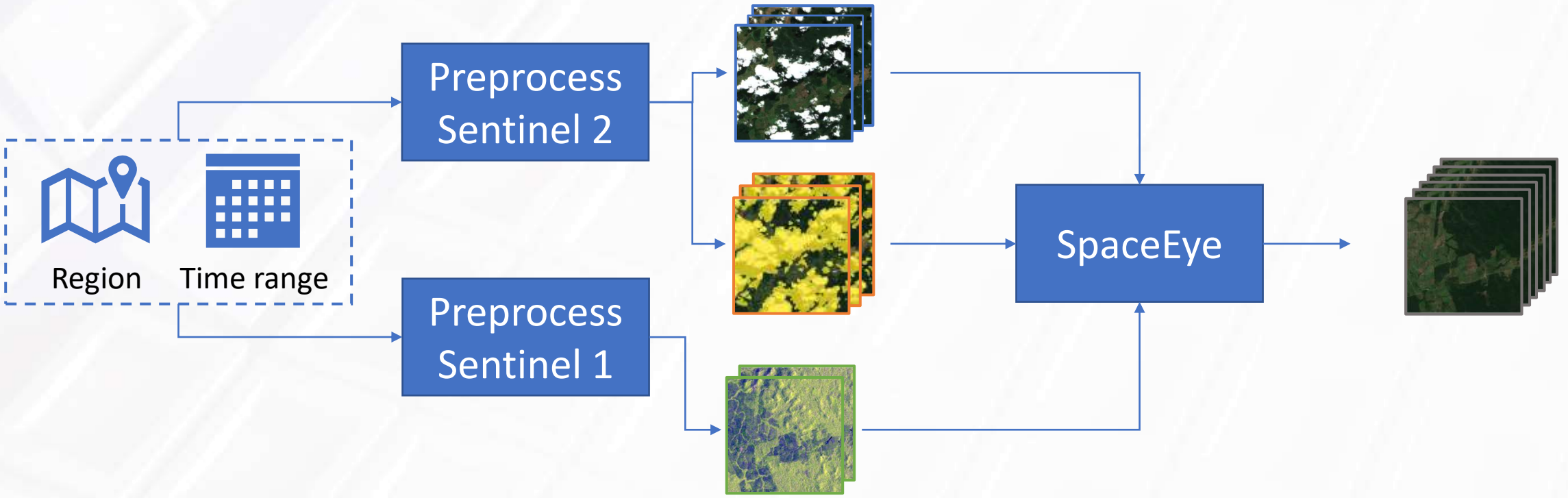
- Neural-network-based technique for cloud inpainting
- Fuses Sentinel-1 (SAR) and Sentinel-2 (optical)
- Interpolates via temporal and spatial attention
- Generates daily cloud-free images



[2106.08408] Seeing Through Clouds in Satellite Images (arxiv.org)

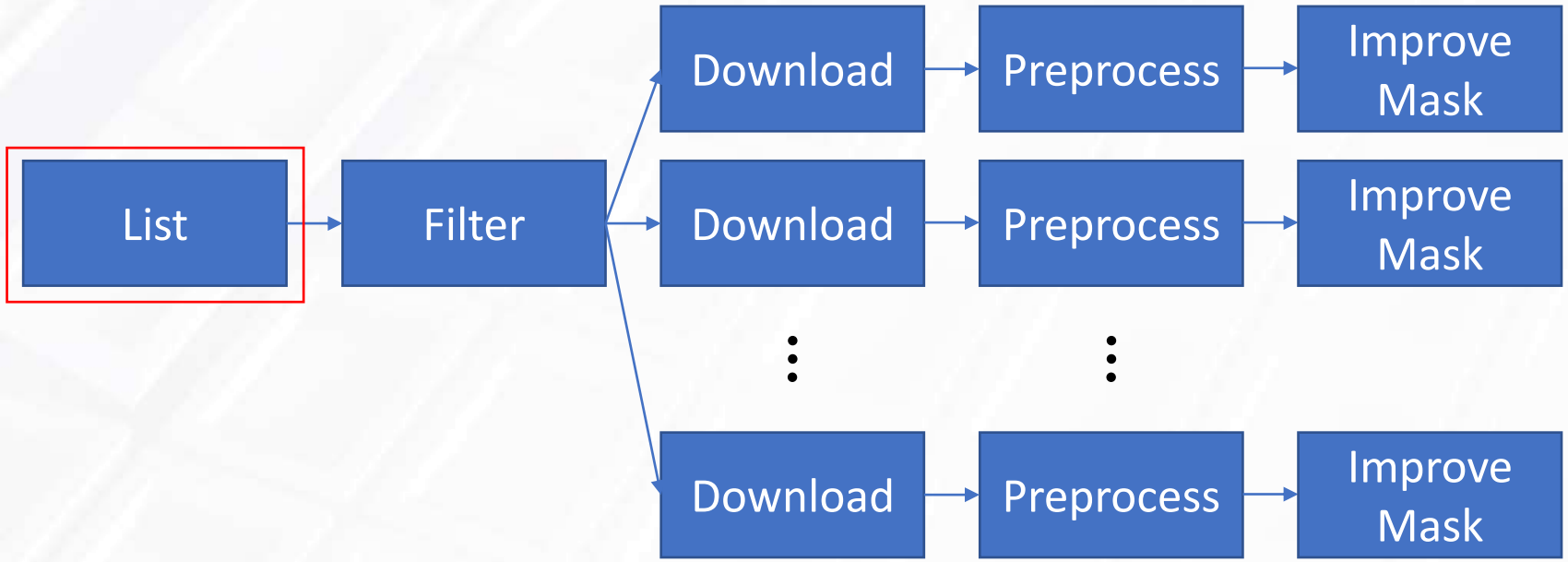
SpaceEye workflow

Generate daily cloud-free images for a given region and time range.



Sentinel-2 preprocessing

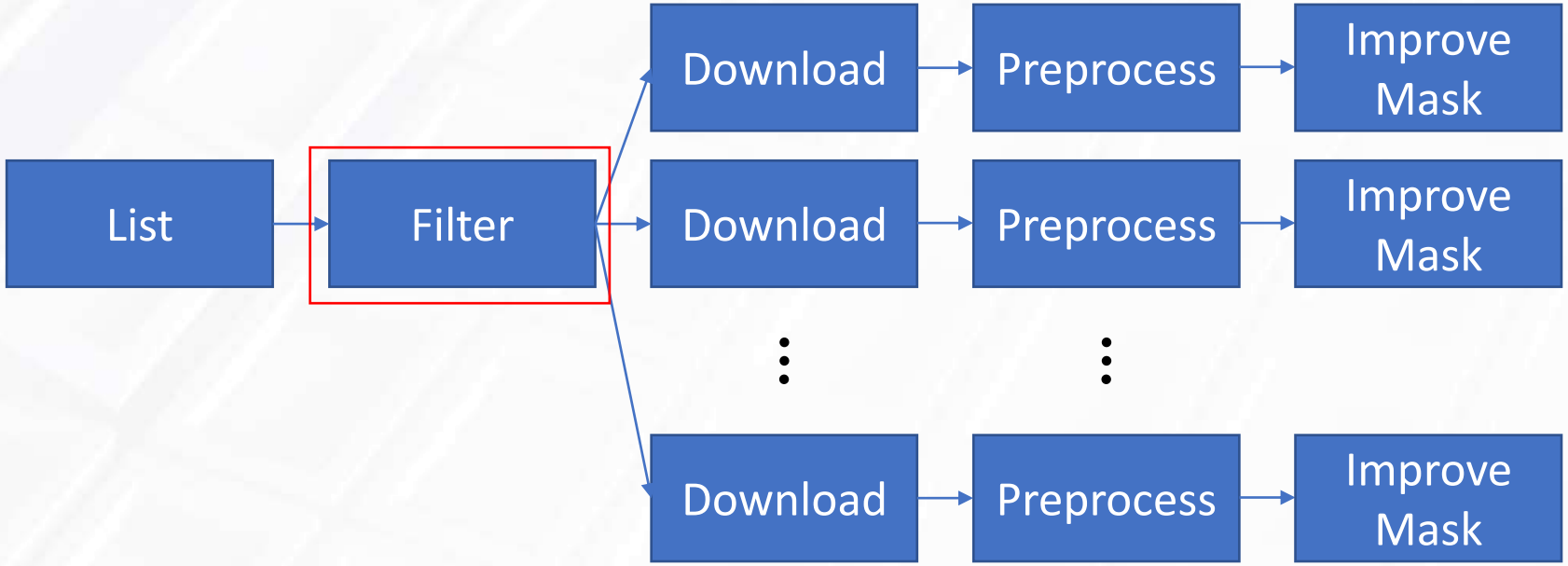
Download and preprocess data. Obtain accurate cloud masks.



Lists available products for the input region and time range

Sentinel-2 preprocessing

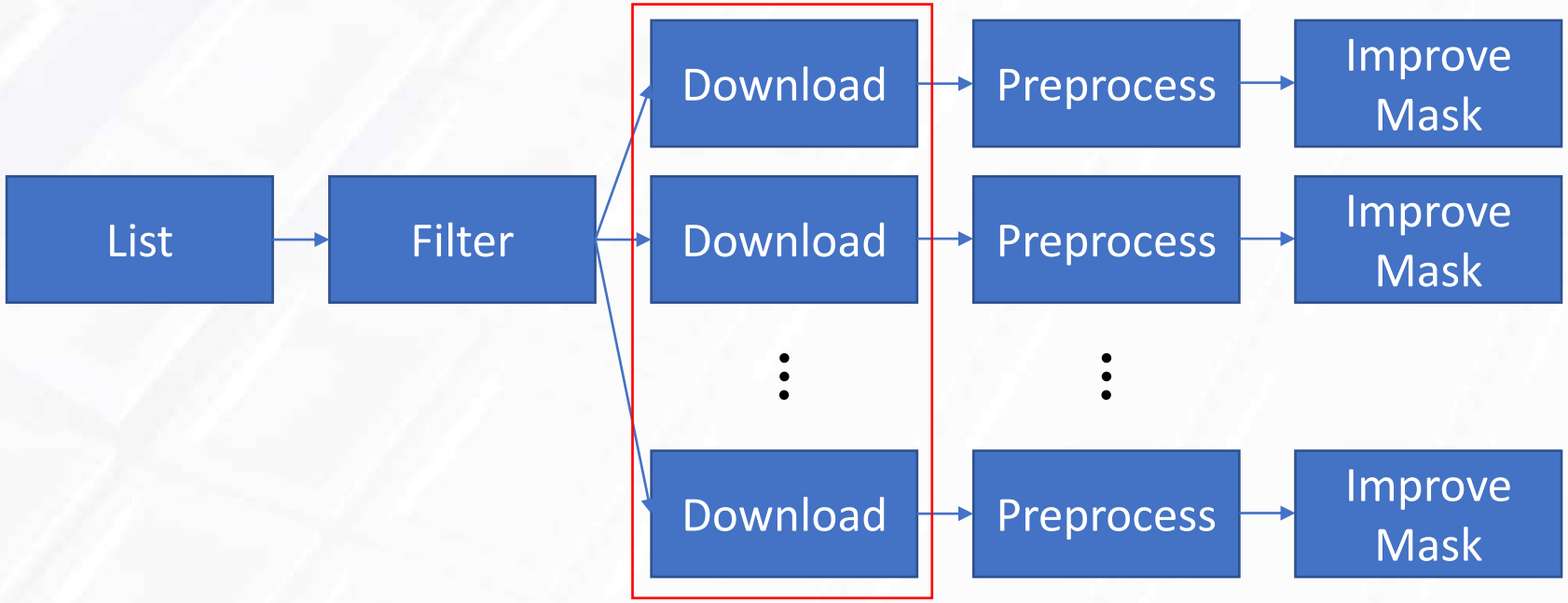
Download and preprocess data. Obtain accurate cloud masks.



Filters the necessary products to cover the input region

Sentinel-2 preprocessing

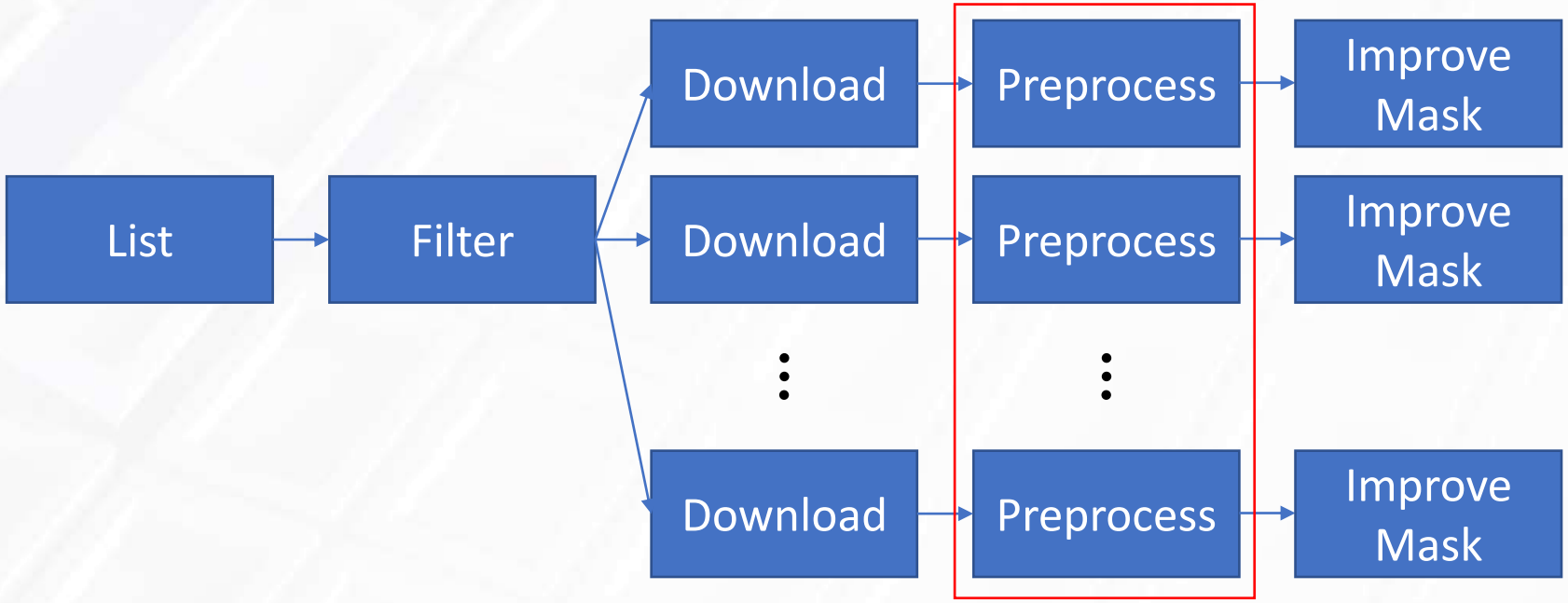
Download and preprocess data. Obtain accurate cloud masks.



Downloads bands and cloud geometries

Sentinel-2 preprocessing

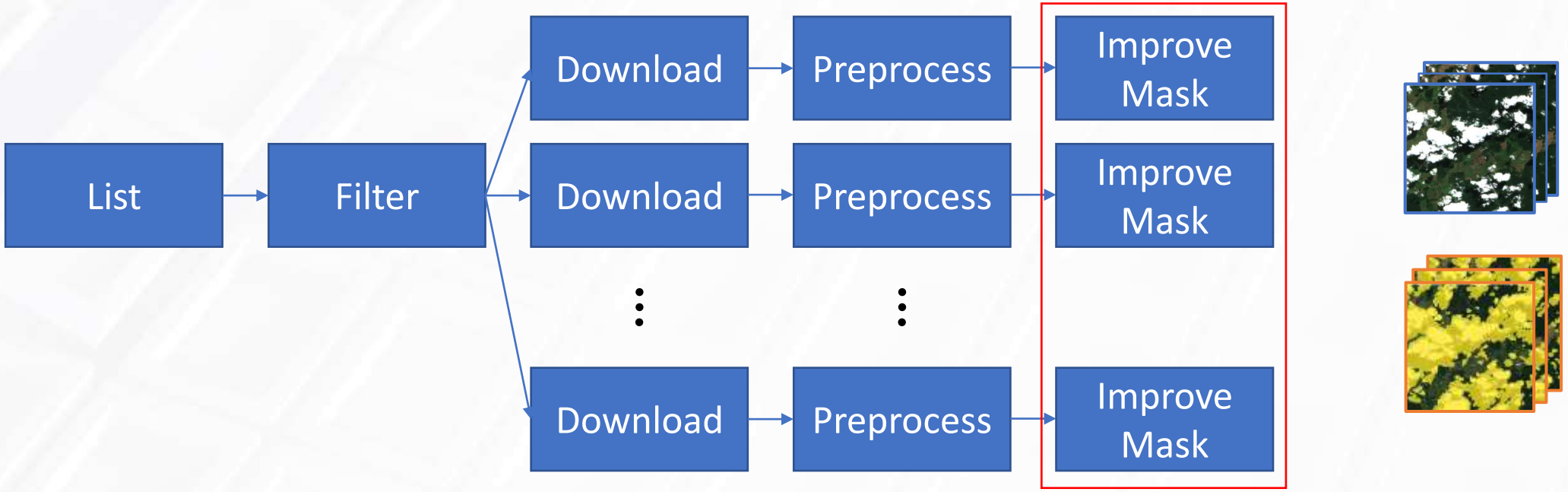
Download and preprocess data. Obtain accurate cloud masks.



Resamples all bands to 10m and stack them. Generates cloud masks

Sentinel-2 preprocessing

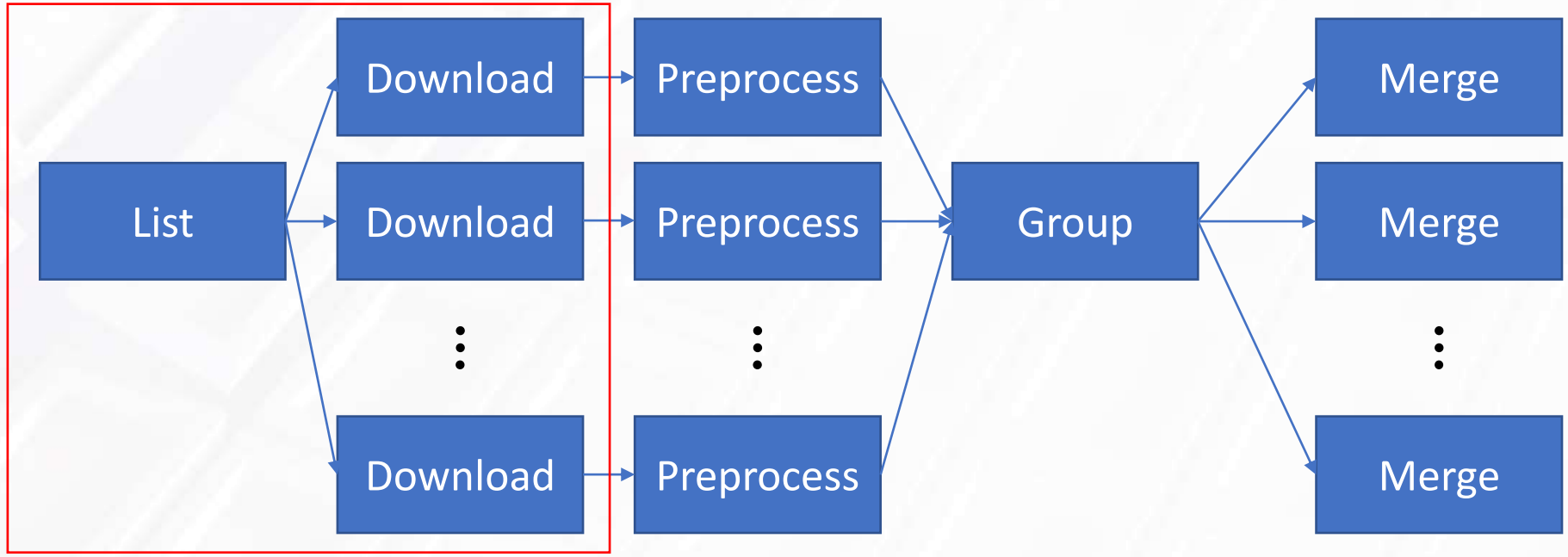
Download and preprocess data. Obtain accurate cloud masks.

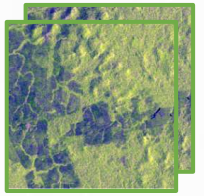


Runs ML models to predict cloud and cloud shadow masks

Sentinel-1 preprocessing

Download, preprocess, resample, tile and merge Sentinel-1 data.

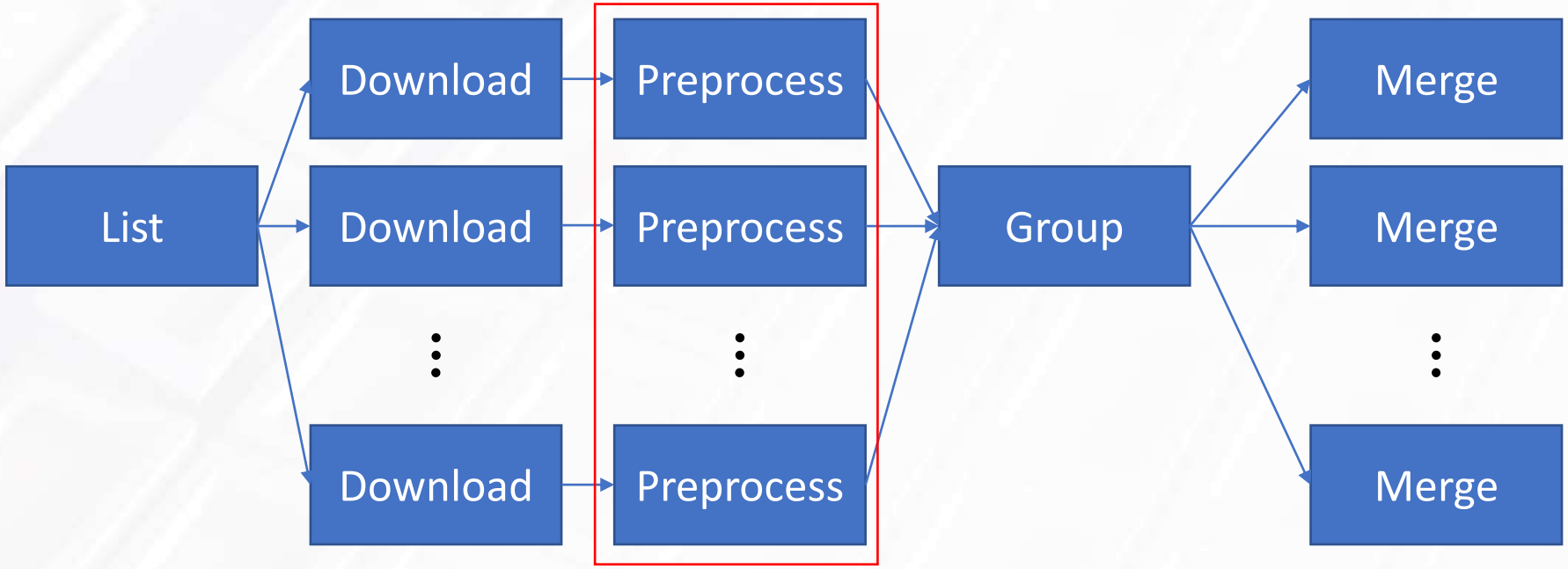


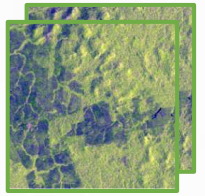


Lists available products for the input region and time range

Sentinel-1 preprocessing

Download, preprocess, resample, tile and merge Sentinel-1 data.

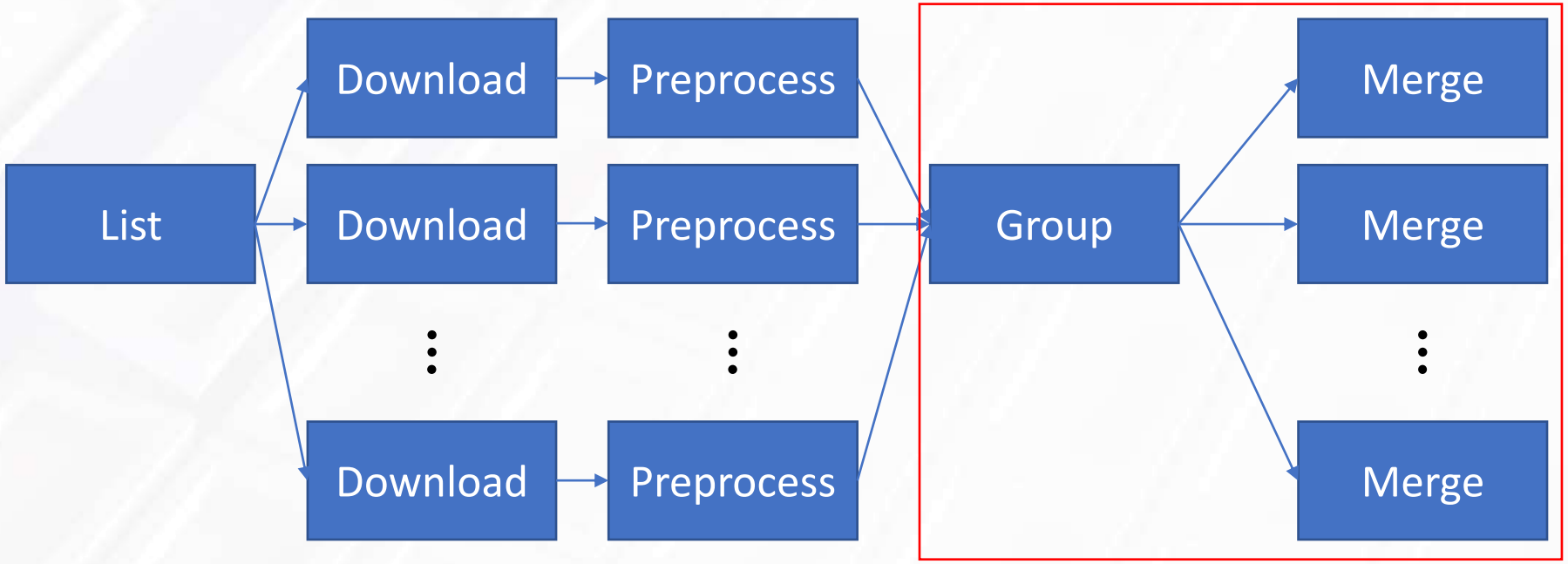


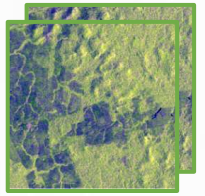


SAR preprocessing, resample to Sentinel-2 tiles.

Sentinel-1 preprocessing

Download, preprocess, resample, tile and merge Sentinel-1 data.

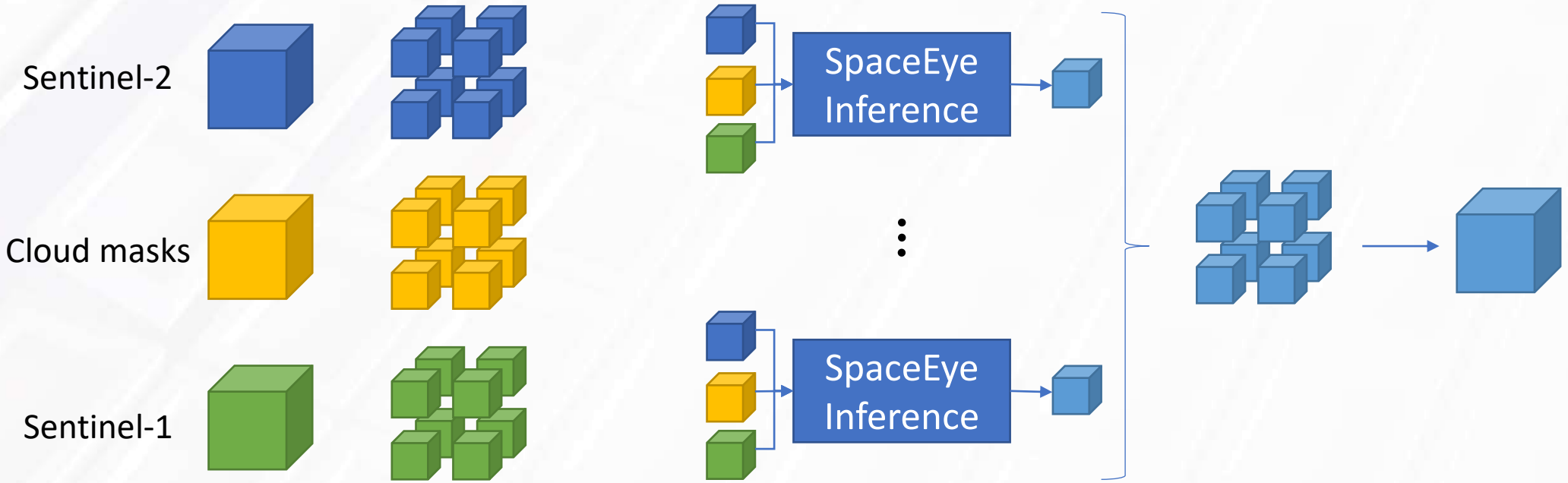


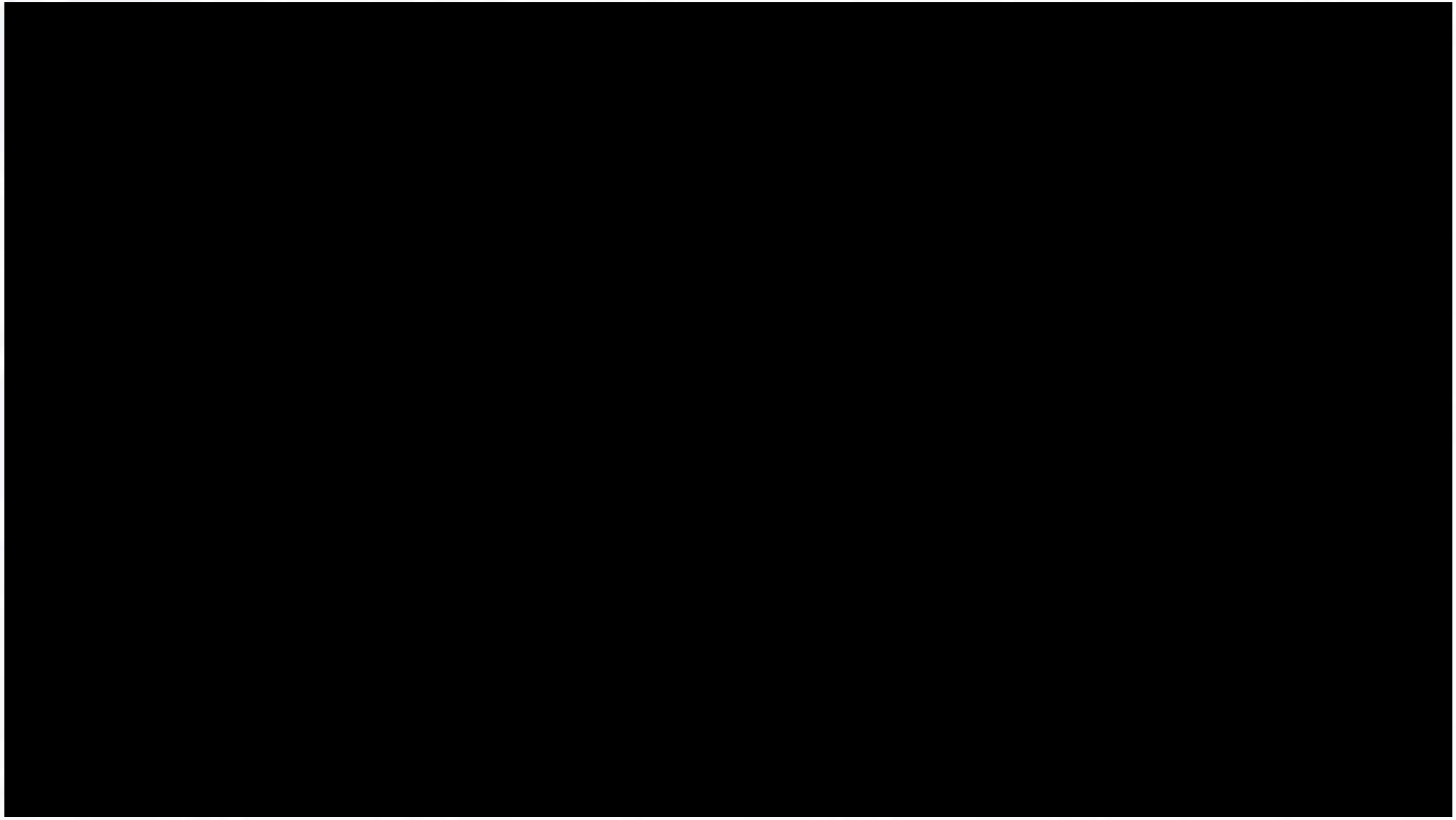


Merge Sentinel-1 data

SpaceEye inference

Split data into spatiotemporal windows, perform inference, merge results.





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Thank you

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https://github.com/microsoft/farmvibes-ai