Deliverable 5.1: Project website

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[1] Dissemination level: **PU** = Public, **PP** = Restricted to other programme participants (including the JU), **RE** = Restricted to a group specified by the consortium, **CO** = Confidential, only for members of the consortium

[2] Nature of the deliverable: **R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

Version history

Document Version	Date	Author	Comments[3]
0.1	03-07-17	Maha AL-SALEHI (SEMIDE)	Creation based on the ToR for the website structure.
0.2	19-07-17	Maria Navarro (METEOSIM), Nube Gonzalez (BSC)	Modification
0.3	27-07-17	Joan Girona (IRTA)	Modification
1	31-07-17	Maha AL-SALEHI (SEMIDE)	Final
Final	07-08-17	Maria Navarro (METEOSIM)	Final Review

Deliverable abstract

The current document presents the specifications of VISCA project website, the different sections it contains and contents. The outline of the website was previously suggested by SEMIDE and reviewed by VISCA partners.

The URL of the website is (www.visca.eu), and it has the purpose of disseminating information about the project objectives, the involved partners, demonstration, technology, dissemination activities and other relevant information related to the project.

The targeted audience of the document is the project consortium (partners), in order to ease the plan for their contribution to the website's content.

[3] Creation, modification, final version for evaluation, revised version following evaluation, final.

List of acronyms and abbreviations

AEMO: Spanish Oliva Association

COTOLIVA: Olive Oil Organisation

DELTAMED: Mediterranean Deltas Association

EC: European Commission

EEA: European Environmental Agency

INNOVI: Catalan Wine Cluster

IOC: International Oil Council

JRC: Joint Research Centre

OIV: International Wine Association

PTV: Plataforma Tecnológica del Vino

R&I: Research and Innovation

ToR: Terms of Reference

UNEP: United Nations Environmental Programme

WMO: World Meteorological Organisation

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1. VISCA project overview

Climate change is threatening different varieties of agriculture species, being wine-grapes especially sensitive to subtle differences in micro-climate impacts causing changes in the crops (i.e. decrease of the grape quality and quantity, changes in alcohol, acid, sugar, etc.), which directly affects the European wine industry.

VISCA 'Vineyards´ Integrated Smart Climate Application' is an R&I project co-funded under the Horizon 2020 programme for a period of 3 years starting from May 2017. VISCA consortium is led by Meteosim and is composed of 11 members from different fields including end-users (Codorniu, Mastroberardino and Symington).

VISCA will provide a Climate Service (CS) and Decision Support System (DSS) that integrates climate, agricultural and end-users´ specifications in order to design medium- and long-term adaptation strategies to climate change. The project will be validated by real demonstrations with end-users, who are included in the consortium, on three demo sites in Spain, Italy and Portugal.

The main objective of VISCA is making European wine industries resilient to climate changes, minimizing costs and risks through an improvement of the production management (quality and quantity of final product), while evaluating its replicability to other high-added value agriculture sectors. The integration of climatic and phenological data supplied by 3 demo core groups into a DSS tool - co-designed with relevant South-European wine companies - capable of supplying well-founded decisions for an appropriate crop planning (i.e. prunning, ripening, harvesting, fertilization, pest-control, etc.), with the ultimate goal of making the wine production industry resilient to effects due to climate change. The objectives to be achieved:

- Development of a tool that supplies climate-informed decisions to the wine industry
- Demonstration of the strategic adaptation decisions supplied by this tool in 3 areas where wine business is most sensitive to climate change (Spain, Italy and Portugal)
- Definition of an action plan to tackle barriers and opportunities derived from the full deployment of VISCA on the 3 demo areas.
- Evaluation of the replicability potential in other relevant sectors (forestry, food security, etc.) at international level

2. Objectives

The objective is to develop the website of VISCA project using a content management system for easy updating by the project partners.

The website will be used to:

- Disseminate information on the project implementation and results to the different stakeholders from various EU countries and beyond
- Actively engage the stakeholders in some activities (e.g. workshops) and future use of the VISCA solutions
- Share document among project partners, advisory board members and the European Commission. (The intranet will be developed by METEOSIM; however, a link will be integrated in the public website with a limited access to the partners only.).

The website must be ready to multilingual operation (i.e. interfaces and content in different languages), but it will be set-up in English, first. Additional languages might be added by users at a later stage.

3. Website structure and content

The proposed structure of the home page is as follows:

Table 1 VISCA website structure

Homepage	The project	Technology	Demonstration Sites	Dissemination	Contact us
VISCA Overview	**Background**	**Weather forecasting/ Extreme events**	**Spain**	**News**	
Latest News	**Objectives**	**Seasonal Forecasting**	**Italy**	**Events**	
Project Partners logos	**Partners**	**Climate projections**		**Promotional Materials**	
<tweets from @VISCA_H2020> Disclaimer, social media, Calendar, etc.	**Project Advisory Board**	**Phenological Treatments**	**Portugal**	**Press releases**	
		Irrigation Optimisation		**Publications and Scientific Articles**	

A domain name has been registered: www.visca.eu. The access to the 'private area' section is restricted to consortium partners only (where they can check, share, upload and download all the project documents, especially the working documents).

The contents of the public website will be as follows:

Homepage:

VISCA Overview

Small summary of the background and the project + Pictures: demo site, partners' group picture, etc.

"Climate change is threatening different varieties of agriculture species; the wine-grapes are especially sensitive to subtle differences in micro-climate impacts causing changes in the crops (i.e. decrease of the grape quality and quantity, changes in alcohol, acid, sugar, etc.) which directly affects the European wine industry.

VISCA 'Vineyards´ Integrated Smart Climate Application' is an R&I project co-funded under the Horizon 2020 programme with a total budget of 3.20 M. The project started officially in May 2017 for a period of 3 years. VISCA consortium is led by Meteosim and is composed of 11 members from different fields including end-users (Codorniu, Mastroberardino and Symington).

VISCA will provide a Climate Service (CS) and Decision Support System (DSS) that integrates climate, agricultural and end-users´ specifications in order to design medium- and long-term adaptation strategies to climate change. The project will be validated by real demonstrations with end-users, who are included in the consortium, on three demo sites in Spain, Italy and Portugal."

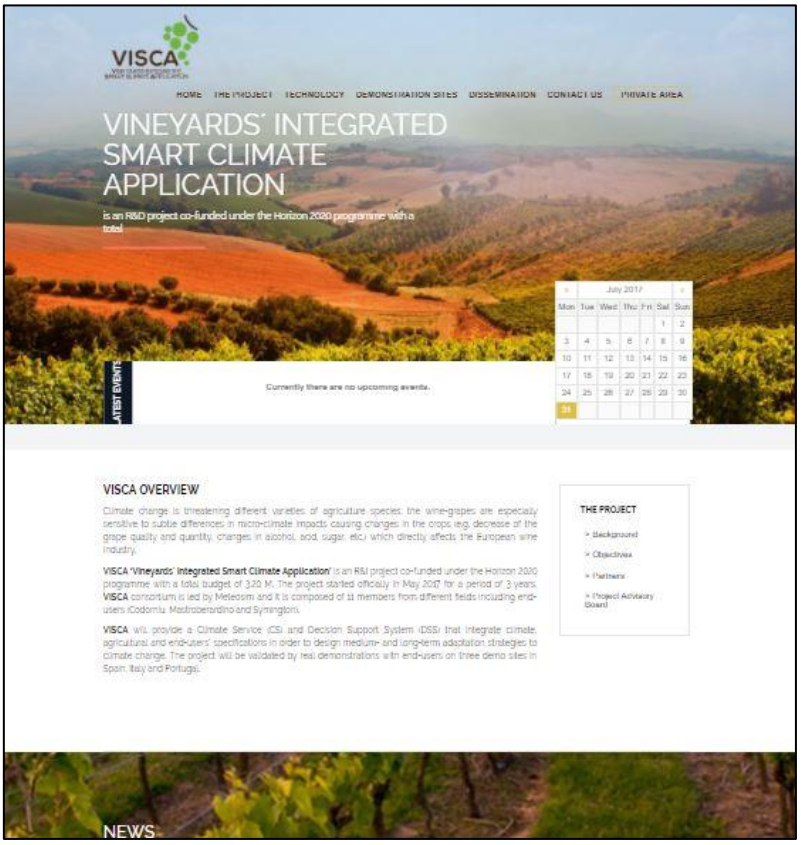

Figure 1 First version of VISCA website-homepage

News

It will be continuously updated (linked to the one in the dissemination)

Project partners' logos

Figure 2 Logos of VISCA partners

Calendar

The calendar will show the related events of interest registered by the website administrator.

Social Media+ Live twitter

Twitter (link)

Facebook (link)

LinkedIn (link)

Disclaimer

This project has received funding from the European Union's Horizon 2020 Research and Innovation Action programme under grant agreement no. 730253.

The project:

Background

"Agriculture is a highly dependent sector on heat, sunlight and water, and therefore very sensitive to climate change. According to the current climate projections, weather events worldwide are very likely to become more extreme and frequent. In Europe, Southern countries will be frequently affected by heat waves, therefore making this region more vulnerable to droughts and wildfires, which will lead to economic, environmental, and even human losses. In addition, Mediterranean countries are prone to undergo hydrological resources´ decrease, due to climate modification (lower precipitation rates) and demographic concentration changes. On the other hand, extreme precipitations will occur especially

in the central and northern parts of Europe, giving rise to floods, resulting in a decrease of water quantity and quality due to the fact that hydrological systems will be altered, which may also decrease the water availability in the surrounding regions.

Grape production is not different from the rest of agricultural activity, and they are likewise inherently interconnected to climate and weather, and, although grapes may grow worldwide, premium wine-grape production occurs in Mediterranean-like climate ranges. Changes in climate and weather patterns are threatening premium wine-grapes (i.e. decrease of the grape quality and quantity, undesirable changes in alcohol production, and acid and sugar concentrations), directly affecting the European wine industry. This is because grapevines are extremely sensitive to their surrounding environment, with seasonal variations in yield much higher than other common crops, such as cereals.

With a view to making South European wine industry resilient to climate change, VISCA intends to deploy a climate service tool that will provide wine producers with well-founded information to be able to apply correctly adaptation strategies on specific grape varieties and locations, to achieve optimum production results (yield, quantity). It will be validated by real demonstration with end-users on three demo sites belonging to wine stakeholders from Spain, Italy and Portugal, which are likewise partners in the consortium: Codorniu, Mastroberardino and Symington."

Objectives

"The main objective of VISCA is making European wine industries resilient to climate changes, minimizing costs and risks through an improvement of the production management (quality and quantity of final product), while evaluating its replicability to other high-added value agriculture sectors. The integration of climatic and phenological data supplied by 3 demo core groups into a DSS tool - co-designed with relevant South-European wine companies - capable of supplying well-founded decisions for an appropriate crop planning (i.e. prunning, ripening, harvesting, fertilization, pest-control, etc.), with the ultimate goal of making the wine production industry resilient to effects due to climate change. The objectives to be achieved:

- *Development of a tool that supplies climate-informed decisions to the wine industry*
- *Demonstration of the strategic adaptation decisions supplied by this tool in 3 areas where wine business is most sensitive to climate change (Spain, Italy and Portugal)*
- *Definition of an action plan to tackle barriers and opportunities derived from the full deployment of VISCA on the 3 demo areas.*
- *Evaluation of the replicability potential in other relevant sectors (forestry, food security, etc.) at international level."*

Partners

Table 2 VISCA partners (logos, description)

Partner	Description
METEOSIM Website: www.meteosim.com	A company specialised in meteorological and environmental services, which operates worldwide using the most advanced numerical modelling tools. The combination of its solid scientific background, the extensive meteorological knowledge and its customers-results improvement approach, enables the company to create customised technology solutions that facilitate decision-making, both in terms of sustainability and operational excellence. Meteosim was founded in 2003 as a spin-off from the alliance between researchers from the Department of Astronomy and Meteorology of the Faculty of Physics at the University of Barcelona (Spain) and the American company Meso Inc. (New York), which enjoys worldwide recognition in the field of meteorology. The main business areas are: Climate change and resilience: It covers areas such as water resources, transport infrastructure (roads, bridges, ports, etc.) and a whole range of economic activities. Risk management: Developing early warning systems (EWS) and solutions to respond to various problems related to risks and emergencies, in order to support the decision-making process: Chemical risks, Fire risks, Oil spill risks, etc. Metocean services: Preparation of climate studies and marine forecasting tools which support the different phases of a project or operation. Applied Meteorology: Comprehensive methodology to adapt meteorological models to each geographical area, by striving for the optimal physical configuration, improving the physiographic databases (uses of land, topography, etc.), and integrating observational data. Air quality: Extensive know-how in the field of air quality and meteorology providing services worldwide to public authorities and private companies
Barcelona Supercomputing Center (BSC) www.bsc.es	Barcelona Supercomputing Center is the national supercomputing center in Spain. BSC specialises in High Performance Computing (HPC) and its mission is two-fold: to provide infrastructure and supercomputing services to European scientists, and to generate knowledge and technology to transfer to business and society. The center is comprised of four different departments, which are

Partner	Description
	Computer Sciences, Life Sciences, Earth Sciences and Computational Applications in Science and Engineering. BSC is a Severo Ochoa Center of Excellence and a first-level hosting member of the European research infrastructure PRACE (Partnership for Advanced Computing in Europe). It also manages the Spanish Supercomputing Network (RES). The mission of the Earth Sciences Department is to perform research and develop methods for environmental forecasting, with a particular focus on the atmosphere-ocean-biosphere system. By combining highly qualified researchers, impact modelers and software developers, BSC-ES also works with a range of end-users to ensure that knowledge and technology transfer support the main societal challenges through the use of models and the efficient use of High Performance Computing (HPC) and Big Data technologies. The Earth Sciences Department is structured around four main pillars: two basic research groups (Climate Prediction, CP, and Atmospheric Composition, AC) and two applied teams (Computational Earth Sciences, CES, and Earth System Services, ESS).
CODORNÍU **CODORNÍU, S. A.** www.codorniu.com	Codorníu is a company dedicated to elaborate and distribute wines and sparkling wines with high added value. We're talking about the oldest company in Spain, with more than 5 centuries of trajectory. Codorníu have its own vineyards and more from other winegrowers to whom advice to control the production from the grape. This factor, added to a strong research work, assures the high quality of all Codorníu's products. Codorníu is a family business with employees around the world because the relevant of export in the last years as consequence of stagnant growth in Spain. Codorníu have seven wineries in Spain which represents the most relevant DO in our country. On the other hand, we have two more wineries in Argentina and United States. In the same way, Codorníu have subsidiaries to distribute our products in Asia (China, Japan, South Korea and Singapore), Europe (United Kingdom and Germany) and United States, our distributor, Aveniu Brands.
IRTA RESEARCH & TECHNOLOGY FOOD & AGRICULTURE **Institut de Recerca i Tecnologies Agroalimentaries (IRTA)** www.irta.cat	IRTA is a research institute owned by the Government of Catalonia adscribed to the Department of Agriculture. IRTA's mission is to contribute to modernising, improving, boosting competitiveness, and fostering sustainable development in the sectors of agriculture, food, agroforestry, aquaculture, and fishing, as well as in all areas of activity directly or indirectly related to the supply of healthy, high-quality foodstuffs to end consumers, while also contributing to food safety and safe processing of foodstuffs and in general enhancing the health and well-being of the population.

Partner	Description
	Its general objectives are to promote research and technological development in the area of agri-food, to facilitate the transfer of scientific advances and to evaluate its own technological advances whilst seeking the utmost coordination and collaboration between the public and private sectors. Since it was founded, IRTA has sought to establish long-lasting collaboration agreements with other public bodies that operate in Catalonia in the areas of technological research and development. This approach has led to the creation of a consortium network of centres (involving IRTA, universities, CSIC, public-sector bodies, etc.), which is, in effect, an R&D cooperative system.
Istituto Superiore Mario Boella Sulle Tecnologie Dell'Informazione Delle Telecomunicazioni www.ismb.it	Istituto Superiore Mario Boella (ISMB) is a research & innovation center operating in the Information and Communication Technologies (ICT) domain. Founded in 2000 by Compagnia di San Paolo and Politecnico di Torino, today ISMB relies on technological and process competences of around 150 researchers working in close cooperation with companies, academia and Public Administration. ISMB is organized in areas focused on core sectors of ICT that can manage the whole value chain, from basic technology up to its practical implementation (proof-of-concept) and consequent deployment. In the project operates the mobile solutions area which is focuses on Intelligent Systems paradigm leveraging on the BigData and IoT domains. It aims to support the innovation of services, products and processes, realizing end-to-end solutions based on smart device applications (e.g. Mobile, Embedded or Wearables) connected to cloud-computing solutions which run smart data management and analysis paradigms including Artificial Intelligence or Machine and Deep Learning. The area manages the relation with several European working groups such as BDVA or GEO as well as the cooperation agreement with large enterprise such as Microsoft hosting the Italian Microsoft Innovation Center. The team combines the research attitude with the practical multidisciplinary experience that allow to foster the innovation in the value-chain of the data, starting from the data generation (i.e. crowdsensing, in-situ monitoring) going through the fusion with other data with the generation of knowledge and hence value.
Università degli Studi di Napoli Federico II – Department of Agricultural Sciences (UNAP) www.dipartimentodiagraria.unina.it/	The UNINA-DAS is settled at the historical Faculty of Agriculture located in the royal palace of Portici that is a long established Institution with expertise in the fields of plant science, fire ecology, animal ecology and behaviour, conservation biology and ecological modeling. The institutional education activities range from undergraduate courses to doctoral studies in the field of agriculture, food science, forestry and environmental science. The scientific relevance and international recognition of these research products positioned, for the year 2014, the University of Naples Federico II as number one in Agricultural Sciences in Italy

Partner	Description
	among the top 16 Universities evaluated, 12 out of 129 in Europe, and 38 out of 300 in the world (see National Taiwan World University Ranking).
Azienda Vinicola Michele Mastroberardino Spa (MBD) www.mastroberardino.com	Mastroberardino company is fully committed to traditional cultivation of ancient grape varietals, with ability to blend modern technology with time-tested techniques. The Mastroberardino long term goal has been focusing on wines reflecting the typical characters and notes of the Irpinia territory (located in the province of Avellino – Campania region – Italy). The family owns an extensive network of vineyards in the DOCG's area like Montemarano, Mirabella, Lapio, Pietradefusi, in "Taurasi DOCG" appellation; Montefusco, Santa Paolina, Tufo, Petruro in "Greco di Tufo DOCG" appellation; Santo Stefano del Sole, Lapio, Montefalcione, Manocalzati in "Fiano di Avellino DOCG" appellation; the Apice estate in "Sannio DOC", and the vineyards located in the archeological site of Pompeii. Mastroberardino has been working to identify different zones with distinctive type of soil in the Irpinia areas, in order to select the most quality sites to get the best grapes for making wines with personality. The Mastroberardino vineyards are located in different altitudes, starting from 450 meters above the sea level up to 700 meters. The benefit is the high difference in temperature between daytime and night, a unique microclimate in the worldwide viticulture scenario. The company collects climate data on daily basis in all vineyards using weather stations in order to understand the vines healthy conditions and possible plant water stress. A micro-vinification center located in the old winery of Atripalda (Avellino) is the key to analyze the specific character and peculiar notes of the grapes coming from the different vines in the family estates.
Symington www.symington.com	The Symingtons, of Scottish, English and Portuguese descent, have been Port producers for five generations since 1882, although their family's involvement in Port dates back fourteen generations to 1652 through their great-grandmother Beatrice de Carvalhosa Atkinson, whose ancestors were among Port's pioneers. Symington Family Estates is the only principal Port Company owned by one family. Five of the family (Paul, Johnny, Rupert, Dominic and Charles) work together, maintaining the vineyards and making the wines for four historic Port houses: Graham's, Cockburn's, Dow's and Warre's. The Symingtons also own Quinta do Vesuvio, one of Portugal's greatest wine estates. The family accounts for 34% of all Premium Port, making it one of the leading quality Port producers. The Symingtons are the leading vineyard owners of the Douro Valley (Unesco World Heritage classification) in Northern Portugal with 27 vineyard properties, known as quintas, amounting to 1 002 hectares of vines of which 126 ha are organically farmed. This is the largest

Partner	Description
	area of organic vineyard in Portugal, reinforcing the family's commitment to sustainable agriculture in this uniquely beautiful mountain wine region.
Universidade do Porto – Faculdade de Ciências (UPORTO) www.fc.up.pt	The Faculty of Sciences of the University of Porto (FCUP) is one of the oldest and largest schools of the University of Porto. It was established in 1911 and has been providing high-quality training in the field of exact and natural sciences and mathematics. Over the years it has been incorporating other fields of studies, such as Geographical Engineering, Astronomy, Computer Science and Information Technology, Biochemistry, Landscape Architecture, Environmental and Agricultural Sciences. FCUP currently hosts six academic departments and six high-performing Research and Development Units: the centres of theoretical physics (CFP), geology (CGUP) and mathematics (CMUP), along with CICGE (Geo-Space Sciences Research Centre), CIQUIP (Chemical Research Centre) and IFIMUP (Applied Physics Centre). FCUP is also partnered with twelve other R&D Units. Offering more than 70 teaching programmes, FCUP has a highly-qualified teaching and research staff responsible for providing a high-quality education, at both undergraduate and postgraduate levels. Besides its core infrastructures, FCUP also incorporates other buildings, such as a Marine Zoology Station, a Geophysical Institute, Botanical Gardens, a Science Museum, an Astronomical Observatory, a Museum of Natural History and a museum with an old collection of documents. FCUP also provides external services related to documents and handwriting examination, statistics and physics. Above all, FCUP remains committed to exploring the opportunities for cooperation and collaboration, not only inside UPORTO, but also with other Portuguese and international entities.
Technical Unit of the Euro-Mediterranean Information System on know-how in the Water sector (SEMIDE) www.emwis.net	SEMIDE is a strategic tool for exchanging information on the water sector among the Euro-Mediterranean Partnership countries. It focuses on assisting the Mediterranean Partner Countries to develop their own water intranets and to allow more coherent water planning. SEMIDE aims at collecting and facilitating the sharing of information and experiences, as well as the development of common tools and cooperation programmes in the water sector. It provides members with a means to collect exchange and disseminate such information particularly regarding water stress issues in the Mediterranean region. In addition, SEMIDE has being translating EU Water Frame Directive principles and the European Union Water Initiative lessons as well as European water innovation practices to the southern Mediterranean countries (Northern Africa), and SEMIDE has contributed significantly to the Mediterranean Water Strategy and the Strategy for Water in the Western Mediterranean (WSWM) which among other priorities includes: Fostering research and innovation. SEMIDE is disseminating information in cooperation with 22 National Focal Points, presented

Partner	Description
	countries in North and South the Mediterranean, using various means from multilingual websites, e-news flash (30 000 subscribers), social networks, multimedia support, physical products as well as events with stakeholders.
Alpha consult **Alpha Consultants** www.alphacons.eu	ALPHA Consultants (UK) Ltd (ALPHA) is a newly formed UK consultancy, affiliated to ALPHA Consultants srl, a leading Italian strategy consultancy specialized on management consulting services in various industries (e.g., Aerospace, Transportation, Medical devices, High tech, Telecommunications, Emergency management, Maritime) and with a strong a strong space applications expertise. The distinctive features of the ALPHA approach are: • A senior staff with significant strategic development, market assessment and business modelling experience; • Aa rigorous, fact-based and analytical approach to decision making, strategy development and market assessment; • The ability to rapidly obtain, absorb and prioritize data, and then draw out and communicate the key conclusions concisely while under considerable time pressure; and • An emphasis on objectiveness and to “data-driven” rather than “ideas-driven” analysis.

Project Advisory Board (PAB)

A Project Advisory Board (PAB) was set up during the first month of the project aiming to link the VISCA consortium with its broad network of members. The PAB will provide the consortium with advice on market opportunities and barriers, directives and regulations, standardization, and on international investment programmes related with agriculture adaptation strategies.

Below is the list of representative organisations of VISCA PAB:

- OIV (International Wine Association) (link)
- INNOVI (Catalan Wine Cluster) (link)
- PTV (Plataforma Tecnológica del Vino) (link)
- Asso Enology (link)
- WMO (World Meteorological Organisation) (link)
- UNEP (United Nations Environmental Programme)-Consultant (link)
- IOC (International Oil Council) (link)
- AEMO (Spanish Oliva Association) (link)
- COTOLIVA (Olive Oil Organisation) (link)
- DELTAMED (Mediterranean Deltas Association) (link)
- EEA (European Environmental Agency) (link)
- JRC (Joint Research Centre) (link)

Technology:

Weather forecasting/ Extreme events

Meteosim will develop and supply the weather forecast services for extreme events, which consists in delivering the best prediction of high impact weather variables (precipitation, temperature, etc.), at forecast time scales from hours up to ten days (240 h). This information could be useful to wine producers to minimize risks related to coming extreme events (for instance, if heat waves is forecasted in three days, wine producers could act in advance irrigating the field two days before the event). With the objective of providing the most in field-useful weather information, Meteosim will provide two different products; short term deterministic weather forecast and mid term probabilistic weather forecast.

The Weather Research and Forecasting model (WRF-ARW) - a next-generation mesoscale numerical weather prediction system - will be used for the short term weather forecast. The availability of weather observational data on the simulated areas will feed the model as data assimilation, in order produce the best weather forecast. Model results will be evaluated against available observational data. The model will be initialized with data from a larger scale, the Global Forecast System (GFS) and the iterated forward in time. Meteosim will calibrate the meteorological model WRF-ARW for operational forecasting of the extreme events in order to achieve the optimum model configuration for each demo-site. An accurate meteorological forecasting will allow reducing the impact of the extreme events over the different regions. To do this, some experiments will be define using the most sensitive model configurations.

On the other hand, the Global Ensemble Forecast System model (GEFS) – a global weather forecast model made up of 21 ensemble members - will be used to generate the probabilistic forecast for the mid-term length horizon. In order to adjust the biases that affect mid-term weather forecasts, statistical downscaling method will be used relying the availability of local historical meteorological data.

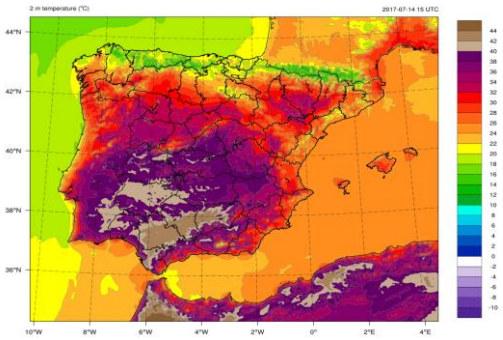

Figure 3 2m Temperature short term forecast map example for a simulated area

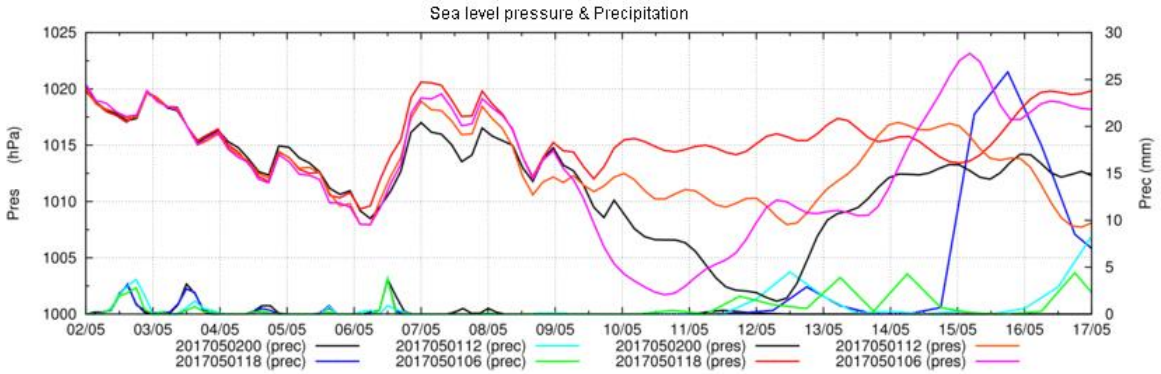

Figure 4 Sea level pressure and precipitation mid-term forecast graphic for a required local spot.

Seasonal forecasting

Seasonal forecasting is a discipline focused on predicting climate variables on a time frame ranging from one month to slightly more than a year into the future. These predictions are probabilistic which means they provide information on the likelihood of occurrence of certain outcomes instead of a single yes-no deterministic prediction. The BSC has benefited from its knowledge on the climate system and seasonal climate predictions to develop climate services that assist decision-making in the wine sector, improving its resilience to weather extremes, climate variability and change. In the VISCA project, BSC undertakes research on the development and assessment of dynamical methods for the prediction of essential climate variables for the wine sector, such as temperature or precipitation, at seasonal time-scales up to 7 months ahead. The formulation of the predictions includes the implementation of techniques to statistically downscale and calibrate seasonal predictions to feed the irrigation and phenological models that will be used by the wine sector partners to adopt strategic decisions regarding their pilot production fields. These seasonal predictions will be also tailored to users' requirements and provided in a Decision Support System platform (DSS) conceived as a tool to support users' decision-making at different temporal scales.

Climate projections

Meteosim will be involved in the second part of the tool that consists in delivering the best climate information at multi-decadal time scale. Such information will be needed by the end-users for strategic planning and adaptation decisions, for example giving hints on the potential geographical shift of viticultural regions.

The usual spatial resolution of global climate models at multi-decadal timescale is around 100 km. However, for the wine grape production, application information is required at significantly finer spatial scale. This justifies the choice of using the 12.5 Km-resolution downscaled Euro-Cordex dataset over Europe instead. Such dataset consists of an ensemble of climate simulations based on multiple dynamical and empirical-statistical downscaling models forced by multiple global climate models from the Coupled Model Intercomparison Project Phase 5 (CMIP5). The set of simulations with a horizontal resolution of 12.5 Km have emission scenarios RCP4.5 (9-member multi-model ensemble) and RCP8.5

(10-member multi-model ensemble). Empirical-Statistical-Downscaling approaches will be developed over the areas of interest using the existing observations.

In order to produce the decadal climatic prediction for the next 20-30 years' time-scale considered, a set of historical climate models data will be evaluated against the existent observations and over the areas of interest. The most influent variables in viticulture will be evaluated, such as mean temperature and precipitation. After that, the changes and trends and the corresponding uncertainty in theses variables will be analyzed and reported.

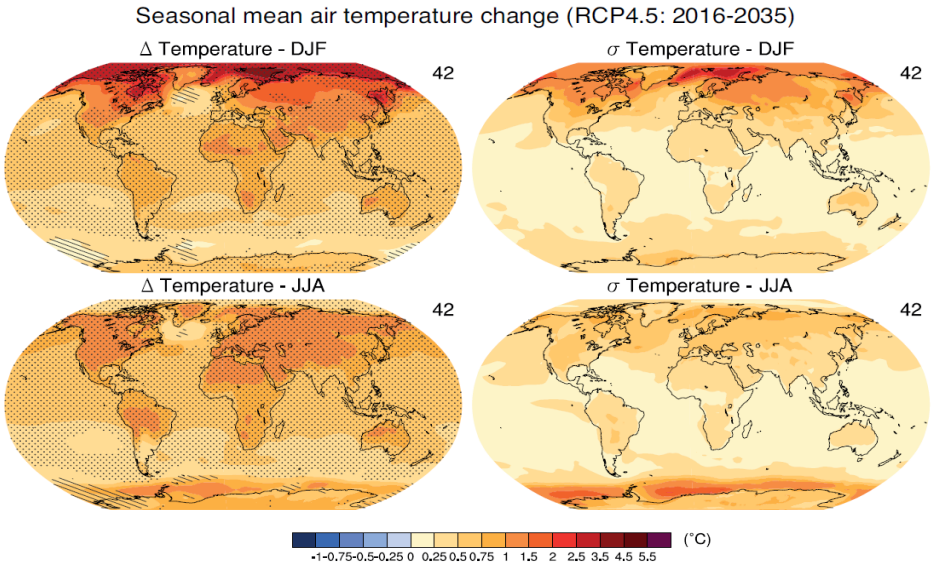

Figure 5 CMIP5 multi-model ensemble mean of projected changes in December, January and February and June, July and August surface air temperature for the period 2016–2035 relative to 1986–2005 under RCP4.5 scenario (left panels). The right panels show an estimate of the model-estimated internal variability (standard deviation of 20-year means). Source: Fifth Assessment Report (AR5) by IPCC.

Phenological treatments

"Crop Forcing is a new technique based on moving the grape-ripening period from hot summer months to a cooler month later in the growing season. This is achieved by making an additional pruning (severe leaf removal), stopping the natural cycle of the plant and forcing the plant to restarting its cycle later.

One of the main obstacles is to decide when to apply the additional pruning. One goal of VISCA is to have enough accurate models to predict plant ***behaviour*** *after this sever summer pruning (based on accurate predictions of meteorological data), which will help to determine the appropriate moment to apply the additional pruning.*

In order to develop these models, different field experiments are implemented, like the ones on the photos where it's possible to observe three different Crop Forcing treatments. These treatments are necessary to ***analyse*** *vine phenological evolution, and with this data to feed the models."*

Irrigation optimisation

"In order to evaluate the effect of different water availability scenarios, and to check the accuracy of the whole VISCA DSS application, different pilot plots are implemented where one of the mine drivers will be irrigation management."

Demonstration sites

Spain (Codorniu)

Raimat wine cellar is located in a region called *Costers del Segre* in the southwest slope of Raimat hills. This location confers special and differentiated characteristics: higher sunlight exposure in the afternoon, which allows the grapes to accumulate more degree days, achieving an earlier ripening without losing acidity. These are well drained soils; the slight inclination of the fields confers a natural draining of the rain water. Being on the slope of the hill causes steady currents of air, which provides a natural cooling down, conferring a special microclimate.

The viticulture performed in this plot is ecological, where the green pruning is especially important: buds and leaves thinning is used to adjust the vine´s productive-vegetative equilibrium. The soil keeps a vegetal cover that contributes to increasing the biodiversity, plus controlling the erosion of the soil.

Climate: Costers del Segre region has a continental climate, with annual rainfall between 300 and 450 mm. Annual average temperature is around 15°C, but variations among the year are remarkable, going below 0°C in winter and overpassing 35 °C in summer.

Grape variety: Chardonnay and Tempranillo

Soil composition: lutites (mineral clay and limestone) with sandstone (compact fine sand).

Most important aspect of the Spanish site is that they will apply commercial vinification on the demo-site, and not micro-vinification: the area devoted to the site will be 3 ha, and therefore the final results will be comparable to a medium-size wine cellar, and therefore results will be representative of a commercial approach.

Figure 6 Spanish demonstration site - Raimat

Portugal (Symington)

Symington Family Estates (SFE) is one of the principal Port producers and is the leading vineyard owner in the Douro Valley with a total area of 1,006 hectares (2,486 acres) of vines spread across 27 Quintas dotted around the Douro's three sub regions (Baixo Corgo, Cima Corgo and Douro Superior) in what is the world's largest mountain vineyard. Portugal's geographic isolation, as well as some past conservatism on the part of its wine producers has worked in the country's favor in terms of the preservation of the rich genetic diversity of its indigenous grape varieties. The demonstration site, Quinta do Ataíde, is located in Douro Superior and it has in total 85 ha vineyards. It consists of two plots with the variety Touriga Nacional, and one plot with Touriga Franca. Although Ataíde has a fairly homogeneous, flat terrain, sandy-loam and loam soil composition, uneven soil drainage has been identified to result in some variance in grape quality.

Climate: The Douro enjoys its own micro-climate, which is an important reason for the quality and style of its wines. The most important geological features responsible for this are several mountain ranges sheltering it from the Atlantic Ocean influence, giving it a continental climate, with hot and dry summers and cooler and wetter winters. Average annual temperatures range from 11.8 to 16.5º C. Rainfall ranges throughout the year from 50.6 mm in the wettest month down to 6.9 mm during the driest month.

Grape variety: Touriga Nacional

Soil composition: sandy-loam and loam.

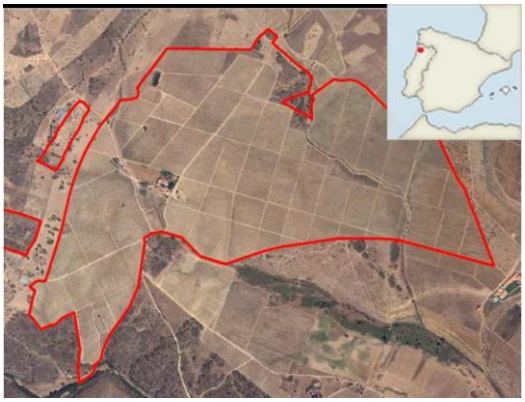

Figure 7 Portuguese demonstration site- Douro Valley

Italy (Mastroberardino)

Mastroberardino is an Italian winery located in the Campania region. The demonstration site is located in Mirabella Eclano Estate, in the heart of the Taurasi DOC area. The vineyards are surrounded by a large natural landscape, not far from the archaeological excavations of Aeclanum. The estate covers 65 hectares on hill territory with an altitude between 350 and 450 meters above sea level. The epicentre of Aglianico production, research and experimentation, this estate is spread over several hills with different exposures and is dedicated to the production of red grapes on the slopes.

Climate: The climate is continental and characterized by large thermal day-night excursions (up to 20 °C). Average annual rainfall is around 750 mm.

Grape Variety: Aglianico

Soil composition: Deep soil of volcanic origin, with layers of clay and traces of limestone along the profile, sandy loam texture.

Figure 8 Italian demonstration site - Campania region

Dissemination:

News

The most important news related to the project and announcements. Part of the news is shown in the homepage and will be updated by SEMIDE.

Events

The most important events related to the project topics.

Promotional materials

It will contain the brochures, posters and other promotional materials of the project.

Press releases

It will contain press releases published in the media as well as the citations.

Publications and Scientific articles

It will present the public deliverables, reports and scientific articles.

Contact us:

It will contain the emails of the project coordinator and the communication manager as well as a form to send a message (protected by captcha) and the possibility to register to receive updates on the project.

Additional

Subscribe to news (CAPTCHA protected with email confirmation)

Search

Quick links

Legal notice[4]

In terms of content the website must manage:

Text with layout

Files

Photos and images

Short video, directly and by integrating a frame from a streaming server (e.g. meo, YouTube, daily motion)

Forms for online surveys

4. Hosting environment

The website will be hosted on a shared server located at EMWIS Technical Unit office in Sophia Antipolis, France. A domain name has already been registered: www.visca.eu

5. Integrity, privacy and security

If the solution proposed uses cookies, an information message will have to be displayed asking for agreement from the user, with a message such as:

[4] See Annex 1

"We use cookies to improve our website and your experience when using it. By continuing to navigate this site, you agree to the cookie policy. To find out more about the cookies we use and how to delete them, see our privacy policy."

6. Design and layout rules

Figure 9 VISCA logo

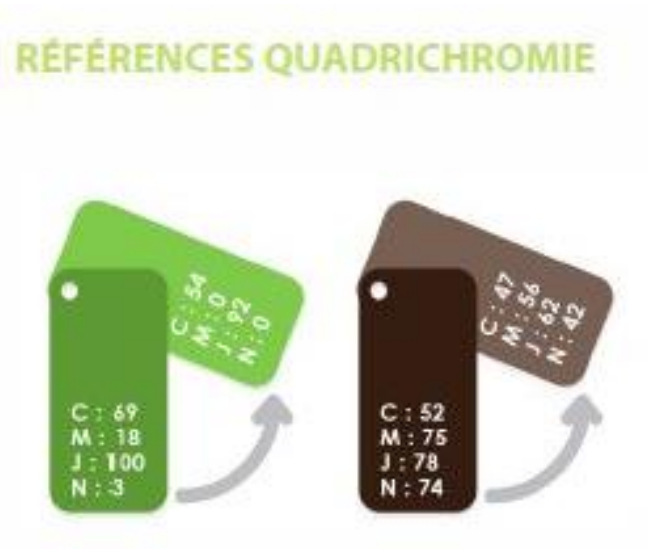

Figure 10 VISCA colour reference

The website should use these colours and the clear font (Calibri or Arial, size: 12)

7. Annex

Annex 1

"***1. Disclaimer notice:***

VISCA consortium maintains this website to enhance public access to information about the project and its relative information. It complies with the EC policies and regulation.

However, the EC accepts no responsibility or liability whatsoever with regard to the information on this site.

This information is

** of a general nature only and is not intended to address the specific circumstances of any particular individual or entity.*

** not necessarily comprehensive, complete, accurate or up to date.*

** sometimes linked to external sites over which the EC services have no control and for which the EC assumes no responsibility.*

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This disclaimer is not intended to limit liability in contravention of any requirements laid down in applicable national law nor exclude liability for matters which may not be excluded under that law.

2. *IDENTITY OF THE WEBSITE OWNER*

EMWIS Technical Unit office in Sophia Antipolis, France with contact telephone number + 33 4 92 942 290 and contact fax number + 33 4 92 942 295.

3. ACCEPTANCE OF TERMS AND CONDITIONS OF USE

The purpose of these Terms and Conditions (hereinafter referred to as the Legal Notice) is to regulate the use of this website as made available by its owner at this URL.

By using this Website a third party becomes a site User, and this means that as a User he/she fully accepts all the terms and conditions included in this Legal Notice.

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In the event that the User is given a personal password when he/she registers for specific services (for example, recruitment), the User undertakes to keep the password secret at his/her sole responsibility and thus accepts any damage or consequences that may arise from its disclosure.

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The owner of the Website does not accept any responsibility for the availability and continuity of the Website, for the services linked to it, or for any interference, omissions, interruptions, computer viruses, telephone breakdowns or disconnections in the operation of the electronic system brought about by causes beyond the control of the owner of the website.
The owner of the Website may temporarily suspend access to the website with no prior notice for the purposes of carrying out maintenance, repairs, updating or improvements.

6.3. Responsibility for links

The links on the website may take the User to other websites operated by third parties. The purpose of these links is solely to inform the User about the existence of other sources of information on a specific topic.

The owner of the Website is exonerated from any responsibility for the proper functioning of these links, for the results obtained via these links, for the truth and legality of any content or information which may be accessed, and for any harm that the User may sustain as a result of information found on the linked website.

7. PRIVACY POLICY

To visit the VISCA website you do not normally need to provide personal details. However, this may be necessary in some cases for us to contact you. If you provide us with personal details they will be added to the relevant file belonging to us and any other companies of the consortium of VISCA, and will only be used for the purpose for which they have been supplied: answering queries, commercial contact regarding VISCA project.

Users may exercise the right to access, rectify and cancel their personal data by sending the appropriate request to the following address:

U.T. SEMIDE/EMWIS T.U.

BP23

06901 SOPHIA ANTIPOLIS

FRANCE

Or by sending an email to: m.salehi@semide.org

7. COOKIES POLICY

This website uses cookies to facilitate navigation and provide a more personalized and responsive service. You can set your Internet browser software to reject these cookies, in which case the quality and speed of web browsing may decrease.

What are cookies and what are they for?

Cookies are files that websites can install in your device (computer, tablet, smartphone, etc.) for very diverse reasons. The main purpose is to facilitate user navigation, but they may also collect other information, such as data for statistical purposes.

Cookies adapt the navigation to the user's preferences, improving the technical performance of the website. Moreover, the statistical data collected from cookies allows web masters to improve the website service provided to users.

Types of cookies

Depending on their life-span, cookies are classified as session or permanent cookies. The former expire when the browser is closed, while the latter expire when they have served their purpose or when manually deleted.

PERFORMANCE COOKIES: These cookies store the preferences of certain tools, avoiding having to set them each time the user accesses the website.

ANALYTICAL COOKIES: These cookies allow web traffic to be analyzed and for a statistical analysis of the use of the various web services. The information compiled is anonymous and not linked to any personal data.

GEOLOCATION COOKIES: These cookies detect, anonymously, the country in which the user is located to deliver more relevant content and services.

REGISTER COOKIES: These cookies are generated when the user registers and are used to identify user accounts and their associated services.

ADVERTISING COOKIES: These cookies enable management of the different advertisements displayed on the website, adapting the content of the ads to the visitor's website use.

THIRD-PARTY COOKIES: Third-party cookies can be installed on the page with the aim of improving third-party services, such as links to social media to share website content.

Can I delete the cookies?

All browsers allow you to block or delete cookies, as the user prefers. Below are instructions to do so:

Internet Explorer: Tools> Internet Options> Privacy> Settings

Firefox: Tools> Options> Privacy> History> Custom Configuration

Chrome: Settings> Show Advanced Options> Privacy> Content Settings

Safari: Preferences> Security

8. *INFORMATION FROM THE USER*

The User guarantees that all the information, material, contents and remarks, other than his/her own personal details, which he/she provides to the owner of the website via the website do not infringe the intellectual or industrial property rights of third parties or any other legal provisions.

9. CHANGES TO THE TERMS AND CONDITIONS OF USE

The owner of the Website reserves the right to change, develop or update at any time and with no previous notice the terms and conditions of use of this website. The User shall be automatically bound

by the terms and conditions of use prevailing at the time when he/she enters the Website, and hence he/she should regularly read the said terms and conditions of use.

10. GOVERNING LAW AND JURISDICTION

Any disputes or claims arising from the interpretation or execution of this Legal Notice shall be governed by European law."