FireLab

A National Fire Danger Forecast System for the Benefit of All

November 15, 2022

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Institute of the Environment (IOE)

Who are we?

- An autonomous and multidisciplinary institute established at the heart of the University of Balamand (UOB)
- Established in January 2004.
- Addresses pressing environmental concerns through scientific researches and public actions.
- Relies mainly on grants and soft funds for its activities.

Our goals

Providing solutions to the sustainability of natural resources within the complex human environment by promoting science as the basis for decision making.

Our programs

- Marine and Coastal Resources (MCR) Program
- **Land and Natural Resources (LNR) Program**
- Environmental and Energy Economics (EEE) Program

Land and Natural Resources (LNR) Program

Themes of interest

- Forest inventories and management
- **Wildfire risk management**
- Restoration of terrestrial ecosystems
- Local community empowerment and capacity building
- Land use and land cover change
- Inventory and mitigation of greenhouse gases
- Climate change, droughts and land degradation
- Conservation of native fauna and flora

Fires in Lebanon

➡ Lebanon suffers from an increasing number of fire events and unprecedented annual extent of burnt areas.

➡ Between 2008 and 2021:

✓ *The total burnt area reached 21,674 ha*

✓ *The minimum total number of fires amounted to 2,249 fires*

✓ *The average annual burnt area increased to 1,449 ha after it was around 1,000 ha per year before the year 2019*

Fires in Lebanon

Assessing and forecasting wildfire danger is an important step towards efficiently allocating resources for fire prevention, mitigation, and post-fire recovery efforts
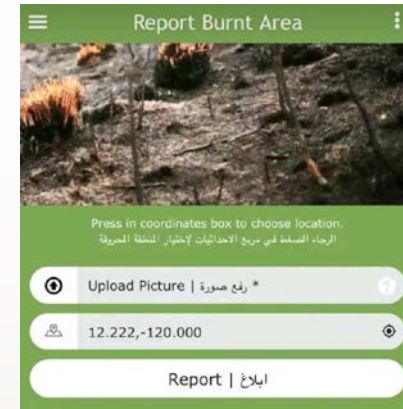
Accordingly, we developed in 2016 a new national
fire danger forecast system for use as an operational fire management tool in Lebanon (FireLab application- available online)

FireLab application: main highlights

- It was fully developed in Lebanon at UOB, using best available techniques and data related to fire risk.

- Firelab is an innovative fire danger forecast system combining local biophysical, socio-economic and weather forecast data in a complex GIS modeling system

- A peer reviewed paper was published in International Journal of Disaster Risk Reduction (http://dx.doi.org/10.1016/j.ijdrr.2017.06.028).

- It provides wildfire-related information at the municipality level all over Lebanon.

- It provides fire danger forecasts for all Lebanon 3 to 9 days in advance.

- It is available online for everyone (Ministry of Environment and many municipalities are already using it, other national and local stakeholders were previously trained to use it).

- There is a continuous collaboration with the European Forest Fire Information System -joint research center (EFFIS-JRC) for employing improved forecast data.

- FireLab uses relatively high resolution weather forecast data (starting at 8*8 Km)

FireLab: usage

➤ Currently, an updated version of a smartphone application (Fire Patrol) is being developed in collaboration with the Lebanon Reforestation Initiative (LRI) and ESRI Lebanon.

➤ Fire Patrol is open for use by individuals all over Lebanon and it provides localized forecasts depending on registered locations.

http://ioe-firelab.balamand.edu.lb/