



## Wind fires

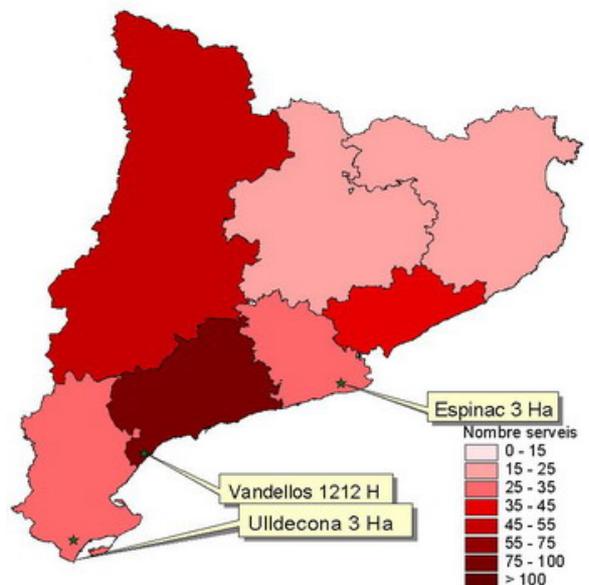
*Inclined column due to the north-west wind in Vandellòs.*

### What we had

Compared tendency from 1/1/06:

	17/04/2005	17/04/2006
Nº Services (VA+VU+VF)	3259	918
Surface (ha)	1307	1310

VA: services of agricultural fire  
 VU: services of urban fire  
 VF: services of forest fire



Number of services (VA+VU+VF) from 19/03 until 17/04/06, and services larger than >2 ha.



## Description de la situation

### Evolution of drought (disponibility of live fuel, and large dead fuels)

The beginning of the spring has not been, until now, much rainy. There have been 3 little abundant episodes and quite a lot of local ones: the first, from the 18th to the 23rd March, with rains among 2 and 10 mm in the Pirinees, coast of Girona and the southeast mountains in Catalonia; the second, from the 2nd to the 8th May, which affected only the Pirinees with less than 10 mm; the third, for Easter (figure 2). This has allowed that the fuel of 100 hours goes from not available to little available.

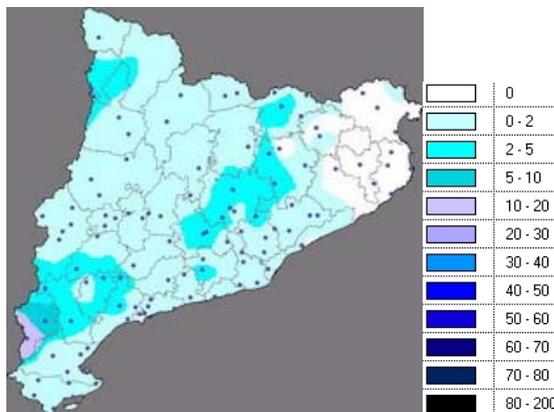


Fig 2. Accumulated rain from 15 to 17 of May. Little rain in the last month has allowed the big slash to start burning.

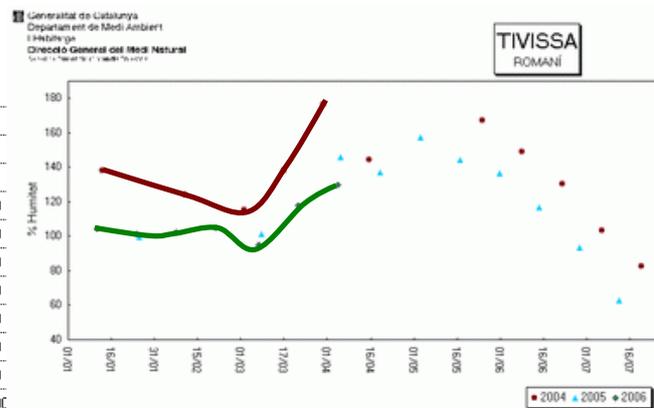


Fig 3. Moisture of the live fuels the year 2004 (*Rosmarinus officinalis*) in red and the year 2006 in green, in Tivissa. Source: Natural Environment, DMAH. Different moisture of plants in two humid winters (2004 and 2006) due to winter frost

These rains are part of an autumn and a winter with high reserves of water in the ground, but strong freezes have reduced the moisture of the live fuels, as shown in fig 3. The start of the spring has forced the increase of moisture in live plants related to phenological changes, even though it started slowly, due to the lack of rain. The accumulated drought is low (fig 4-6), and both living and large dead fuel are poorly available.



Fig. 4. Sequera acumulada al 27/04/06

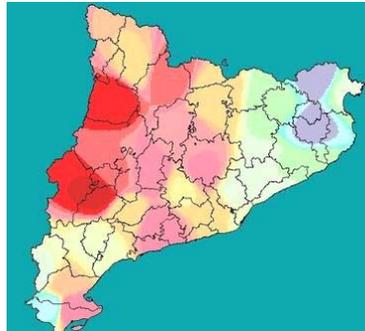


Fig. 5. Sequera acumulada al 12/04/05

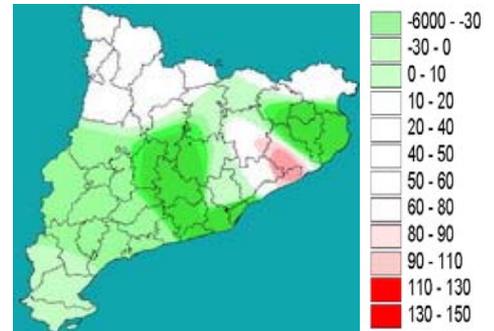


Fig. 6. Percentils de Sequera (% respecte al normal) 27/04/06

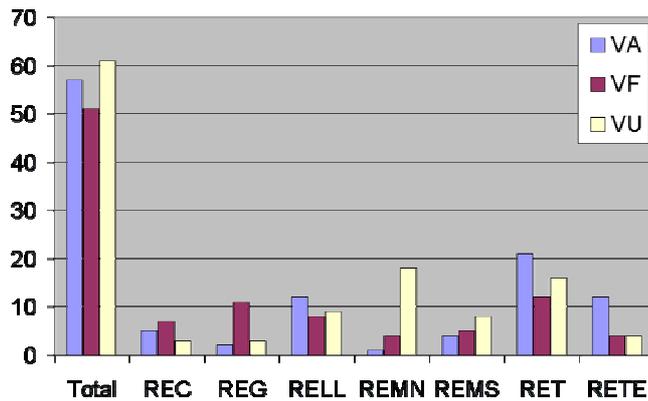
If it continues without raining in an abundant way, the large fuels will keep on drying, although the living fuels for phenology will keep moisture high. And again, attention to the episodes of north wind.



## Evolució de Services

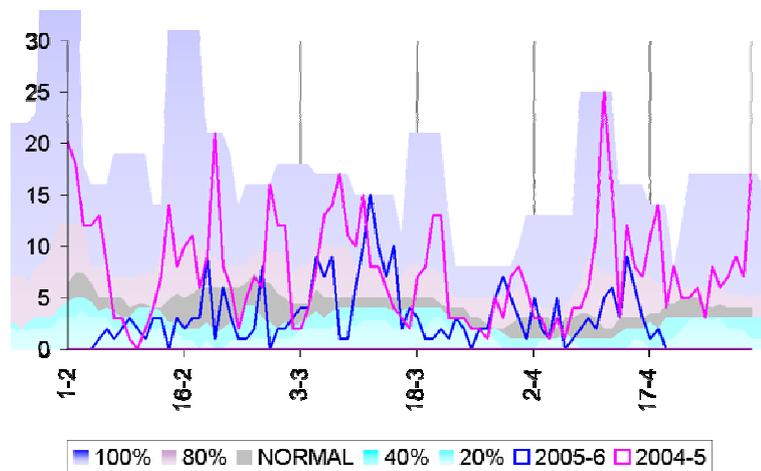
### What we had

The number of forest fire vegetation services continues diminishing as the vegetative activity of the plants increases. Only in the episodes of high risk, during high wind, and the services increases: remember the episodes of March and the second week of May.



**Gràfic 1.** Total number of services by region and type. VA=agricultural, VU=WUI, VF= forest I (01/04-17/04).

**Gràfic 2.** Mbs13 (services of forest fire) from 01/01/06 until 19/03/06, compared with the same period in 2003/4 (blue line) and compared to the normal number of fires (in grey 50% percentil, in blue lower than normal, in rose higher than normal) for the last 5 years.



In the prescribed burnings of the last month it has been observed that the large fuel starts to be there available where it has not rained the last month. It has also been observed that the green fuel is difficult to burn without a basis of dry fine fuel, which gives the needed intensity to evaporate the water that the movement of the sap concentrates in its tissues

### What is forecasted

In a few days we will enter in a good period for carrying out the prescribed burnings. The scarce rains of last month and the highest temperatures allows that the dry fine fuels are available in few hours (1 and 10 hr).

A low level is expected of services for forest fire, except in the ends of the country (RETE and REG) and to the plain of Lleida during episodes of wind, with low intensity but fast.



## Regions

REG

The increase of the activity of the vegetation implies that the green fuel is more hydrated. Only where there is accumulation of dry fuel, fine as well as large, intensity and medium propagations can be observed.

**What is forecasted** Calmness, except in the episodes of north wind, with surface low intensity fires very fast.

REMN

The last episodes of rains of April, although feeble, have moistened again the fuels. The ground and the living vegetation are hydrated, only the fine dry dead ones, inland, are available after days without rains

**What is forecasted** Calmness, expecting successive episodes about drying winds.

REMS

The occidental part of the region is the one that is less humid, is where the light dead fuels will rather be available if there are not new episodes of outstanding rains.

**What is forecasted** Calmness, only with episodes of wind we could have fast propagations, in spite of that, the large fuels still have to be dried.

REC

The last episodes of rains have soaked the region globally, moistening the fuels. For the time being, only the finer dead fuel is starting to be available during some hours of the sunny days, being the diurnal and night cycle of moisture.

**What is forecasted** Only recurrent or long episodes of North or West winds can allow intense behavior.

RETE

The last episodes of rains of April, although feeble, have moistened again the fuels. The ground and the living vegetation are hydrated, only the fine dry dead ones, are available after days without rains.

**What is forecasted** Calmness, only with episodes of wind we could have fast propagations, in spite of that, the large fuels still have to be dried.

RET

The last episodes of rains of April, although feeble, have moistened again the fuels. The ground and the living vegetation are hydrated, only the fine dry dead ones, are available after days without rains

**What is forecasted** Calmness, only with episodes of wind we could have fast propagations, in spite of that, the large fuels still have to be dried.

RELL

It is the less humid region and still sustains some regions with accumulated drought, although, that light. The last rains, feeble, have kept on soaking the ground and activating the vegetation after the standstill of winter and of the snow.

**What is forecasted** Calmness, only with episodes of wind we could have fast propagations, in spite of that, the large fuels still have to be dried..

### Degree of activity

 Low
  Normal
  Medium
  Important
  Critical
  Large fire

## Main aspects

### 3.1.- Training. Forest Fire in Vandellòs (10/04/06; 1211 ha)

Once again the capacity of extinction of the fire brigade arrives at its limit, while the behavior of the fire has high intensity; in this case, the speed of the wind is the factor that nourishes this intensity. The fire of Vandellòs wins intensity when direction follows the ridges N-S in the coast.

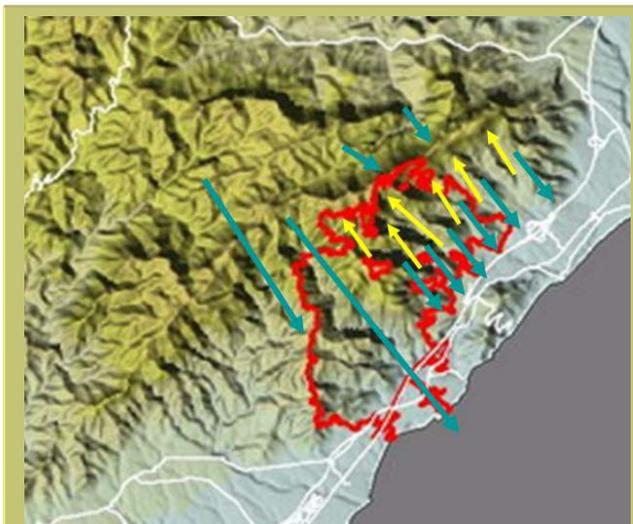


*Figura 7. Window of relative moisture, temperature and Dew Point (Atmetlla de Mar). The slope of dew point (gray line) decreases due to the dry air, related to the entrance of north winds.*

#### Kind of fire and window

We are in front of a fire driven by wind in the coastal mountain range (V2). We are, meteorologically, in an episode of wind of mistral (NW), which forces the fallen down of the relative moistures from the dawn of the 10th, (the lowest values) during the noon of the 10th and on 11th. These do not recover during the night of 11th, due to the dry air mass ( see dew point in figure 7). The important rains of last winter with the temperature decreasing (with the entry of north wind) has hampered the propagation with spots, and only 50 meters spotting has been registered, due to the strong winds. Once again the campaign of winter fires

is ascertained. In spite of the high environmental humidity and the rain of former days, the fuel punished by the freezes of the winter is available enough for fires dominated by the wind, characteristic fire regime in the extremes of our country.



*Figura 8. Perímetre de foc amb topografia. Litoral Mountain Range, parallel to the coast, with more than 700 m of high, 4 km to the see, perpendicular to the dominant winds of NW. The consequence is a zone of counterwinds (yellow arrows) overlapped with the zone of direct winds (blue arrows)*

#### The fire

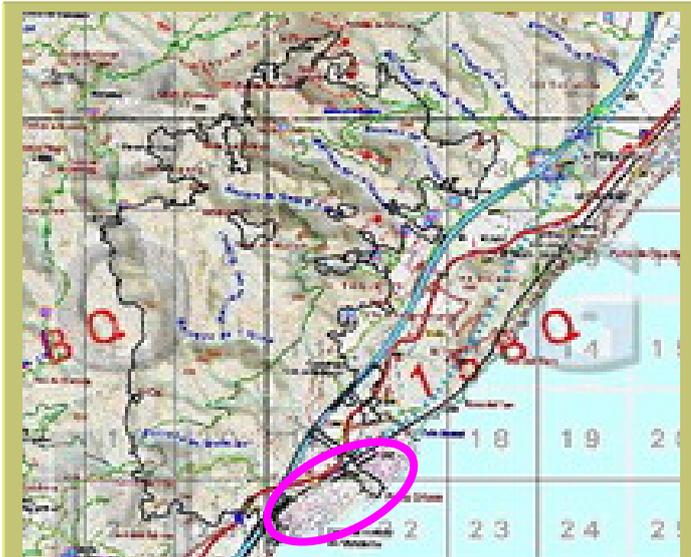
In 2,5 hours the fire arrives to sea following a first run with direct wind that crosses the highway (in white) and the national road (in white). The same wind holds the back of the fire and most of the right flank. The left flank keeps on opening up in the zone of overlap among the counterwinds and the direct wind.

#### Tactics

The inaccessibility of the back of the fire and of the right flank of the fire together with the wind that is holding them, provokes that the extinction is centered in the zone where the head of the fire loses alignment, at the end of the ridges, using the road infrastructures and globally, the discontinuity of the cultivated area around Hospitalet. On the other hand, once the



head of the fire is stabilized, the attack is centered on the flank that wins potential: the left flank, the one that can generate runs as the fire reaches the NW-SE ridges aligned with the wind.



*Figure 9. Perimeter of fire with the firefighters cartography. Nuclear Power Station of Vandellòs (in pink) was at the end of the first direct run*

The fact that the fire affects two infrastructures like the highway (AP-7) and the national road, that should be cut for some time during Easter, as well as the fire arriving to the Nuclear Power Station, has generated a big social alarm.

Many of the resources were destined to protect the nuclear power station, apart from their own system of protection, due to the risk that supposed that the fire could affect it.

The driving force for the advance of this flank is in the zones of overlap of wind and counterwind, since in this zone the back or flank of the fire of counterwind becomes the head of the direct wind fire, and on the contrary, the back of the direct wind fire becomes the head of the counterwind.

The jump of spots and the lack of infrastructures of anchorages hamper the work in these zones. As the wind reduces, the left flank is more accessible to the parallel and direct attack, and with the joint work of lines of water, backfires and aerial resources, the morning of the 11th the fire is stabilized. The back and the right flank is revised with manual tools.



*Figure 10. Column inclined by wind, with the direction of spread towards the Nuclear Power Station.*

MORE INFORMATION IN NEXT NUMBER.

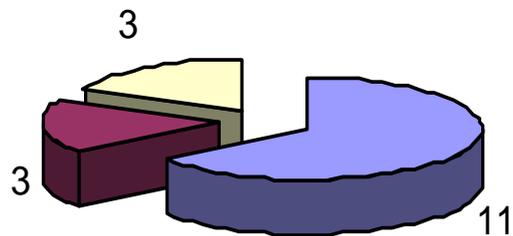


### 3.2.- End of the prescribed burning of pastures in the French Pirinees.

On the occasion of the exchange among regions of the Mediterranean basin -INTERREG- this last winter we have had again the opportunity of collaborating with the Office National des Forêts of the Pirinees Orientals and the Service Pastoralisme et Environnement del Service Montagne Elevage del Languedoc-Rosselló (SIME) in the execution of prescribed burnings.

This year, has been the fourth year of collaboration and both Firefighters as well as the ONF, have done a positive evaluation, although the weather episodes that have affected the north side of the Pirineus Orientals have not allowed having many suitable days.

In the Graph 1 attached, you can see the participation in number of weeks, counting the 17 foreseen in the Program of Prescribed Burning accorded, since the 14th November of 2005 until the 7th April of 2006.



*Graph 1. Weeks of participation to the french prescribed burning program. In blue, canceled by meteorology, in red firefighters not available, in yellow, real execution of burns*

Only a few weeks have resulted in execution of prescribed burnings, allowing 20 firefighters to receive specific formation in use and handling of the technical fire are few weeks.

In concrete: 2 sergents of the course CFAIFCOM\_0401, 11 GRAF firefighters, and 5 trainers. But real the volume of persons who has been activated and deactivated has been of 30 persons. To all of them, thank you for the interest and patience in each of these constant changes in the planning

The stay of 5 days (from Monday afternoon to Friday noon) collaborating with the Prescribed Burning Program is part of the compulsory formation of the new GRAF Firefighters (2005), apart from being necessary (specific module) for obtaining the CAIF (Advanced Course of Forest Fires)



*\* Execution of prescribed burnings to recover pastures of high mountain, north of Puigmal (Pirinees Orientals). Images of the test fires, and the difficulties of execution in these terrains.*