INDOFIRE: An Infrastructure and Operational MODIS-Based Near Real-Time Fire Monitoring Program in Indonesia

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Abstract- The Indofire project is a capacity building project with the aim of transferring operational satellite-based fire detection technology currently in use within Australia to several government agencies within Indonesia to improve fire monitoring and management. The project was funded by the Australian Government's overseas aid program, AusAID, in 2008/09 and has succeeded in building the infrastructure for operational fire monitoring via satellite within Indonesia and training staff within the partner agencies in how to make best use of the system for improved forest management. This presentation summarises how Landgate has transferred the necessary technology, trained Indonesian counterparts and collaboratively built the Indofire system over the last few years.

Keywords: MODIS, remote sensing, forest management, fire management, Indonesia

1. INTRODUCTION

Indofire is an operational near real-time (NRT) satellite-based monitoring system for fire monitoring and management which covers the whole of Indonesia and is accessed freely through the internet (see Figure 1). Two phases of the Indofire project have currently been completed under funding from the Australian Government's overseas aid program AusAID.

The Indofire system includes automatic downloads of satellite data, automatic pre-processing, and an underpinning data transfer network supported by an Indonesian University, inbuilt redundancy throughout the system and delivery of online information through two Jakarta-based web servers. A system diagram describing the system infrastructrure is shown in Figure 2.

Partners in the Indofire project include LAPAN, Ministry of Forestry (MoFr), Ministry of Environment (MoE), Ministry of Education (MoEd) within Indonesia and the Western Australian Land Information Authority (Landgate) in Australia.

2. PROJECT DELIVERABLES

The key deliverables from the Indofire Project were :

Automatic real-time satellite processing of fire information: to achieve this parts of the FireWatch MODIS-based fire hotspot detection system (http://firewatch.landgate.wa.gov.au/) operated by Landgate Satellite Remote Sensing Services (SRSS) in Australia were installed in sites within Indonesia.

Hardware, software and communication installation: Figure 2 describes the complex infrastructure which was installed. The AARNET within Australia links to the INHERENT network within Indonesia to allow the various nodes to access the fire hotspot data within Indonesia and Australia.

High speed access to satellite imagery products : this was the key technical deliverable to the Indonesian partners to improve fire monitoring and management in Indonesia.

Comprehensive training : to teach the staff of partner organizations in Indonesia how to get the most information out of the new data streams and build the capacity of Indonesia to effectively monitor its forests.

Multiple levels of redundancy: two nodes within Indonesia located at the Ministry of Forestry in Jakarta and LAPAN in Pekayon and a further node at Landgate SRSS in Western Australia ensure that the data is widely used and available from multiple sources.

Enduring partnerships between government agencies : fire monitoring and management Indonesia's forests, peatlands and other landscapes is a task bigger than any single agency. The Indofire project brings different agencies together and promotes collaboration in the interests of forest management and protection.
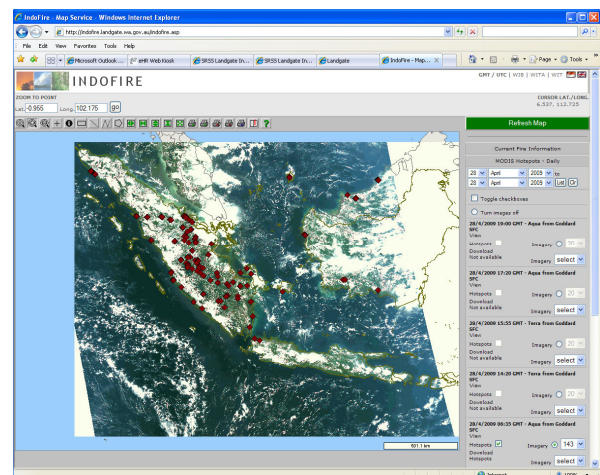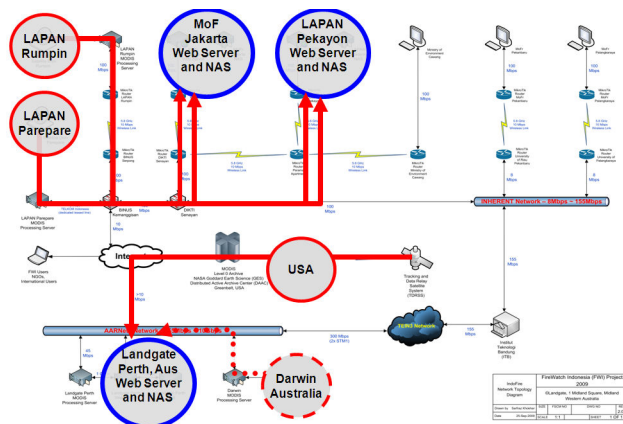

Figure 1. Screenshot of the Indofire website.

Figure 2. Indofire system diagram.

3. CONCLUSION

Two successful phases of the Indofire project have been completed and the system is now used operationally in Indonesia for monitoring and managing fires. Staff of the partner agencies of the project continue to be trained in the use of Indofire in Indonesia and Australia with the aim of ensuring sustained improvement in fire management practices.

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