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**Recent Developments and Needs for Wildfire  
Fighting on the Ground:  
Tactics and Technologies**


A Video Conference organized by

Global Fire Monitoring Center (GFMC) (Conference Chair)

Field Analytical Chemistry and Technology Unit/ National Technical University  
of Athens (FIAC TU / NTUA)


European Center for Forest Fires (ECFF)

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**Some thoughts on Tactics**



**WORKING  
ON FIRE**  
INTERNATIONAL

**GFMC / Working on Fire (WoF)**

**Fire Behaviour Analysis**

- **To implement tactics that work**
- **To avoid tactics that are dangerous**



### **The “most important” to know about a wildfire**

- Predicted rate of spread?
- Predicted flame length?

and / or ?

- When and where fire behaviour will change?

### **Questions to ask:**

- When and where a fire will change?
- When and where we will be in control of the fire ?

### **Ask yourself and your colleagues**

- Why some fire fighters seem to know what fire will do - while others don't?
- Where have they aquired this knowledge? Lessons - or experience?
- How long it took them being good in fire prediction?
- How many times they couldn't explain their intuition and they failed to change tactics?

### **OBSERVATION**

- To know where and when the fire will change
- So:
  - When and where will it be dangerous and beyond our threshold of control
  - When and where will it be safe and within our threshold of control

### The Campbell Prediction System - CPS

#### Rationale - I

Wildland firefighters face variations in fire behaviour that can be predicable, but unfortunately, **too many fire fighters lack the training and knowledge to foresee these changes**, resulting in unsafe and / or ineffective tactics that can lead to burn-over accidents and / or the inefficient use of resources.

### The Campbell Prediction System - CPS

#### Rationale - II

The development of a **reliable prediction system** that would mitigate these problems drew upon the **first hand experiences** of seasoned firefighters, **investigating** the commonalities in burn-over accident reports, **analyzing** fire weather and fuel moisture concepts .....

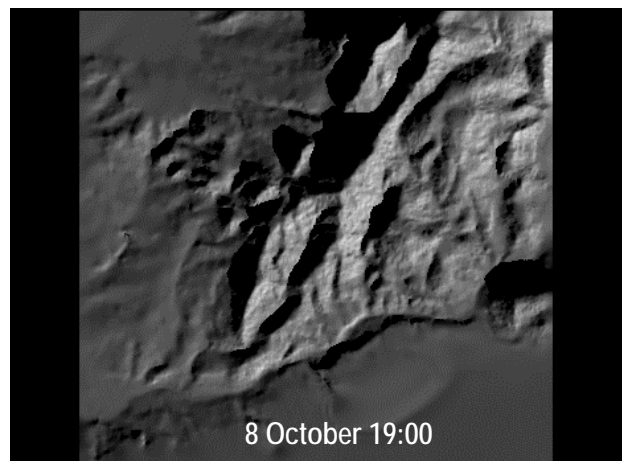
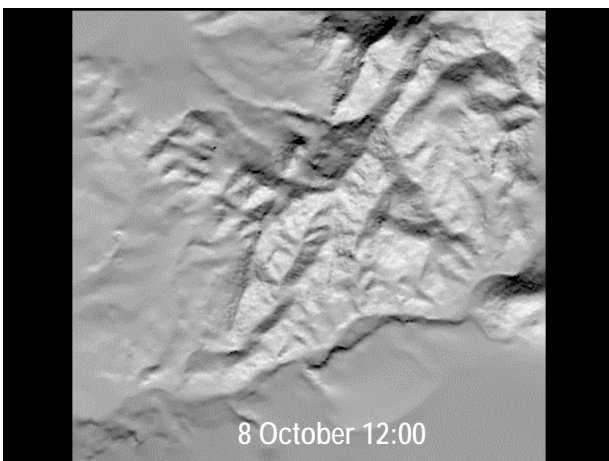
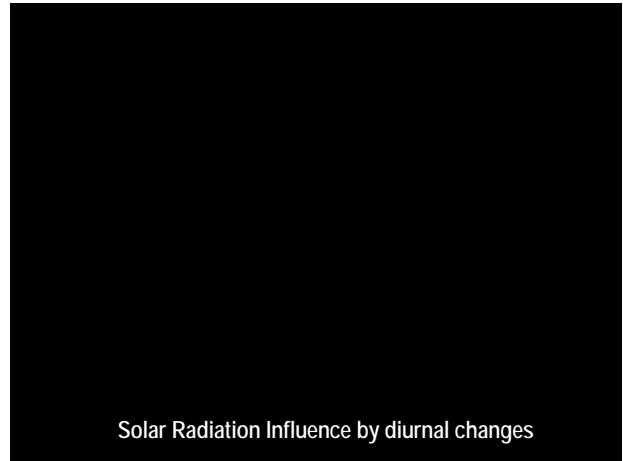
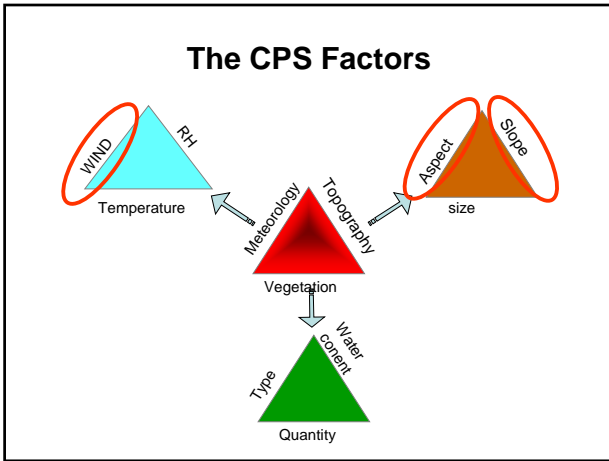
### The Campbell Prediction System - CPS

The **CPS** has been developed to explain

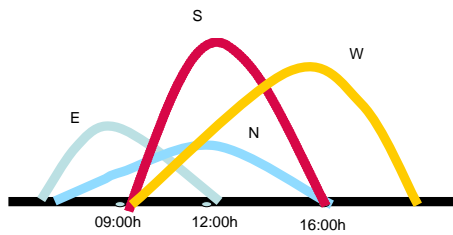
- how firefighters can make predictions of fire behaviour changes that may occur at any time, and
- make these predictions while on the fireline

#### The CPS enables the firefighter to:

- **Identify and use the correct information to make fire behaviour predictions**
- **Explain how you arrived at your prediction of fire behaviour change**



### The hourly variation of solar radiation



Morning



3 p.m.



Noon



6 p.m.



Fuel flammability and fire signature variation on a daytime topography fire  
Source: [http://www.dougsfire.com/articles/html/cps\\_working\\_paper.html](http://www.dougsfire.com/articles/html/cps_working_paper.html)

### The Logic (CPS)

- “Alineation” of factors:

- » 0 / 3 out of alignment
- » 1 / 3 small alignment
- » 2 / 3 medium alignment
- » 3 / 3 full alignment

### BETTER or WORSE ?

- The fire behaviour is going to a **better** or a **worse** scenario ?
- What kind of factors influencing fire behavior, will change the situation ?

### To Decide the TACTIC

- How to attack the **situation**?
- Is this tactic **safe** and **effective**?
- Do we apply the professional **ethic**?
- Can we explain **why** this will work?

### What is the fire telling you?

- The combination of factors (fuel, topography, meteorology) are influencing fire behaviour....

**Basics:** Application of water - It's not that easy ....

#### Water Triangle

The **right amount**



At the **right place!**

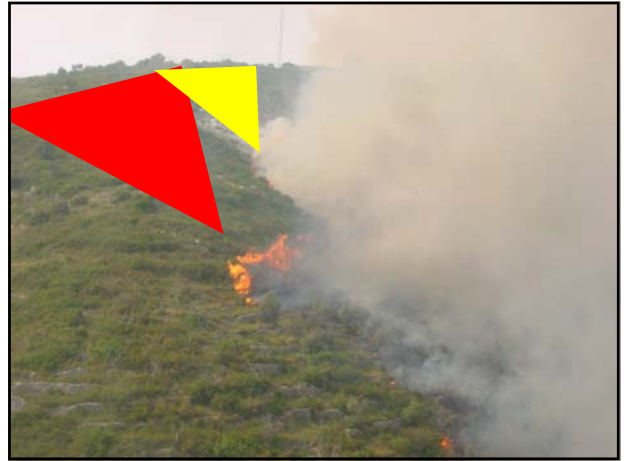
**Experiences:**

**“Years of Service” do not translate into (fire) Experience.....”**  
You can fly helicopters for 20 years and still not understand wildfire.

At the following fire scene...where would you bomb as a pilot?







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**Thanks for your Attention**