Over each grid point (0.1°) of a study region

Generate training datasets over the hindcast period (1993–2016) based on observed climate and BRIN model predictions

Create a data table

Fit the Random Forest (RF) model

Apply the RF model with forecast datasets

Feature selections: L1-based feature selection

Categorize variables (C1-6)	C1: (0, 10] percentile*; C2: (10, 25] percentile; C3: (25, 50] percentile; C4: (50, 75] percentile; C5: (75, 90] percentile; C6: (90, 100] percentile;					
Classification year	Input features to fit the ML model					Target prediction feature
	Total number of hot days (daily maximum temperature >=25 C°)	Average minimum temperature	Mean temperature	Average maximum temperature	Cumulative GDD with base temperature equivalent to that of BRIN model	Phenology model predictions
1994	C1	C3	C4	C3	C2	C2
1995	C3	C2	C3	C2	C4	C3
.....	.....	.....	.....	.....	.....	.....
2016	C4	C6	C5	C3	C6	C5

**Percentile is computed over the study period of 1993-2016*

Objectives

1. Evaluate if any modelling methodology can be useful to forecast the phenology percentile (not absolute values) given the 7-month seasonal forecast datasets for Portuguese wine regions

2. A ML-based approach or conventional phenology model in seasonal forecast for Portuguese wine regions.