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Vegetation Fires in Brazil: an Approach Combining Orbital Imagery, Geoprocessing, Numerical Weather Analysis and the Internet.

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Hundreds of thousands of vegetation fires occur every year in most parts of Brazil, mainly in association with non-mechanized agriculture practices, pasture renewal, forest conversion, and arson. Many protected areas are also burnt, and in dry years the high levels of pollution resulting from the fires affect the health of millions of persons and precludes air traffic for periods of weeks; atmospheric changes at global levels have also been linked to such large-scale emissions. Near real-time monitoring and analyses of these fires and their risk of spread are performed jointly by INPE-IBAMA through a unique system that evolved from over a decade of field practice and previous versions. Orbital imagery from the AVHRR sensors on-board 850 km high NOAA-series polar-orbiting satellites provide up to six daily overpasses, from which the geographical coordinates of fires ("hot pixels") are extracted using a channel 3 (~3.7μ) temperature threshold algorithm and a navigation package with ground control points. The fire pixels are then ingested by a Geographical Information System (GIS) which allows their analysis against layers of political and geographical boundaries, vegetation maps, and recent high resolution satellite imagery (Landsat-TM); corresponding weather maps for precipitation, humidity, temperature, winds and other variables, and a vegetation fire risk map, as well as the corresponding numerical forecasts for 1 to 5 days are also available and updated constantly, providing important decision-making tools for fire control and suppression. Persistence of fires and fire presence in areas of special interest are automatically provided by the GIS. Fire alert levels are then issued accordingly. The system is accessed and fully operated by users through the Internet, without the need of special PC boards or databases. Details of the major steps of this multi-technology approach are presented.

Thursday, October 5, 2000, Morning
Room G2, Session Number 68

B. **Earth Observation Symposium**

Coordinators: W.J. Hussey (USA)
Jackie Jouan (FRANCE)

B.4. **Data for Environmental Applications and Global Change Studies**

Chairmen: Bhaskar Choudhury (USA)
S. Vetrella (ITALY)

Rapporteurs: D.T. Lauer (USA)

IAF-00-B.4.01 **Spatio-Temporal Investigation of Net Radiation and Heat Fluxes - Results from a Satellite Data Analysis**
Eberhard Parlow
MCR Lab - University of Basel, Basel, Switzerland

IAF-00-B.4.02 **The Shuttle Radar Topography Mission (SRTM): a Breakthrough in Remote Sensing of Topography**
Jakob Van Zyl
Jet Propulsion Laboratory, Pasadena, USA

IAF-00-B.4.03 **Vegetation Fires in Brazil: an Approach Combining Orbital Imagery, Geoprocessing, Numerical Weather Analysis and The Internet**
Alberto Setzer
T. Krug, C.A. Nobre, S. Pereira, INPE, Sao José dos Campos, Brazil, J.A. Raposo, IBAMA, Sao José dos Campos, Brazil

IAF-00-B.4.04 **Application of Satellite Data to Evaluate Evaporation and Vegetation Productivity of River Basins**
Bhaskar Choudhury
NASA Goddard Space Flight Center, Greenbelt, USA

IAF-00-B.4.05 **A New Remote Sensing Database System in Ministry of Agriculture, Forest and Fisheries, Japan**
Masafumi Kodama
Xianfang Song, Computer Center for AFFR, MAFF, Ibaraki, Japan

IAF-00-B.4.06 **Remotely Sensed Data for Regional Mapping of Timber Exploitation in the Brazilian Tropical Rainforest**
Thelma Krug
J.R. dos Santos, L. Spinelli Araujo, INPE, Sao José dos Campos, Brazil, L.G. Meira Filho, Brazilian Space Agency, Brazilia, Brazil

IAF-00-B.4.07 **Remote Sensing Application for Assessing Degradation in Drylands in En Nahud Area, Central Sudan**
A.A. Eltayeb Osman
Remote Sensing Authority, Karthoum, Sudan

IAF-00-B.4.08 **Using Three Different Satellite Remote Sensing Instruments to Study Stratospheric Ozone**
Anssi M Ikki
S. Hassinen, E. Kyrl , G.W. Leppelmeier, L. Oikarinen, J. Tamminen, Finnish Meteorological Institute Geophysical Research, Helsinki, Finland

IAF-00-B.4.09 **VEGETATION: Global Monitoring of the Vegetation for the Long Term**
Xavier Passot
CNES, Toulouse, France, G. Dedieu, CESBIO, Toulouse, France

IAF-00-B.4.10 **Evaluation of Optical and Microwave Remote Sensing Data to Study the Landscape Dynamics of the Ne-Sector from Maranhao Island, Brazil**
Hermann Kux
M.E.S. Rangel, G.M. Sales, INPE, Sao José dos Campos, Brazil

IAF-00-B.4.11 **Status of Carbon in the Universe**
Gerald Soffen
NASA Goddard Space Flight Center, Greenbelt,MD, USA