

Collaborative Project



CLIM-RUN

Climate Local Information in the Mediterranean
region Responding to User Needs



WP 6 – Wild Fires Case Study

Task 6.2 - Collection of local information on wild fires natural hazards

D6.3 Protocol definition

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1. Stakeholders

The first workshop for the wild fires case study entitled “Effects of Climate Change on Forest Fires and Forest Ecosystems”, took place on September 28, 2011 at the premises of the National Observatory of Athens. The workshop was held in the Greek language. The conference brought together 16 academics and representatives from the public and private sector who are involved in the fields of forest fires and ecosystems.

Out of the 18 stakeholders workgroups invited, belonging to five different domains of activities, 16 of which responded positively to the invitation, showing interest in participating and 9 of them made a brief presentation of their activity.

The domain sectors involved were:

- academic / research area
- public services
- private sector
- commerce and
- non-governmental organizations (NGOs).

In the following steps, involvement of more stakeholders seems possible, mostly in the domains of academic / research area and nongovernmental organizations. In a broader view, all sectors using climatic data in their activities are considered as potential stakeholders.

In the following table, a classification of the participating stakeholder’s domains is presented.

Research / Academic	Public Sector	Private Sector	Nongovernmental Organizations
<i>Institute of Mediterranean Forest Ecosystems and Forest Products Technology, NAGREF</i>	<i>Management Body of Mount Ainos National Park</i>	<i>Forester - Environmental Scientist</i>	<i>Greek Hunting Confederation</i>
<i>University of Athens, Faculty of Biology Dept of Ecology & Systematics</i>	<i>Ministry of Environment, Energy and Climate Change</i>	<i>Hellenic Timber Association</i>	<i>WWF Greece</i>
<i>Environmental Training Center of Argyroupolis</i>	<i>Forest Service of Piraeus</i>		
	<i>Fire Service</i>		

2. Methods of engagement

In order to approach the participants initially, a list of potential stakeholders and their organizations was made. Basic prerequisite for someone to be in the list was to be affiliated to any of the fields of Climate Change or Forest Fires. A second prerequisite was the location of the potential stakeholders, so those closer to Athens were considered favourable. Of course, there were participants from other parts of Greece as well.

In order to approach all these people, various methods of engagement were applied. At first, a personal telephone approach was adopted to initiate communication. In this very important step, it was possible to determine the willingness of the candidate stakeholders to respond positively to the concept of involvement to our project. As part of the telephone communication with the stakeholders, a brief interview was conducted in order to understand more of their goals and activities in the related fields.

The following step in our communication with the stakeholders was the emailing of the official invitation to the workshop. Email was also used to collect stakeholders' presentations and suggestions after the workshop.

During workshop, direct contact was made with all stakeholders. Both through presentations and personal conversations, as well as through the discussion following each workshop presentation, there was a possibility of direct contact with all of the participants. Another important engagement method during the workshop was the completion of the questionnaire, which gave a rather explicit view on the stakeholders' needs and uses of climatic data.

Following the workshop, there was a data exchange between NOA and certain stakeholders, which was certainly one of the intended methods of engagement. In addition to that, publications concerning the workshop material were made from the total set of participants.

Methods of Engagement	Advantages	Disadvantages
Telephone	<i>Direct, fast, comprehensive</i>	Time consuming, depending on common time availability
Email	<i>Massive, fast</i>	Without other engagement methods can be easily ignored
Interviews	<i>Provide the best possible view on stakeholders' profile</i>	Time consuming, require personal or telephonic contact
Questionnaire	<i>Best way to uniformly interview the entire set of stakeholders on certain issues. Provides concise and precise view of the stakeholders' opinion.</i>	Requires a lot of time for preparation and for the collection and analysis of the results
Data Exchange	<i>Contribution to user needs, enhances collaboration and sets new possibilities on future</i>	Obtaining data is time consuming, plus copyright of the data has to be secured.

	<i>projects</i>
Publications	<i>Contribution to science and knowledge.</i>

3. Critical climate variables

In terms of processing of climate change projections for wild fire studies, the emphasis in previous/ongoing work has been on the Canadian **Fire Weather Index** (FWI) – used in both Greece and Spain.

FWI calculation requires the following variables (noon readings):

- Instantaneous values of temperature
- relative humidity
- wind velocity and
- accumulated 24hr value of precipitation

Thus from the perspective of wildfire risk, all these variables should be considered as essential Climate Variables. The summary table below focuses on the essential climate variables for the wildfires case study.

The bold numbers indicate:

1: Already available

2: Easy to provide

3: Able to provide but with a lot of work

0: Not possible (not used in table)

Climate variable	Observations	Model simulations*
Daily temperature (T) and derived extremes (e.g., very warm/hot days)	1/2 Available now or with relatively little additional work. Station, gridded (E-Obs) and reanalysis (ERA-40 and, preferred, ERA-interim) data.	1/2 For climate change simulations, available now or with relatively little additional processing of model output. Question mark about appropriateness of daily values (rather than noon) for FWI.
Daily precipitation (P) and derived extremes (e.g. maximum dry spell duration)	1/2 Available now or with relatively little additional work. Station, gridded (E-Obs) and	1/2 For climate change simulations, available now or with relatively little additional processing of model output.

	reanalysis (ERA-40 and, preferred, ERA-interim) data.	Question mark about appropriateness of daily values (rather than noon) for FWI.
Relative humidity (RH)	2 Available for limited Greek stations (to be catalogued) and from ERA-40/ERA-interim Reanalysis.	2 For climate change simulations, available now. Question mark about appropriateness of daily values (rather than noon) for FWI.
Wind velocity (WV)	2 Available for limited Greek stations (to be catalogued) and from ERA-40/ERA-interim Reanalysis.	2 For climate change simulations, available now. Question mark about appropriateness of daily values (rather than noon) for FWI.
Wind direction	3 Need to catalogue what is available (particularly for stations which have FWI input variables). Could be calculated from ERA-40/ERA-interim Reanalysis.	3 Could be calculated, but not very reliable?
FWI (Fire Weather Index) Input variables required: T, P, RH, WV – all noon values	1/2 Data available for 44 stations over Spain (noon values). Can be calculated from ERA-interim and from station data in Greece and Spain	1/2 Can be calculated from RCM output (ENSEMBLES, CIRCE and CORDEX). Can also be calculated from statistically downscaled output

*ENSEMBLES and CIRCE RCM simulations available now, plus CORDEX and any CLIM-RUN simulations available in the future.

4. Next Steps

Extensive interaction with the stakeholders through the engagement methods described in Section 2 facilitated the identification of two ways to address their needs in the next immediate steps of CLIMRUN:

- 1) To link the fire danger index with meteorological forecasts already provided by the National Observatory of Athens operationally on a daily basis for the Greek territory (www.noa.gr/forecast). This will adequately address the needs of fire fighting stakeholders requiring forecasts of fire risk on an operational basis.
- 2) To update the public website of the Greek WWF on climate and forest fires (www.oikoskopio.gr) with near-future (2021-2050) fire risk projections using output from available regional climate models. This will adequately address the needs of long term policy makers and education stakeholders requiring information on the impacts of climate change on forest fire risk.

As the FWI index was developed for the Canadian forests, calibration and classification of the index is required for its use in the Greek Forests. Furthermore, in order to provide more detailed information to the stakeholders, downscaled FWI values will be given. This could be implemented by using the statistical downscaling portal (in collaboration with UC group) to downscale the input variables needed to calculate the index. Additionally, a statistical downscaling method taking into account the orography will be applied to both input variables and the index itself.

Annex: Wildfire case study step by step methodologies

WP6 followed the general WP1 and WP4 protocol provided in detail below:

Objectives	Methods	CLIM-RUN partners involved
3.1 Mapping the issues (MM1-3)		
<p>Assessment and conceptualization of:</p> <ul style="list-style-type: none"> - the relationships of the activity with climate parameters, at present and in the future (climate change); - the current use of climate information by stakeholders; - the existence of nucleus of climate services in the activity (relations between climatologists, sporadically or permanently). <p>The objective is to work both at a general level (each theme, e.g. wildfires) and at the very local level of case studies (e.g. Greece or parts of Greece).</p>	<p>Stakeholder institutional analysis</p> <p>Literature, desk research</p> <p>Face to face interviews of key stakeholders</p> <p>Collection of sector-specific data (basic economic data for each case study...)</p>	<p>WP 5 to 7 leader + case studies local team</p>
3.2 Stakeholders' involvement (MM 2-5)		
<p>CLIM-RUN relies on the consultation of stakeholders, from various origins :</p> <ul style="list-style-type: none"> - Scientists not specialized of CC, but expert in the field of forest fires - Socio-economic stakeholders: economic operators, inhabitants, civil servants, elected people <p>To ensure a quality consultation, each team will have to secure the participation of a sufficient group of willing stakeholders, which might prove more or less difficult depending on case studies</p>	<p>Depending on each case, the involvement of stakeholders can be more or less long, costly and formal:</p> <ul style="list-style-type: none"> - Informal involvement of colleagues (scientists, experts, socio-economic operators), through each team's network; - More formal involvement / invitation, for instance through the participation of a ministry or any other institution, inviting stakeholders to participate, or through the subcontracting of sample constitution to a poll institute. 	<p>WP 5 to 7 leader + case studies local team</p>
3.3 Workshop n°1 (MM 6)		
<p>A first stage setting Workshop (climate data requirements) will focus on the comparison between data demand and supply</p>	<p>Facilitation of workshop</p> <p>Live + online consultation of participants before and after the workshop</p>	<p>Organisation: WP 5 to 7 lead, in relation with WP4, WP 2 and WP3</p>

<ul style="list-style-type: none"> - A sample of stakeholders and experts will be invited to present their ideal data requirements in the framework of climate and climate change - In collaboration with the CET, WP2-3 experts will be invited to present advanced research in climate downscaling to illustrate what climate models can currently provide - The workshop will prepare the choice of key criteria and simulations for WP2 and 3 to consider so as to respond to users' needs 		
3.4 Iterative consultation (MM6-20)		
<p>Each case study manager will then participate to the iterative process of producing new climate information, allowing :</p> <ul style="list-style-type: none"> - to precise some needs expressed in previous phases - to evaluate the value of the climate information produced by WP2 and WP3, at intermediary steps. If necessary refining needs 	<p>On-line consultation Questionnaires, Conference calls</p>	<p>WP2 and 3 + WP 5 to 7</p>
3.5 Provision of data and modeling tools answering stakeholders' need (MM6-20)		
<p>As a follow-up of stakeholders' consultation, WP2 (new modeling tools) and WP3 (provision of existing data and climate projections) will try to adapt their supply to stakeholders' demand. By doing so they must constantly keep in mind the data requirements of stakeholders, and the form of output desired (type of graphs, mapping of uncertainty, for instance)</p>	<p>Provision and adequate presentation of existing data Downscaling of existing climate projections Development of new modeling tools for specific questions</p>	<p>WP 2 and 3</p>
3.6 Workshop n°2 (MM20)		
<p>A second workshop will consolidate the interaction between climate specialist and stakeholders, allowing a collective analysis of:</p> <ol style="list-style-type: none"> 1) the relevance of the analysis, simulations and tools produced to address users' needs 2) the usefulness of data produced to improve climate change impact assessment 3) the quality of the interactions between climate experts and stakeholders 4) the possibility to extend these interactions and establish more permanent institutional links and 	<p>Workshop facilitation</p>	<p>WP 5 to 7 leader + case studies local team,+ WP2 to 3 (presentation of results) + WP4 (coordination)</p>

procedures towards the development of a climate service network		
3.7 Synthesis and recommendations (MM20-30)		
<p>Lessons will be learnt from case studies following a bottom-up approach :</p> <ul style="list-style-type: none"> - findings and recommendations from each local case study - cross-cutting results for each theme (e.g. wildfires). Recommendations for guidelines and standards (e.g. improvement of sector climate indexes...) - cross-cutting conclusions of all CLIM-RUN case studies - Transfer to WP1, towards recommendations for future climate services 	<p>Desk research Conference call Seminars (lessons learnt)</p>	<p>WP 5 to 7 leader + case studies local team + CET-SET Transfer to WP1</p>