



Agromet project: Operationele ruimtelijke interpolatie van weerdata voor agrarische beslissingondersteunende systemen

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Our partners



www.cra.wallonie.be



The weather: a critical information in agriculture

- Daily tracking to :
 - Anticipate cultivation operations (sowing, spreading, irrigation, frost, etc.)
 - Regulation: spraying vs. wind speed
 - Disease and pest control



The weather: a critical information in agriculture

Pameseb network

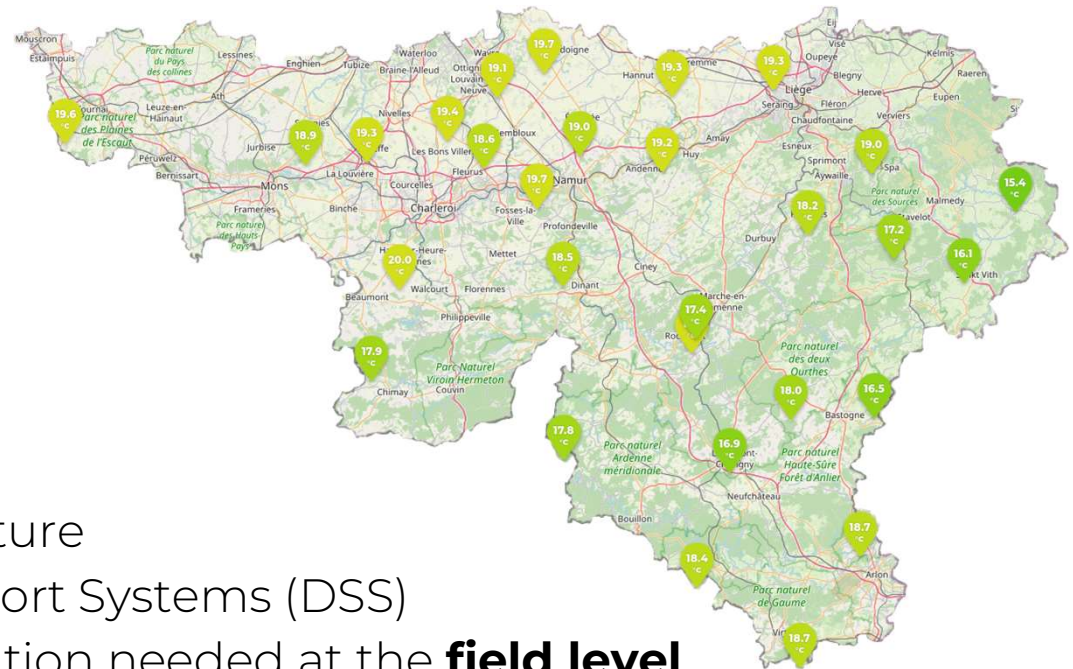
- ~ 30 stations
- ~ 30 km mesh
- representative of the whole region



Precision agriculture

Decision Support Systems (DSS)

- information needed at the **field level**



Crédits : Noar 91 (<https://commons.wikimedia.org/w/index.php?curid=27705263>)

Virtual weather station: what is that?

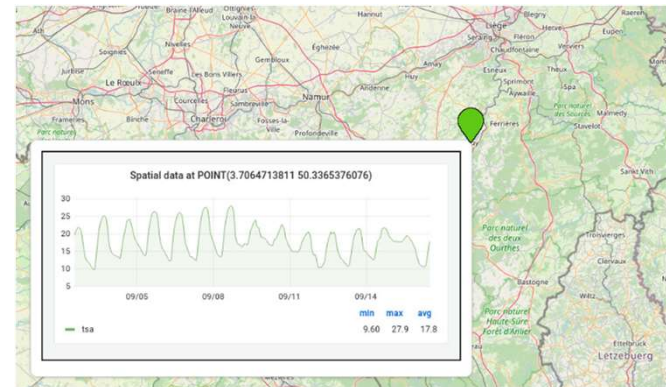
“Physical” weather station

- ⊕ data coming from sensors
 - high accuracy
- ⚠ cost
- ⚠ heavy maintenance



“Virtual” weather station

- ⚠ mathematical model
 - limited accuracy
- ⊕ arbitrary localization
- ⊕ no maintenance

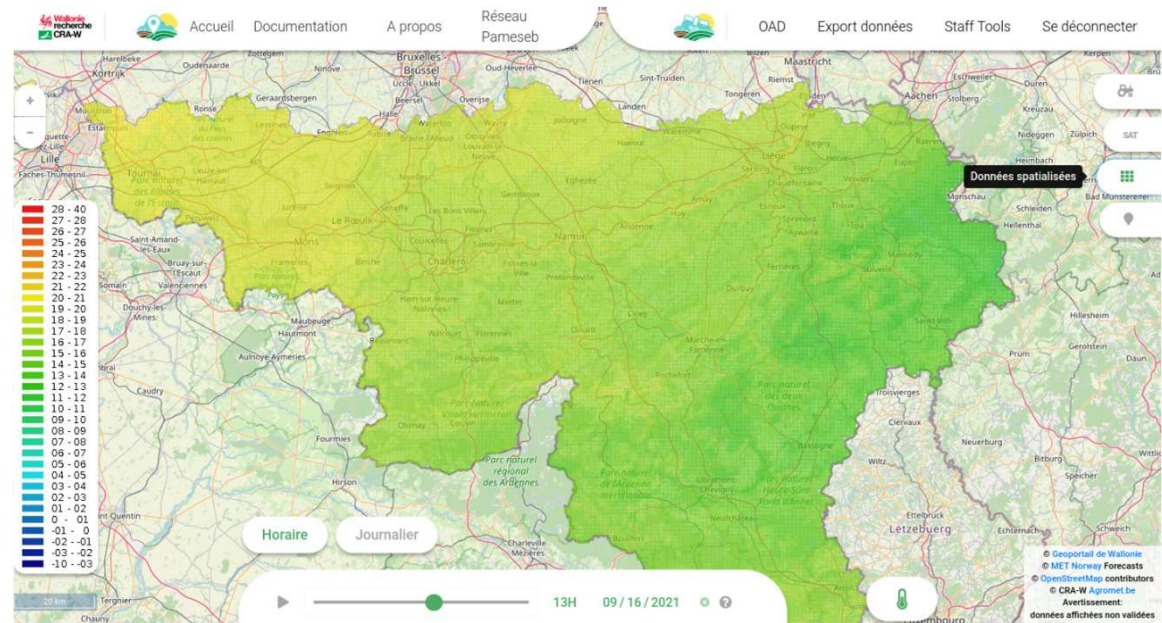


Agromet project: spatially interpolated data

Grid of virtual weather stations

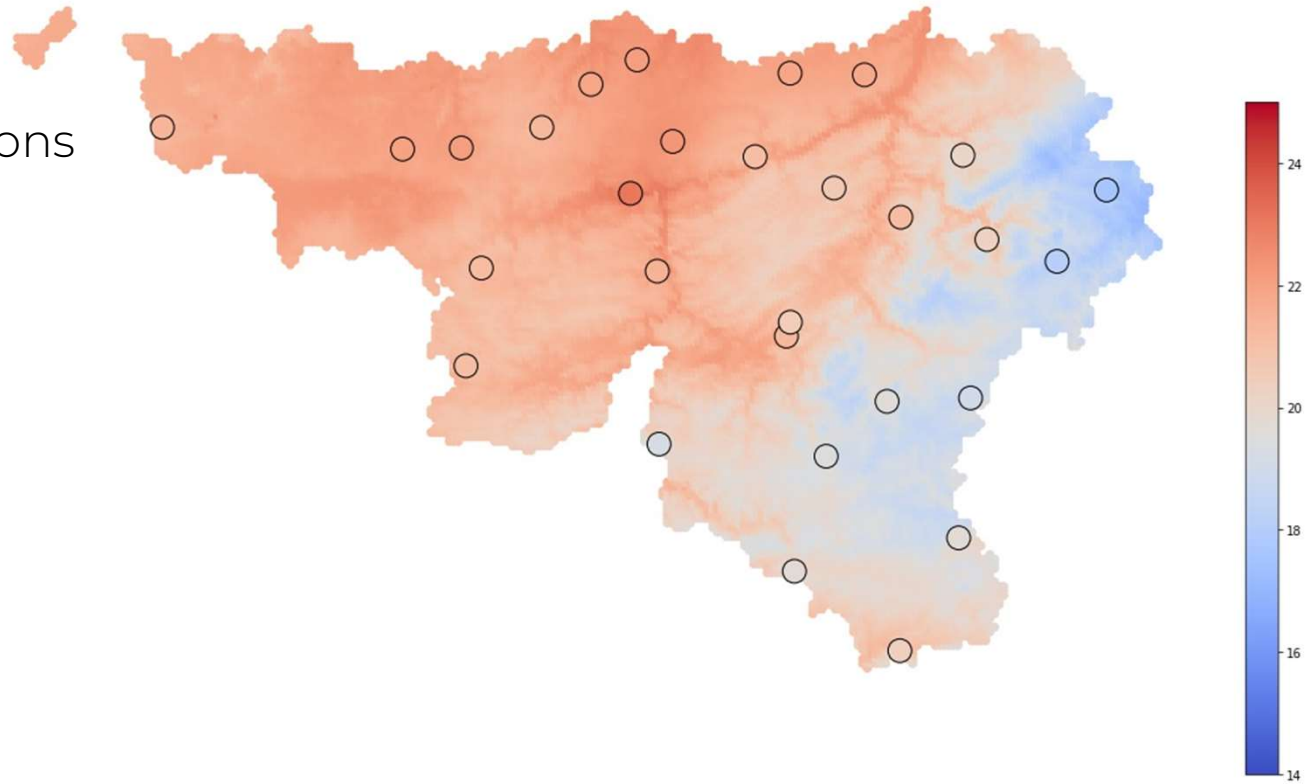
- 1 km x 1 km (~ 16.000 stations)
- Various sensors:
 - temperature
 - relative humidity
- Frequencies:
 - near real-time (hourly)
 - daily (min, max, mean)

Operational tool required!



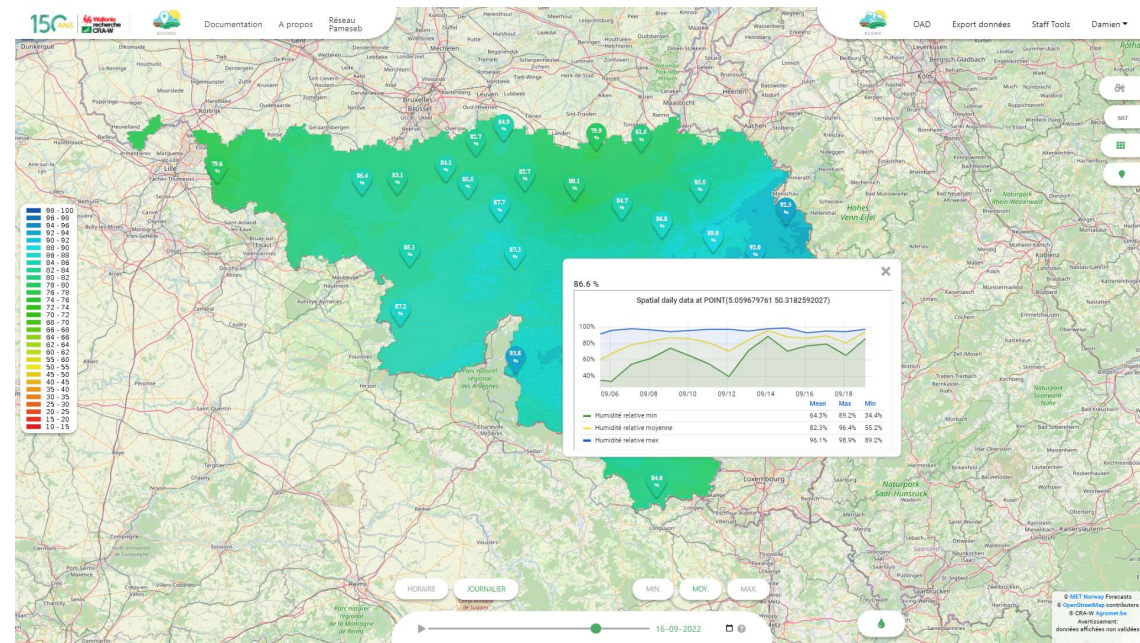
What model for the interpolation?

- Starting point:
observations at Pameseb stations

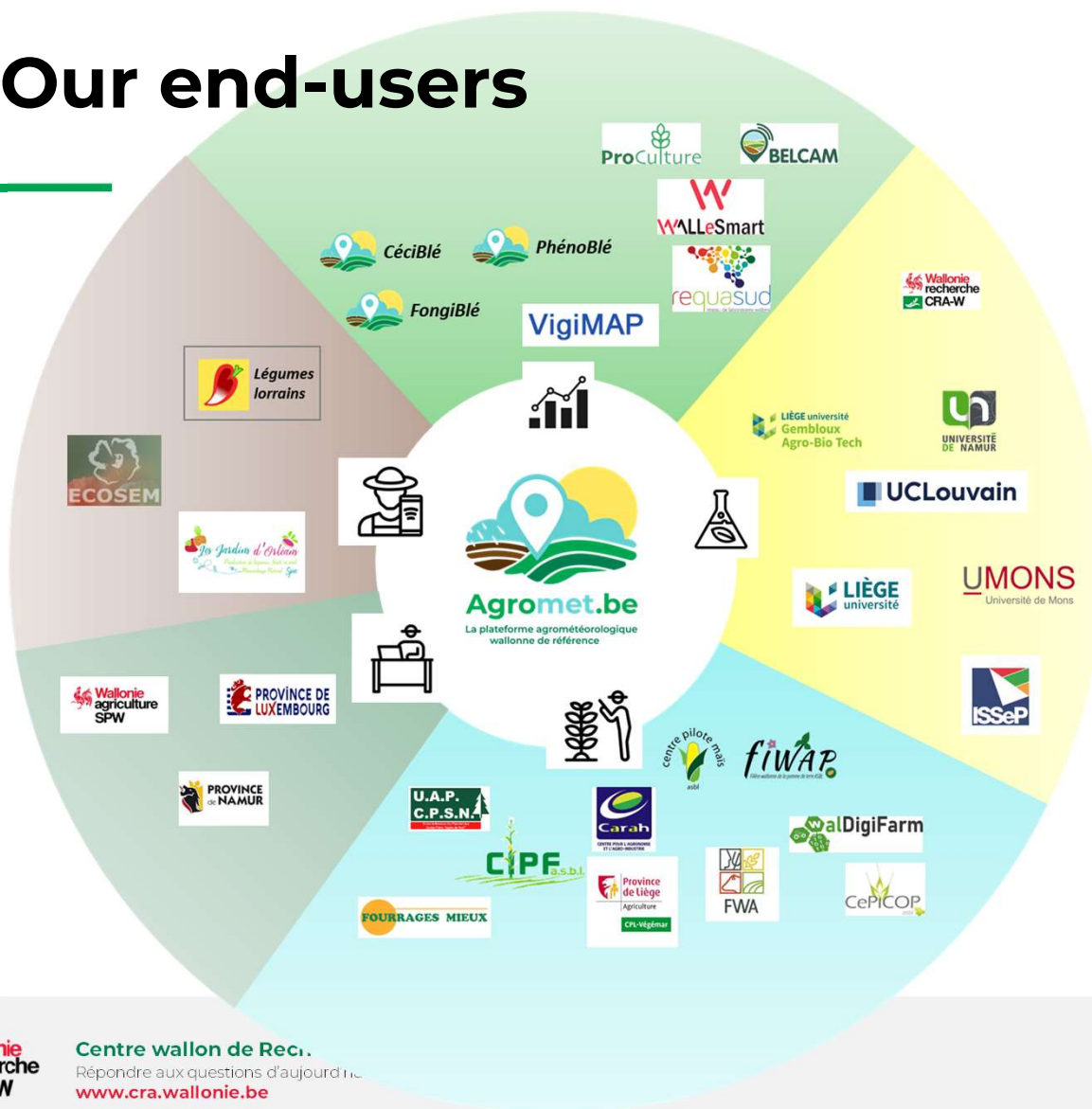


First results : Agromet.be

- [Agromet.be](https://agromet.be): Operational website. Weather data diffusion (station and grid) in Wallonia.
- Near real-time visualisation, data access (manual export or API)
- Agricultural DSSs



Our end-users



A tool for the actors of the agricultural world:

- Reasearh
- Advisors
- Government
- Farmers
- Tools

Today 439 accounts created :

- Farmers
- Reaseach
- Advisors

Spatial interpolation & Decision Support Systems

Model choice based on **meteorological** scores performance

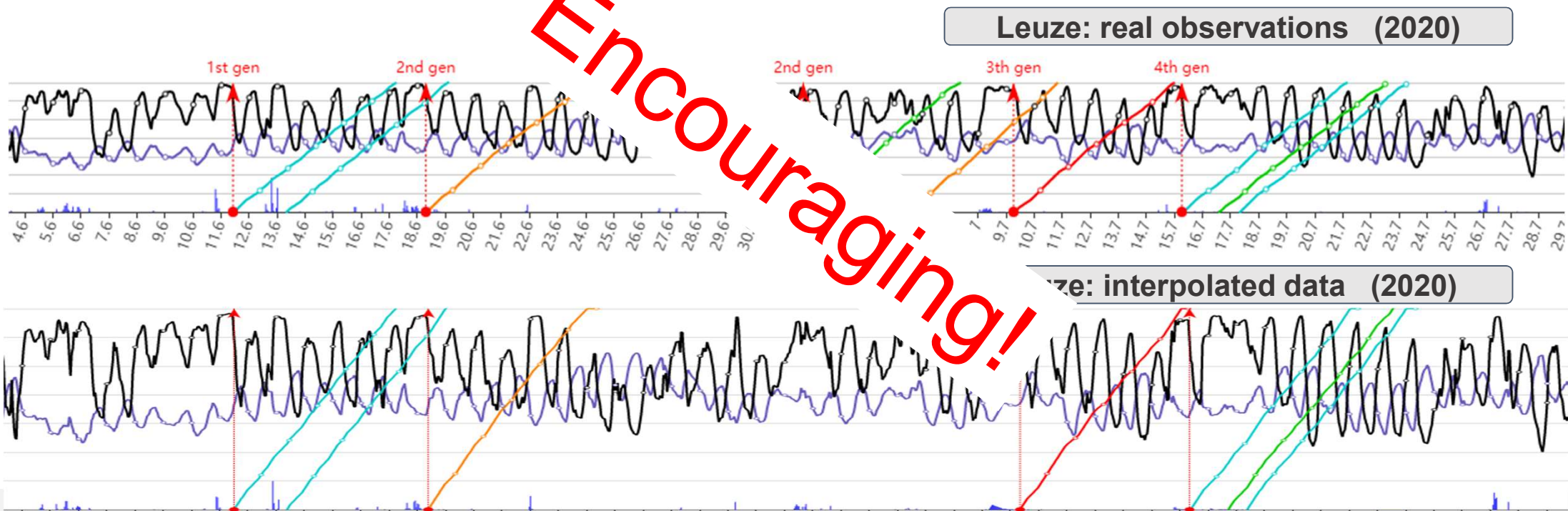
	Médiane	Moyenne	P75	P95
Température de l'air				
Horaire moy	0.40°C	0.62°C	0.81°C	1.97°C
Journalière min	0.52°C	0.79°C	1.1°C	2.39°C
Journalière moy	0.30°C	0.42°C	0.56°C	1.22°C
Journalière max	0.36°C	0.48°C	0.66°C	1.33°C
Humidité de l'air				
Horaire moy	2.13%	3.04%	4.00%	9.12%
Journalière min	1.98%	2.64%	3.59%	7.33%
Journalière moy	1.53%	1.94%	2.65%	5.12%
Journalière max	1.49%	2.11%	2.79%	6.20%

Statistiques des erreurs absolues de prédiction par paramètre

Spatial interpolation & Decision Support Systems

How does the spatial interpolation impact the output of **agricultural** DSSs?

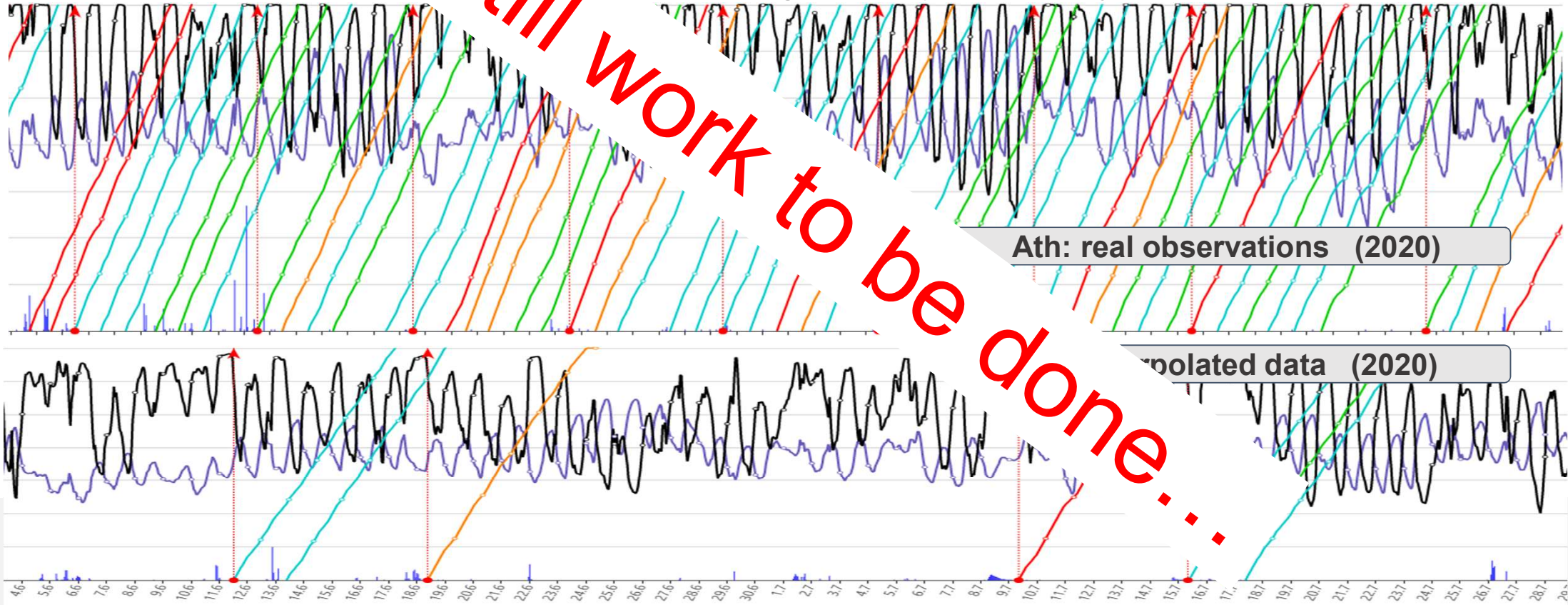
- First tests on VigiMAP: potato blight DSS provided by CARAH



Spatial Interpolation & Decision Support Systems

How does the spatial interpolation impact the output of agricultural DSSs?

- First tests on potato blight DSS provided by CARAH



Spatial interrelation & Decision Support Systems

How does the spatial interrelation impact the output of agricultural DSSs?

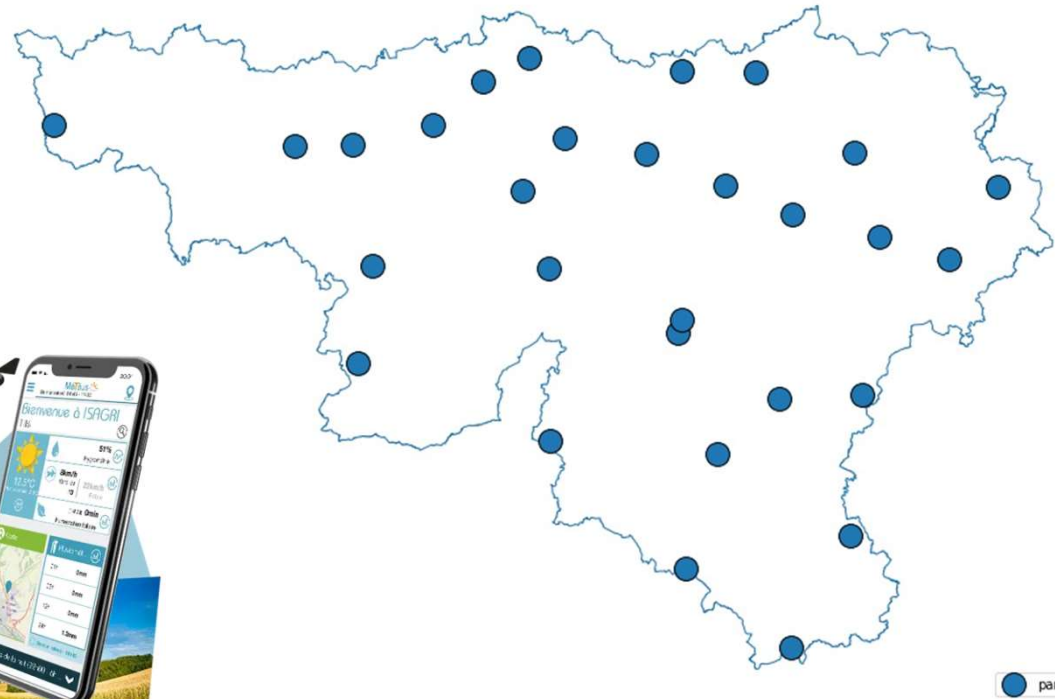
- First test case: late blight SSD provided by CARAH
- Real-world case studies
 - VigiMAP based on CARAH
 - VigiMAP based on CARAH



2022: no late blight
To be continued ☹️

Farmers' stations: an opportunity?

More and more farmers get a personal automatic weather station



Source : sencrop.com

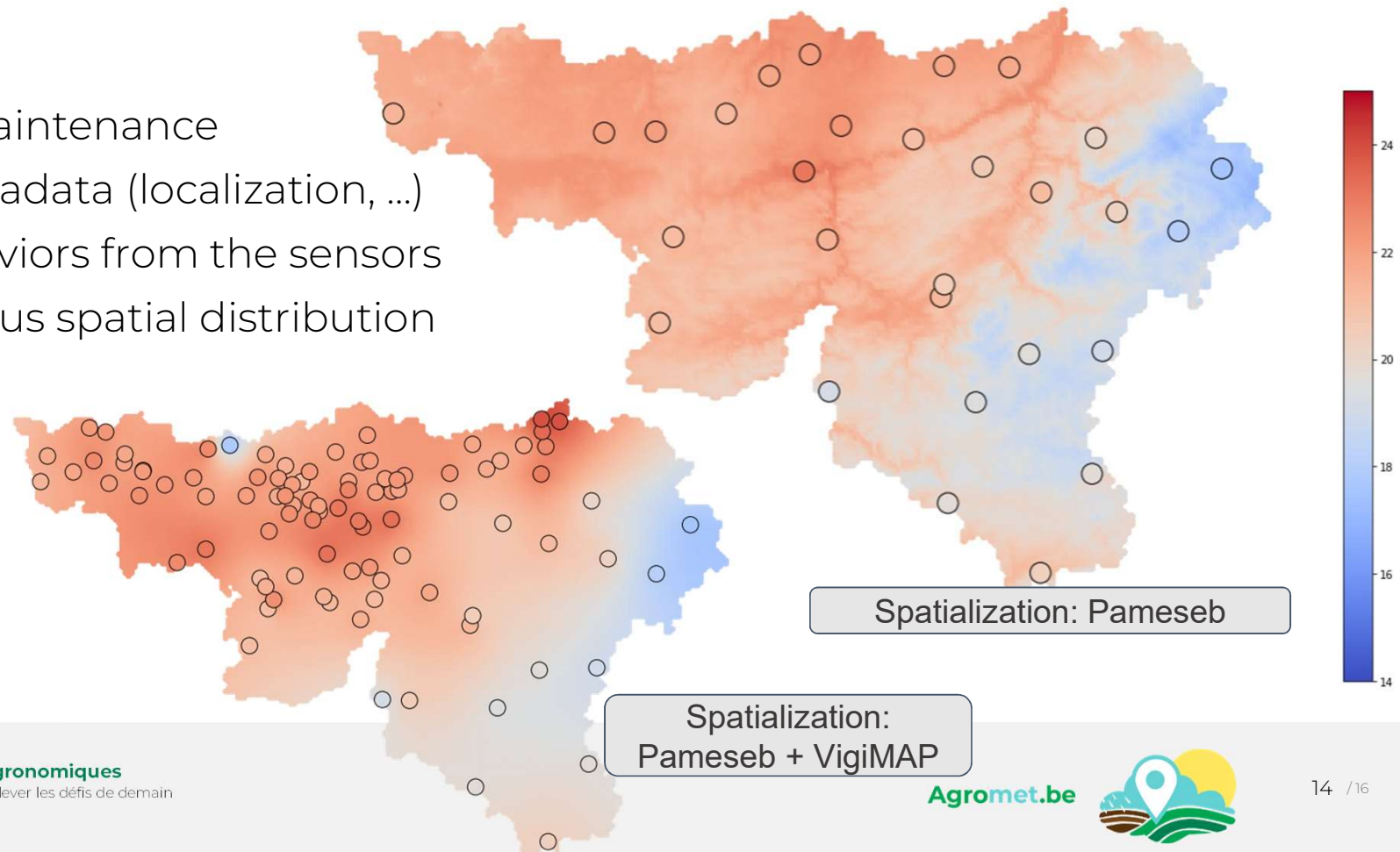


Source : www.isagri.fr

Farmers' stations: an opportunity?

Many challenges:

- quality and maintenance
- changing metadata (localization, ...)
- different behaviors from the sensors
- inhomogeneous spatial distribution
- legal aspects
- ...



Closing words

- **Agromet.be** : website for near real-time weather data dissemination in Wallonia (stations, grid) for agrometeorological monitoring
- **Potato late-blight** DSS with **interpolated weather data** : First exploration **encouraging** but still a lot of work.
- **Integration of farmer's station** to improve interpolation : **an opportunity** but **many challenges**.

Thank you for your attention!

Visit Agromet.be ☺

