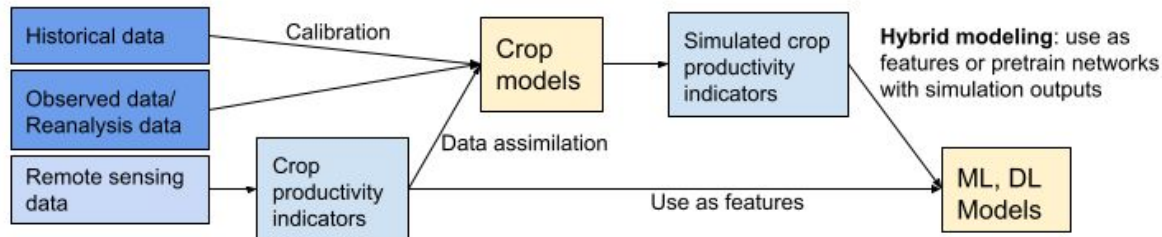
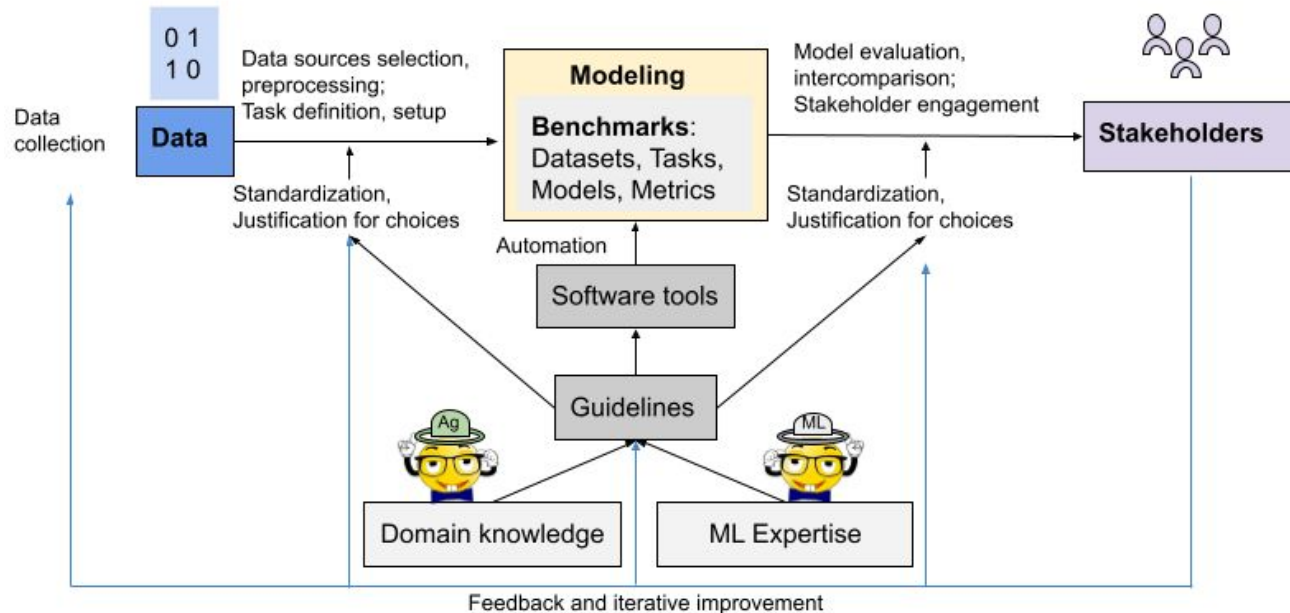


What is AgML

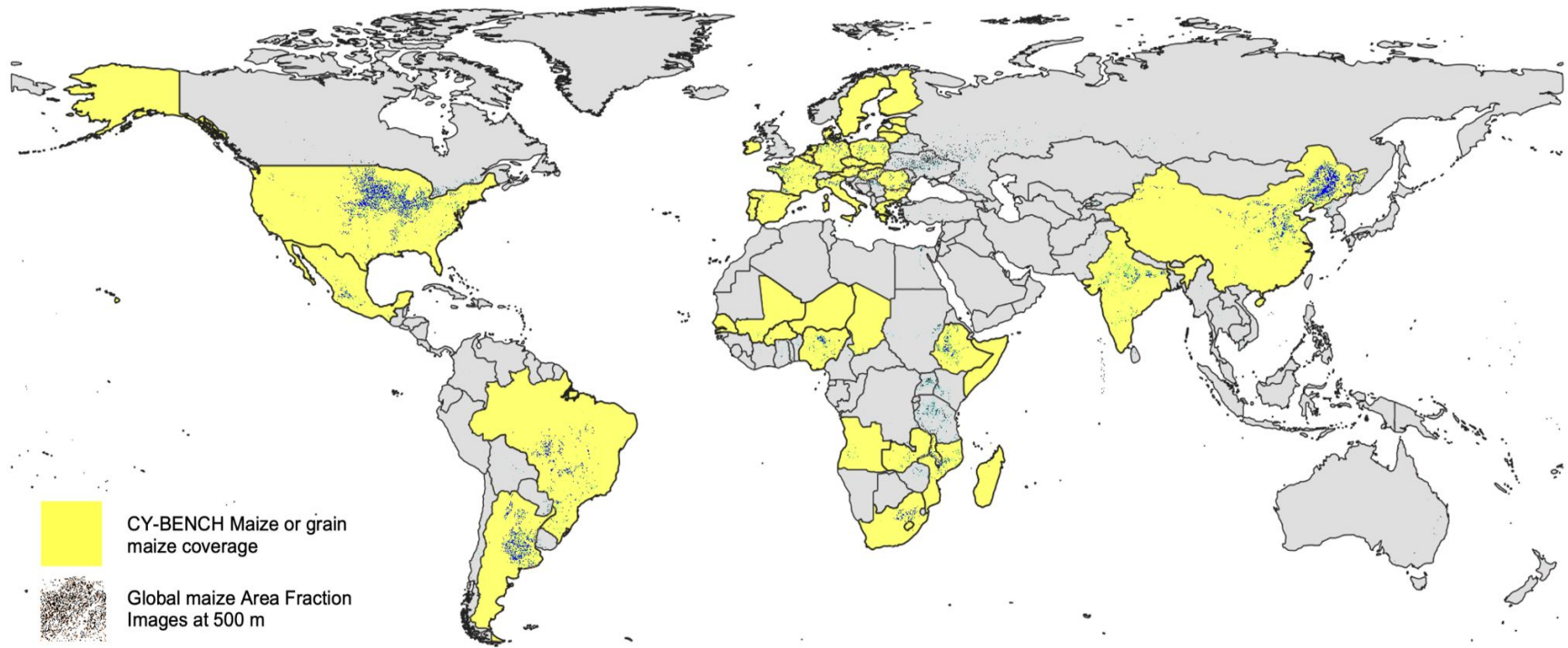


(a) convergence of crop modeling, remote sensing and ML



(b) open and community-driven research practices

What is CY-Bench



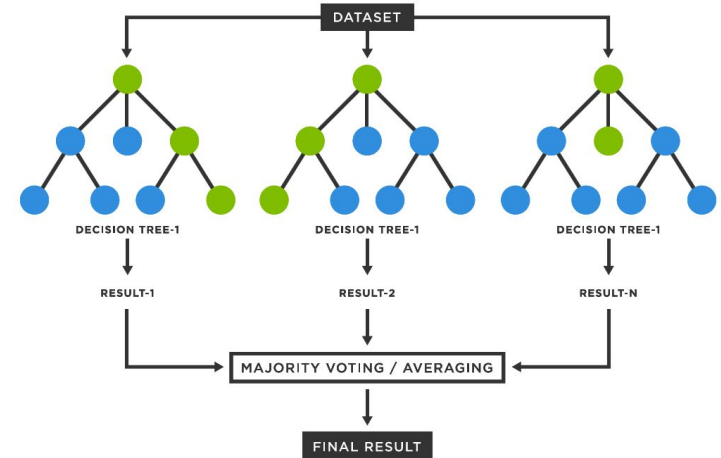
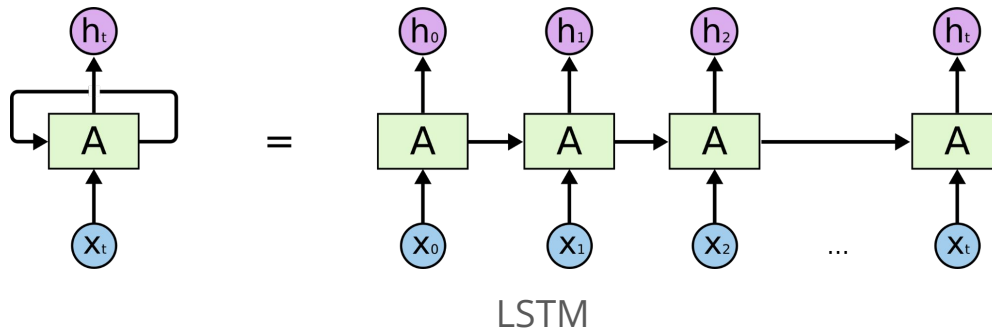
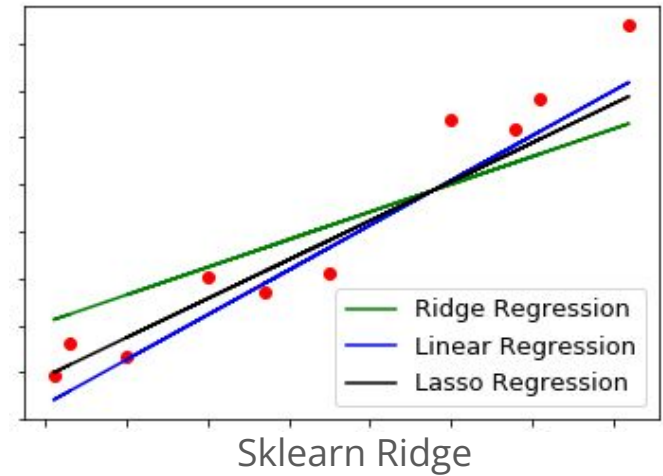
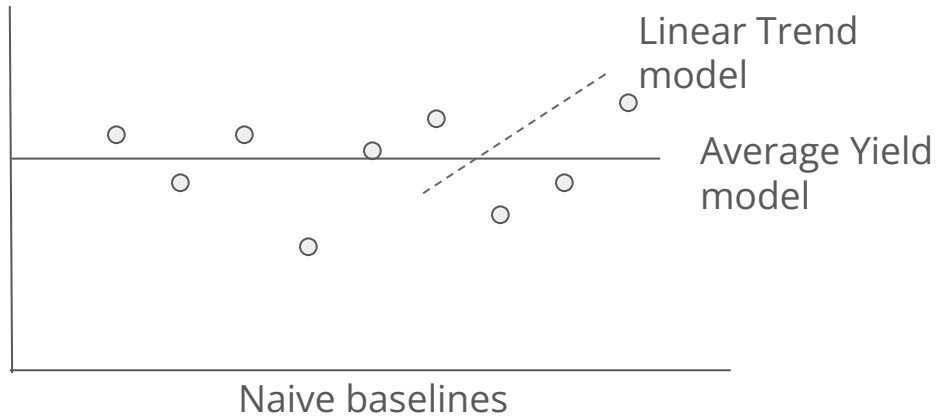
- 2 crops, 38 countries for maize (shown above), 29 countries for wheat
- Globally available inputs: weather, remote sensing, soil (moisture)

CY-Bench input data

Table 1: Overview of the predictor data, crop mask and crop calendar. NDVI refers to the normalized difference vegetation index, FPAR is the fraction of absorbed photosynthetically active radiation and AWC is the available water capacity.

Category	Data		Spatial resolution	Temporal resolution	Source
	Name	Unit			
Meteorological	temperature	°C	0.1°	daily	AgERA5 (9)
	precipitation	mm			
	solar radiation	Jm ⁻²			
	evapotranspiration	mm	0.1°	daily	AQUASTAT-FAO (2)
Vegetation	FPAR	%	500m	10-days	JRC (62)
	NDVI	-	5000m	8-days	MOD09CMG (75)
Soil	AWC	cm m ⁻¹	30"	static	WISE (6)
	bulk density	kg dm ⁻³			
	drainage class	-			
	moisture content	kg m ⁻²	0.25°	daily	NASA GLDAS (52)
Crop	crop mask	-	0.5°	-	Crop masks (74; 18)
	crop calendar	-			Crop calendars (22)

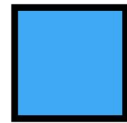
CY-Bench models



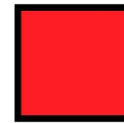
InceptionTime (1-d CNN), Transformers

CY-Bench evaluation

$n = 8$

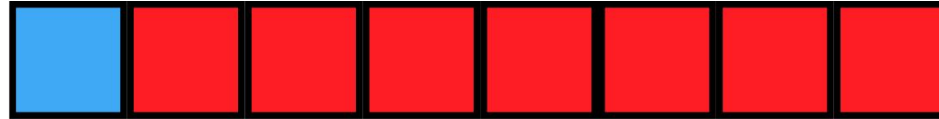


Test



Train

Model 1



Source: <https://upload.wikimedia.org/wikipedia/commons/c/c7/LOOCV.gif>

Metrics:

- Normalize RMSE
- MAPE
- r^2

For interested participants

- Clone repository in your laptop
- Follow instructions in Getting started.
- Run the benchmark.
- Add your own model and run the benchmark.