



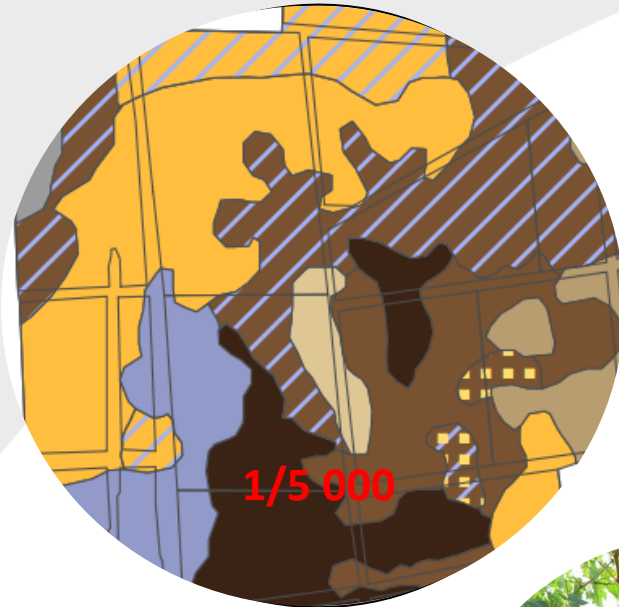
Effect of local temperature variability on vine phenology in the Saint-Emilion area (Bordeaux, France)

Laure de Rességuier

Under the contract number: LIFE13 ENV/FR/001512



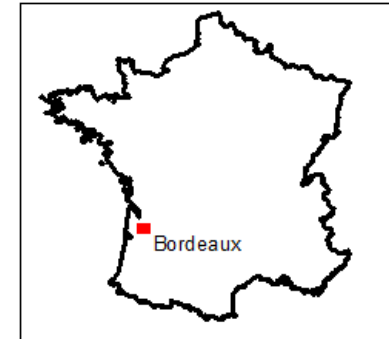
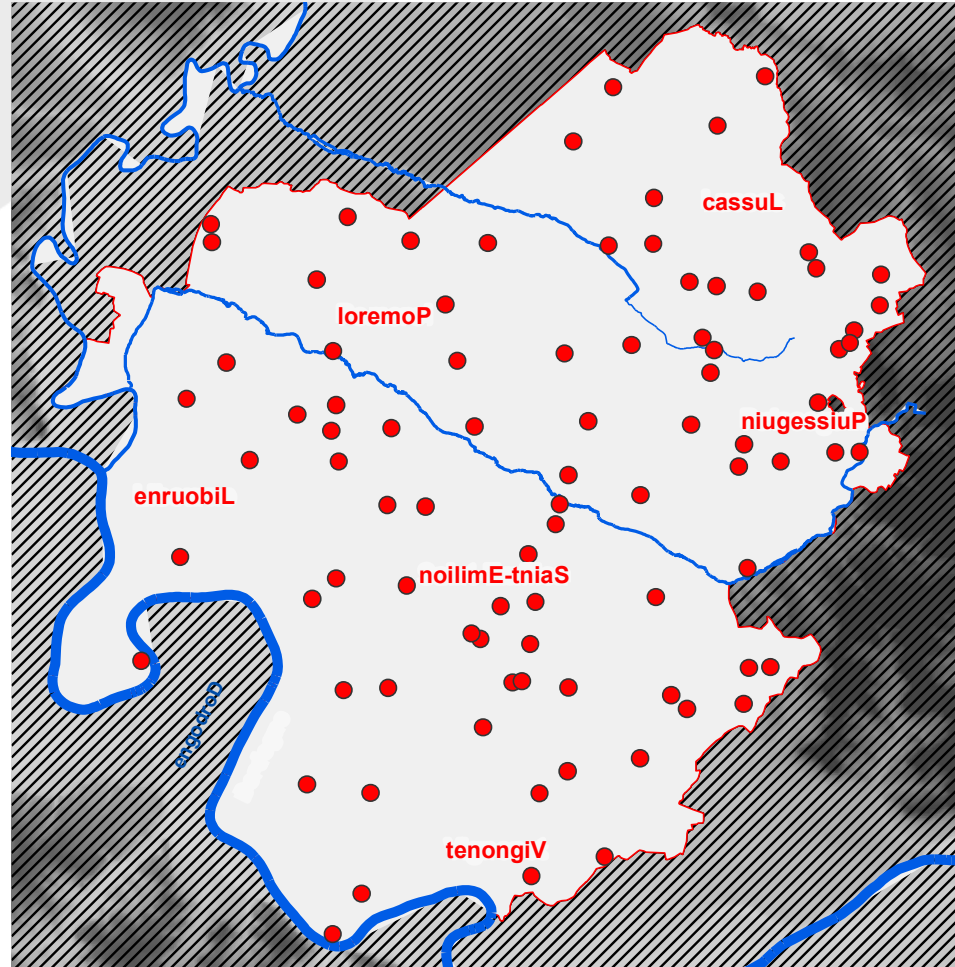
Terroir: a key factor for wine quality and typicity



What about
fine scales?



Sensor distribution taking into account many parameters

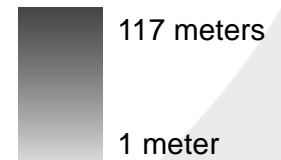


● Temperature sensor

— River

□ Study area

Altitude (meter)



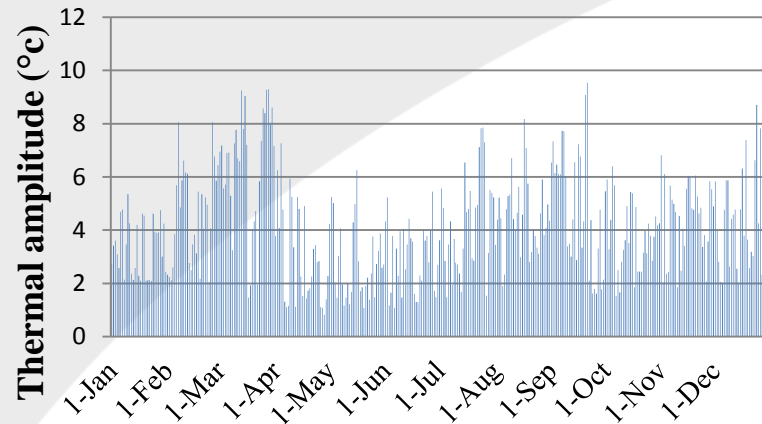
0 2,5 5 Kms



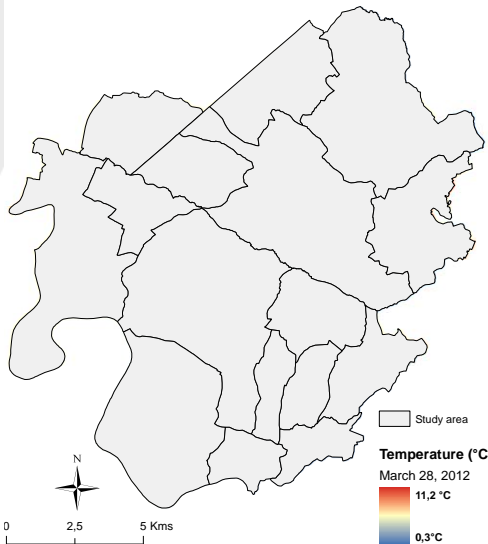
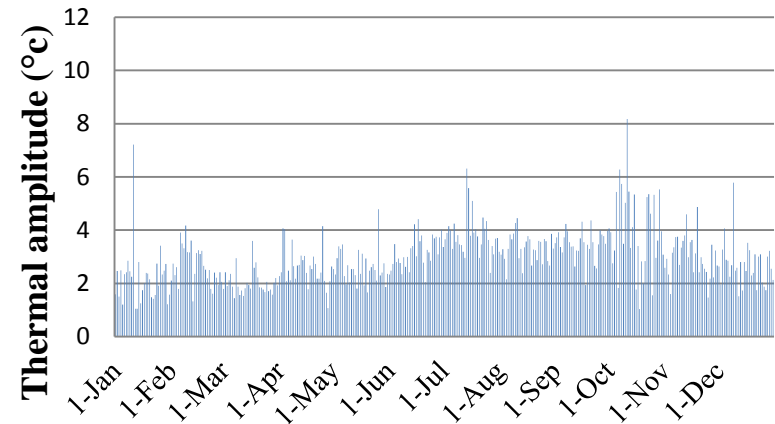
- Topography (altitude, exposures, slopes)
- Soil types (warm and cool)
- Distance from rivers
- Proximity to town (Libourne)

Great spatial variability in minimal temperatures

Minimal temperatures 2012



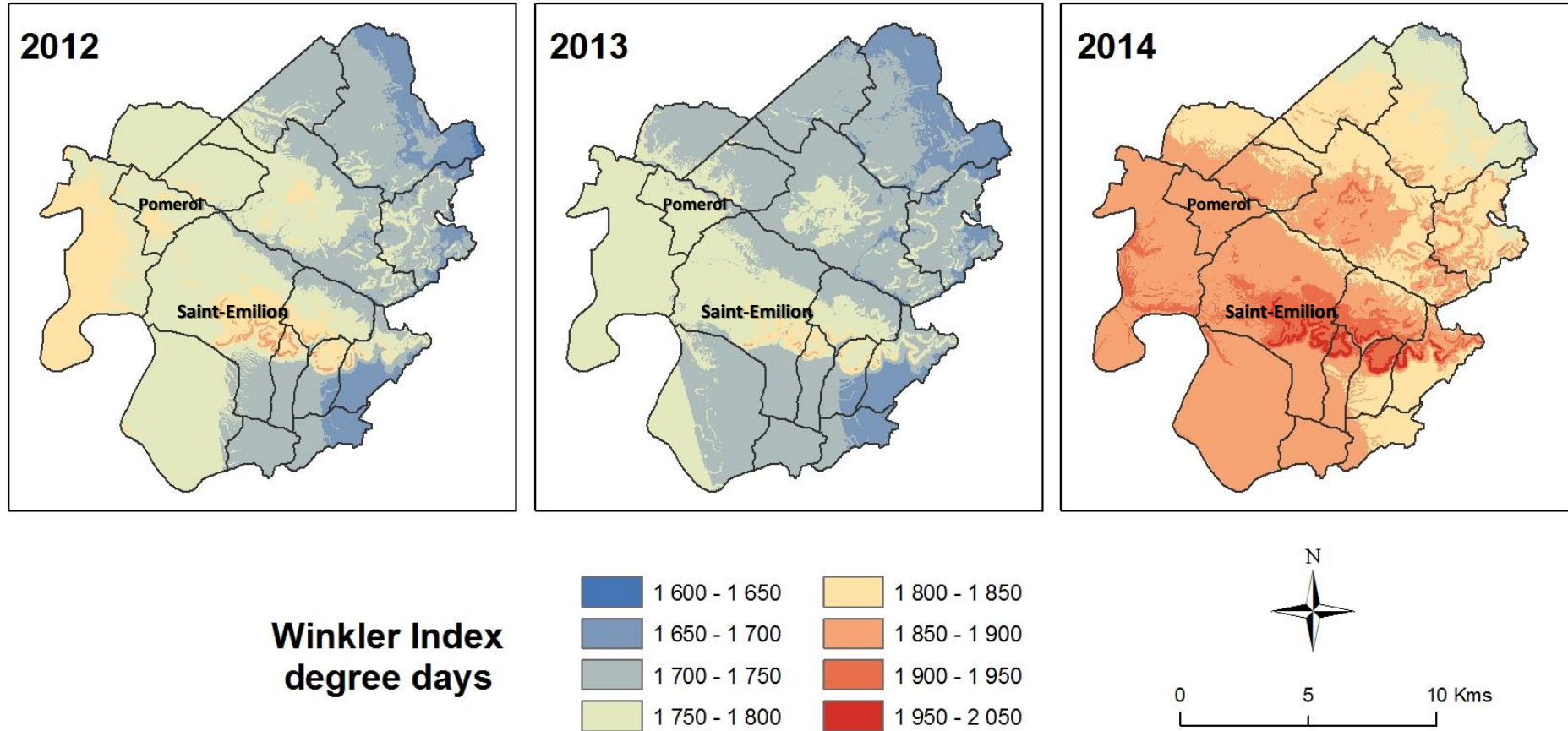
Maximum temperatures 2012



More amplitude on minimal temperatures than on maximal temperatures , with an average of 4°C

But on some specific days, like anticyclonic clear sky conditions, amplitude on minimal temperatures can increase by up to 10°C

Spatial modeling of Winkler Index (2012-14)



- Vintage effect: 2014 was warmer than 2012 and 2013
- More than 250 degree days of amplitude on Winkler Index each year
- Spatial distribution constant over the years

Consequences on vine development

	Year	Period	Mean date	Duration (days)
Flowering	2012	30/05 - 08/06	4 June	10
	2013	15/06 - 20/06	17 June	6
	2014	31/05 - 07/06	3 June	8
Veraison	2012	31/07 - 18/08	9 August	19
	2013	16/08 - 26/08	21 August	11
	2014	30/07 - 16/08	7 August	18
Sugar maturity (day of the year sugar concentration reaches 200g/l)	2012	22/08 - 12/09	1 September	22
	2013	05/09 - 4/10	21 September	30
	2014	31/08 - 22/09	10 September	23

Inter-annual variability: vintage effect

Intra-annual variability: key factor for adaptation in a context of climate change

Conclusions and perspectives

An innovative project to study the climate at fine scale

A great variability of temperatures, particularly min temperatures in the area

Modeling of Winkler Index with annually-recurrent spatial distribution can help winemakers to adapt plant material and viticultural practices

Perspectives:

Modeling of phenological stages at this scale

Integration of temperature and phenological models in the GIEC predictions, to study the consequences on vine development in a context of rising temperatures



Thank you for your attention

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