

# Irrigation Machine Learning

Adrien Chabert

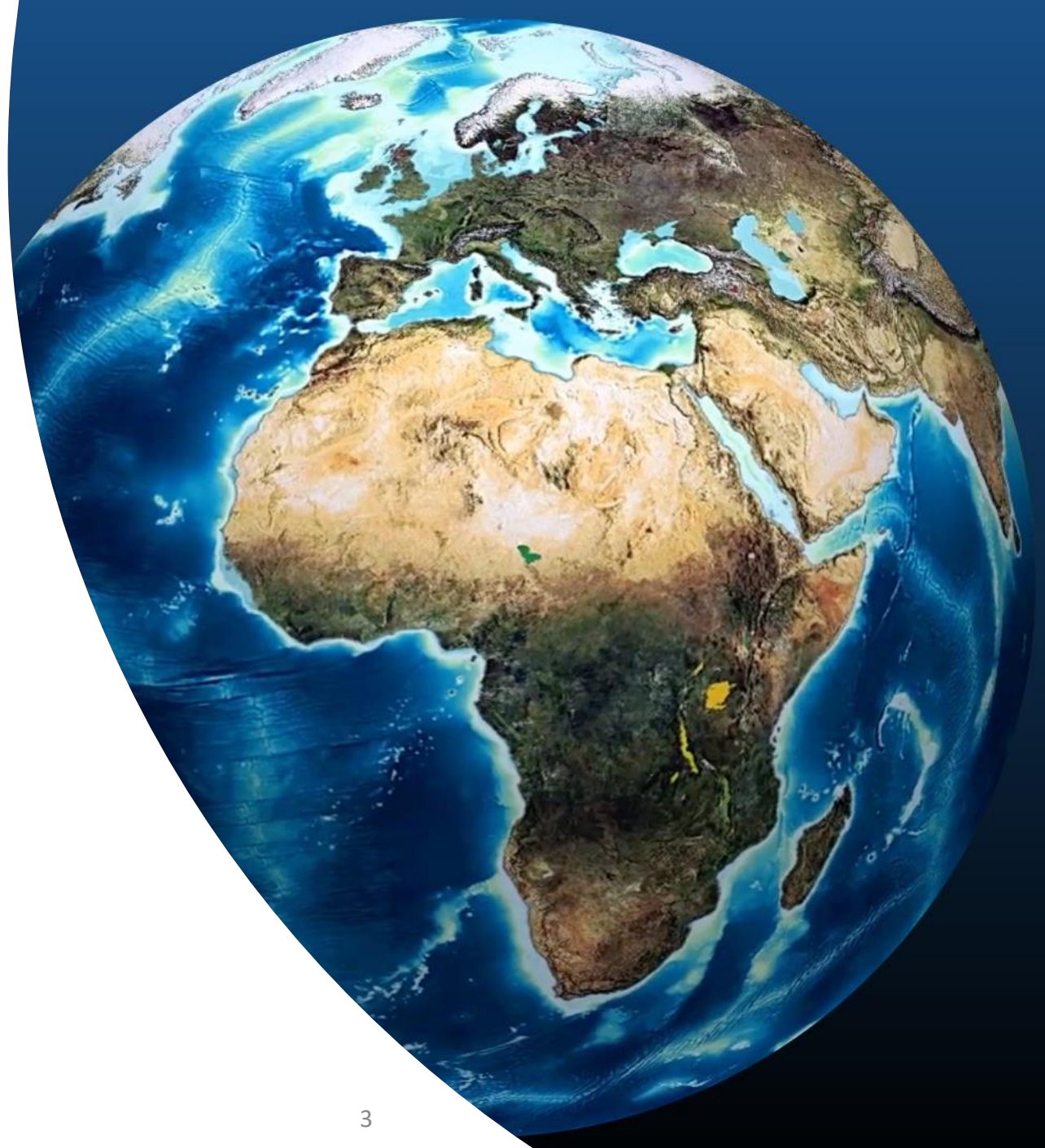
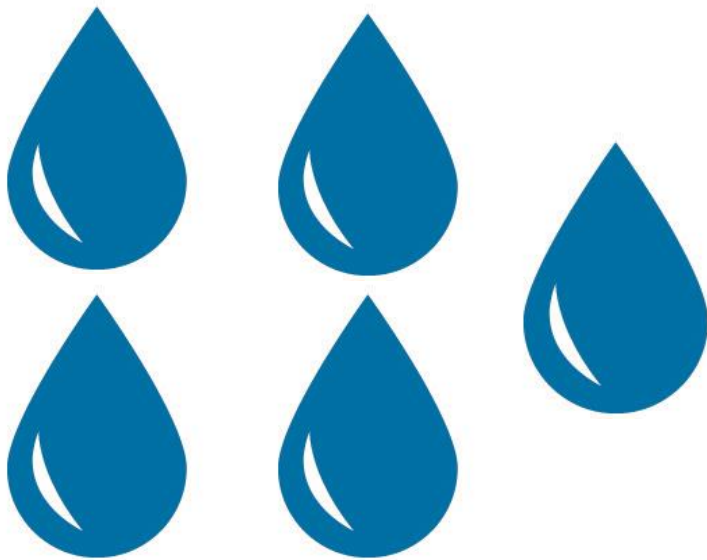


# Motivation

To predict water quantity necessary for a specific plant for it to remain in its confort zone

200'000 km<sup>3</sup> of fresh water

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Research of Literature

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graph TD; A[Research of Literature] --> B[Collect Data]; B --> C[Integration of Machine Learning Algorithm]; C --> D[Test our result]; D --> E[Create a watering plan];
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The diagram is a vertical flowchart with five steps. Each step is contained within a rounded rectangular box. The boxes are arranged in a descending staircase pattern from top-left to bottom-right. The color of the boxes transitions from a bright orange at the top to a dark grey at the bottom. Downward-pointing arrows connect each box to the one below it, indicating a sequential process.

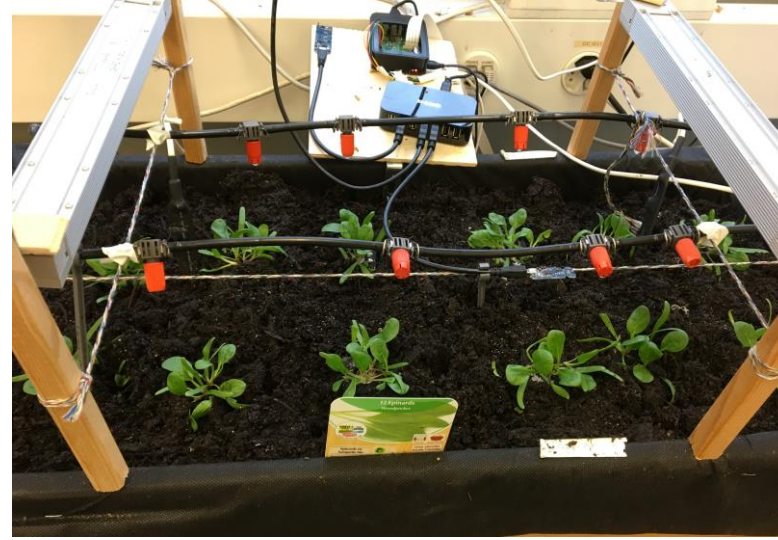
Collect Data

Integration of Machine Learning  
Algorithm

Test our result

Create a watering plan

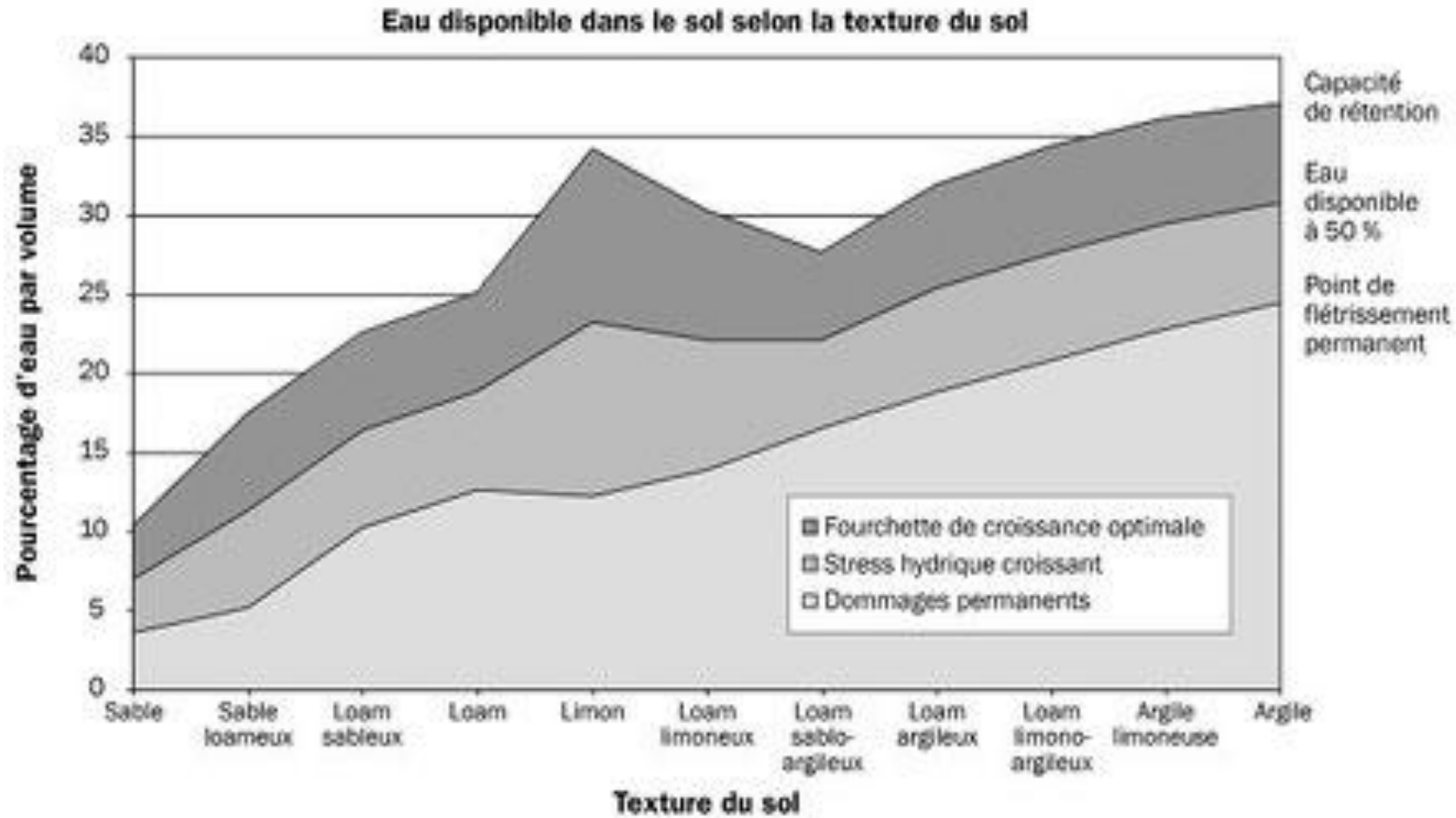




# Planting

Basilic, onion, spinach

# Optimal soil Moisture depending of the soil

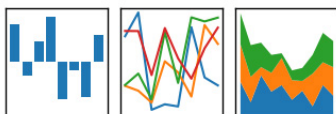


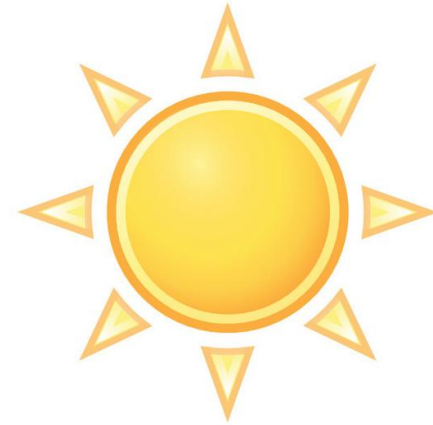
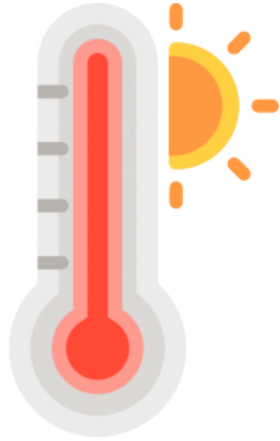
Source : <https://www.capteurs-et-mesures-agralis.com/mesure-humidite-sol/>



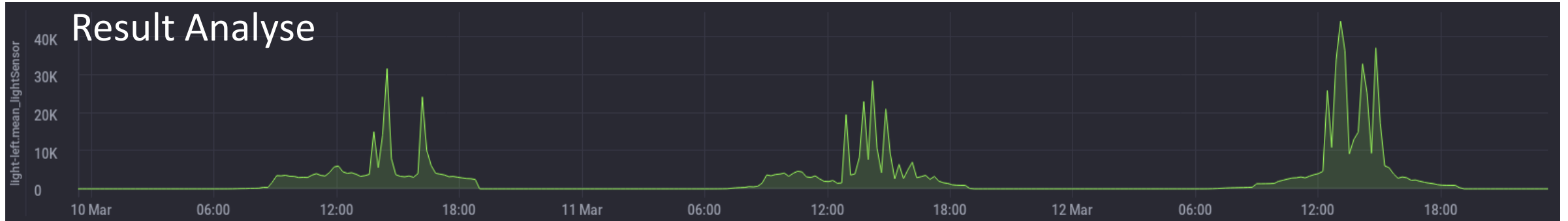
pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$

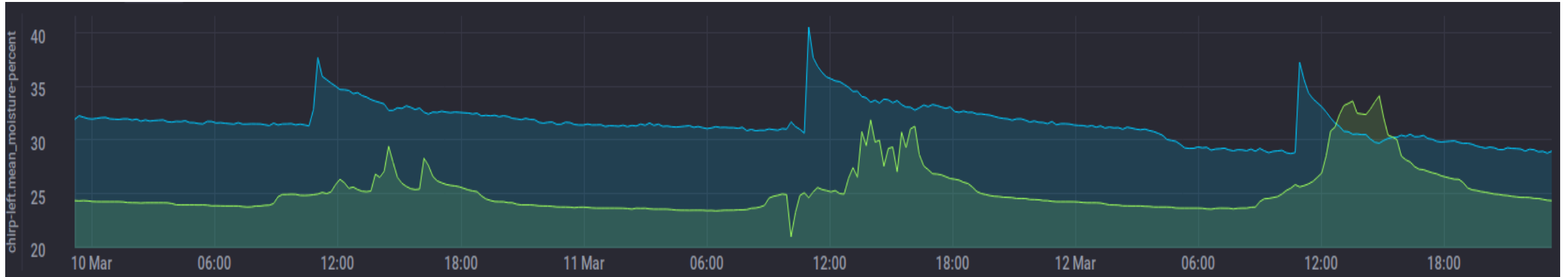




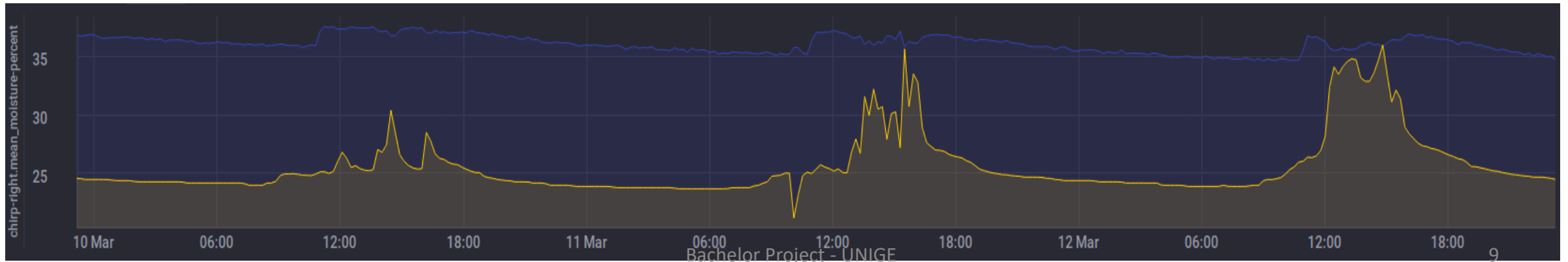




Demeter.autogen chirp-left : Moisture percent and temperature



Demeter.autogen chirp-right : Moisture percent and temperature





# Encountered problem

Position of the humidity sensor

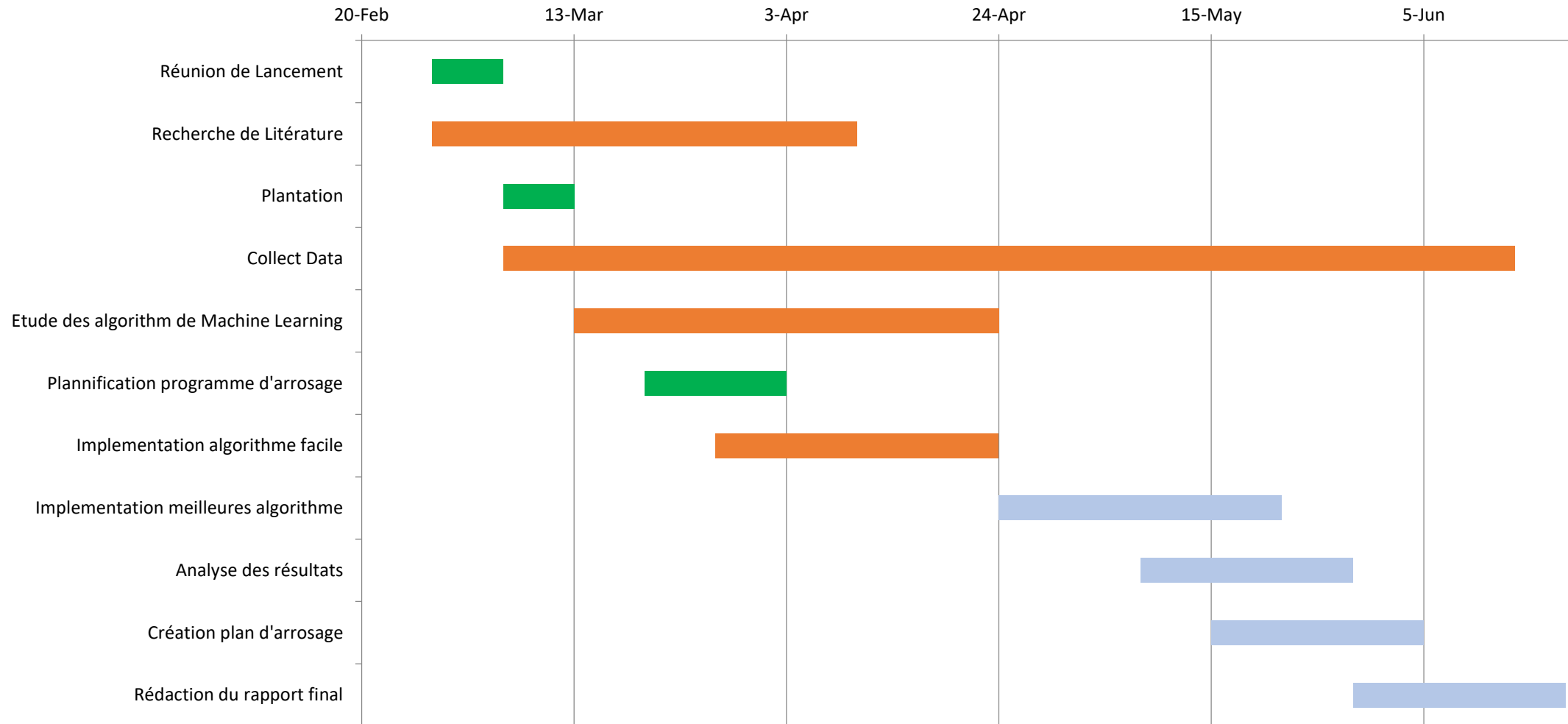
Weird curve

Not found comparable  
experience in indoor small scale

# Planning for the next 3 weeks

- End of the research of Literature
- Research about Machine Learning algorithm
- Implementation of a first easy ML algorithm
  - Bayesian learning machine approach for Regression
  - Least Squares Multiple Linear Regression
- Vary the watering with respect of the plants

# Project Planning



# Watering Plan

Date	Ceres	Demeter	Autre
6-Mar	10 s/j	10 s/j	
13-Mar	10 s/j	10 s/j	
20-Mar	10 s/j	10 s/j	
27-Mar	20 s/j	15 s/j	
3-Apr	20 s/j	15 s/j	Full watering
10-Apr	50 s/2j	30 s/2j	
17-Apr	30 s/j	10 s/j	
24-Apr	30 s/j	10 s/j	
1-May	40 s/j	20 s/2j	Full watering
8-May	20 s/0.5j	20 s/j	
15-May			
22-May			Full watering
29-May			
5-Jun			Full watering
12-Jun			
19-Jun			Full watering
26-Jun			
3-Jul			
10-Jul			