Strengthening the Measurement, Reporting and Verification (MRV) System in Cambodia

Vanna TECK, Ate POORTINGA, Andrea MCMAHON

May 28, 2024 | Session 1 | Remote Sensing Laboratories

Outline content

01 SIG's core values

02 Project outlines in Cambodia

03 Data and mapping

04 Technologies

05 Data collection

06 Training and capacity building

SIG's core values

1

We use the best available science, technology and data to meet client needs

2

We are committed to the principle of open science

3

We are transparent with our partners, staffs and clients

4

We are active listeners and responsive to client needs

5

We are responsible stewards of the environment, our work strive to inform and benefit current and future generations

SIG's core values (Cont.)

6

We support our team members at SIG regardless of domain and team label

7

We priorities partnerships, consortiums, and collaborative research

8

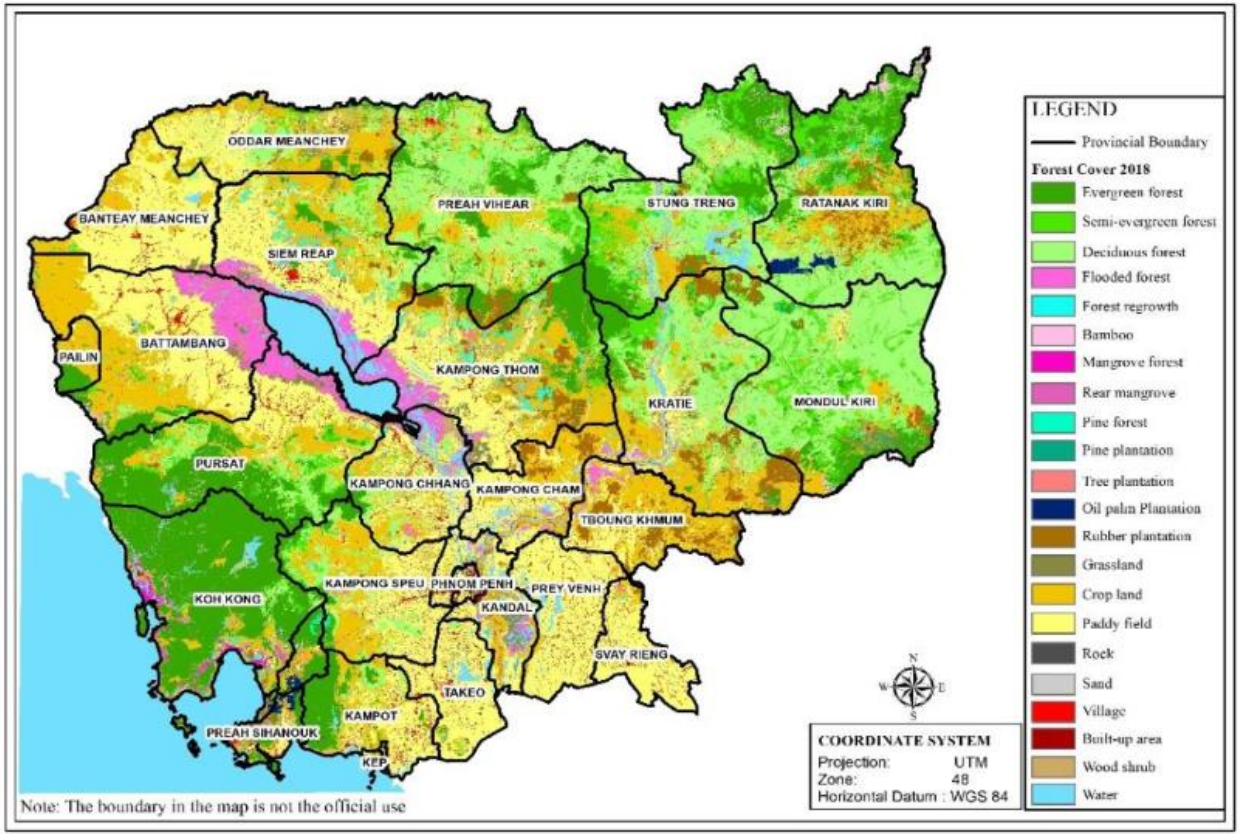
Diversity and inclusiveness is a strength and is embraced

9

We support our team's continued personal development to maintain expertise and exposure to new & different technologies & approaches

Project in Cambodia

Introduction
- MOE data

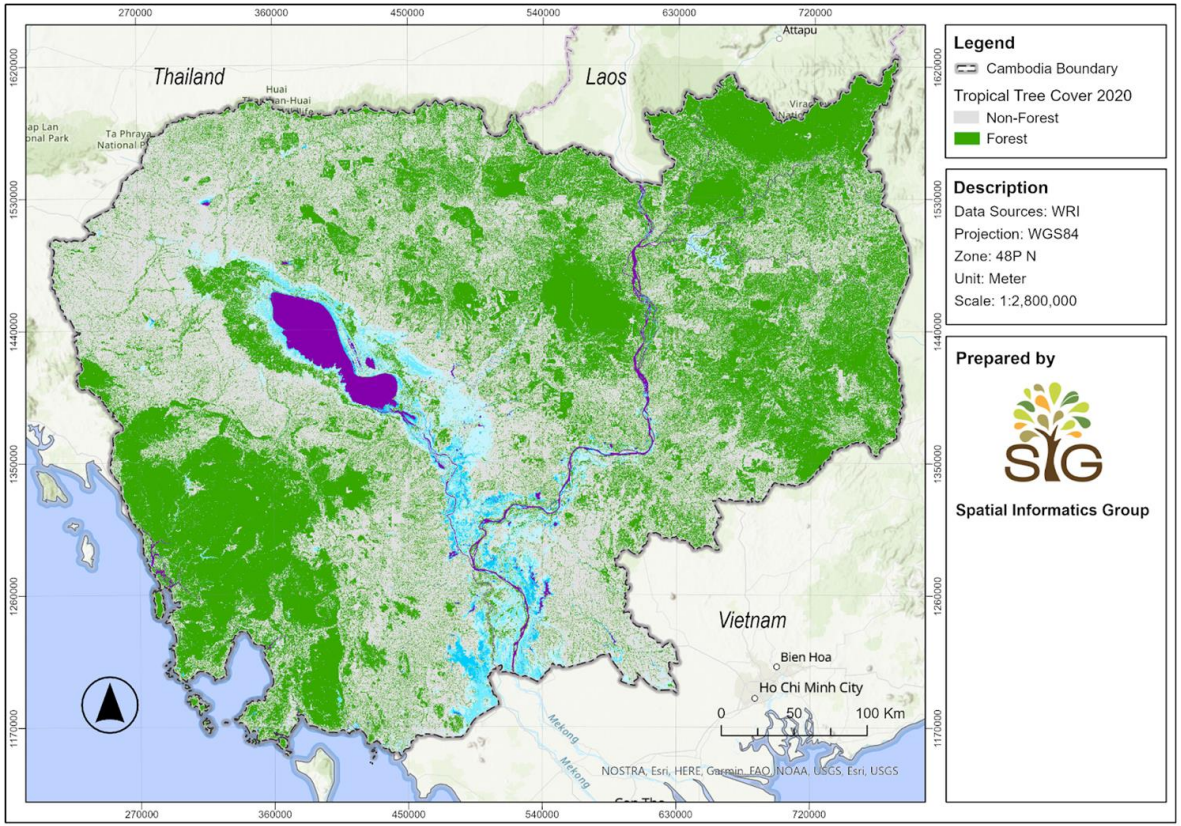


Introduction - global data

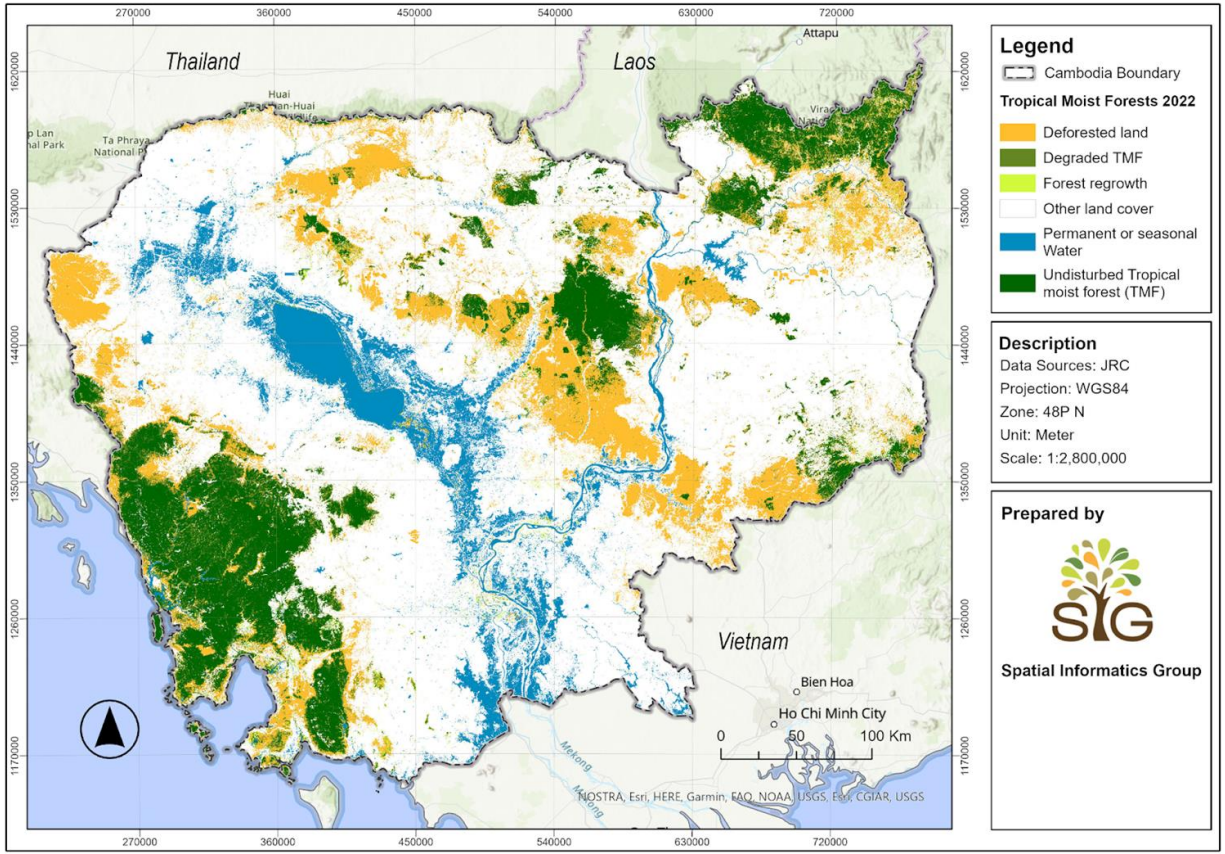
Table 4: overview of global data products with the data provider and their spatial and temporal resolution

Data provider	Product	Time period	Resolution	Reference
GLAD	Tree Canopy Cover Tree Canopy Height	2000 - 2022	30 m	Hansen 2013, Potapov et al., 2019
WRI	Tropical Tree Cover	2020	10 m	Brandt et al. 2021, 2023
JRC	Forest cover change in tropical moist forests (TMF)	1990 - 2022	30 m	Vancutsem et al., 2021
JAXA	Forest / non - forest	2017 - 2020	25 m	Shimada et al., 2014

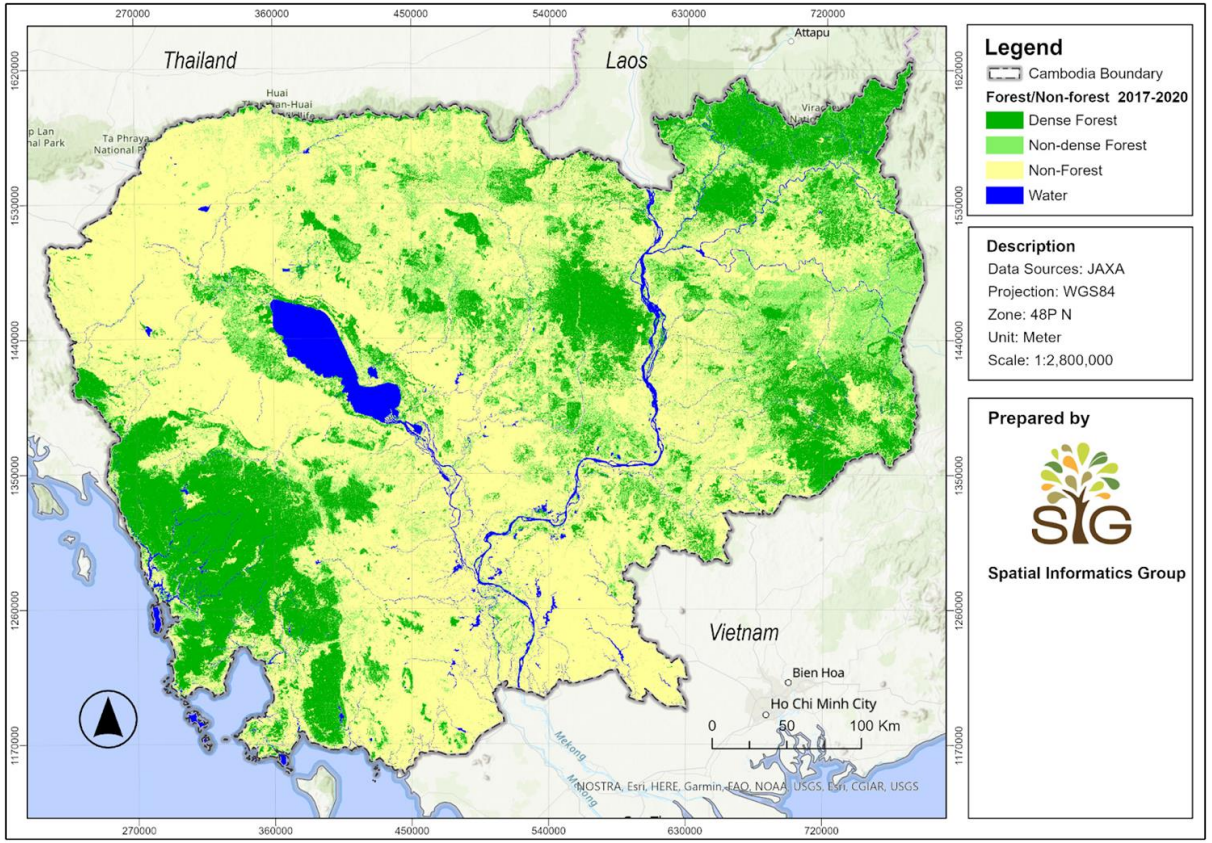
Introduction - global data (Cont.)



Introduction - global data (Cont.)

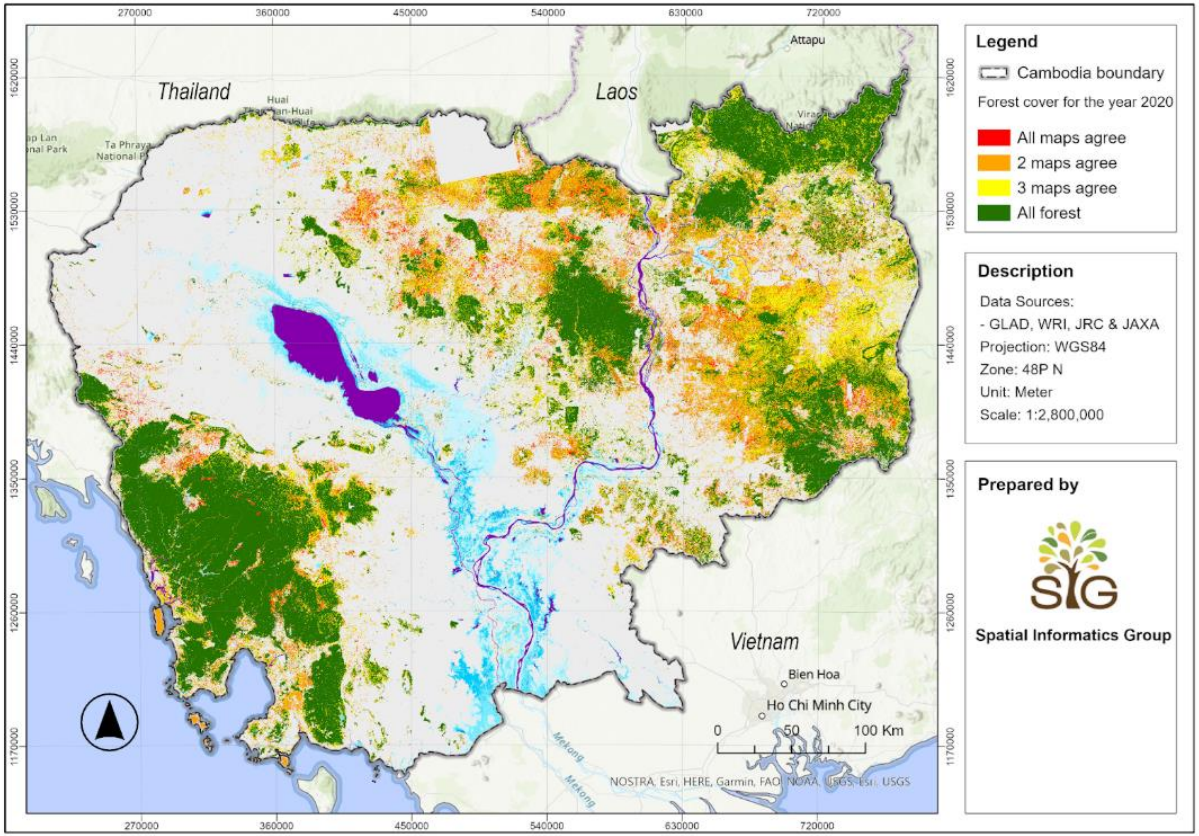


Introduction - global data (Cont.)

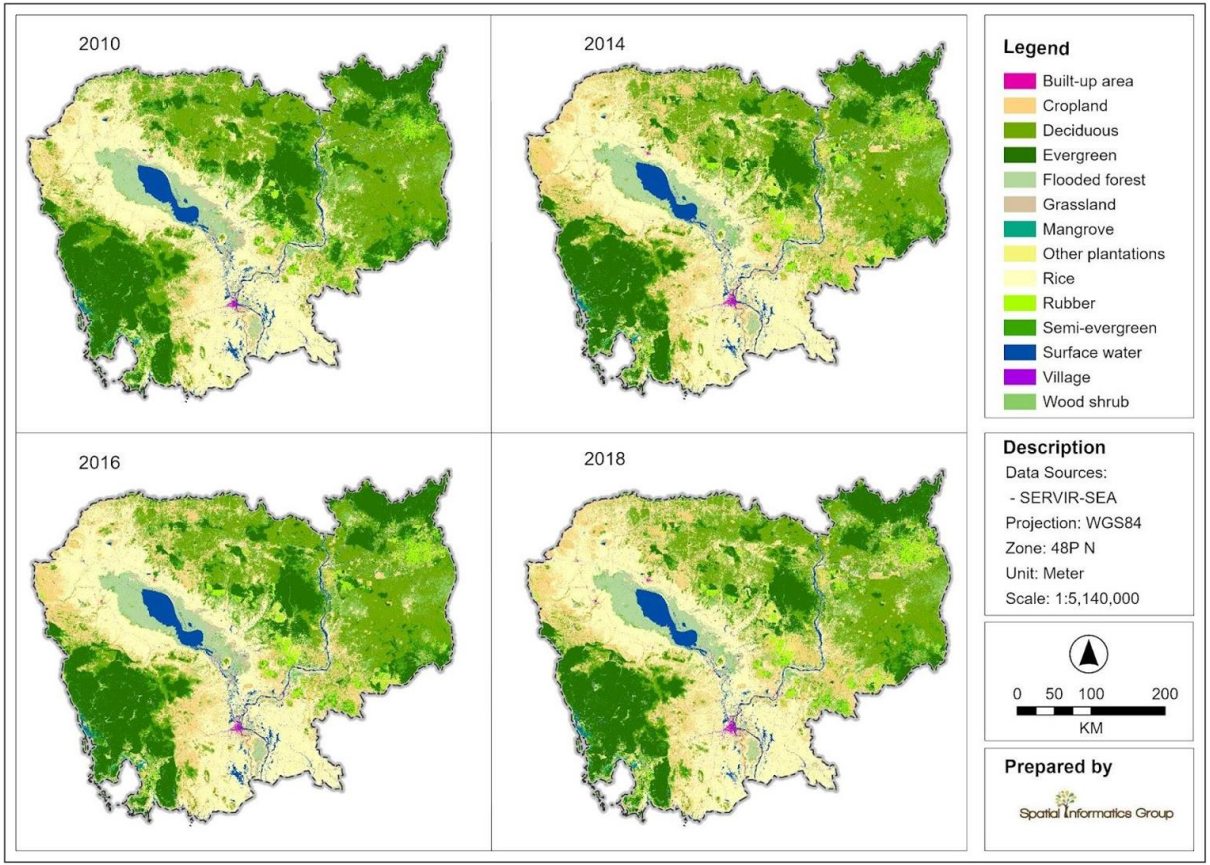


Introduction - global data (Cont.)

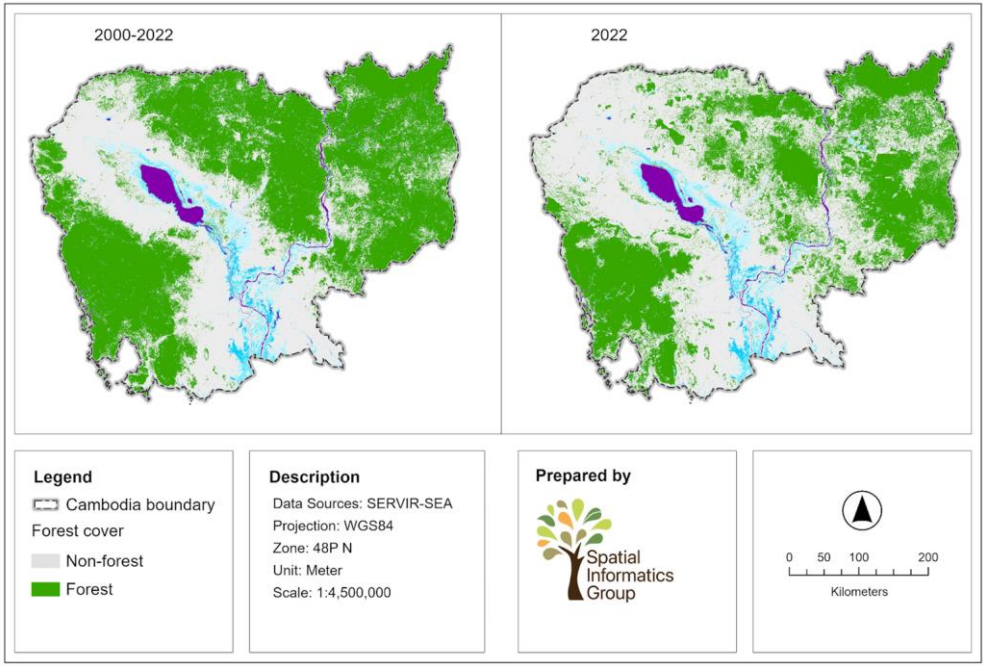
Not all data agree

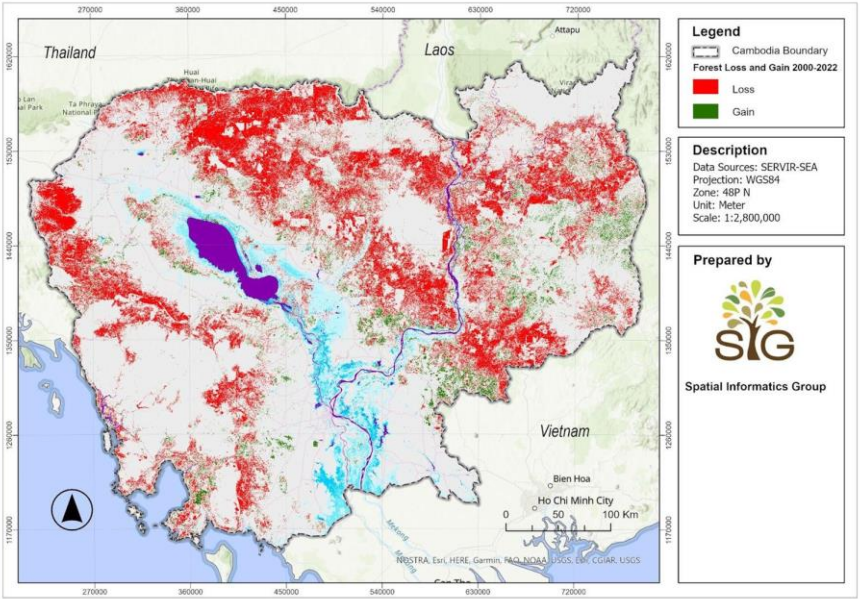


Introduction - regional data

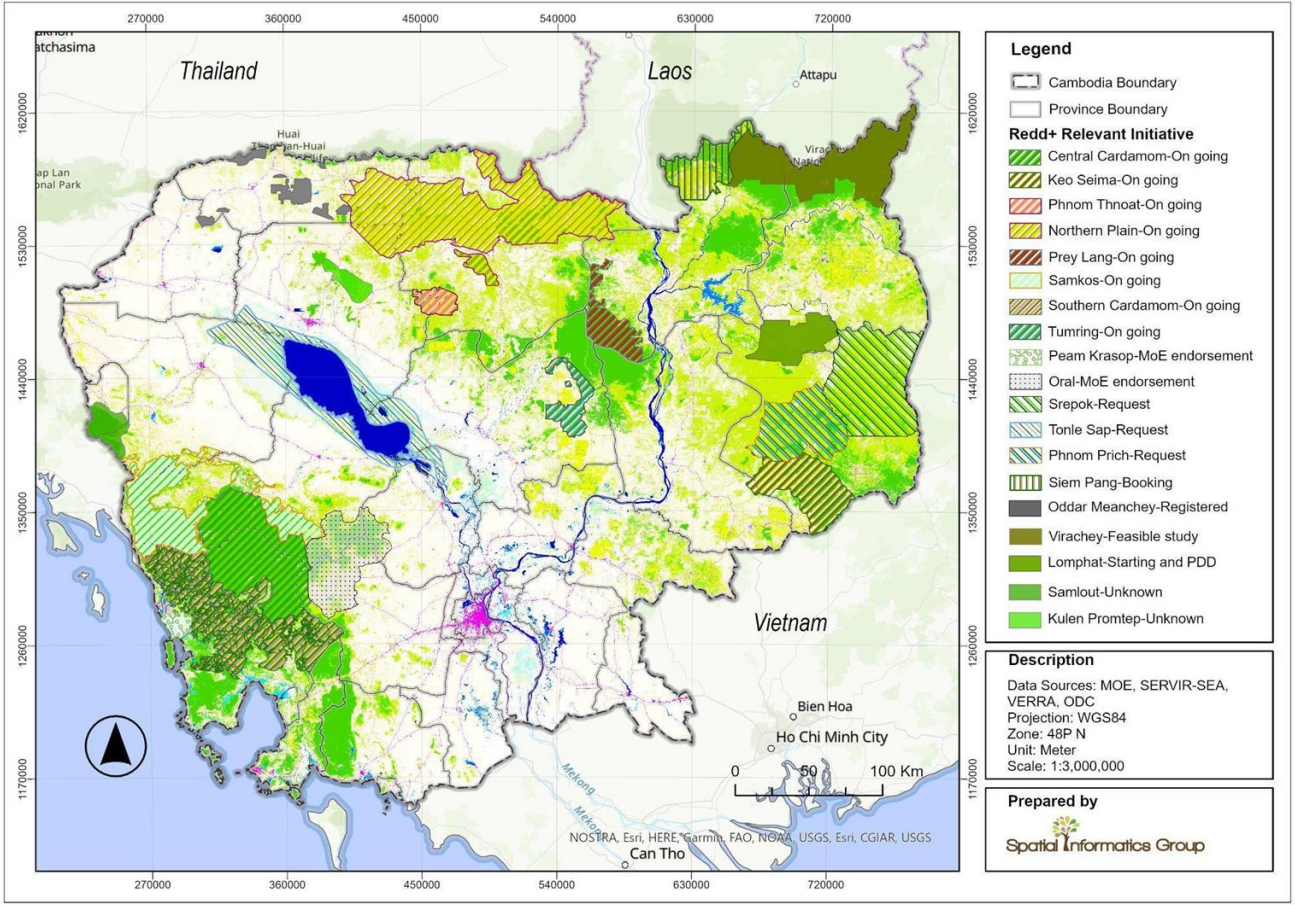


Introduction - regional data (Cont.)



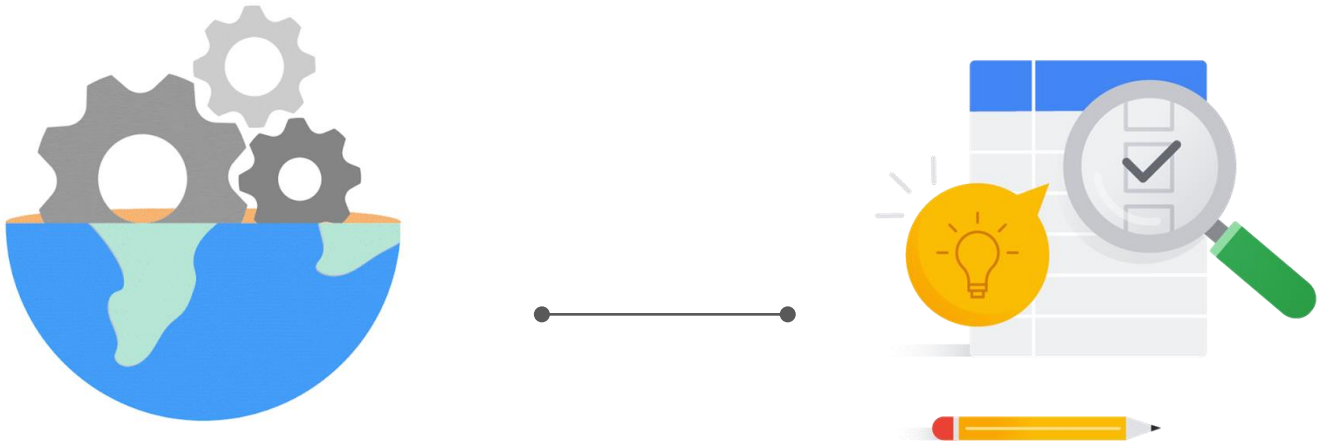


Projects require high quality data



Technologies

Cloud-based technologies are indispensable



Rapid Growth of Artificial Intelligence

AI is a rapidly **growing** field **cross-cutting** many disciplines

NUMBER of AI PUBLICATIONS by FIELD of STUDY (excluding Other AI), 2010–21

Source: Center for Security and Emerging Technology, 2021 | Chart: 2022 AI Index Report

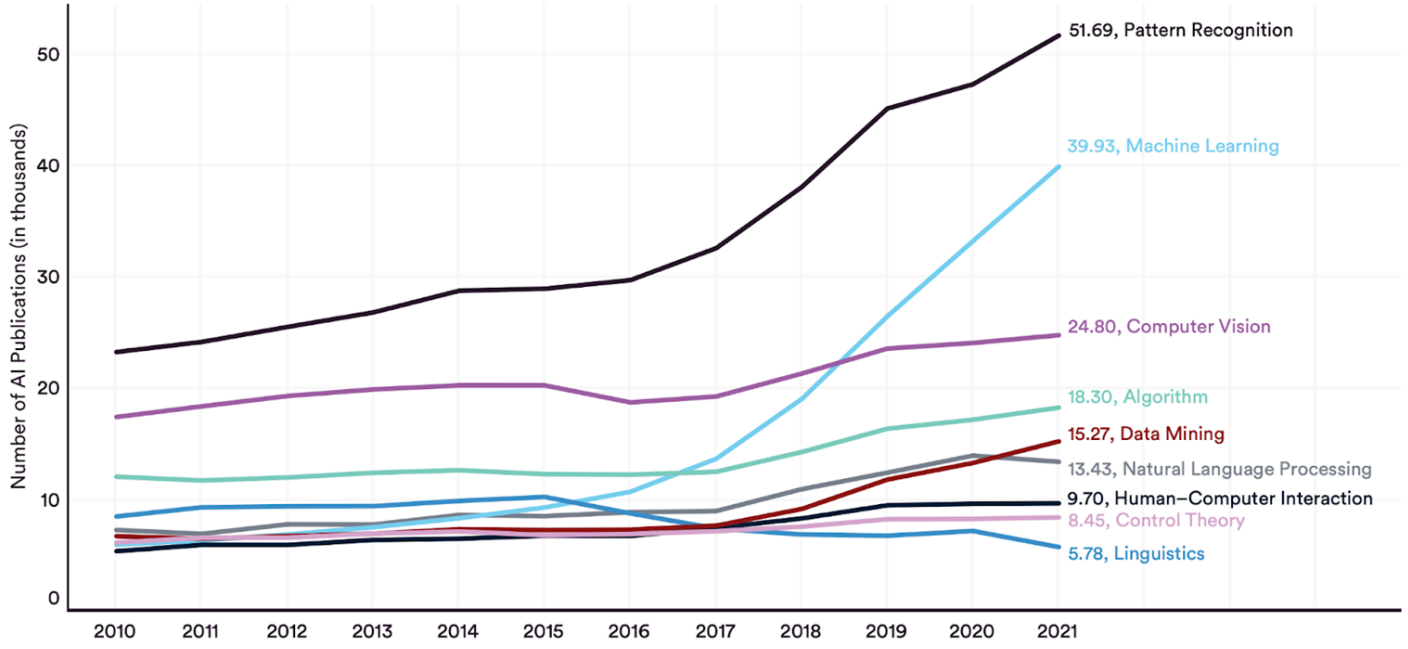
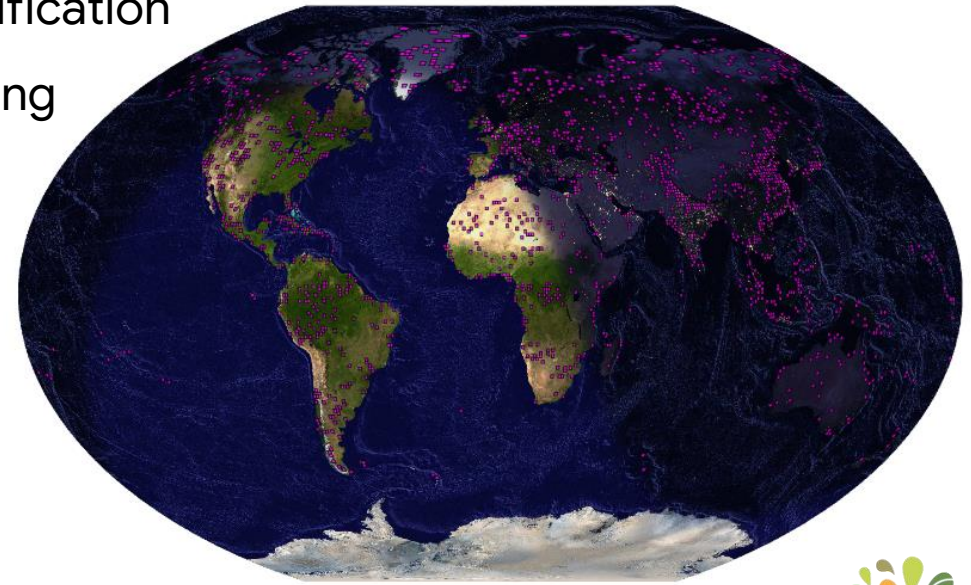


Figure 1.1.3

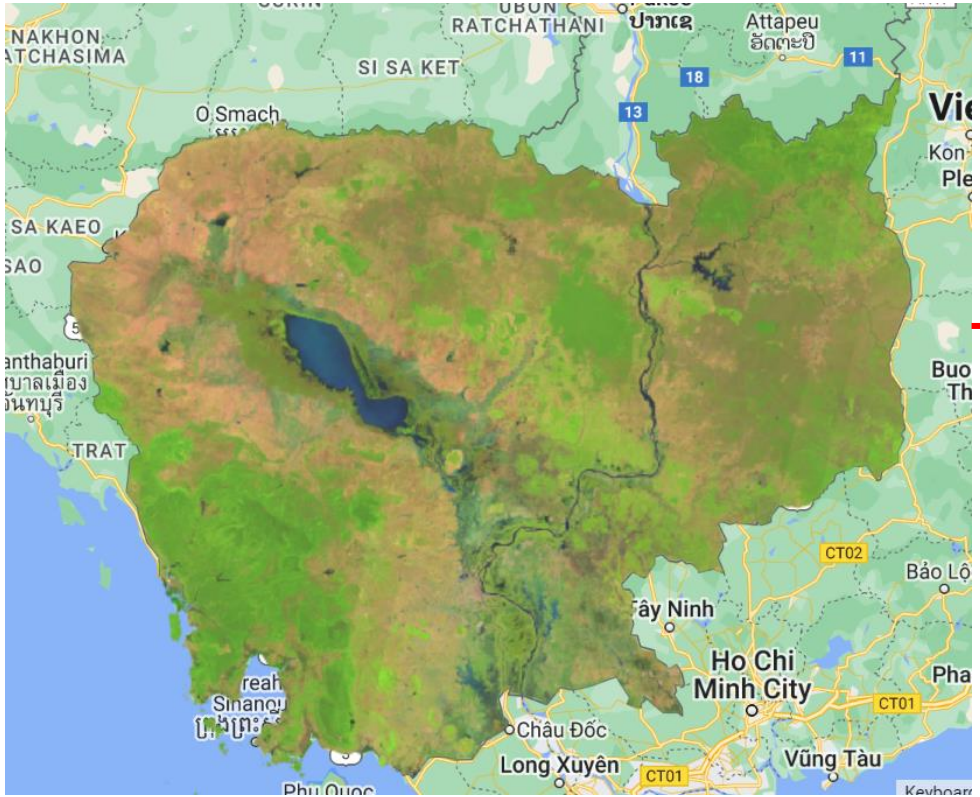
The AI Index Report 2022 – Artificial Intelligence Index (stanford.edu)

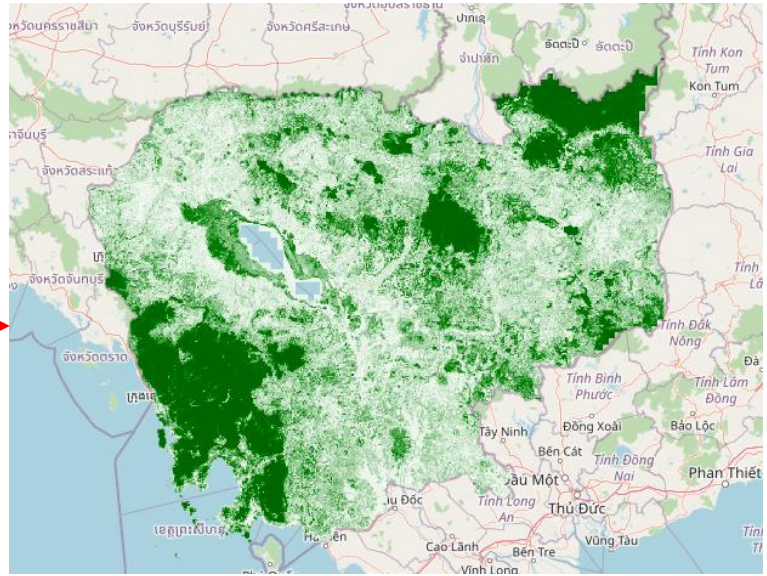
Foundation models

- Precision in Land Cover Classification
- Scalable & Real-Time Monitoring
- Advanced Feature Detection

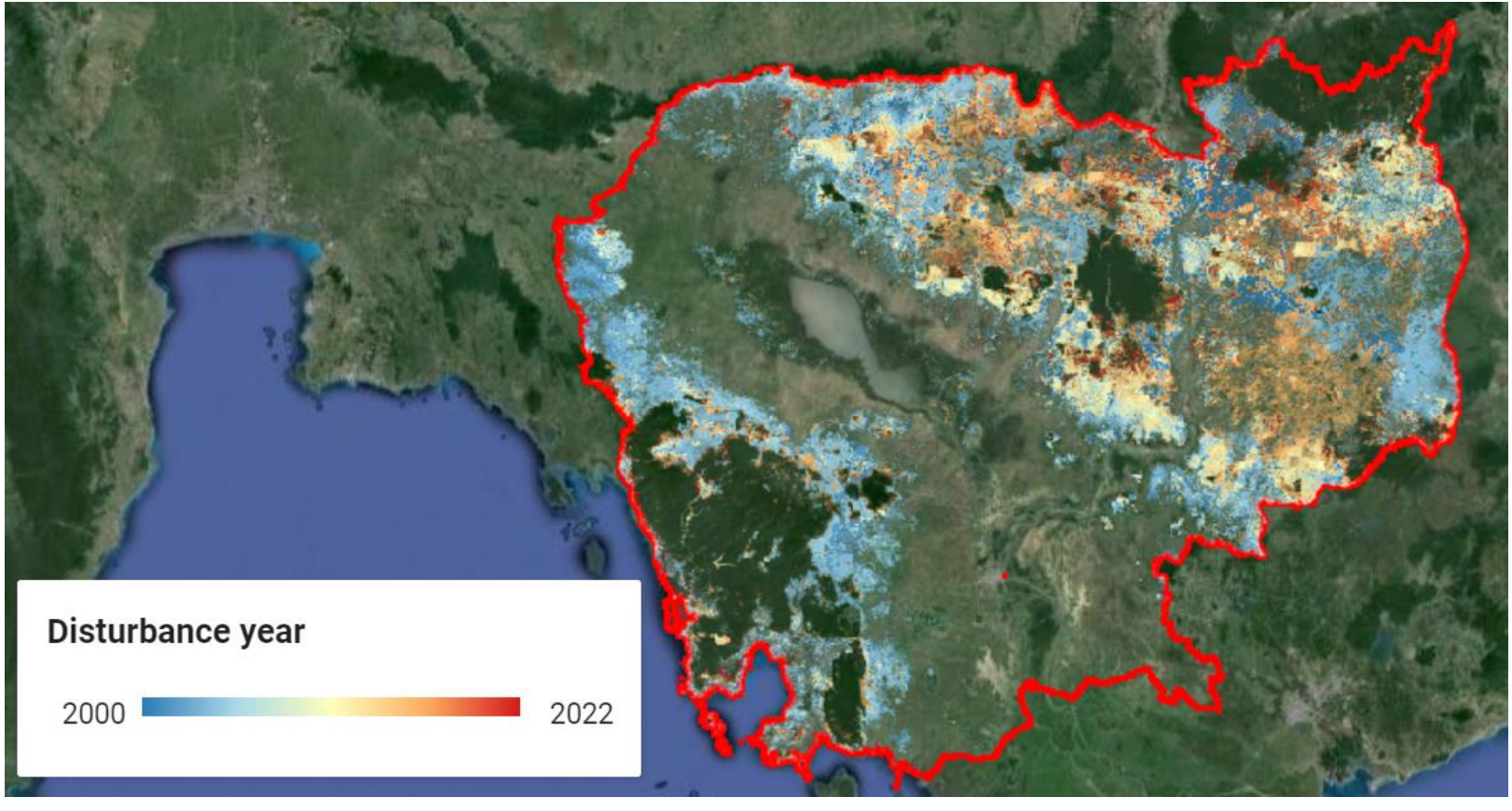


Random forest



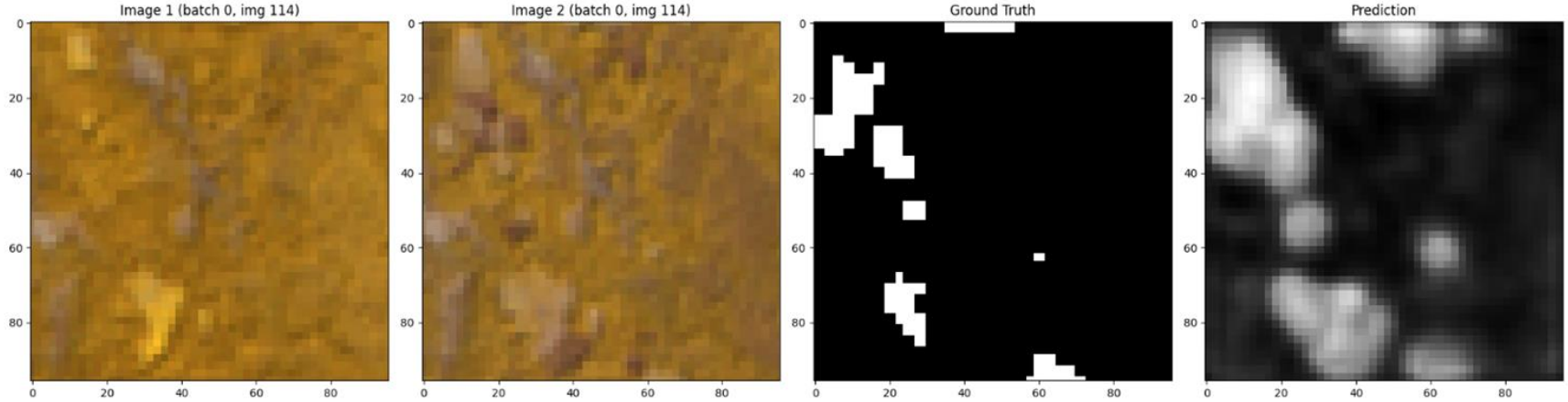


CCDC-SMA

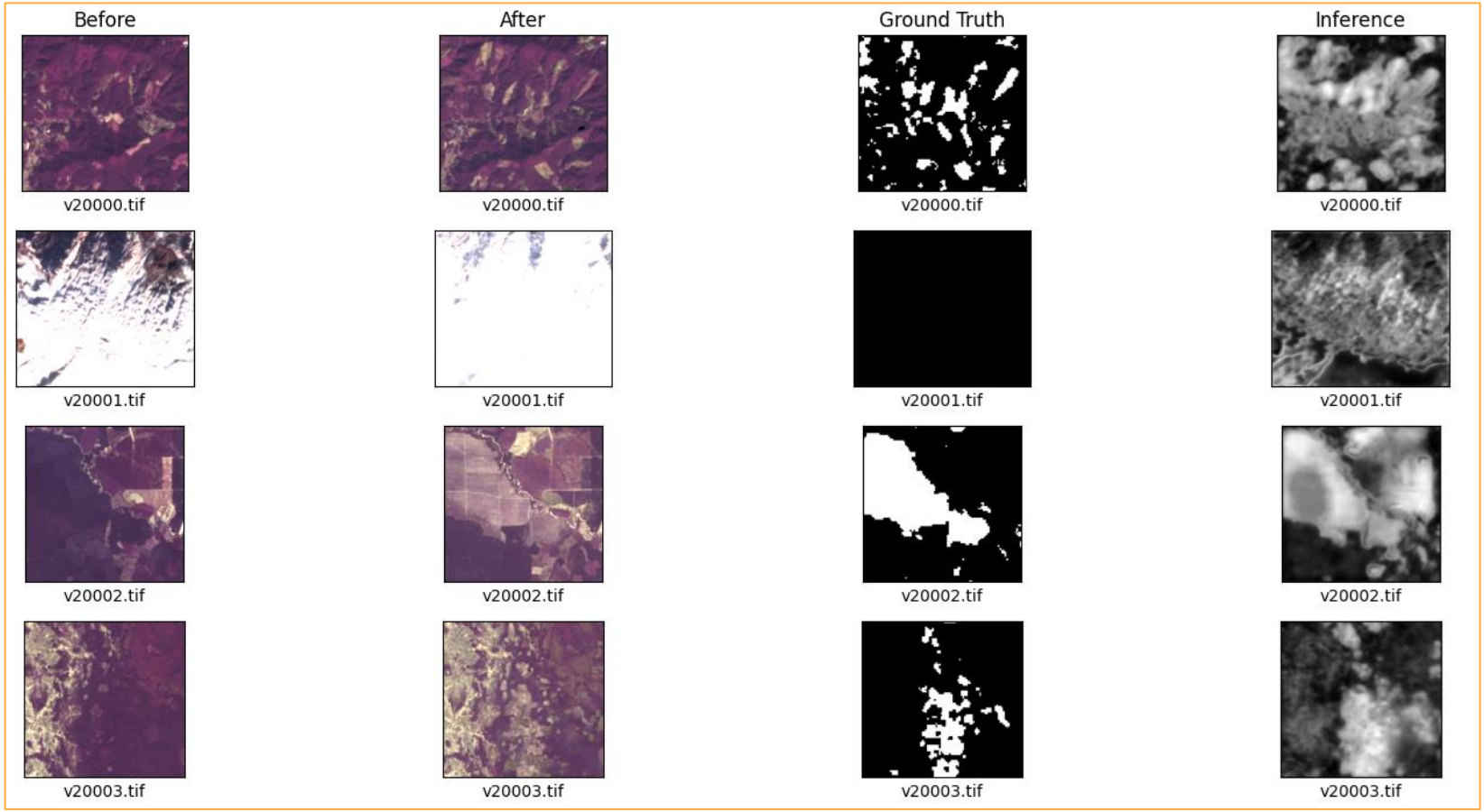


Optimized Self-supervised Contrastive Learning for Change Detection (OSCD) model

```
folder_path = '/content/drive/MyDrive/ChangeDetection/Output/Validations_Figures'
display_images_from_folder(folder_path)
```



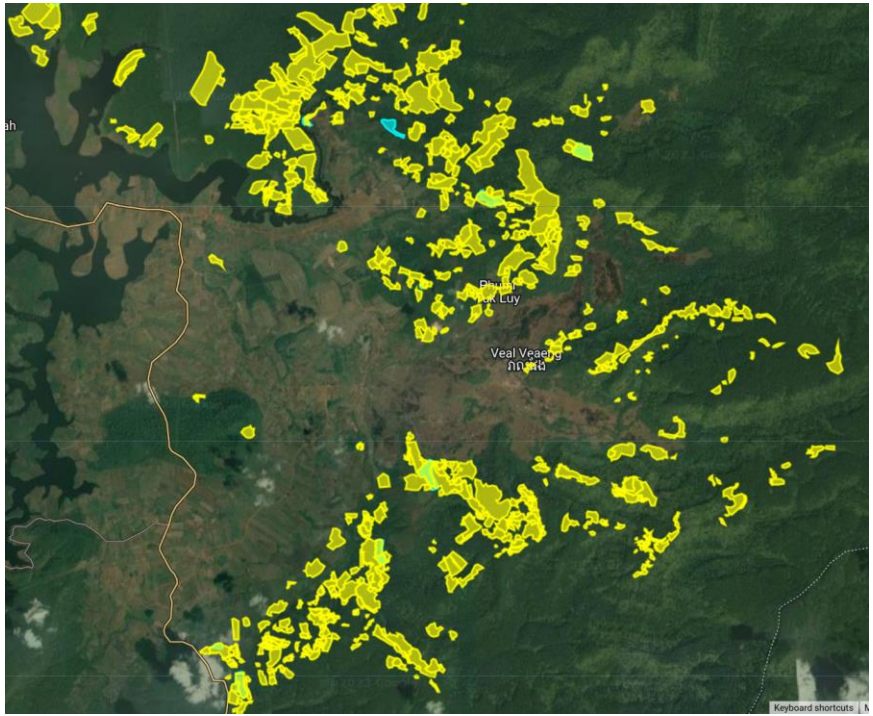
https://github.com/zhu-xlab/SSL4EO-S12


Before
After
Ground Truth
Inference
v20000.tif
v20000.tif
v20000.tif
v20000.tif
v20001.tif
v20001.tif
v20001.tif
v20001.tif
v20002.tif
v20002.tif
v20002.tif
v20002.tif
v20003.tif
v20003.tif
v20003.tif
v20003.tif

Data collection

1. Data for training deforestation model
2. Data for validation deforestation model
3. Data on forest degradation

What data has been collected and are there any field campaigns on data collection planned?



Sample based approach

Training and Capacity building

- Training on new methods and technologies
- Training on Forest degradation

- Training on accuracy assessment
- Training on system management and sustainability

Further information

sig gis.com

Linkedin

Facebook

YouTube

Spatial Informatics Group

Thank you !

KHEOBS
Khmer Earth Observation Laboratory

Institut de Recherche pour le Développement
FRANCE

Espace DEV
OBSERVATION SPATIALE, MODÈLES & SCIENCE IMPLIQUÉE