



Climatic and Morphological Variability in Alpine Viticulture: Effects on Nebbiolo Production in Valtellina

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VIII. International Congress

Mountain and Steep Slopes Viticulture

Montreaux – Switzerland 6 – 8 May 2026

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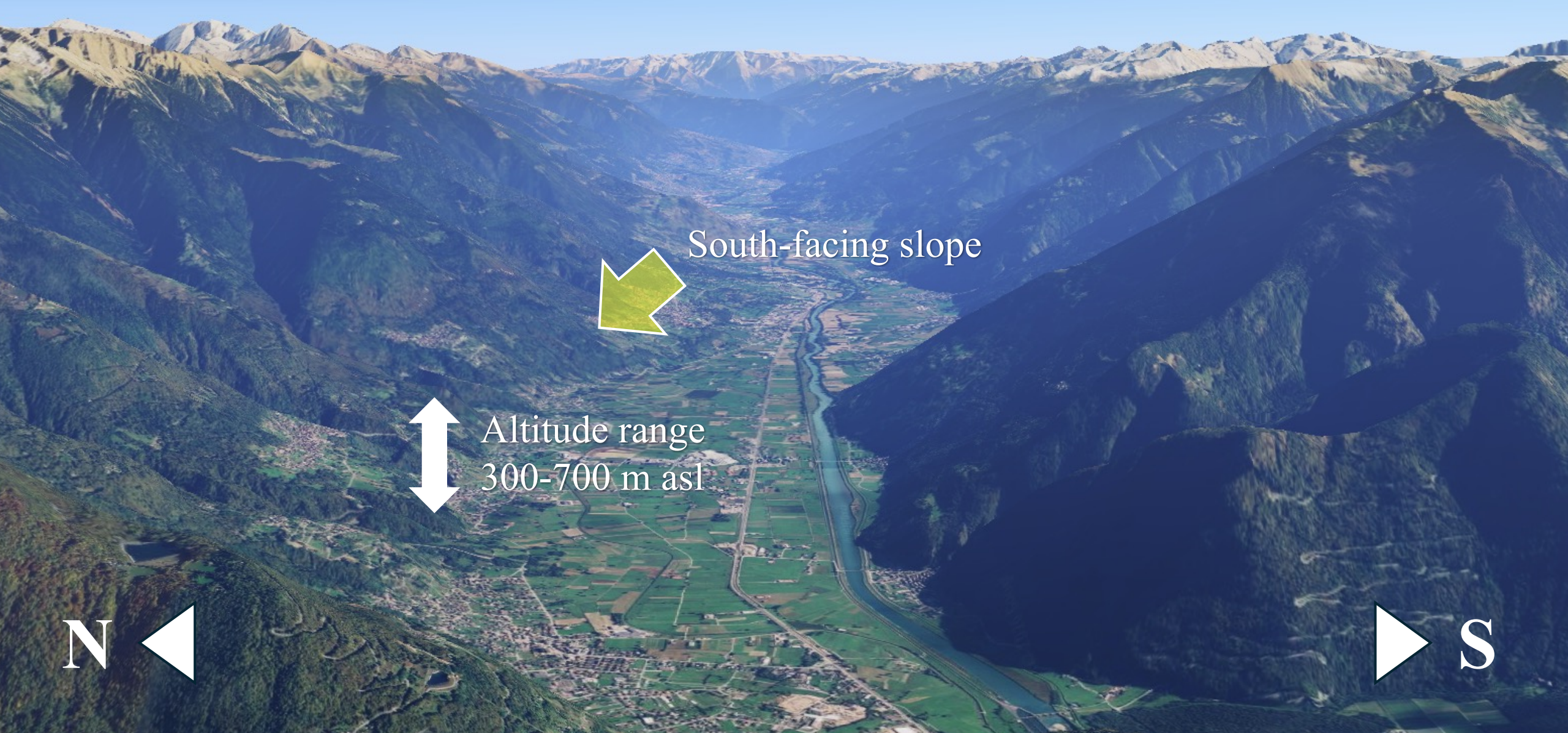
2



Valtellina



Viticulture in Valtellina



South-facing slope



Altitude range
300-700 m asl

N

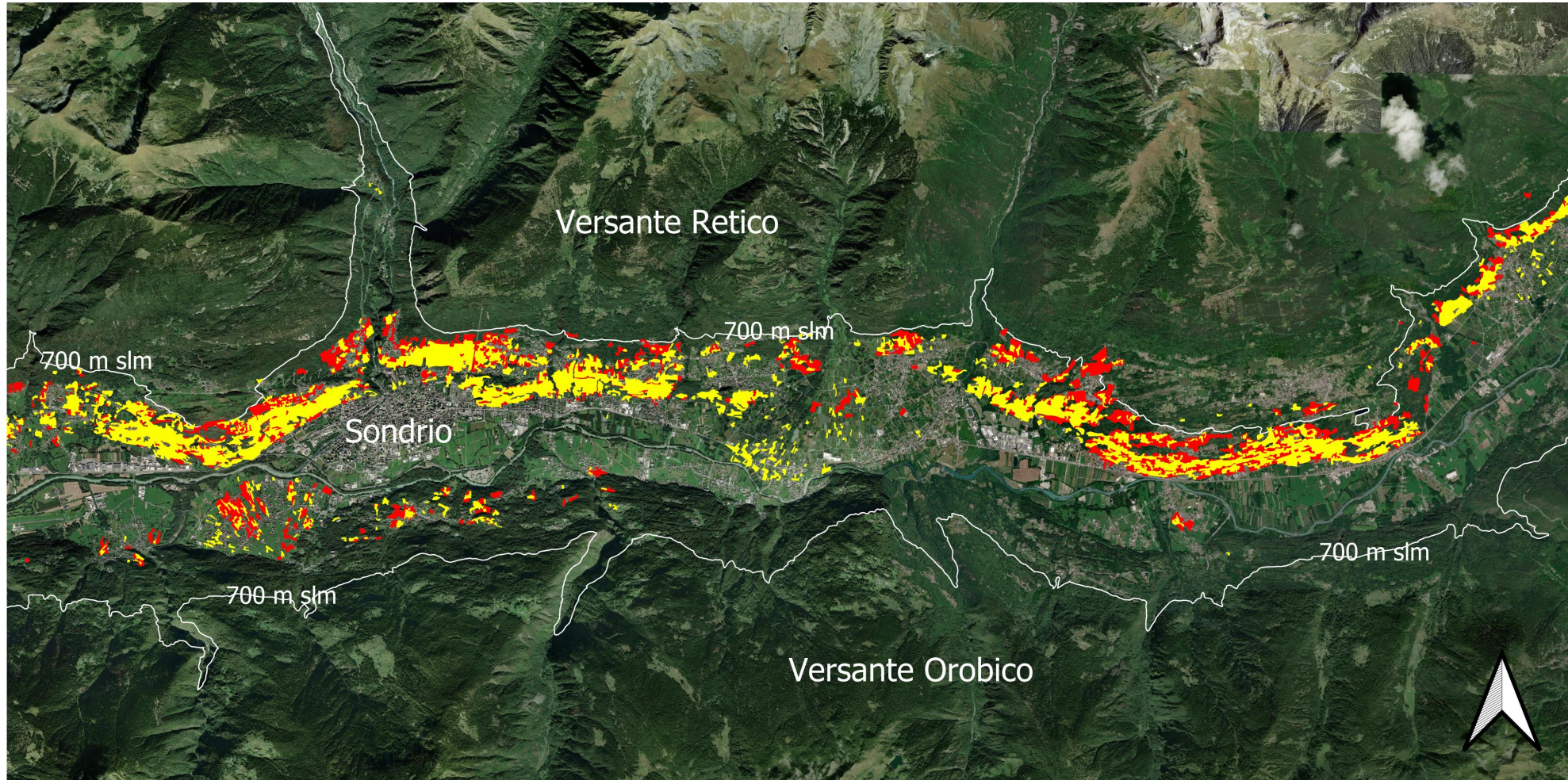


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Viticulture in Valtellina



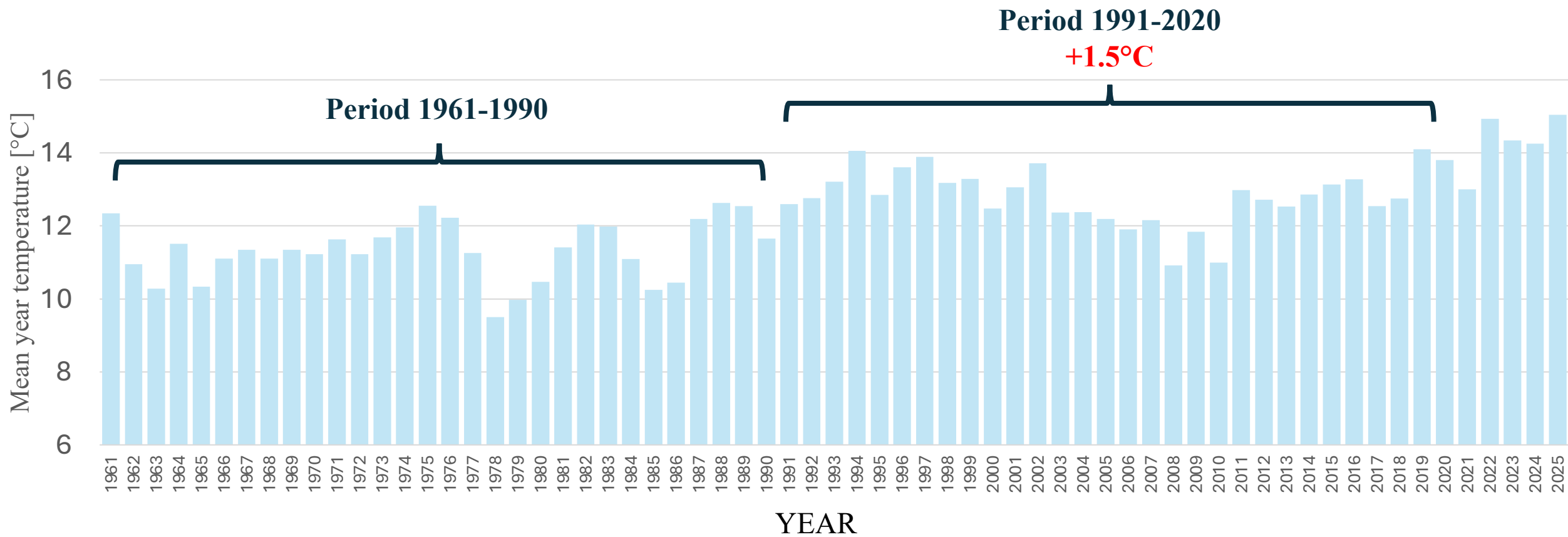
Vineyard evolution



 Vineyards in 2021

 Vineyards abandoned between 2001-2021

Climatic trend



Experiment 1



Aim: to assess the effect of temperature and elevation on grape ripening



Variety: Nebbiolo (Chiavennasca)



Vineyards: 15 ranging between 300-700 m asl



Period: 2001-2021 (21 years)

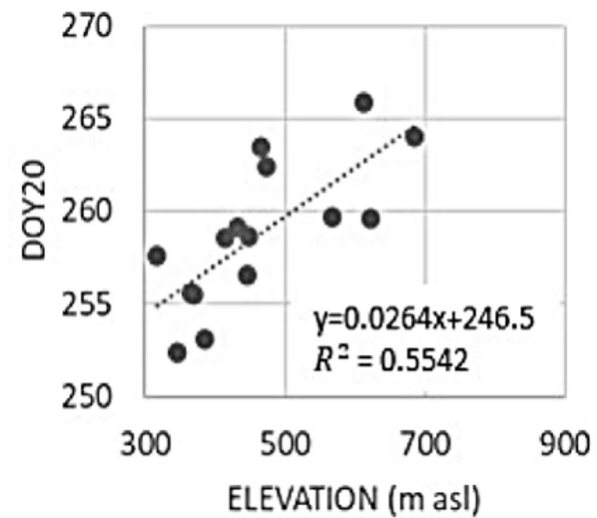
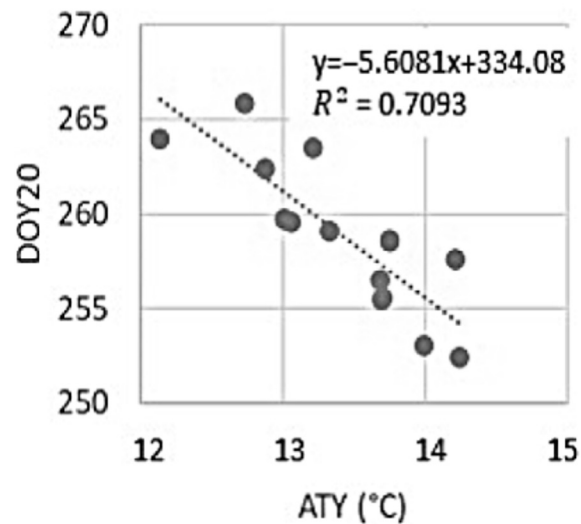


Analyzed parameters: ripening curves (TSS, TA, pH)

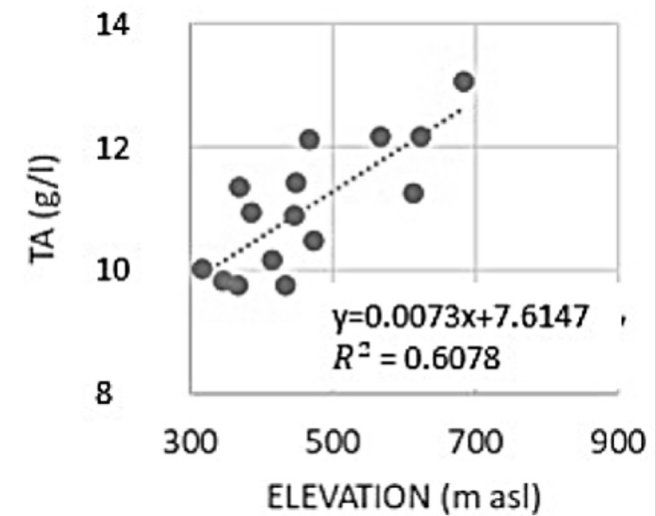
Grape ripening



The day reaching 20°Bx



Total acidity at 20°Bx



Temperature [°C]

Elevation [m asl]

Experiment 2



Aim: to investigate longitudinal and altitudinal effect on grapes and wines



Variety: Nebbiolo (Chiavennasca)



Vineyards: 9 distributed in 3 altimetric cross-sections



Period: 2023-2024



Analyzed parameters: grape production and quality, micro-vinifications

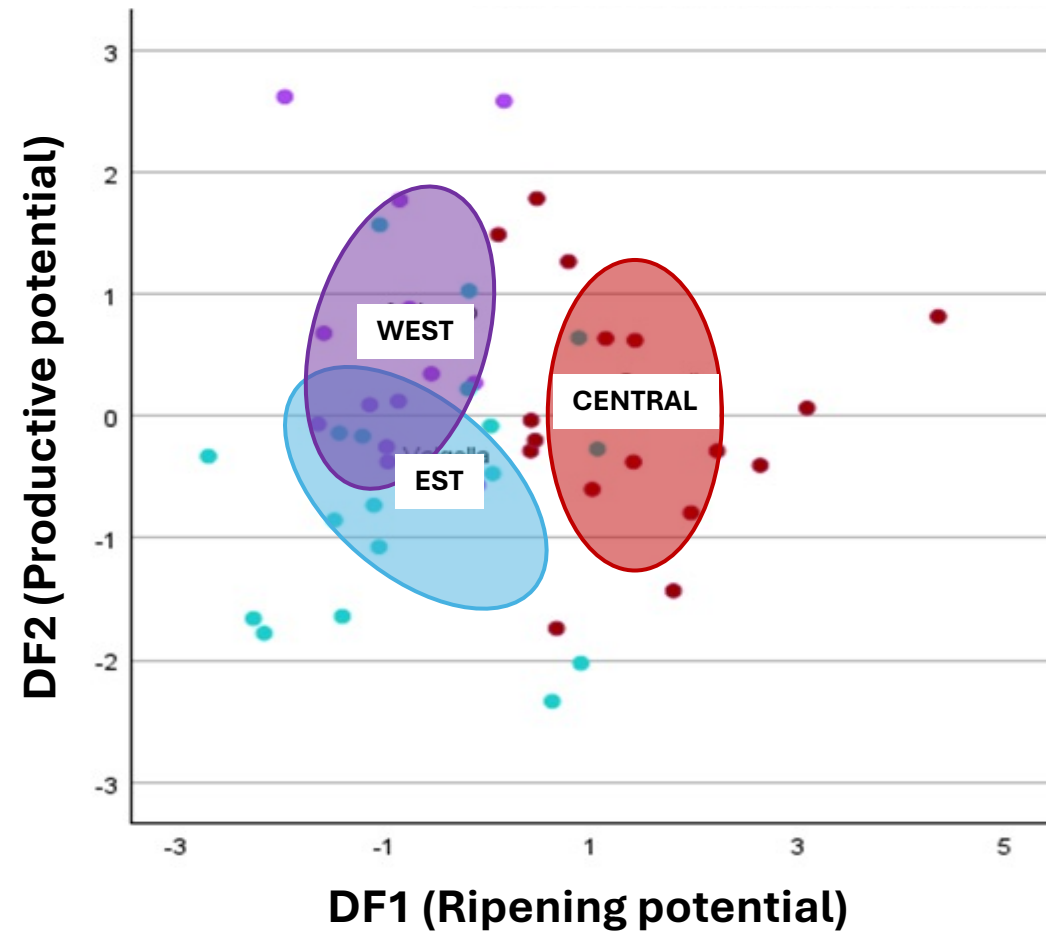
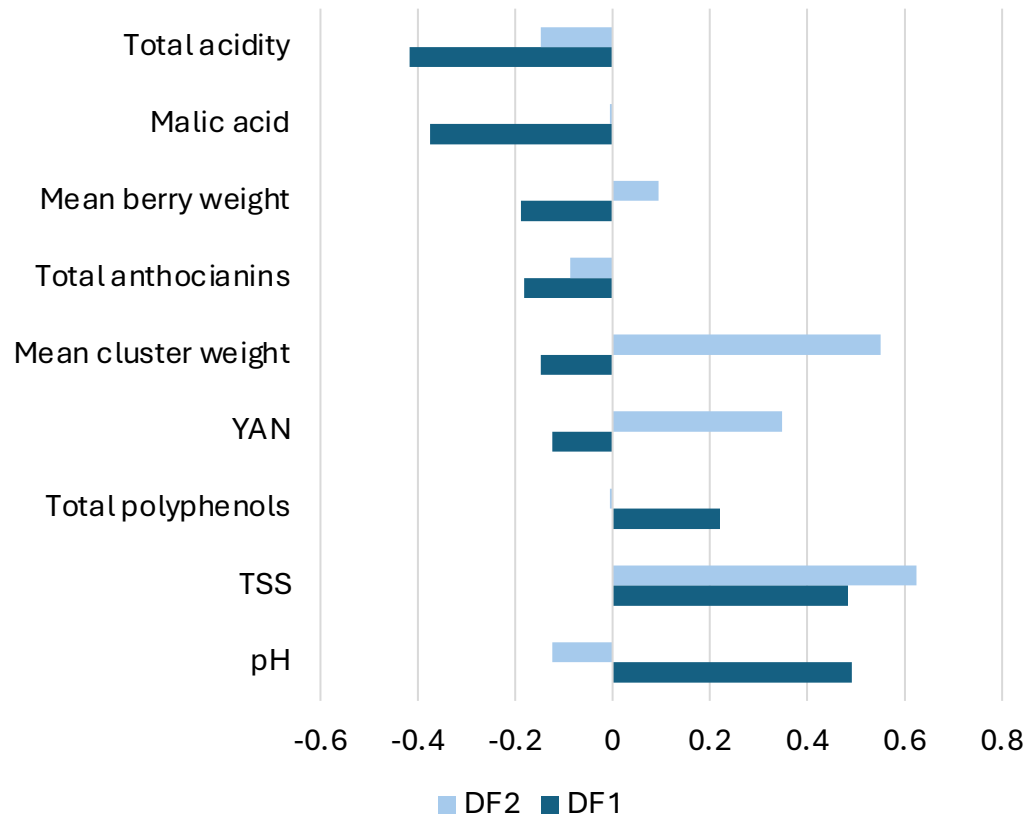
Altimetric cross-sections



Linear Discriminant Analysis (LDA)



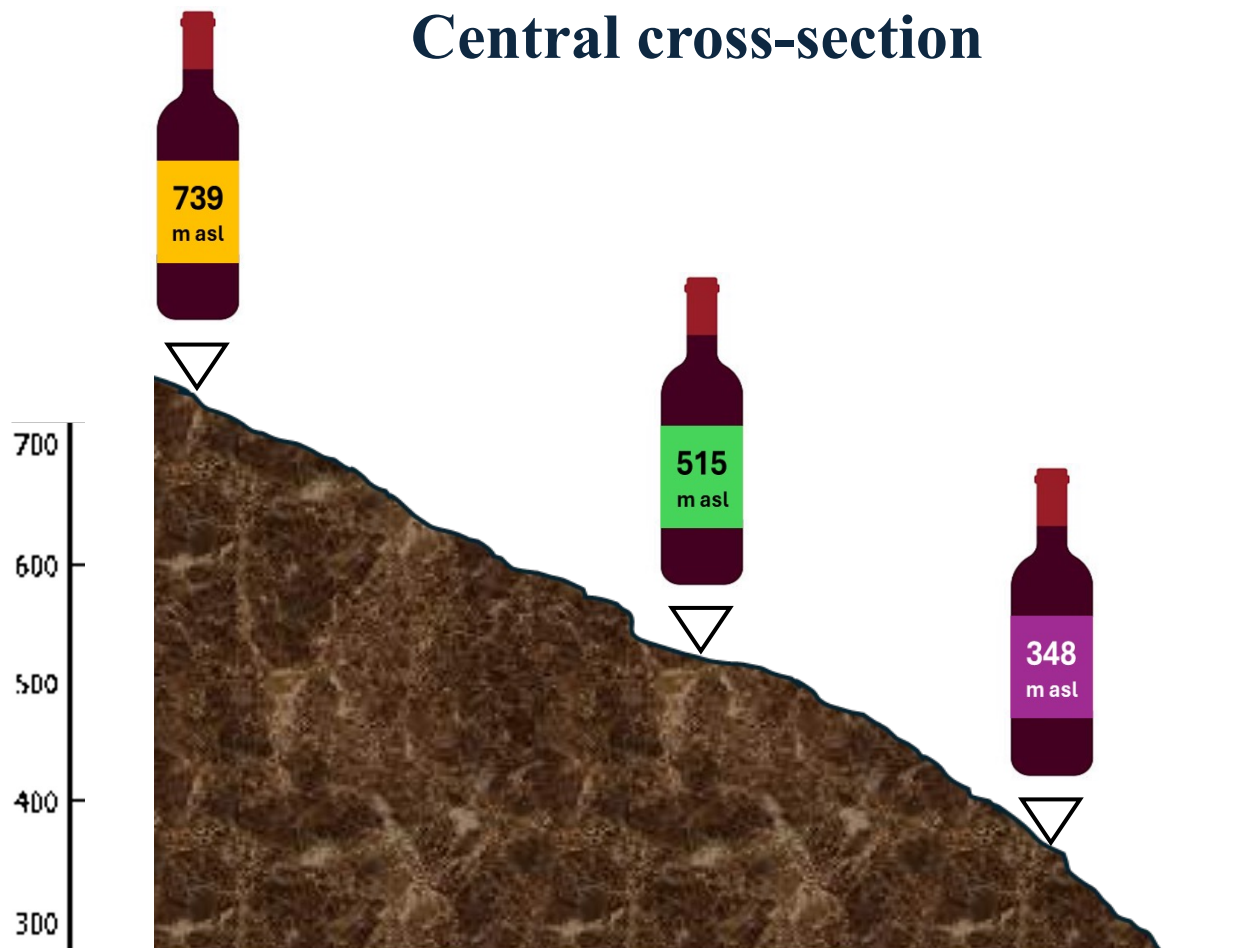
LDA Structure Matrix



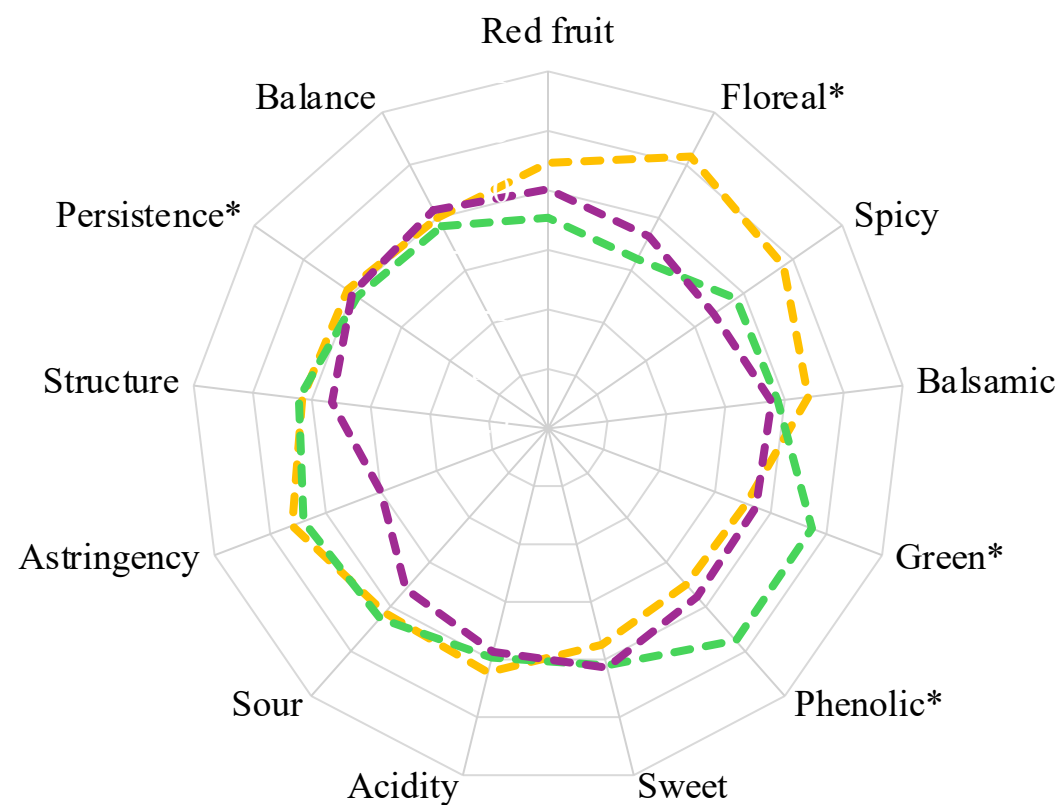
Elevation and sensory profiles



Central cross-section

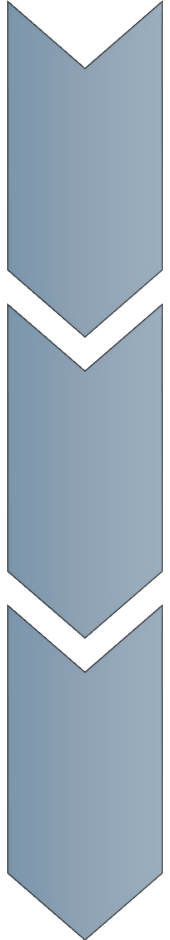


Sensory profiles

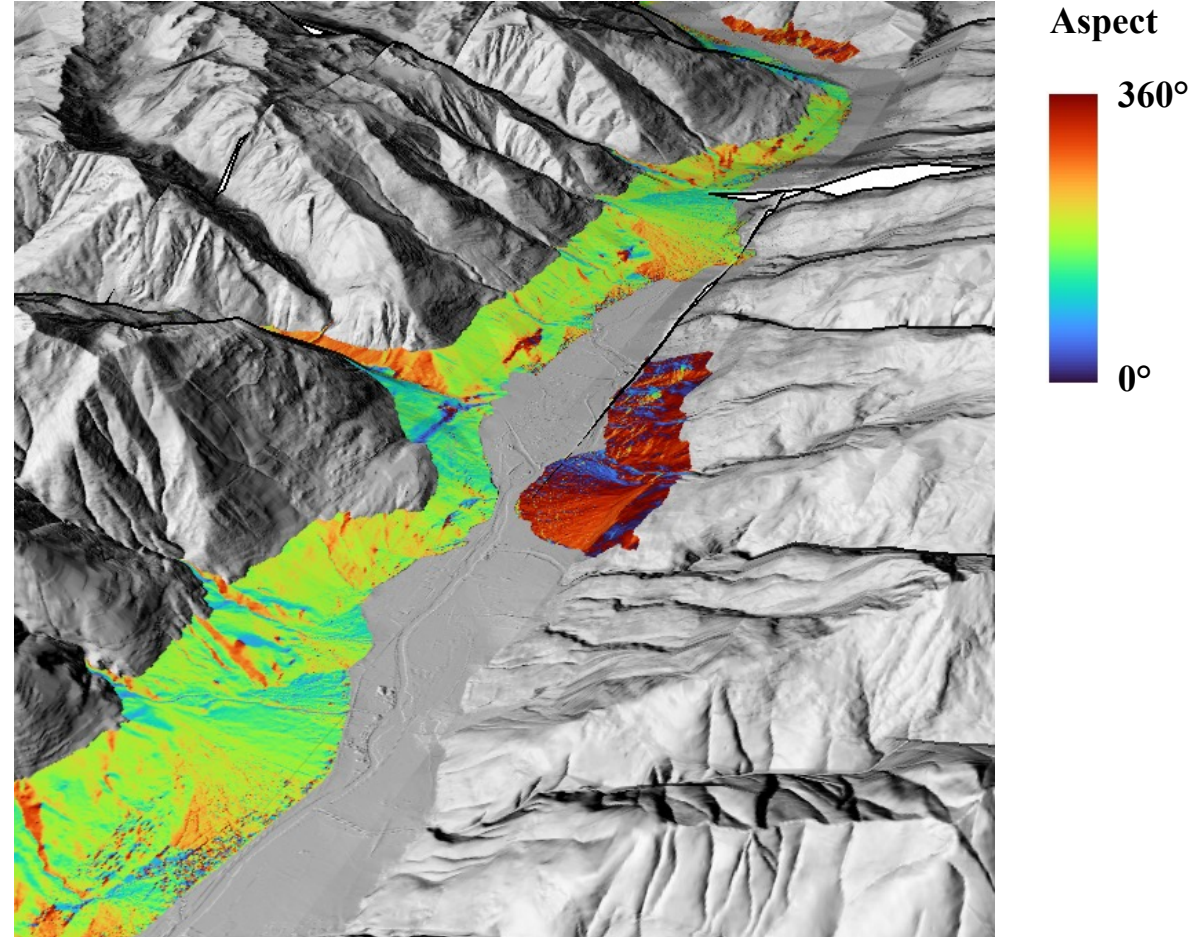


--- 739 m asl --- 515 m asl --- 348 m als

Perspectives



- to define homogeneous morphological **sub-zones** (Additional Geographical Units – UGAs);
- to validate UGAs on 20 reference Nebbiolo vineyards
- to integrate emerging climatic and market trends;



Contacts



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