Preliminary research results of inter-disciplinary analysis of Kornati fire accident

Presented on Workshop

„ Forest Fire Behavior Research and Kornati Fire Accident – Facts and Preliminary Research Results“

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The Kornati Accident

- On August 30th 2007. at 16:30 the biggest firefighters accident in the history of firefighting in Croatia happened on island Kornati.
- Routine fire fighting operation ended with the great loss of humans. Six firefighters were killed and seven hardly burned. Unfortunately, after few days, six of them could not fight any more for their lives, so all together 12 firefighters were dead and only one survive.

Inter-disciplinary team

- In September 2007. the Ministry of interior affairs organise, for the first time in Croatia, the multidisciplinary team whose main task was to explain from scientific point of view what had happened on island Kornat on August 30. 2007.
- The team was composed of expert from the fields of meteorology, vegetation analysis, computer simulation of fire behavior and fire spread, aerodynamics and thermodynamics.
- All team members are here and they will present you after this introduction the preliminary research results.

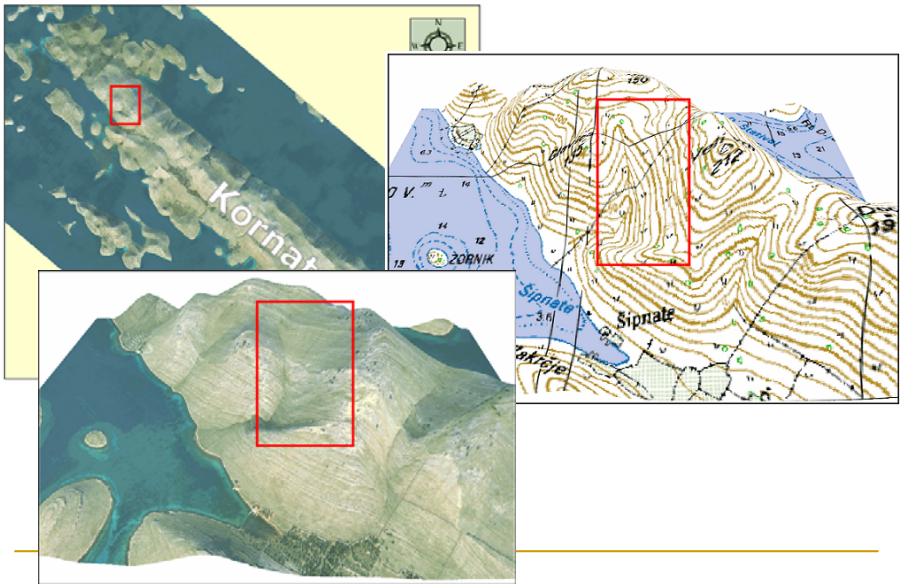
History of team work

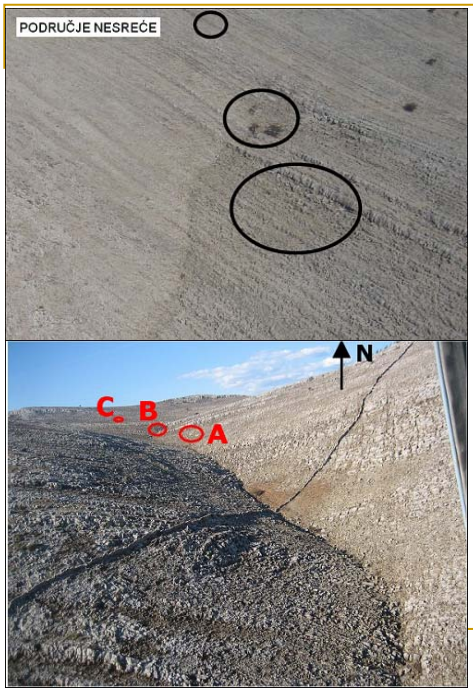
- Shortly after constitution the team define all information necessary for research, based mostly on evidences collected after the accident and forensic analysis.
- On September 25. 2007. six team members visit the accident place during the *jugo* wind (the same wind that had blown on the day of accident).

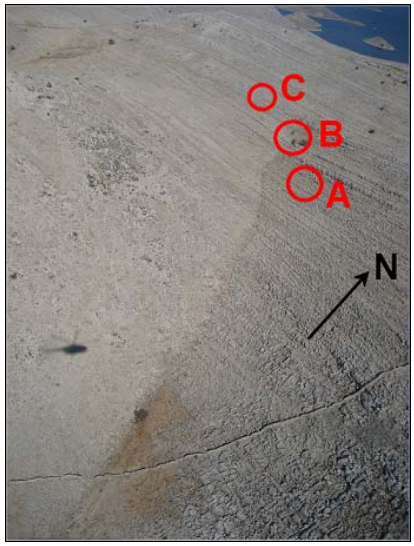
History of team work - II

- Almost two months after constitution, the team has been informed that the judge responsible for Kornati accident investigation doesn't want to give any official evidence connected with Kornati accident during the investigation period. That was his right, according to Croatia low.
- After that we have change our goal. The goal was **not any more to analyze what had happened on Kornat island**, including analysis of all possible natural and unnatural causes of accident, because such analysis has to be based on forensic data.
- Our new goal was **to analyze what could happened on Kornat island caused only by natural forces and burning of natural vegetation**.

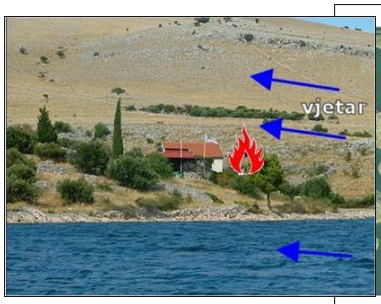
Basic facts – place of accident

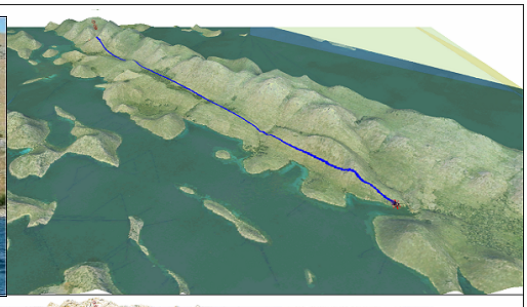


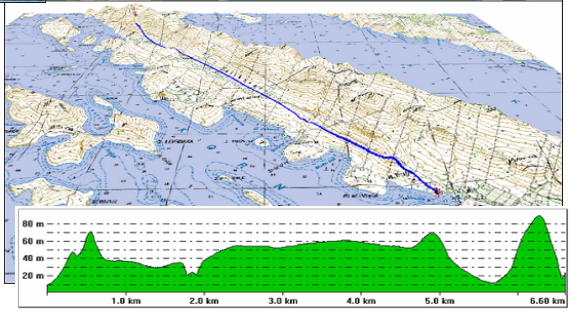




Fire ignition spot - Vrulje

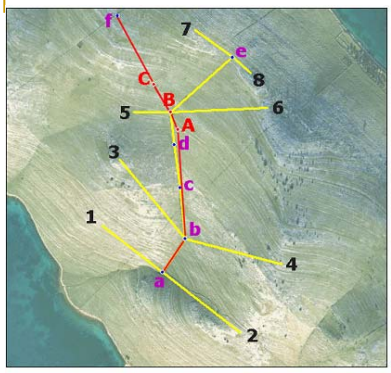


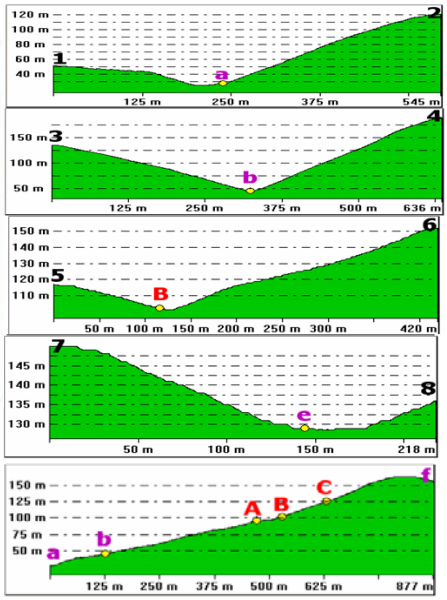




- Distance from ignition point to accident place cca. 6.6 km.
- Fire starts at 11:30.
- Accident happened at 15:25.

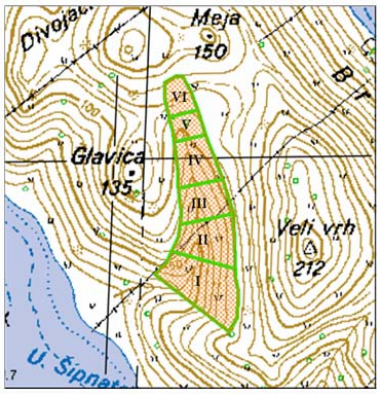
Terrain profiles



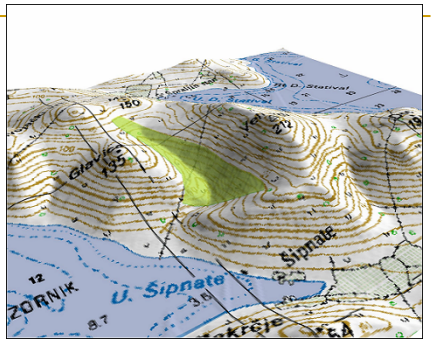


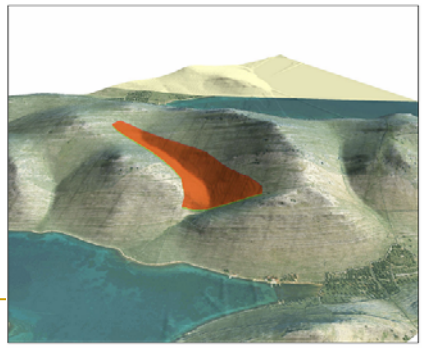
- Maximal slope in direction of canyon axis (line bA) 8.3º (14,49%)
- Maximal slope on line b4 24º

Canyon Area

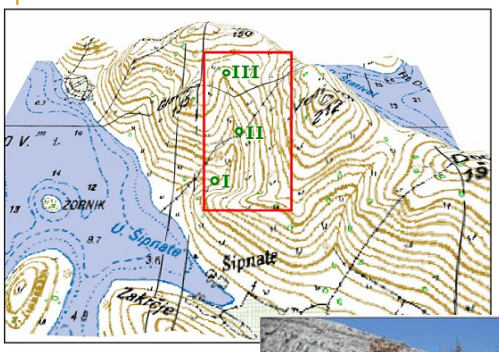


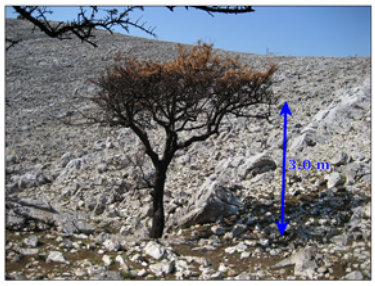
I	31 964 m²	32 %
II	20 976 m²	21 %
III	15 982 m²	16 %
IV	14 983 m²	15 %
V	6 992 m²	7 %
VI	8 990 m²	9 %
UKUPNO	99 887 m²	100 %

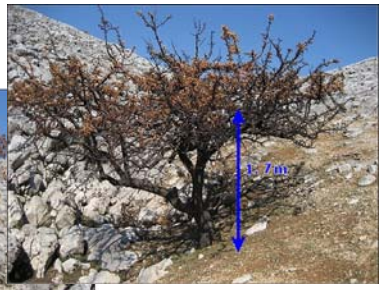


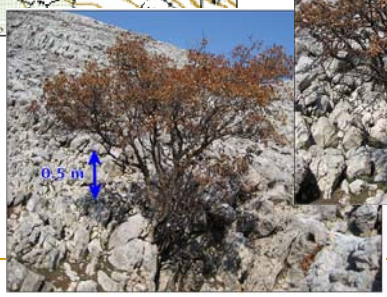


Important facts - I





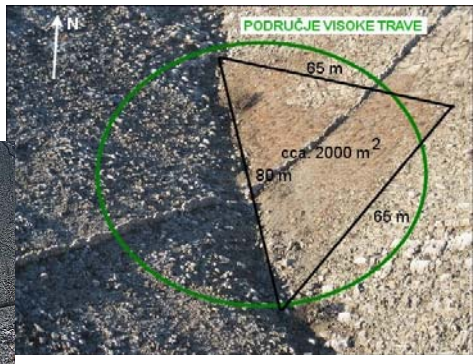


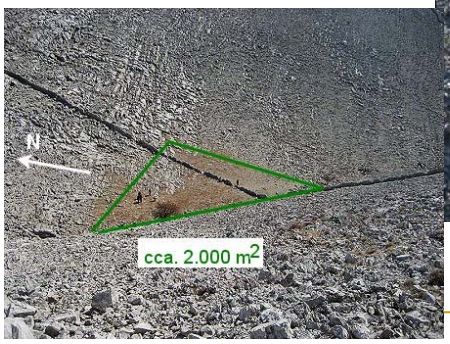


- Trees in Sipnate canyon was not totally burned. Starting from the canyon entrance trees loose their leaves up to 0.5 m, 1.7 m and 3 m.

Important fact II

- 300 m south from the accident place in the middle of canyon it seems that an area was created by soil erosion, where probably the vegetation was bigger then in other canyon parts (cca. 2.000 m ^{2})





Multi-disciplinary analysis included in our research

- **Analysis of meteorological situation in Kornati region on August 30th 2007.**
- **Analysis of Kornat island vegetation**
- **Analysis of fire propagation from the ignition point to Sipnate canyon and inside the Sipnate canyon**
- **Analysis of eruptive fire behavior**
- **Analysis of aerodynamic aspects of Kornati accident**
- **Analysis of thermodynamic aspects of Kornati accident**
- **Conclusions and Recommendations**