



Trajnostni razvoj kmetijstva in turizma na čezmejnem Krasu
Sviluppo sostenibile dell'agricoltura e del turismo nel Carso transfrontaliero

AGROTUR II

Simpozij Akademia o teranu/Accademia di Terrano Grad Štanjel/Il castello Štanjel 8. 11. 2018





Vodni status kraških vinogradov v letu 2018

Stato dell'acqua dei vigneti del Carso nel 2018

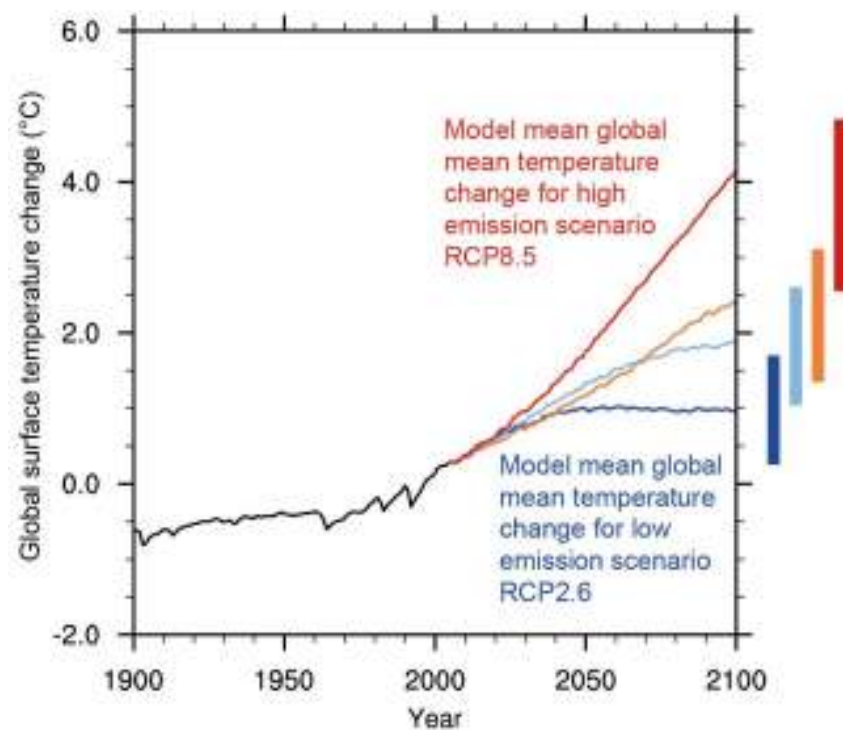
Francesco Petruzzellis

Università degli Studi di Trieste

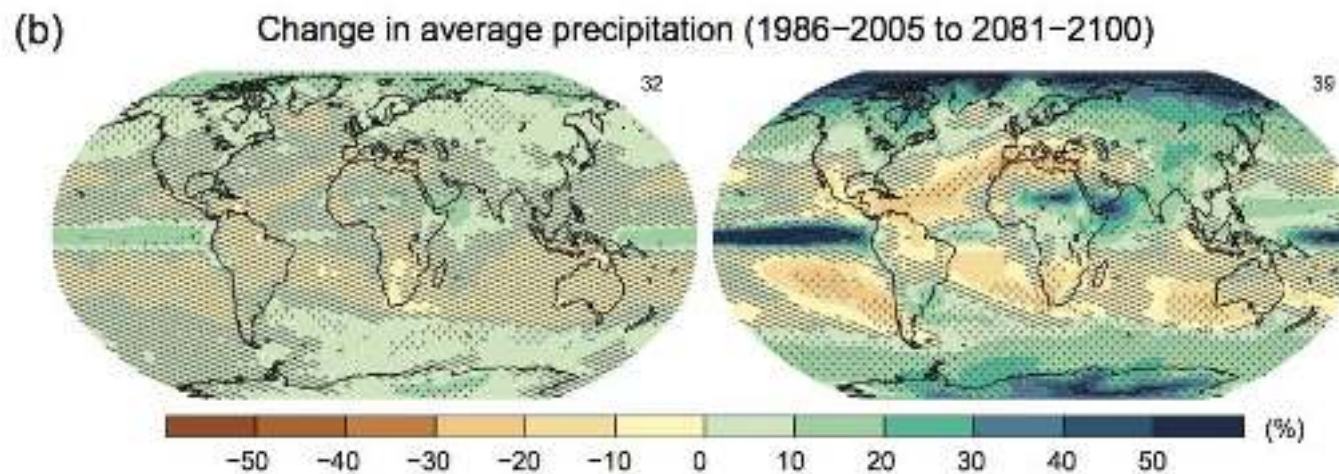


Global climate change

INCREASE Temperature



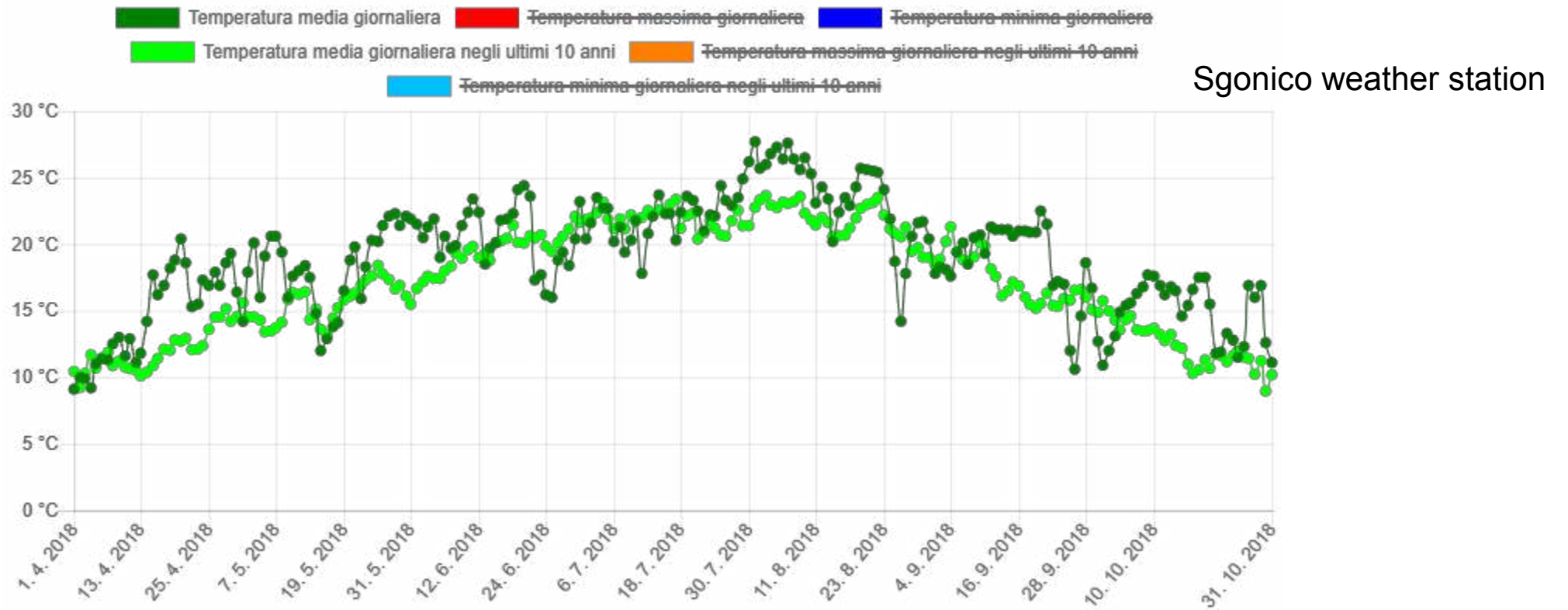
DECREASE Precipitation



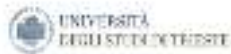
Source: www.epa.gov



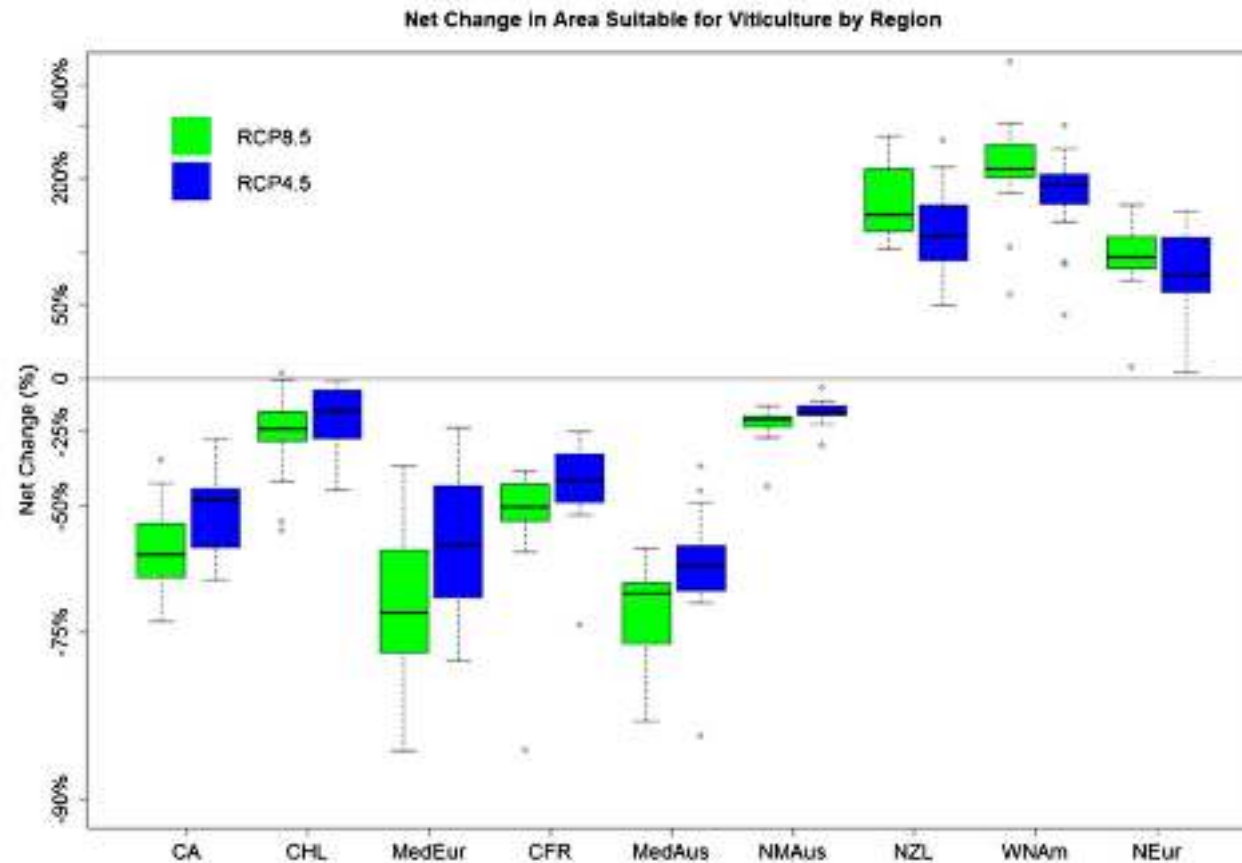
Also at local scale...



Source: www.e-karst.eu

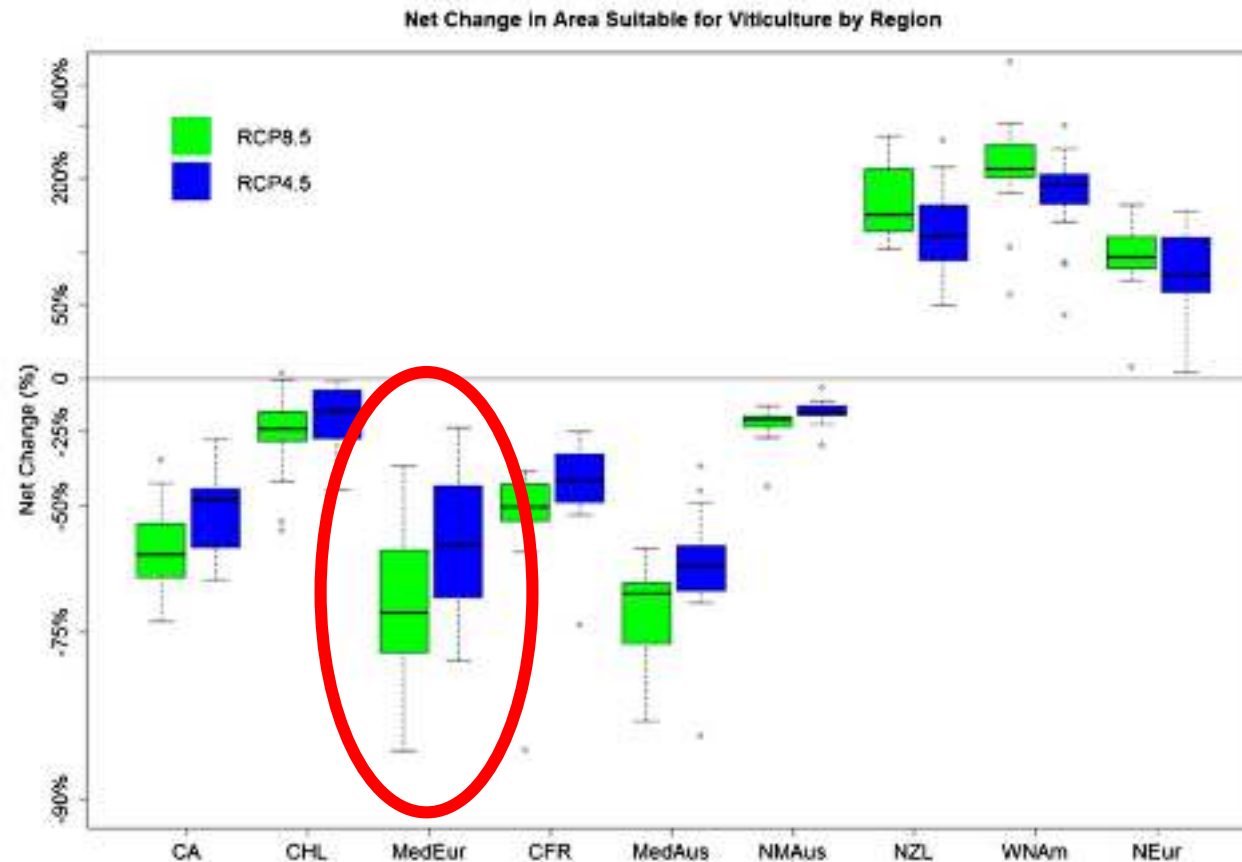


Crop productivity and quality will be NEGATIVELY affected by climate change



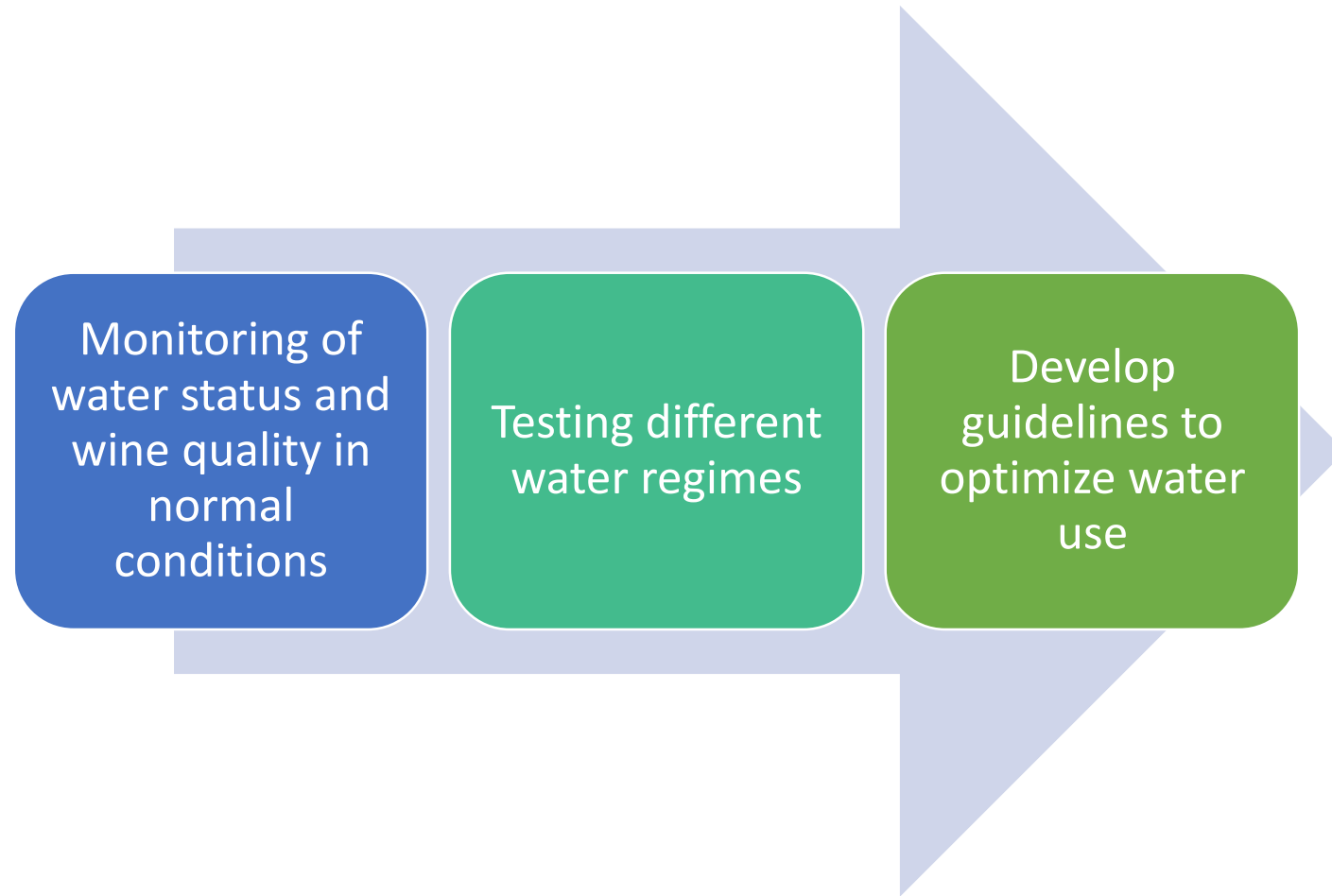
Hannah et al. 2013 PNAS

Crop productivity and quality will be **NEGATIVELY** affected by climate change

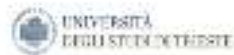
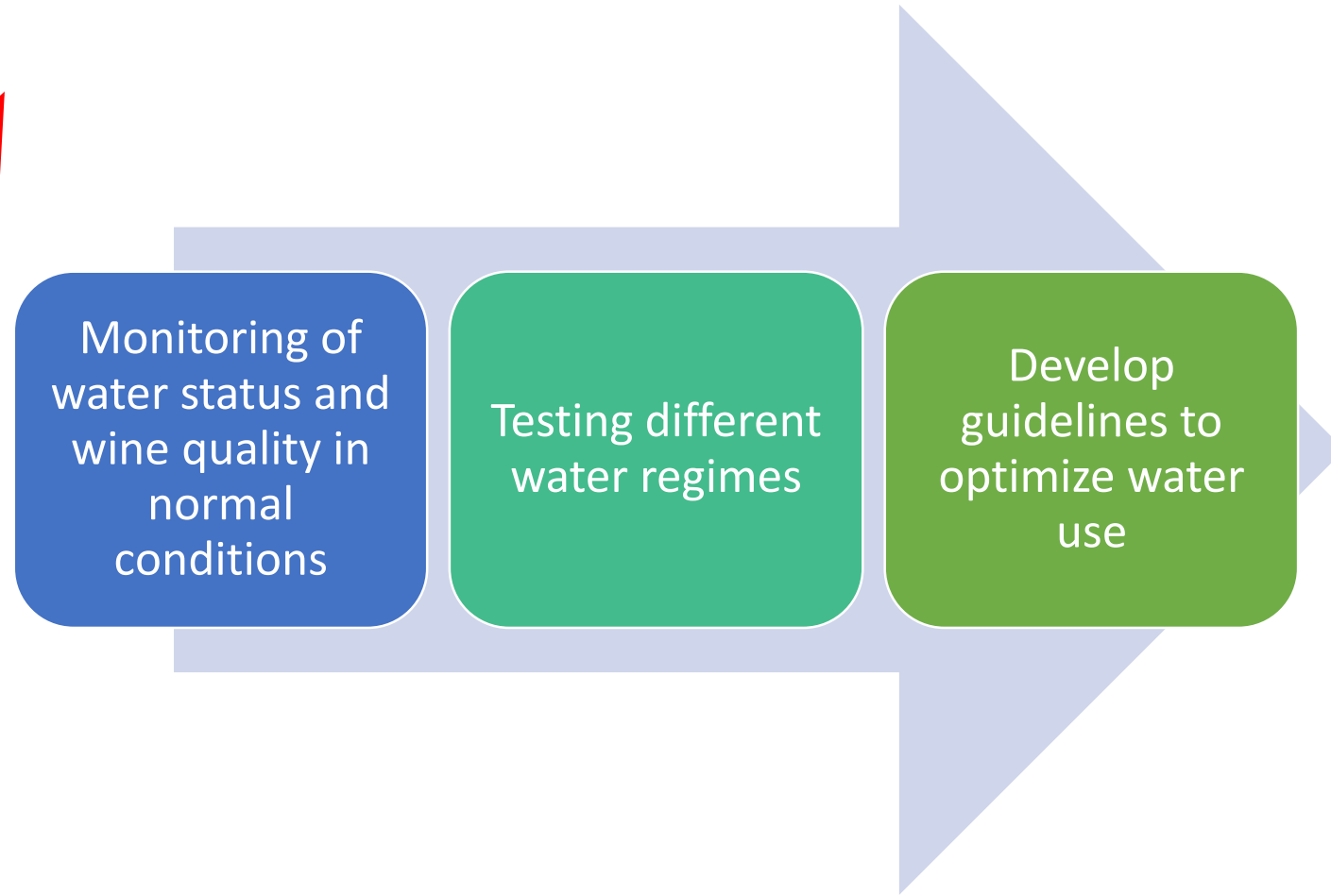
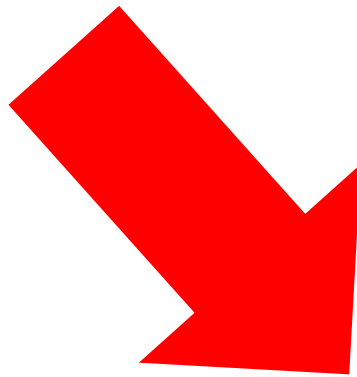


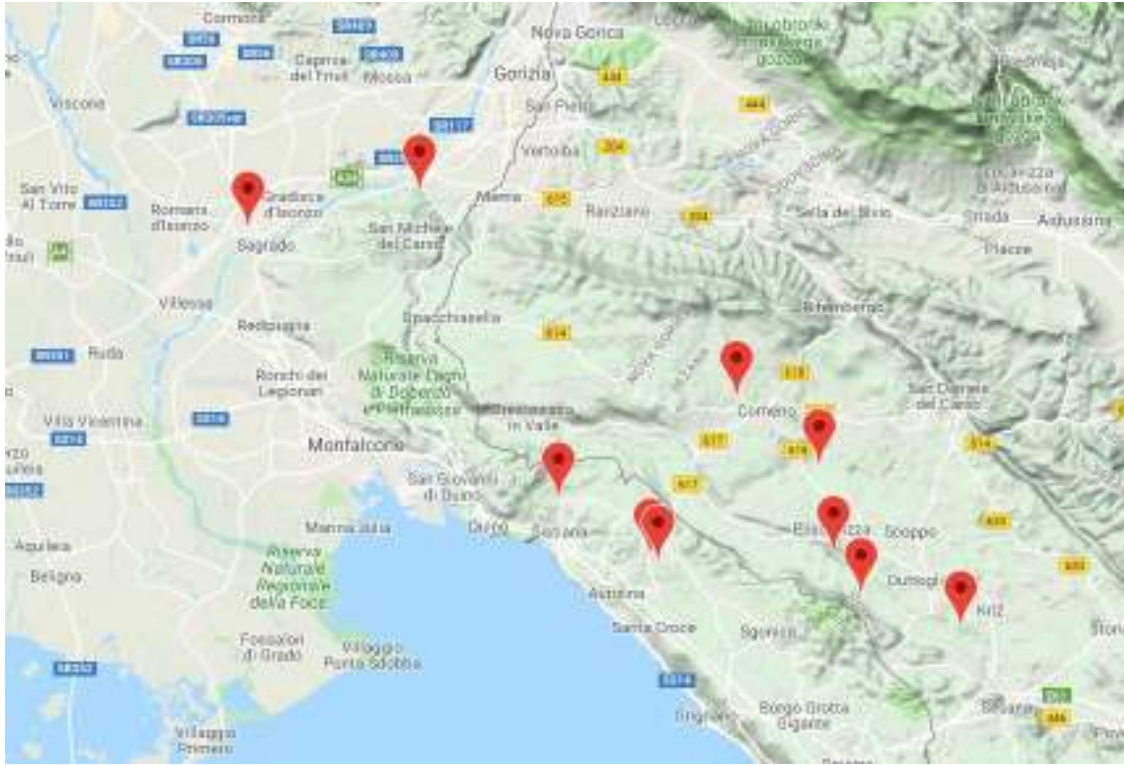
Hannah et al. 2013 PNAS

Find suitable water management



Find suitable water management





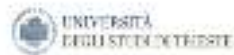
10 vineyards (5 in Italy and 5 in Slovenia)
and monitored water status of Terrano vines
in 2018 growing season (May-August)



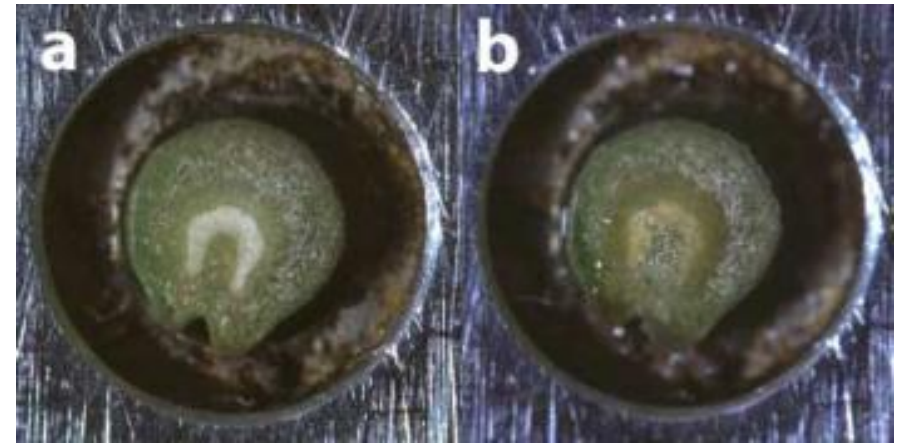


10 vineyards (5 in Italy and 5 in Slovenia) and monitored water status of Terrano vines in 2018 growing season (May-August)

Parameter	Abbreviation	Significance
Water potential at pre-dawn	Ψ_{pd}	Soil moisture
Water potential at midday	Ψ_{min}	Maximum diurnal water stress
Water potential at turgor loss point	Ψ_{tlp}	Drought resistance
Sap oxygen isotopes	$\delta^{18}O$	Root depth
Leaf carbon isotopes	$\delta^{13}C$	Water use efficiency



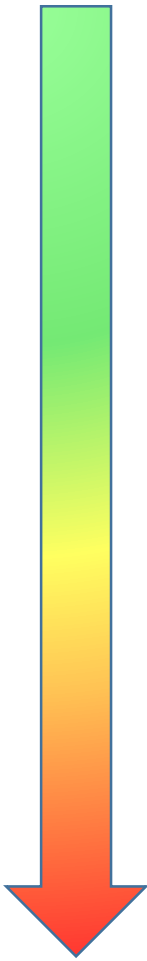
Measuring leaf water potential



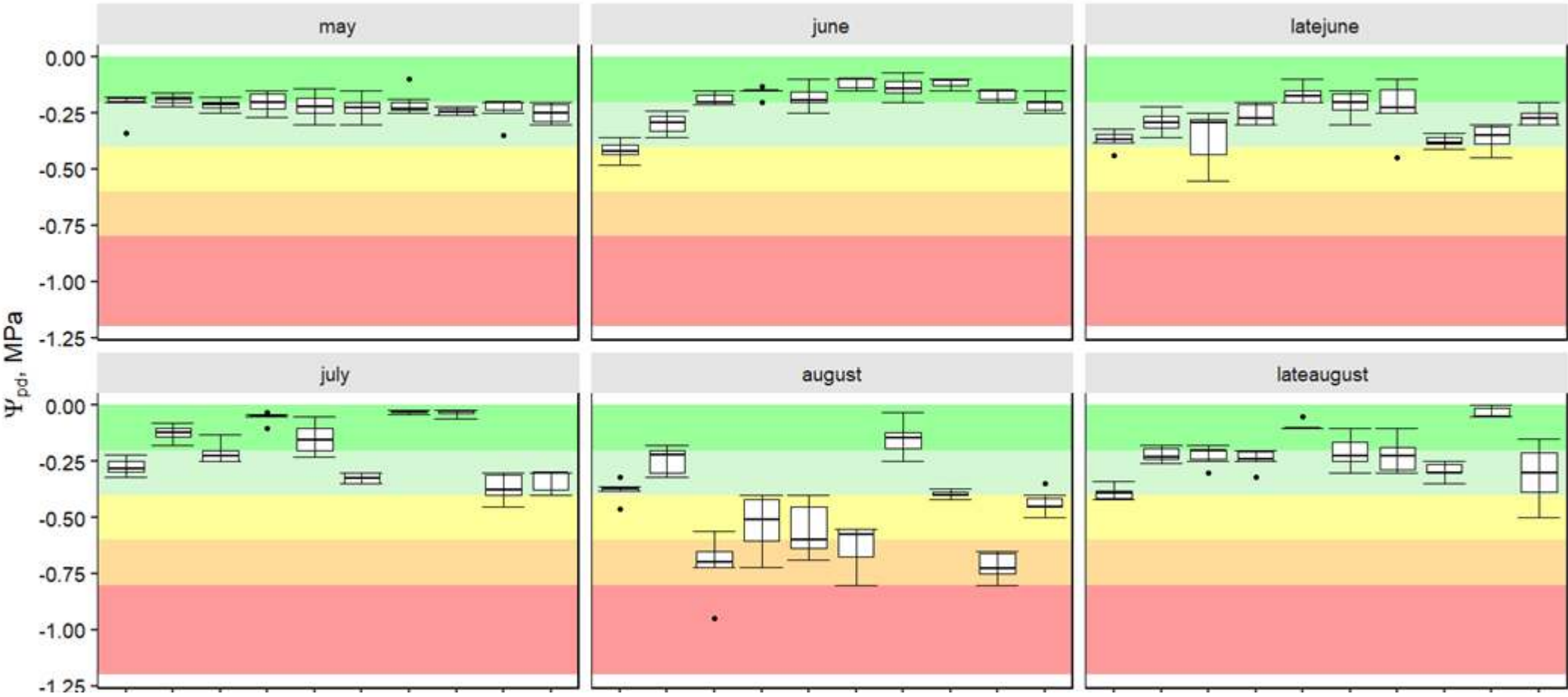
Collecting water from stems and rainfall



No stress



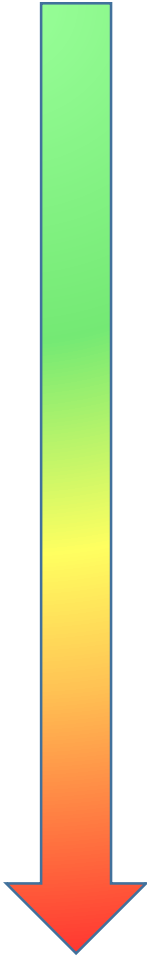
Severe stress



Vineyards



No stress

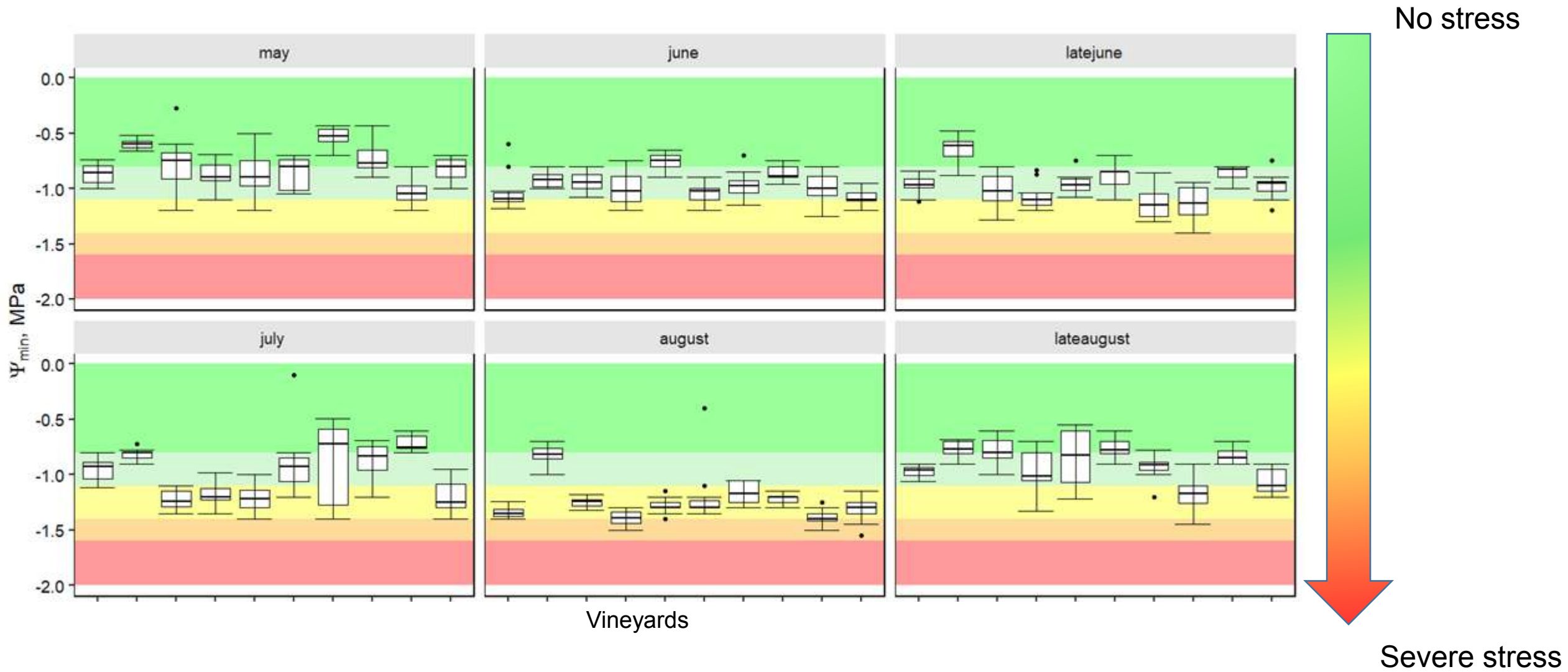


Severe stress

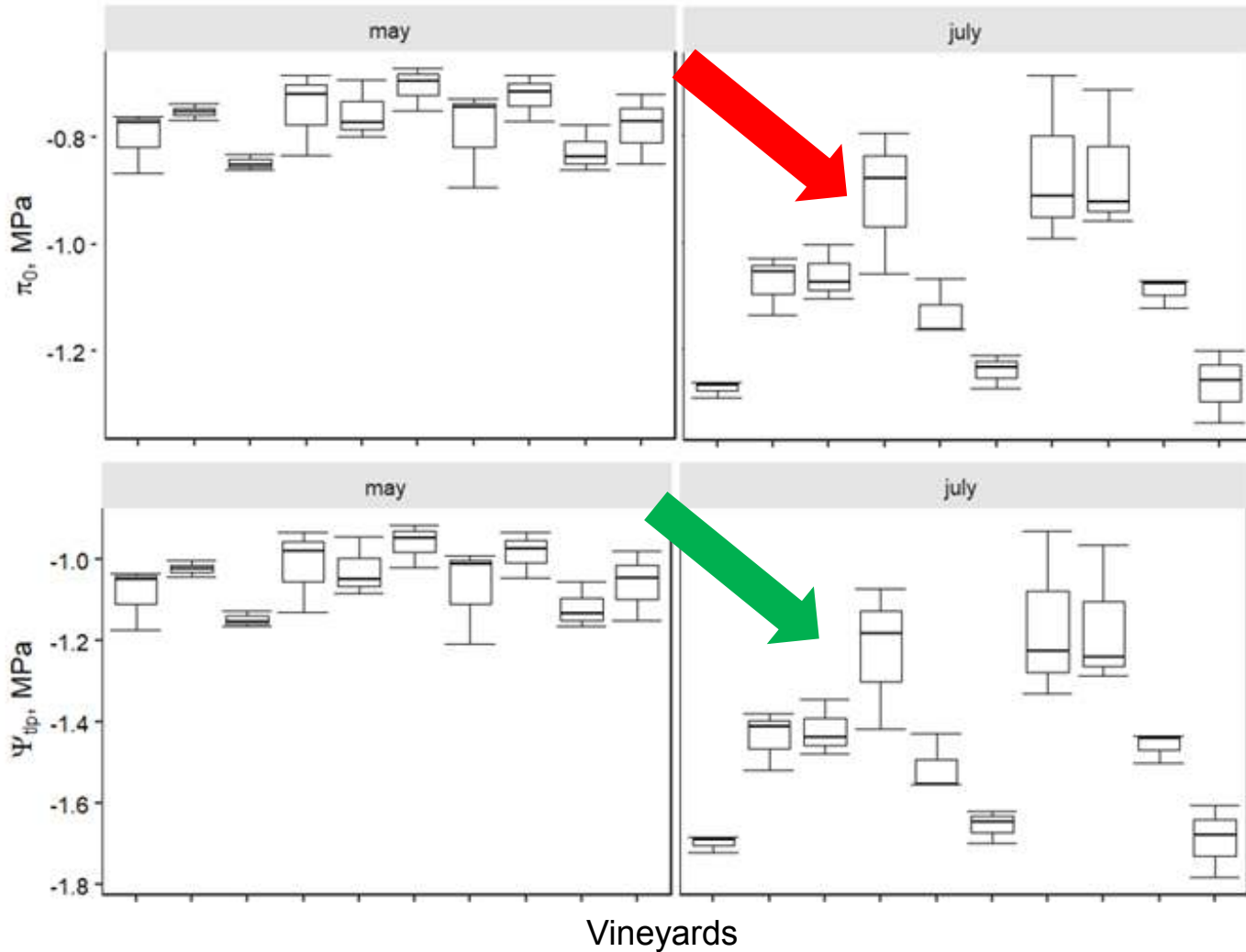


Vineyards



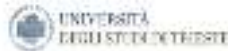




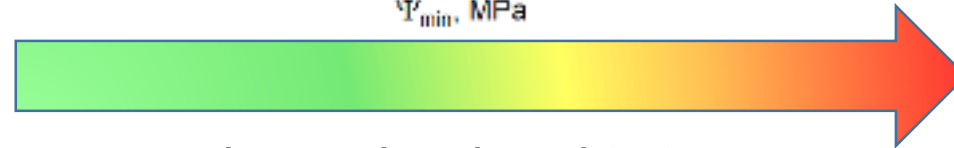
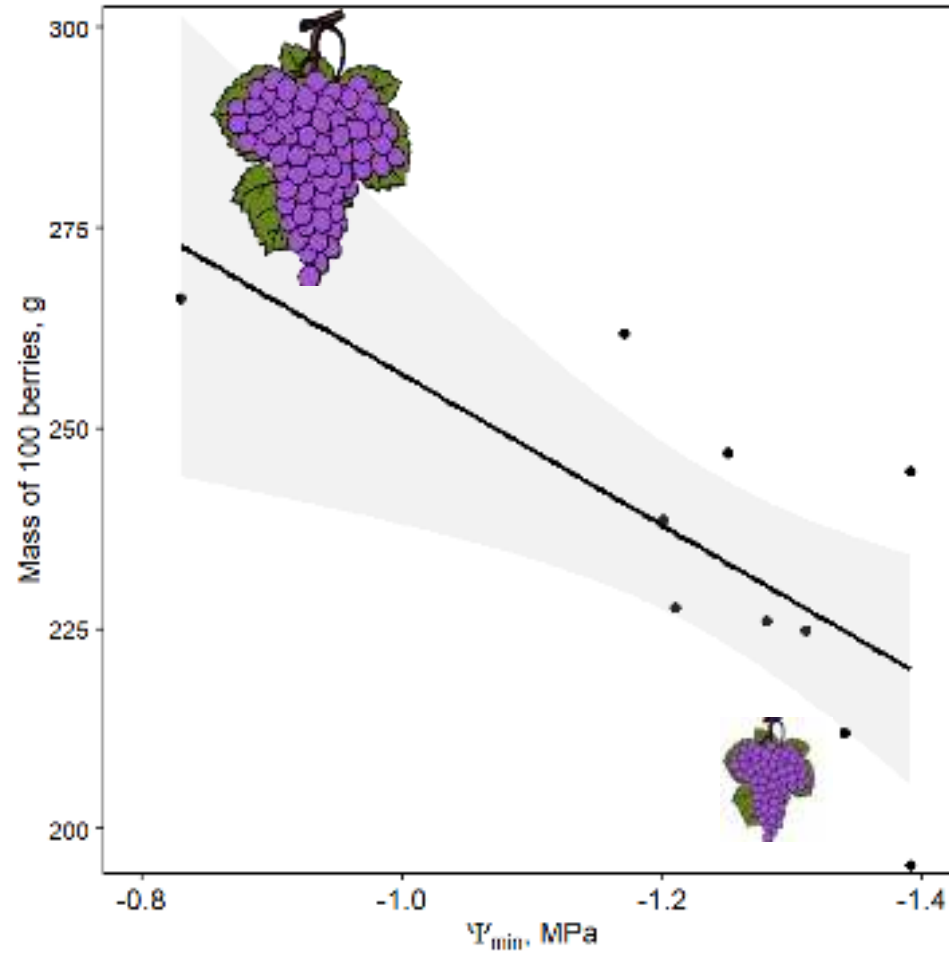


Higher solutes concentration when drought stress increased

Higher drought stress resistance



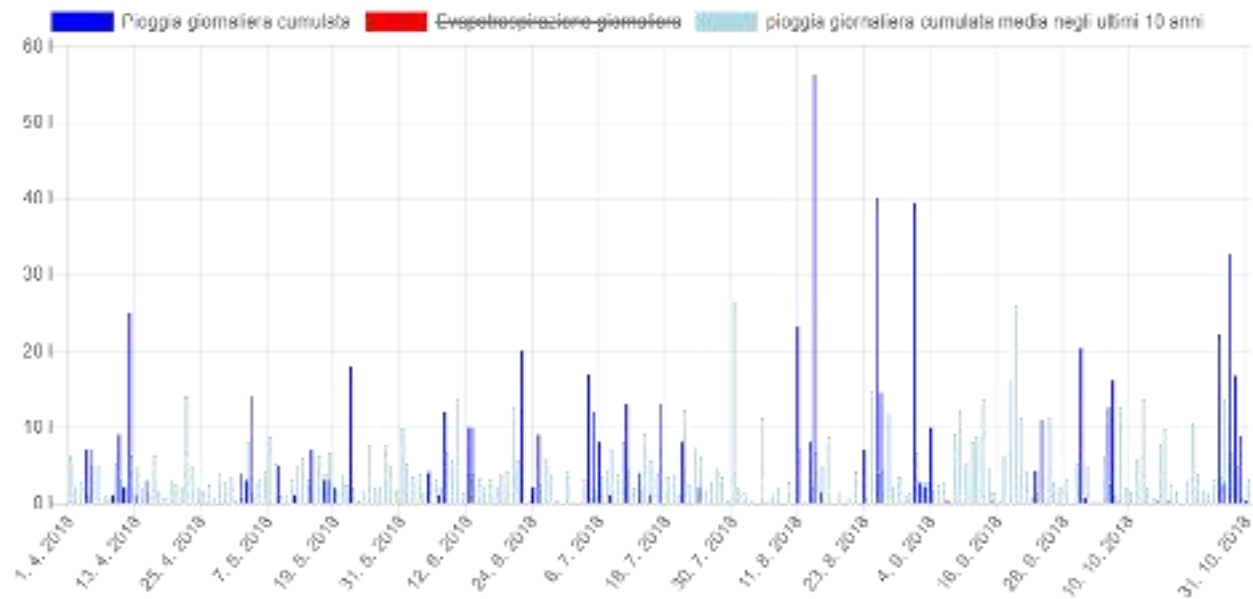
Any effects on vines' productivity?



Increasing drought stress

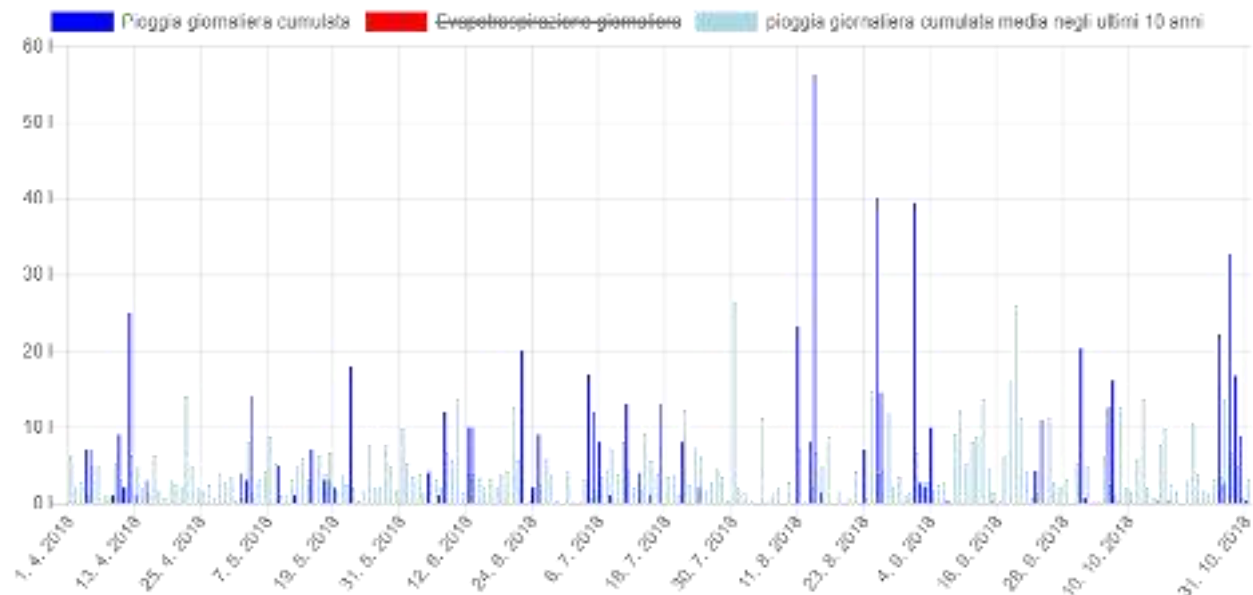
What vines told us....

High rainfall through the
spring/summer 2018



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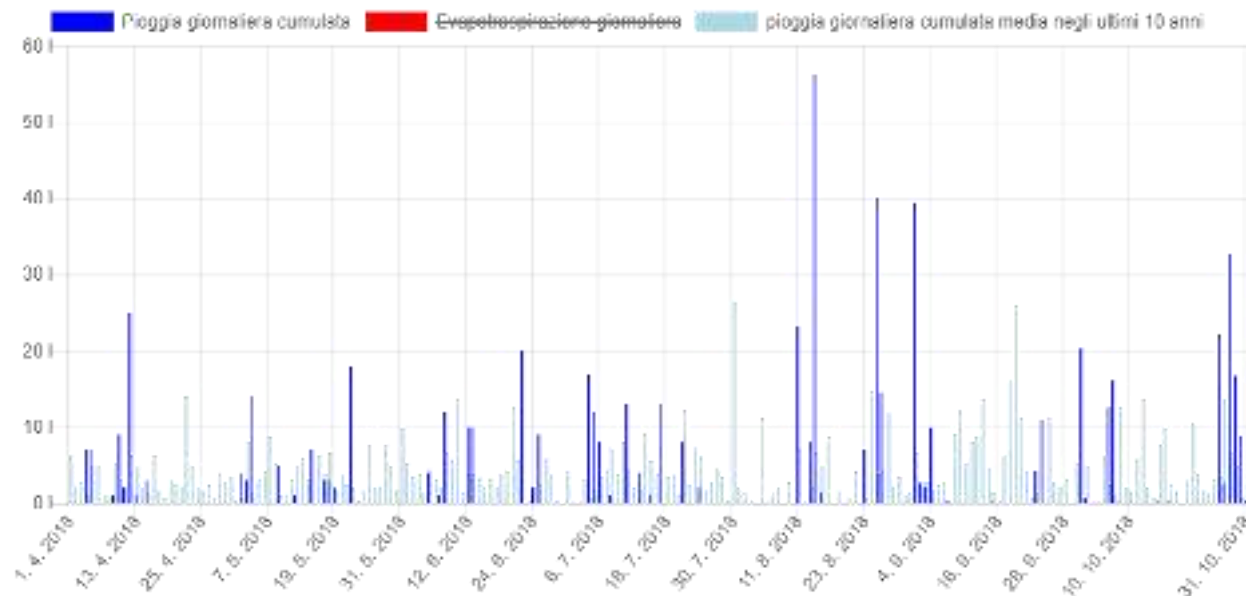


But some vineyards suffered mild drought stress



What vines told us....

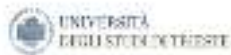
High rainfall through the spring/summer 2018



Karst has heterogeneous climate/substrate



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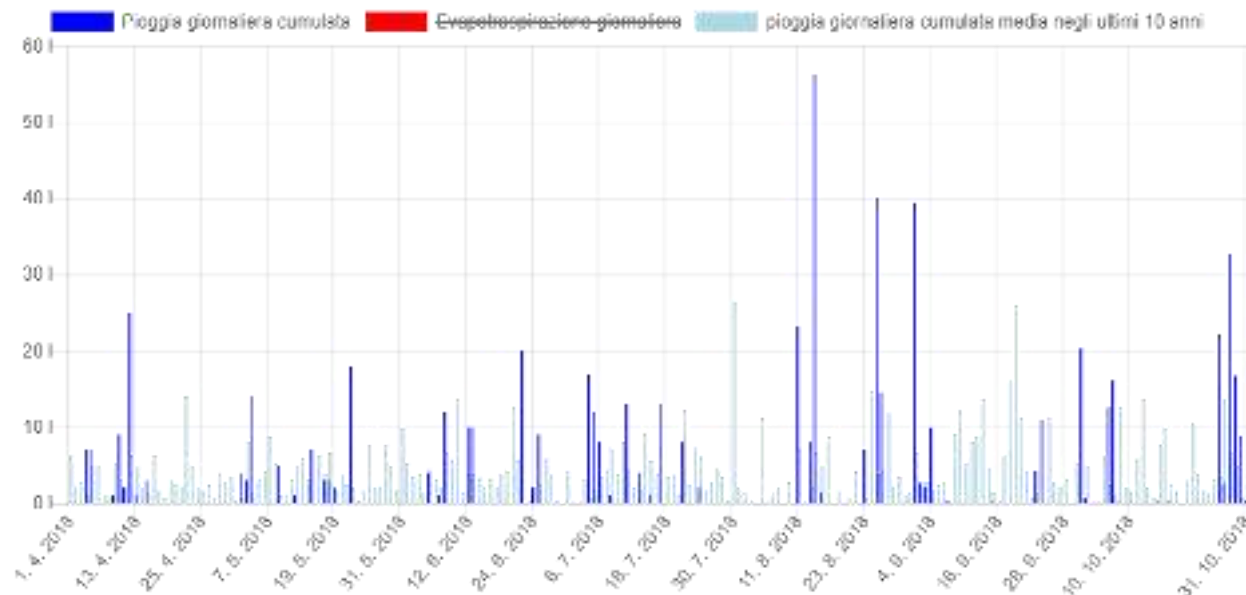


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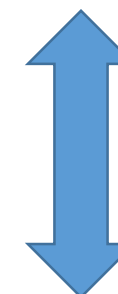
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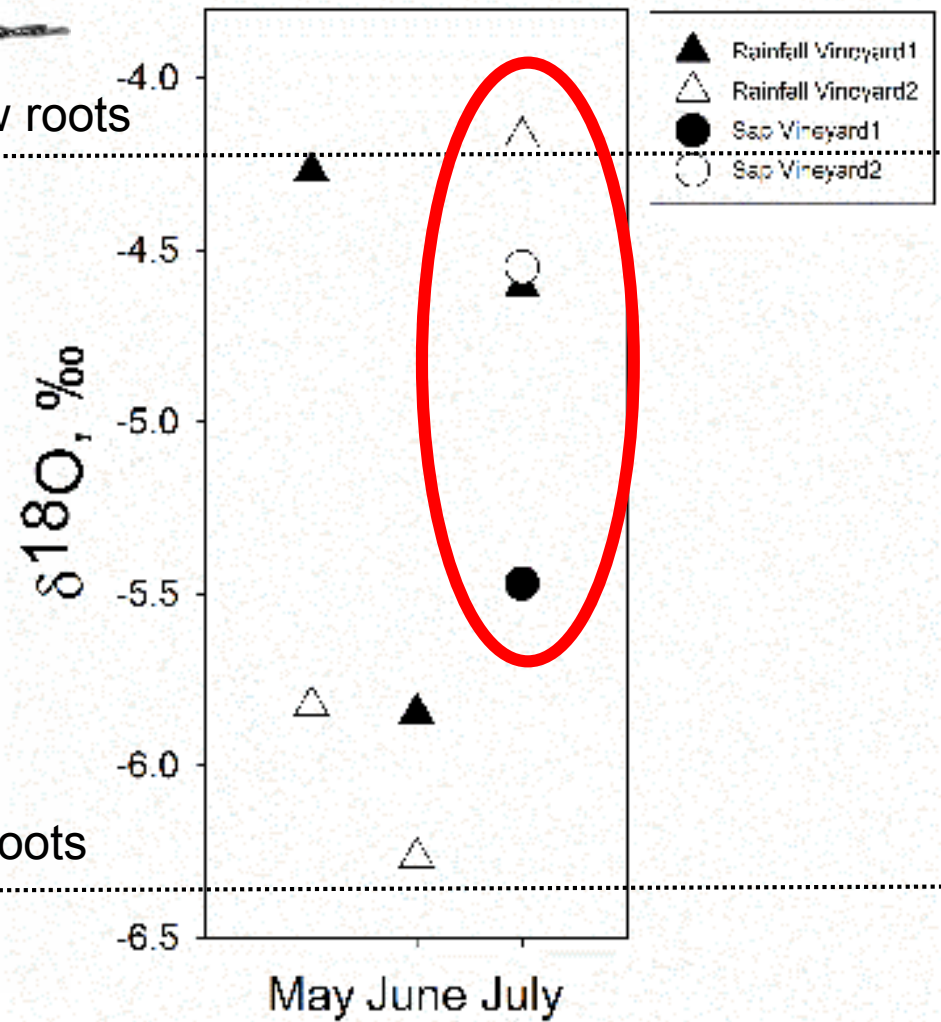


Karst has heterogeneous climate/substrate



Different root depth?





Thank you for your attention

