

# DeepSentinel

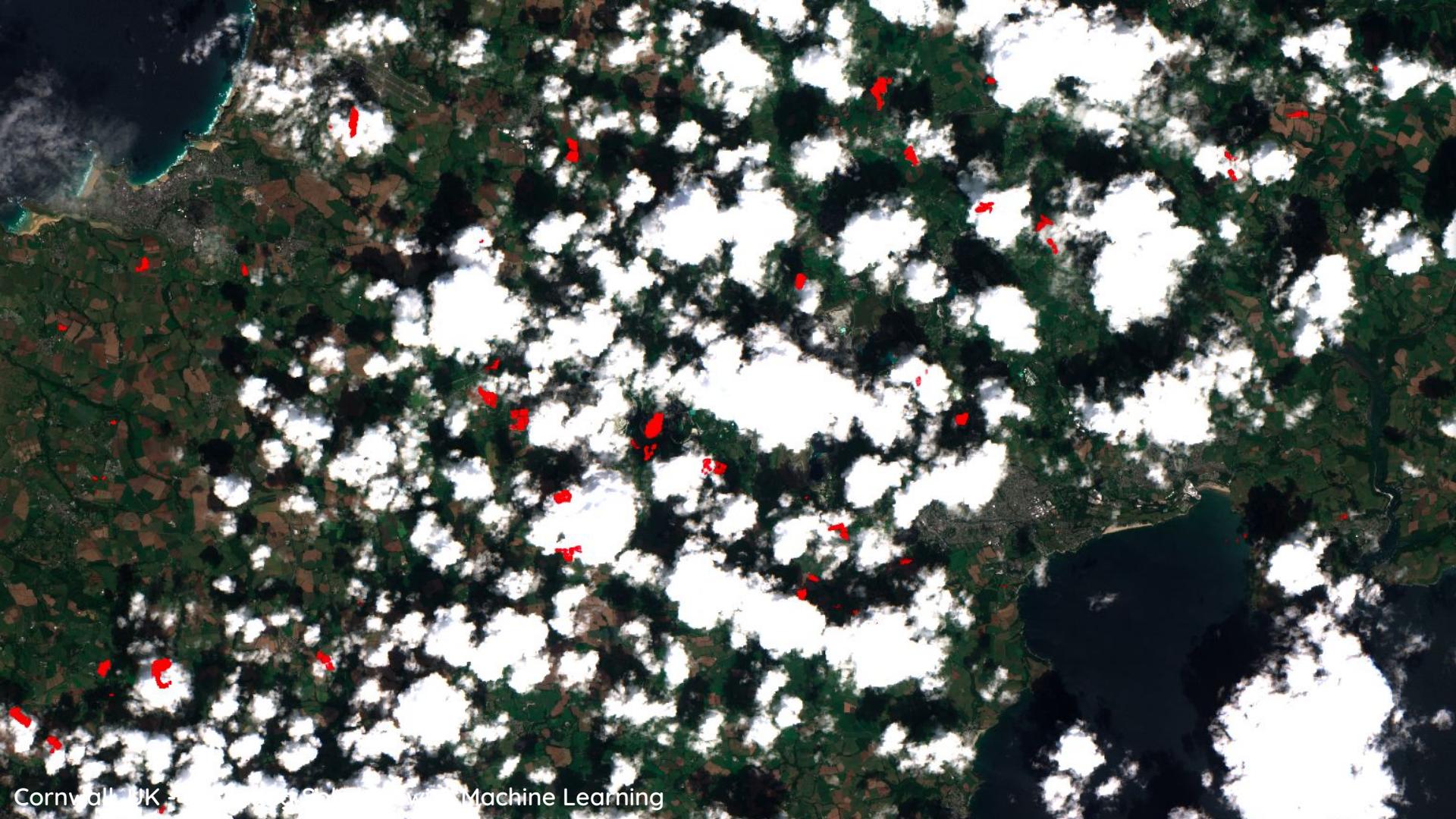
A general-purpose Sentinel-1 and Sentinel-2 computer vision model aiming to unlock an explosion of earth observation use cases for public good.

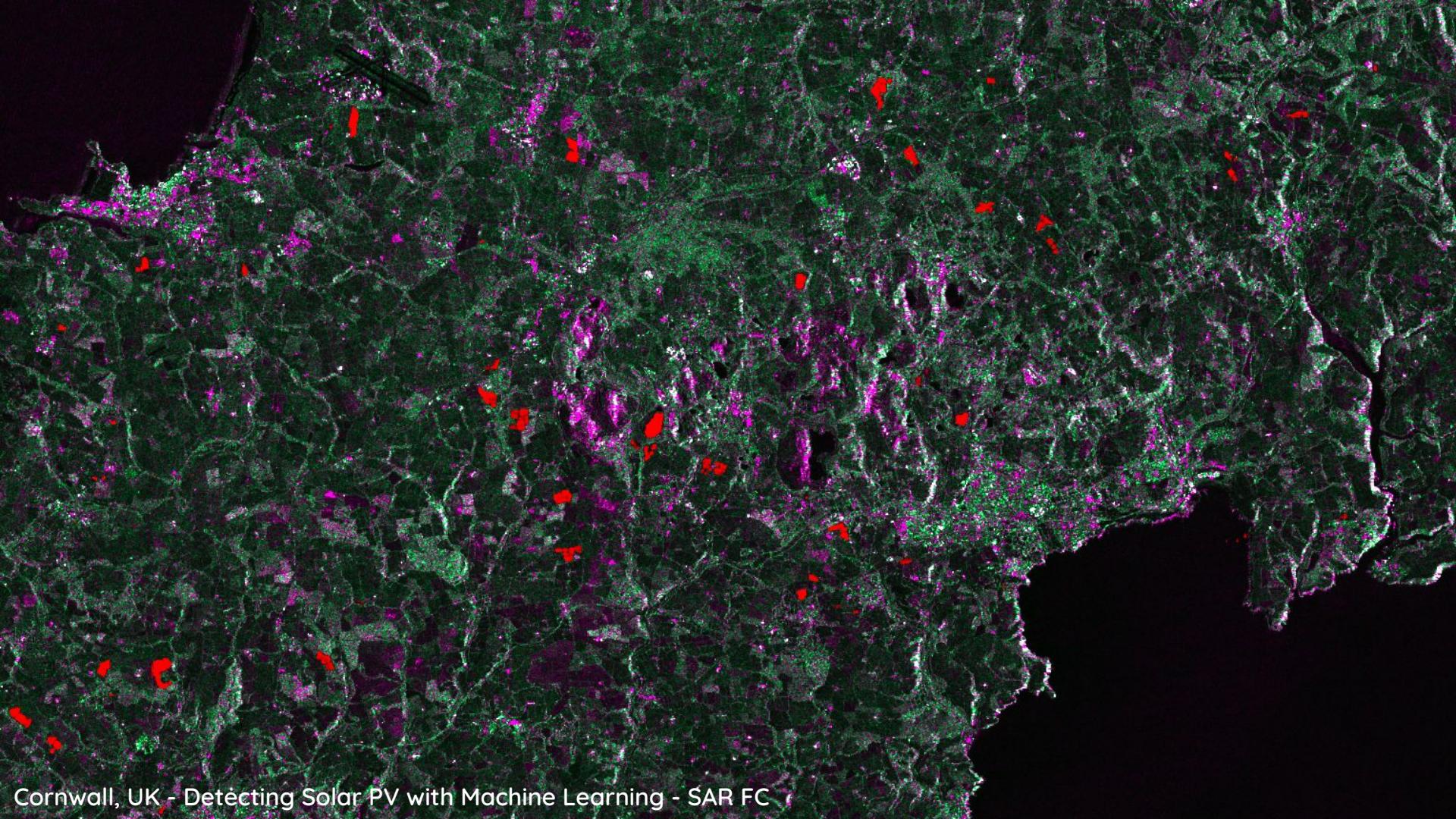


Lucas Kruitwagen, Smith School of Enterprise and the Environment  
2020-12-07 - NeurIPS Climate Change AI Workshop - Poster Talk



Cornwall, UK - Detecting Solar PV with Machine Learning





Cornwall, UK - Detecting Solar PV with Machine Learning - SAR FC

# So how do we address these problems?

- Atmospheric interference and clouds



Sensor Fusion with SAR

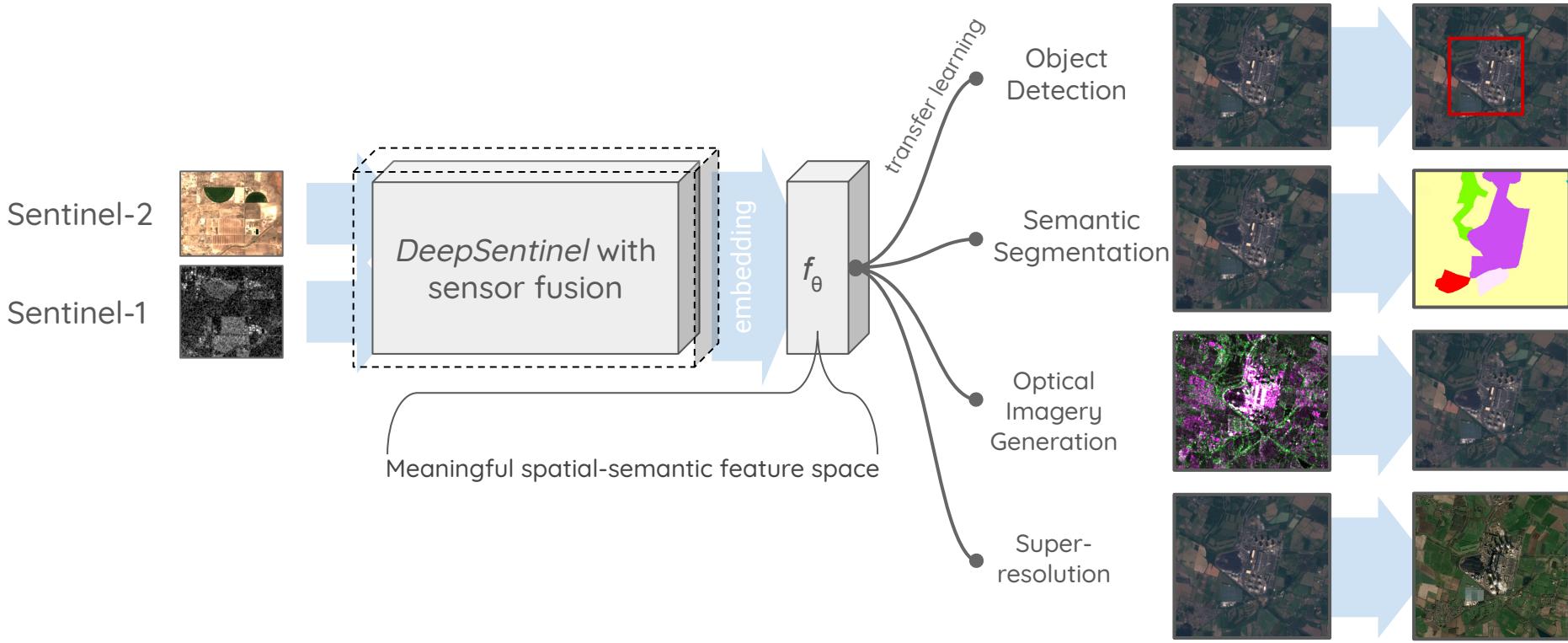
- Plenty of data but a shortage of labels



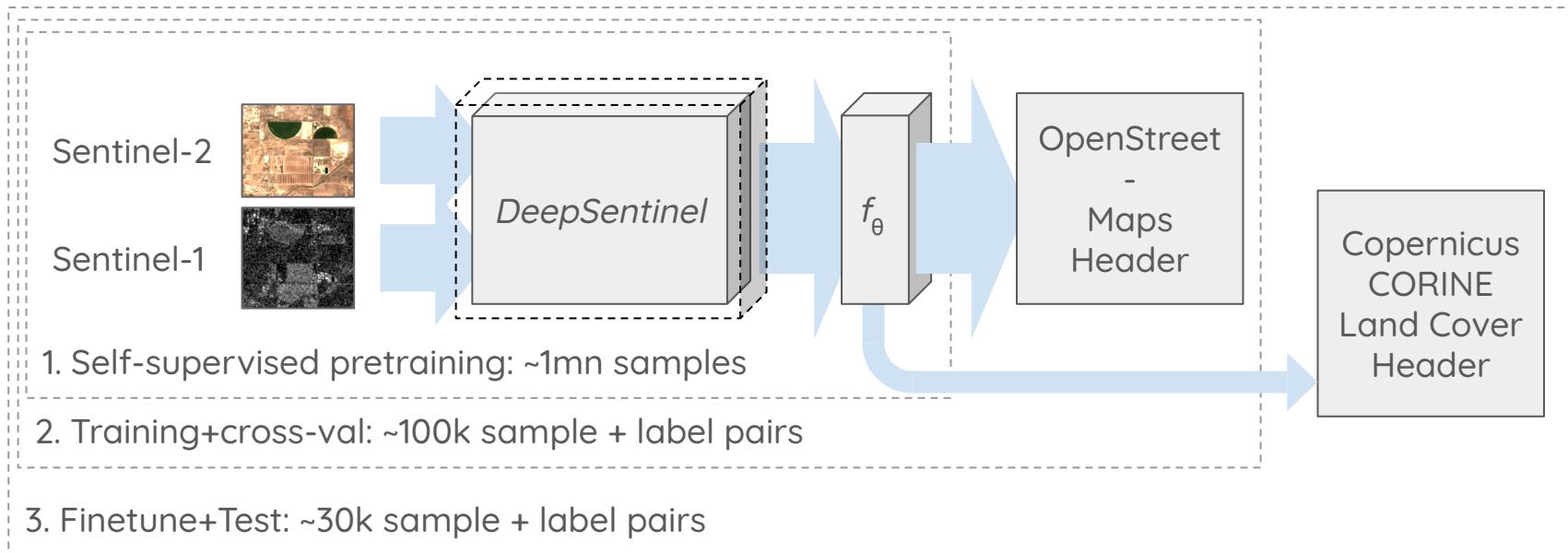
“Self-supervised” learning  
+ Transfer Learning

... unlocking extensively more use cases for Sentinel-1 and Sentinel-2 Imagery!

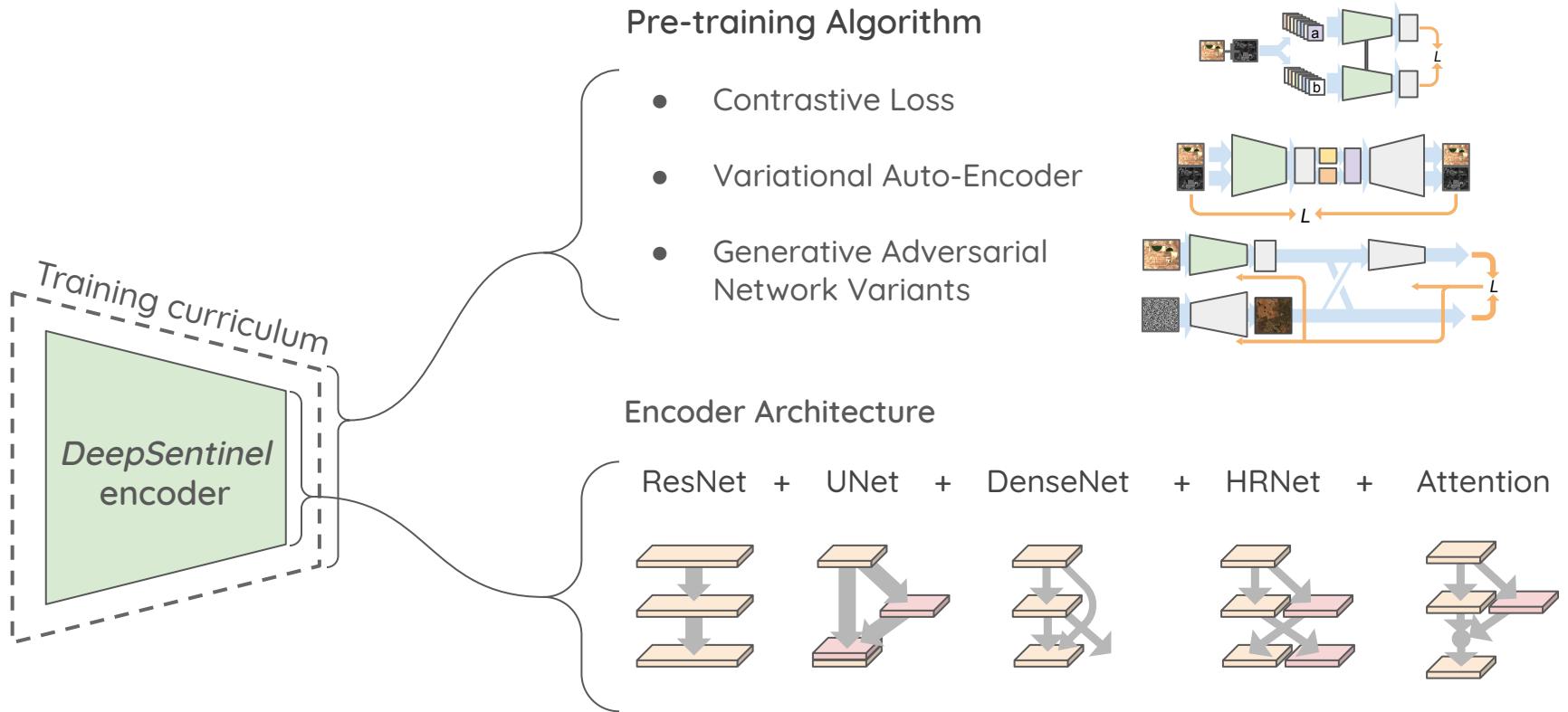
# DeepSentinel



# DeepSentinel: How does it work?



# DeepSentinel: Technical Details



# DeepSentinel: Technology Readiness



Infrastructure for model training and obtaining samples is built



Experiments are underway to determine the self-supervision algorithm and the embedding architecture



Secured support of:



**Descartes  
Labs**

Impact Science Program



**Microsoft**

AI for Earth Program



GCP Research Credits

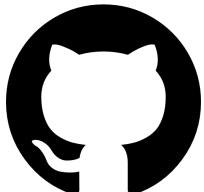
# DeepSentinel: Impact



Training data and pre-trained models made publicly available.



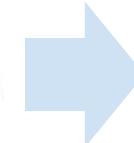
Pre-trained model deployed via *Google Earth Engine* for use in on-the-fly inference.



Codebase released via github.



Adding detail to the world's mines sites.



Training Data

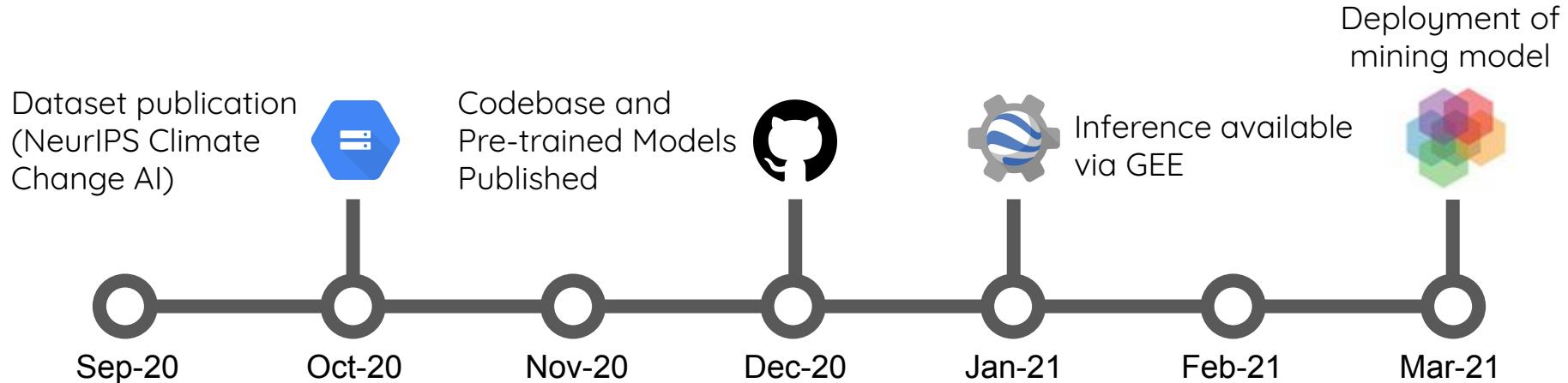
Maus, V. et. al (2020)  
A global-scale data set of mining areas,  
*Nature Scientific Data*



Deployment



# DeepSentinel: Timeline



# DeepSentinel: Today



<https://console.cloud.google.com/storage/browser/deepsentinel>  
<gs://deepsentinel>



<Microsoft Azure: Contact me for access>



<https://github.com/Lkruitwagen/deepsentinel.git>  
<https://github.com/Lkruitwagen/deepsentinel-osm.git>

# Thank You!



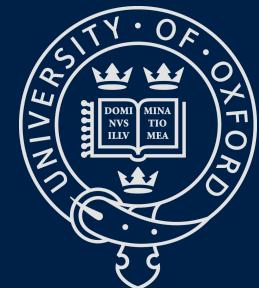
Lucas.Kruitwagen@Smithschool.ox.ac.uk



<https://github.com/Lkruitwagen>



<https://www.linkedin.com/in/lucaskruitwagen>



# DeepSentinel

