

Worldwide Perspectives on Geographical Indications Montpellier. France – 5 to 8 of July, 2022



Food and Agriculture
Organization of the
United Nations



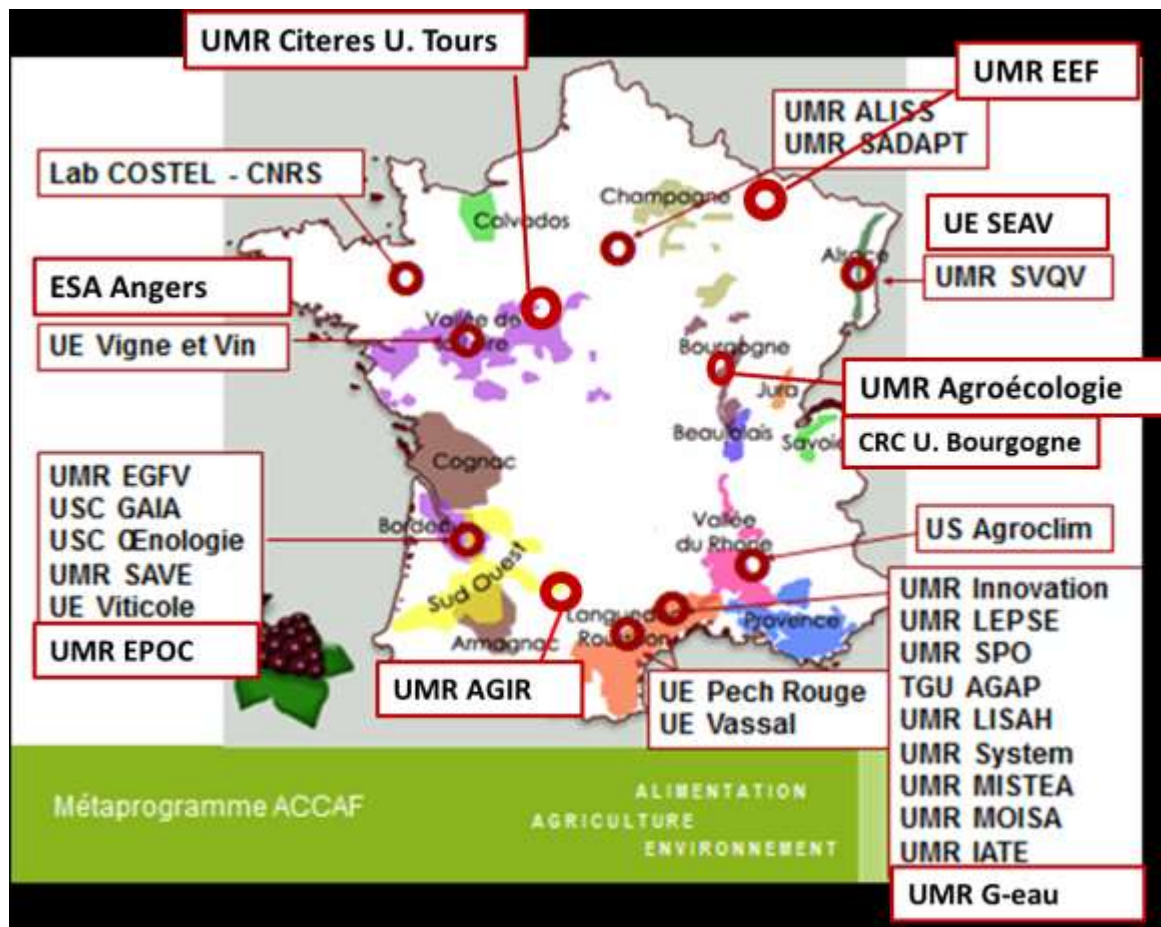
Terroir wines facing climate change: No future or New Morning ?

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Impacts of climate change on vine and wine in France Innovations and solutions for adaptation in the wine industry



Involving the main French wine regions

28 research units

100 researchers and PhD students

Partnership : FranceAgrimer, INAO, IFV, APCA

Interdisciplinary project

climatology

génétic

Enology

agronomy

soil sciences

geography

économics

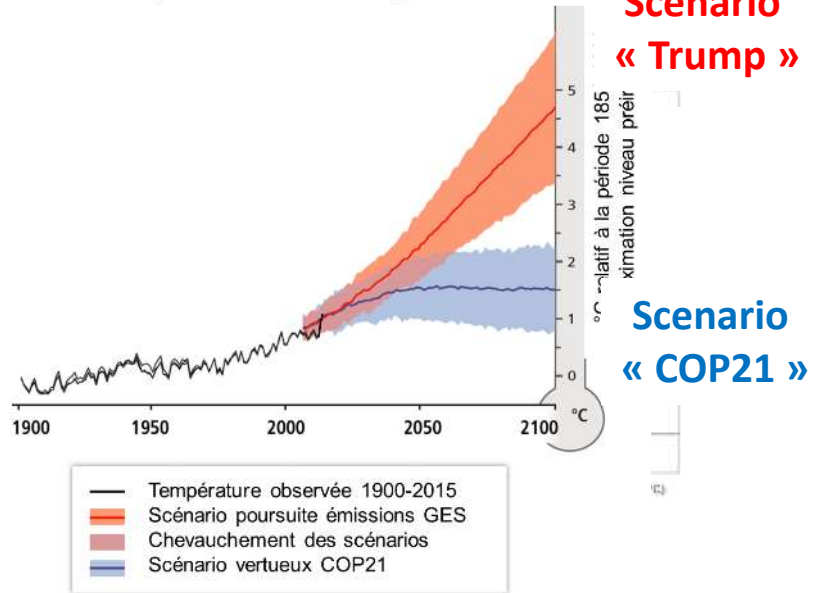
sociology

Data sciences

www.inrae.fr/laccave

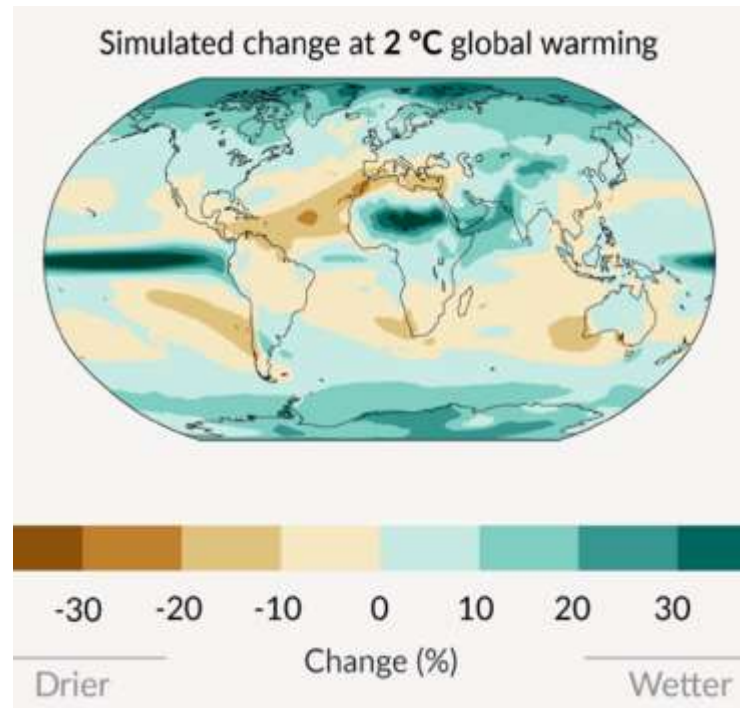
Climate change : « new » issue for viticulture

Evolution de la température moyenne de la surface du globe
(GIEC 2013 et NCDC 2016)



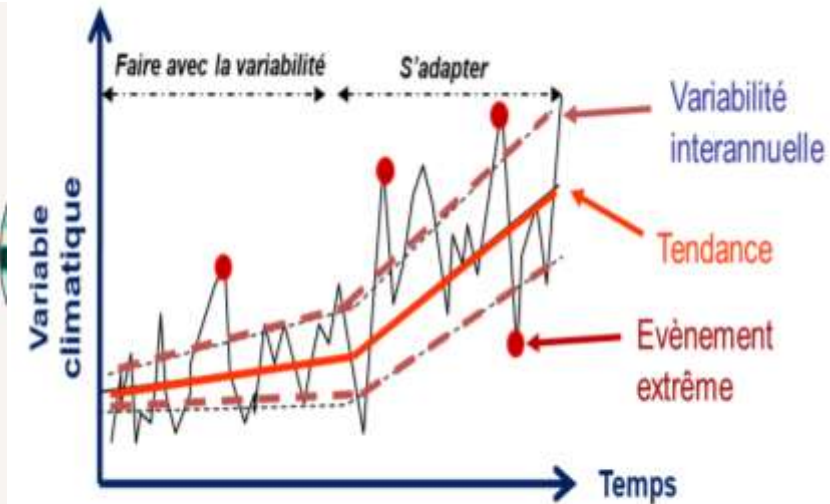
increase of the average annual temperature :

- + 1,1°C at the global level
- + 2°C in Mainland France !



Little change in annual rainfall, but...

a future decrease in the south especially for the summer period



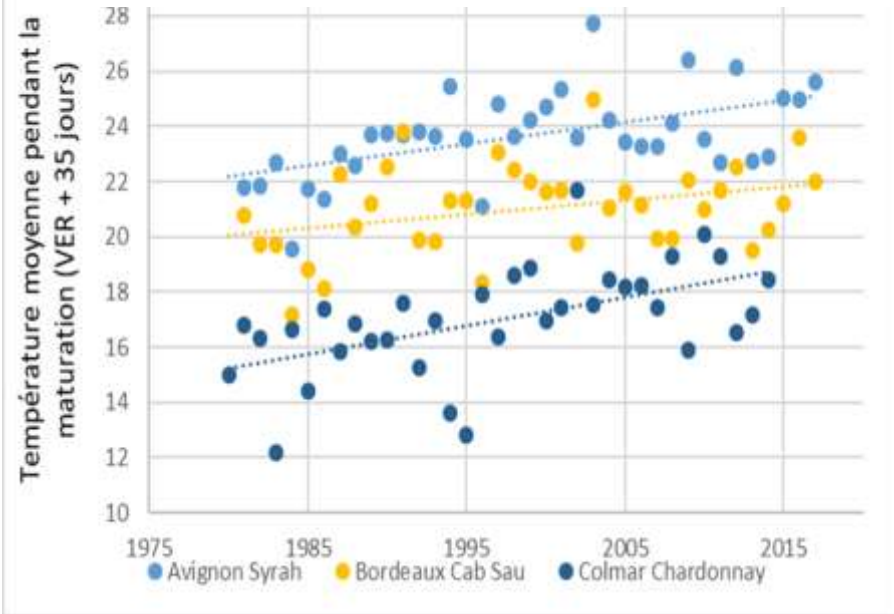
- ✓ S'adapter à une tendance de fond
- ✓ Réduire la vulnérabilité à la variabilité interannuelle probablement croissante

Increased climate variability

extreme weather events
heat waves
violent rains
unprecedented sequences

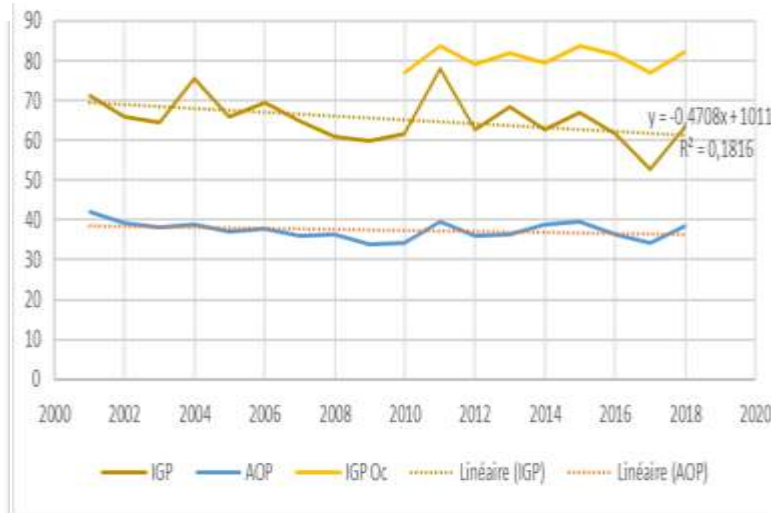
Climate Change Impacts on Vine and Wine (1)

Amplification of the temperature increase for grape ripening

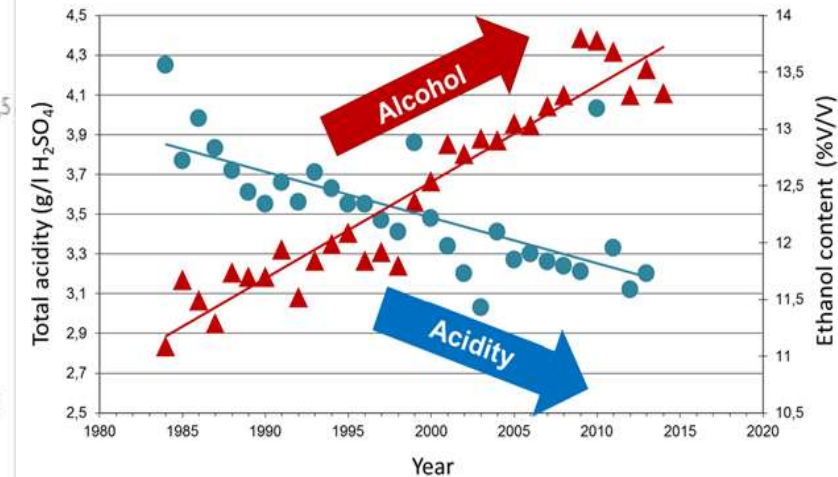


Earlier phenological stages
Earlier budburst (risk of frost)
Early harvest of nearly 3 weeks

Yield decrease for Languedoc Wine AOP

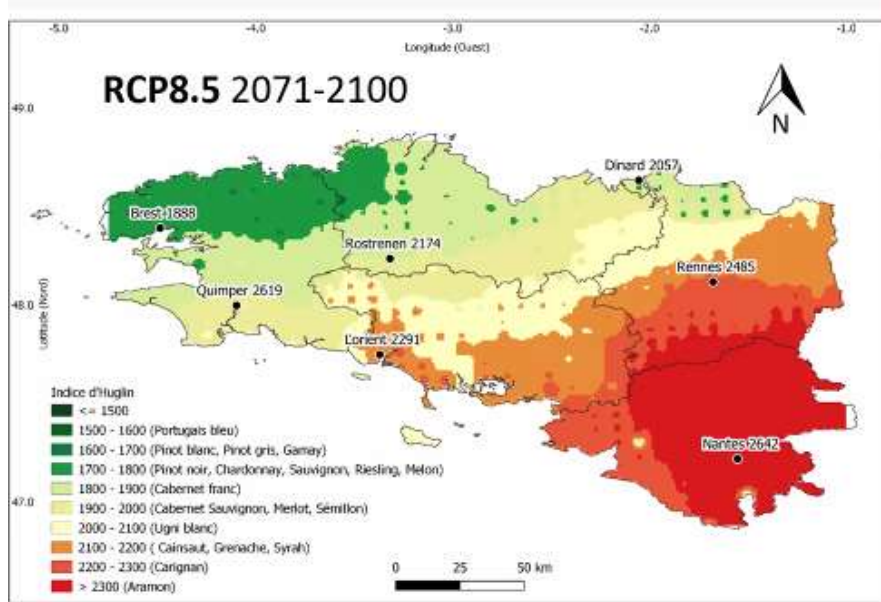


Increased water stress
Higher transpiration of the plant and less summer rain (in the south)
Impacts on yield and quality



Evolution of the wine quality
Increase in alcohol content
Decrease in acidity
Modification of the aromas

Climate Change Impacts on Vine and Wine (2)



Evolution of regions favorable to viticulture

New opportunities in Northern Europe
and on high altitude plots

Difficulties for vineyards in the south of
the Mediterranean



Many indirect impacts

Biogressors

Ecosystems and soil functioning

Landscapes and fire

Water resources (for irrigation)

Sea level rise (salinization) du sol

Component of the terroir !



Increased climate risks

Loss of crops or vines

Erosion damage to plots

Loss of competitiveness

First conclusion

Climate Change modify the qualities of the products, their variability, their image and conditions of competition : **their links to the territory.**
...

It calls into question the economic model of GI products:

- Intrinsic and extrinsic characteristics of the products that consumers may recognize
- the volumes, costs and margins of producers;
- the management of local resources;
- the zoning and GI institutions (code of practices...)

No Future for Gis ?

No future for a conservative GI pathway !



Many areas of adaptation are possible, studied by researchers and experimented by wine growers (1)



Changing grape variety/rootstock

Later, tolerant to drought and high temperatures, resistant to diseases...

Clones, "old forgotten varieties", varieties from other regions, varietal creation (ex Resdur Inrae)...

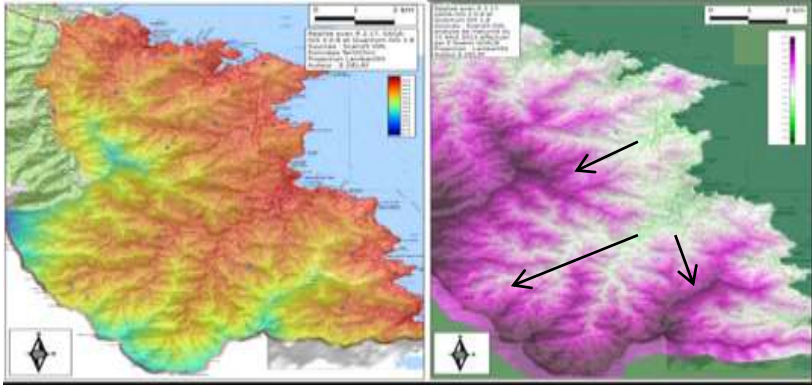
New viticultural practices

pruning and canopy management
soil management (organic matter, cover)
precision and responsible irrigation
agroforestry, ecological infrastructures
digital viticulture

Oenological innovations

de-alcoholization
adjustment of acidity
choice of yeast
cold control...

Many areas of adaptation are possible, studied by researchers and experimented by wine growers (2)



change the location of vineyards

Soil selection

Altitude, zoning modification

Creation of new plantations
(e.g. Brittany)



Change the institutions

Revision of specifications

New insurance schemes

Climate policies

New R&D collaborations



Involving consumers

Acceptance of impacts on quality

Acceptance of innovation

share issues and strategies

associate mitigation actions

Second conclusion

Many solutions can be combined in strategies, at different scales, and above all at local scale

...

But, a highly innovative adaptation strategy would result in an **artificialization of production systems** that will **reduce the links to territorial resources** and would not necessarily be accepted by the consumers

It also calls into question the economic model of GI products !

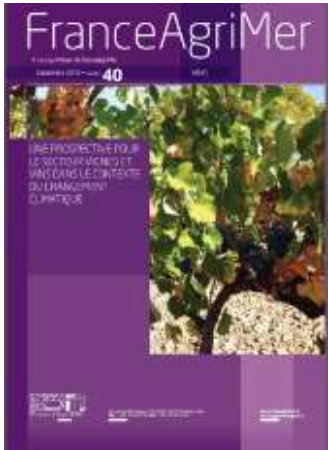
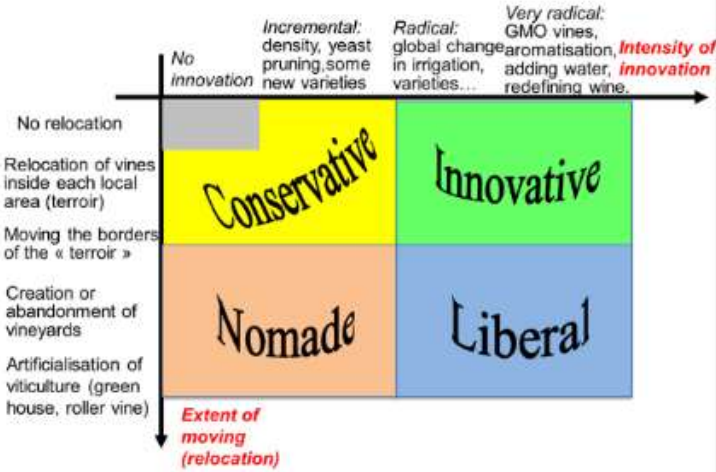
No Future for Gis ?

No future for an artificialization pathway !

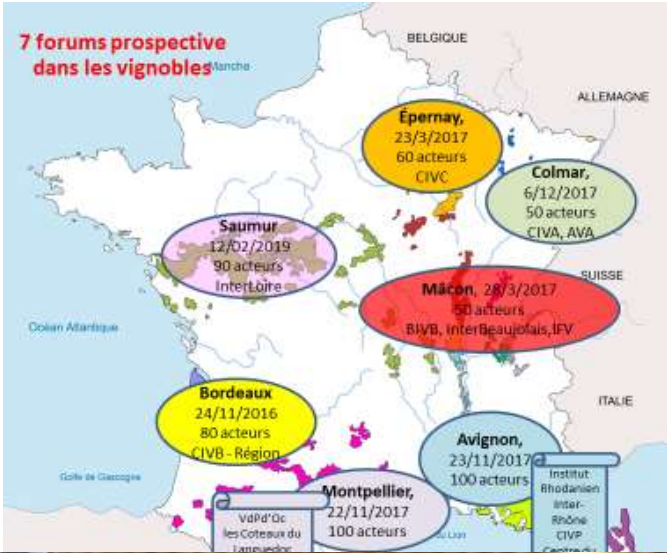


A third way desired and already engaged by the wine growers (1)

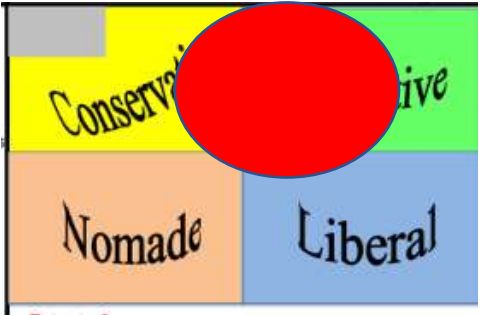
4 scenarios built by an expert group (2016)



Participatory forum in 7 wine regions
550 participants



73% vote for “innovation to stay in my terroir”



2650 propositions of action

A third way desired and already engaged by the wine growers (2)



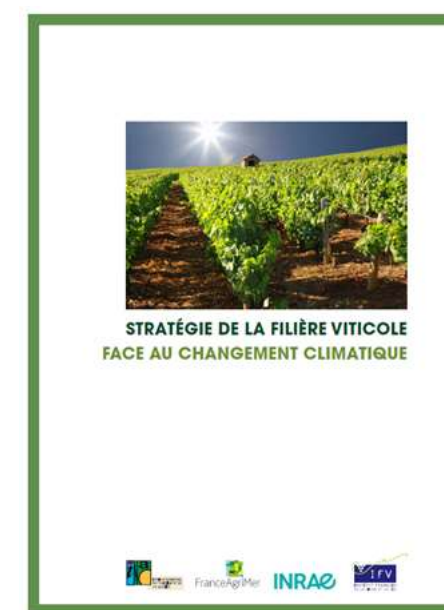
Local creative event
24 hours for solutions
Multi-stakeholders Creation of solutions in wine villages
Murviel lès Montpellier, Montpeyroux, Cabrières



Co-construction of regional AOP strategies
Appellations Ventoux, Val de Loire, Languedoc...



Prospective et forums régionaux LACCAVE
Aquitaine, Languedoc, Vallée du Rhône, Alsace, Champagne, Bourgogne, Val de Loire



Construction d'une stratégie Nationale avec INAO, IFV, FranceAgrimer

Worldwide perspectives on GIs

General conclusion

A third way (**new morning**) for GI is possible under a set of conditions:

- the **most moderate global warming**, close to the COP21 targets !
- Redefinition of the principles of GI product, moving from a conservative to a procedural definition, promoting a specific quality based on **adaptive management of local resources**
- Inclusion of **mitigation actions** in both GI specification and voluntary actions
- The evolution of **consumer's incomes and food patterns**
- The development of **participatory R&D projects** in GI sectors
- A new "**engineering of GI products**", combining skills in diagnosis, spatial analysis, climate simulation and adaptive management of local projects.

Général conclusion : the ten messages from the LACCAVE project (1)

- 1. The impacts of climate change are intensifying on vineyards**, even if these impacts are rather beneficial for northern . The sustainability of French viticulture is threatened, as is that of many vineyards around the world
- 2. Solutions for adaptation are possible in all French vineyard...**
if the increase in (global) average temperature is contained to less than 2°C
- 3. The conservation and improvement of vineyard soils is an emergency** to promote the resilience of vineyards, combining controlled grassing, contribution of organic matter (compost, shreds, eco-paturation ...), anti-erosion developments ...
- 4. The renewal and diversification of plant material is also a major option (...)** For this, genetic research must be pursued, but conservatories, individual or collective trials, observation networks must be supported (...).
- 5. Water management must be thought of in a systemic way** by playing on the management of the terroirs which regulate the circulation of water and its recharge from winter rains. Precision irrigation can be used to control the water status of the vines, but its generalization is neither possible nor desirable

The ten messages from the LACCAVE project (2)

6. The spatial heterogeneity of a terroir is a key resource for adaptation, which requires new knowledge (...). The management of fires, ecosystems and landscapes calls for governance that is open to other stakeholders. Climate change calls for a new engineering of vineyard territories.

7. There are already ways to adapt winemaking to limit the effects of climate change (...) but systemic and applied research on new grape varieties is still needed.

8. Taking into account the consumers is essential to know their preferences regarding the evolution of the wines or the innovations of the adaptation, and to involve them in the implemented strategies

9. Climate risks are disrupting economic strategies. Insurance must be associated with public or mutualized support and investments, prevention, and efficient information systems.

10. The wine industry must contribute to climate change mitigation by reducing its emissions and capturing carbon. The opportunities are numerous and consumers are sensitive to this commitment (...)

The major challenge is to design and evaluate the combinations of adaptation levers, by mobilizing systemic and participatory approaches to build strategies at different scales of action