A Development of Forest Fire Forecasting and Monitoring Information System in Vietnam (FFSolution.2014)

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OUTLINE

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Problems
- Risk for forest fire in Vietnam is extremely high. Of which, factors of weather and vegetation types are potential causes arising forest fires.

Insufficient amount of rainfall in dry season 2014 comparing with mean of rainfall in long period.

Prolonged drought and baking sun in many regions.
- Forest area, which has been lost due to fire and frequency of forest fire is very high (112,000 hectare of forests have been lost since 1994. There were 419 events of forest fire and more than 3150 hectare lost due to fire in the year of 2014).
- Consequence of forest fire is very severe.
Current systems for forecasting forest fire as well as for preventing and fighting this event is still simple, delay in communicating information, inconvenient and ineffective.
Research Questions
(1) How can forest fire danger levels be accurately forecasted?

(2) What is a fast, convenient and efficient way to communicate information concerning forest fire potential occurrence to the forest office, forest owners and local stakeholders?
Methodology
The study developed a system (FFSOLUTION.2014) using the integration of many data sources such as meteorological information, forest resources, remote sensing and GIS data, and reports from local ranger offices/people to establish automatically news and maps of Forest Fire Danger Warning Index (FFDWI) for every hour of a day, which can also be modified interactively when input data change.
Process for forecasting forest fire risk by FFSOLUTION.2014

Using Nesterop’s algorithm with some necessary modification (by adding three more factors: forest type, wind speed and fog level).
Deploying Model of the System

(Automatic discovering fire position)
Devices interactive with the system

- **Computer, Laptop**
  Interacting with the system through: IE, Firefox, Chrome

- **Tablet, Smart phone**
  Interacting with the system by software installed in the devices

- **Simple phone**
  Interacting with the system through messages (SMS)
Technology for establishing the system

The system was established on the foundation of modern technologies: .NET, ASP.NET, C#, MS SQL SE, RVER, ARC GIS, ARC GIS SERVER. Therefore it satisfies the requirement of forest fire forecasting and monitoring in Vietnam.
Results and its Implication
FFSOLUTION.2014 for forecasting forest fire
FFSOLUTION.2014 for fighting forest fire
FOREST FIRE FORECASTING AND MONITORING INFORMATION SYSTEM

Layer Visibility
- Phuong tieu PCCC rong
- Dia binh
- Dien dam chat
- Dung lieu khi trong
- Dau
- Gioa thong
- Rung
- Thuy van
- Cap kt

Chu giai
- CAPKT_HUYEN
  - Cay kyi nguy hiem
  - Raat nguy hiem
  - Nguy hiem
  - Co nguy ot chat
  - It co nguy ot chat
Implication of the study: risk for forest fire may increase by increment of forest cover in a location/region. The study contribute to help us in protecting forests from fire risk by efficient way.
Concluding remarks
- Two important questions concerning forest fire forecasting and monitoring in Vietnam were answered and solved by FFSOLUTION.2014.

- Highlight characteristics of FFSOLUTION.2014 are:

  (1) system configuration is automatic.

  (2) administrative reports can be made and database always be stored.

  (3) flexibility for forecasting at any unit of area.

  (4) easy of use.
Thank you for your attention!