

The AGU 2006 Joint Assembly, 23-26 May, Baltimore, MD, USA  
Location: BCC 308; H32A(oral); Wed.1045h, H23A(poster); Tues.1400h

## **Use of Satellite Remote Sensing Data in Flood and Landslide Analysis**

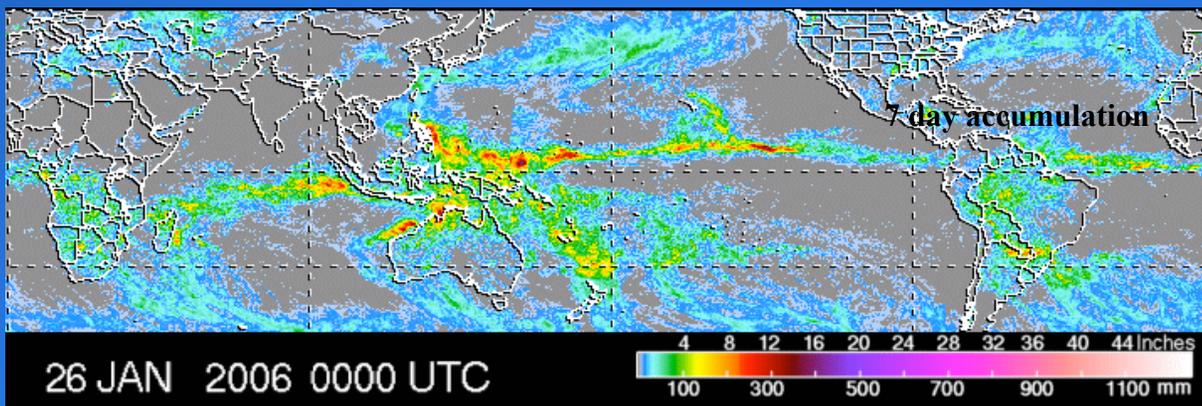
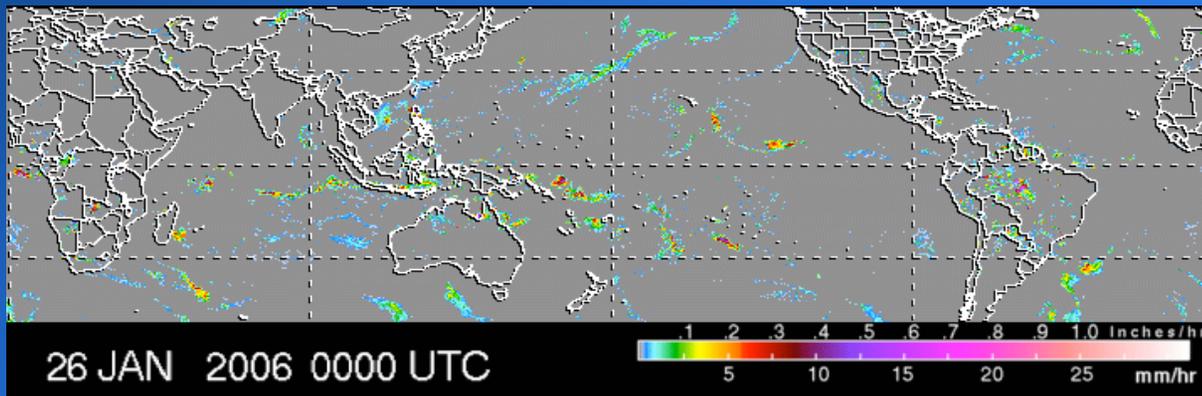
- Floods and associated landslides impact more people globally than any other type of natural disaster
- Detecting and monitoring such events globally is important to understand the processes, for mitigation planning and execution, and potentially for warning
- New satellite remote sensing data sets of precipitation and land surface characteristics (e.g., elevation, soil, vegetation) are now available for research and potential applications in this area
- The purpose of this session was to facilitate discussion on the subject and assess the state of the science

# Precipitation Information for Floods and Landslides

## *Tropical Rainfall Measuring Mission (TRMM)*

### TRMM Multi-satellite Precipitation Analysis (TMPA)

*Real-time update every 3-hour at <http://trmm.gsfc.nasa.gov>*

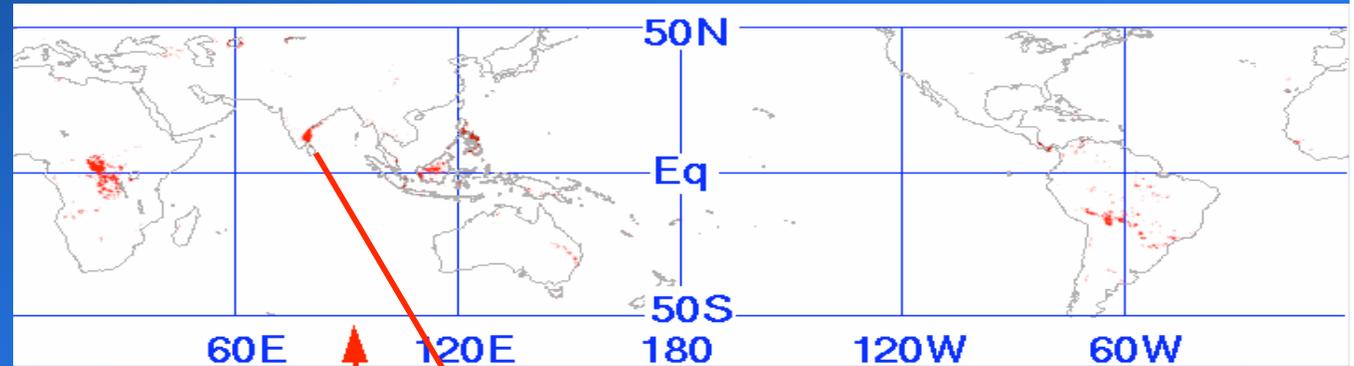


**TMPA uses polar-orbit microwave satellites (NOAA, DoD, NASA) and geosynchronous IR satellites, all calibrated by TRMM**

# From Space-borne Rainfall to Flood Potential Maps

<http://trmm.gsfc.nasa.gov>

**28 Oct. 0000GMT**  
2005



## **NEWS STORY:**

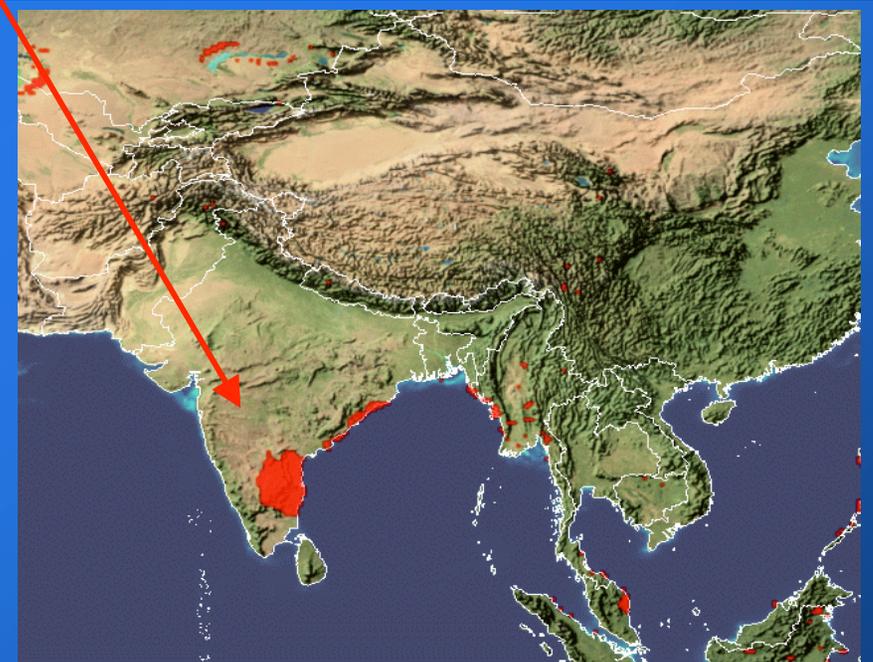
### **More than 100 die in India floods**

More than 100 people have died in five days of heavy rains in the southern Indian states of Tamil Nadu and Karnataka, officials say.

More than 50,000 people have been evacuated from their homes in affected areas of Tamil Nadu.

Thousands of people have been displaced and air, rail and road services hit.

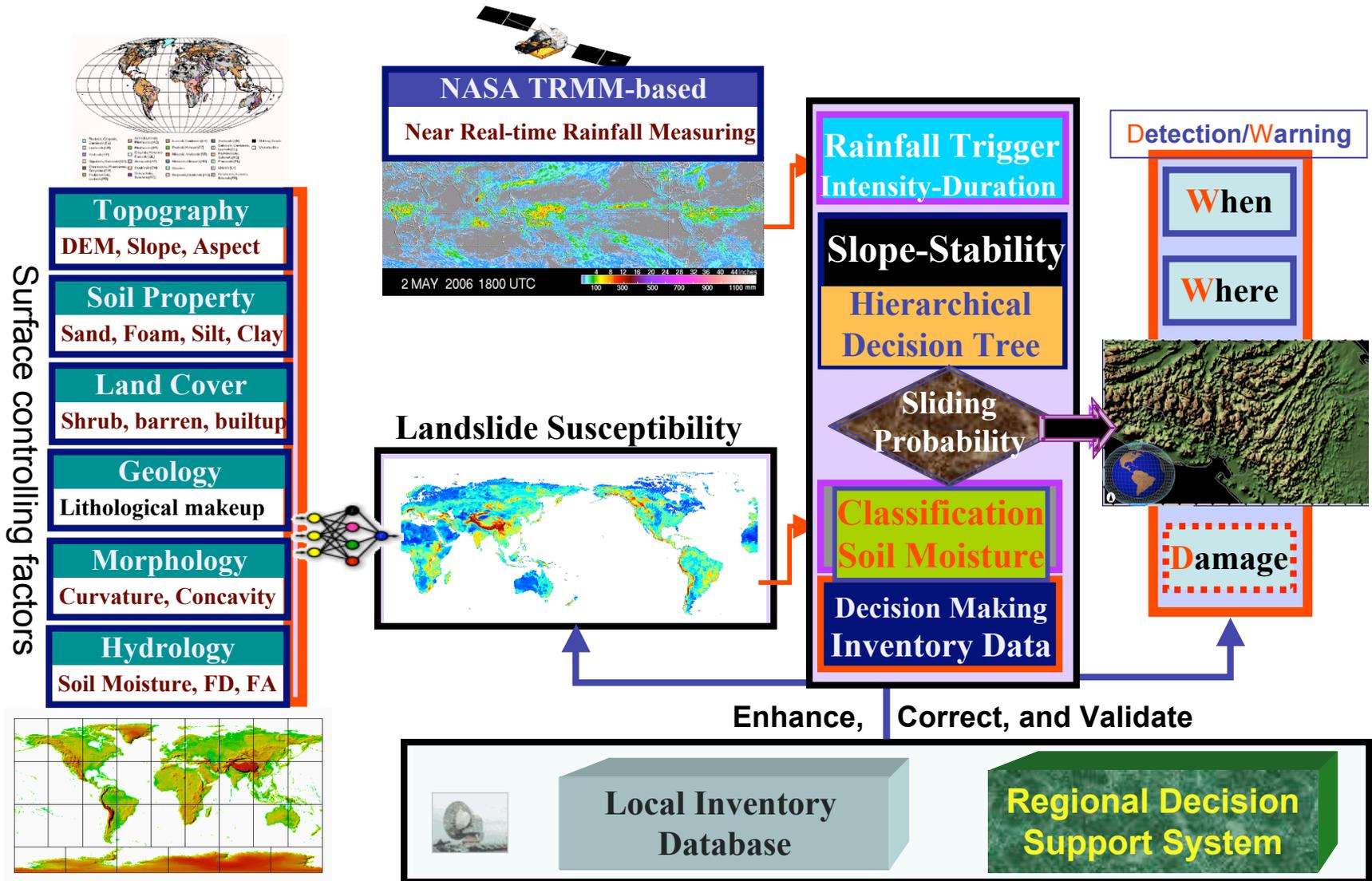
### **From web site text page:**



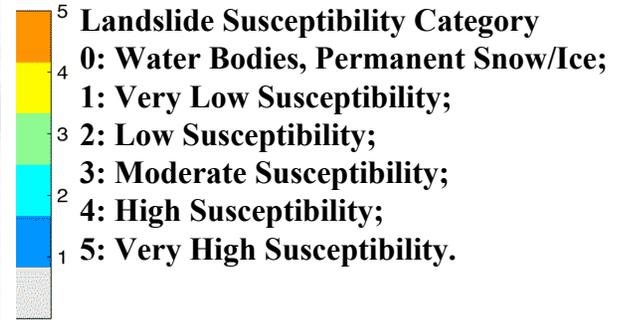
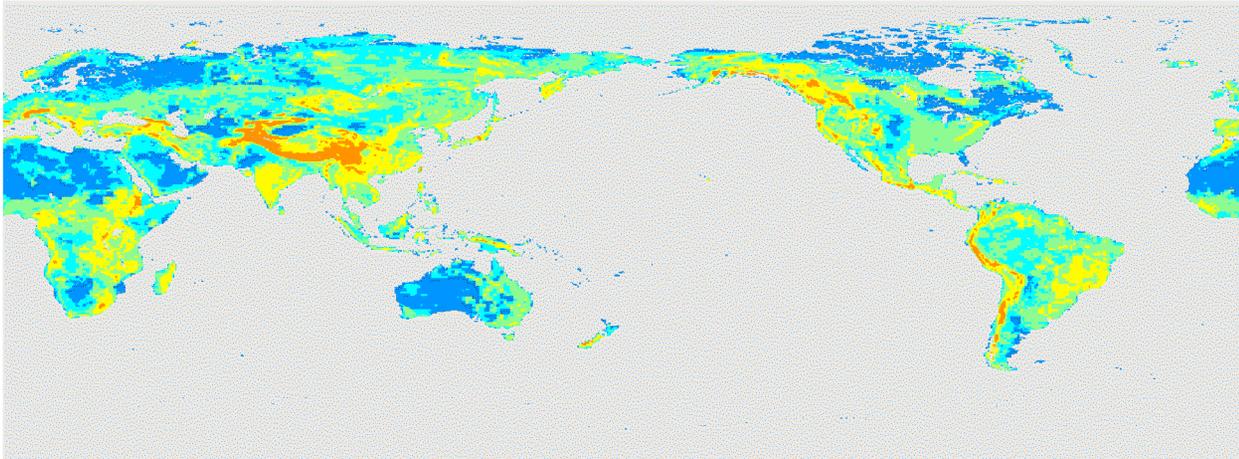
### **24 hr rainfall**

India	131.84 mm	MADRAS	13.07 80.25
India	214.84 mm	NELLORE	14.45 79.98
India	234.37 mm	CUDDAPAH	14.48 78.83
India	336.91 mm	TIRUPATHI	13.67 79.58

# Global Rainfall-induced Landslide Detection

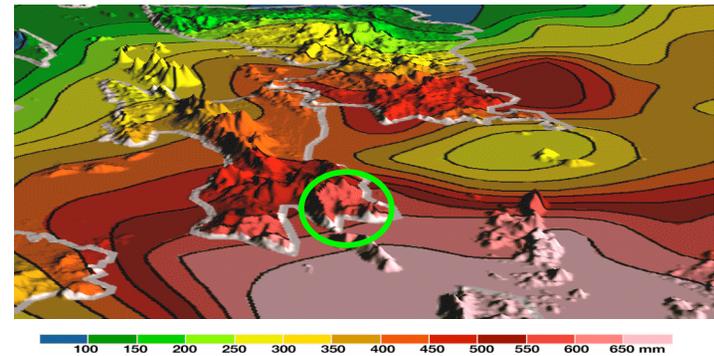
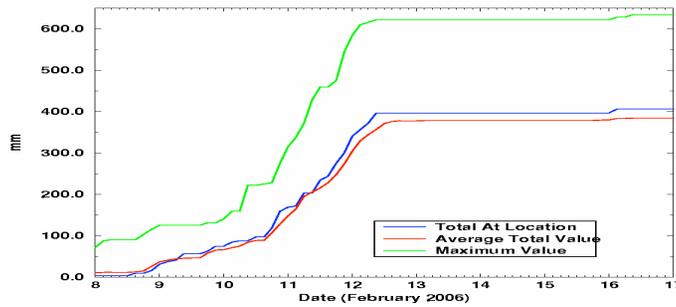


# Global Landslide Susceptibility Map Developed in this research



## Philippines Landslide and TRMM Rainfall Accumulation

Rainfall Accumulation Near 10.43N 125E  
634.4 mm=Maximum Within 100km

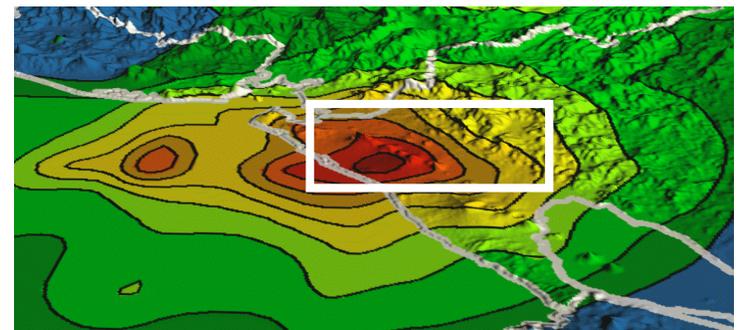
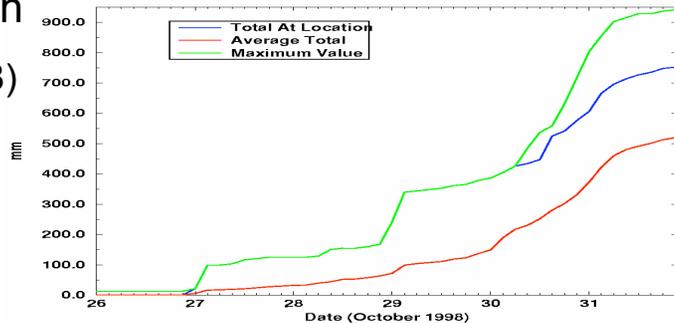


Philippines

Feb 8-17, 2006

## Hurricane Mitch induced Landslide and TRMM Rainfall Accumulation

Rainfall Accumulation Near 12.5N 87.0W  
941.0 mm=Maximum Value within 100km

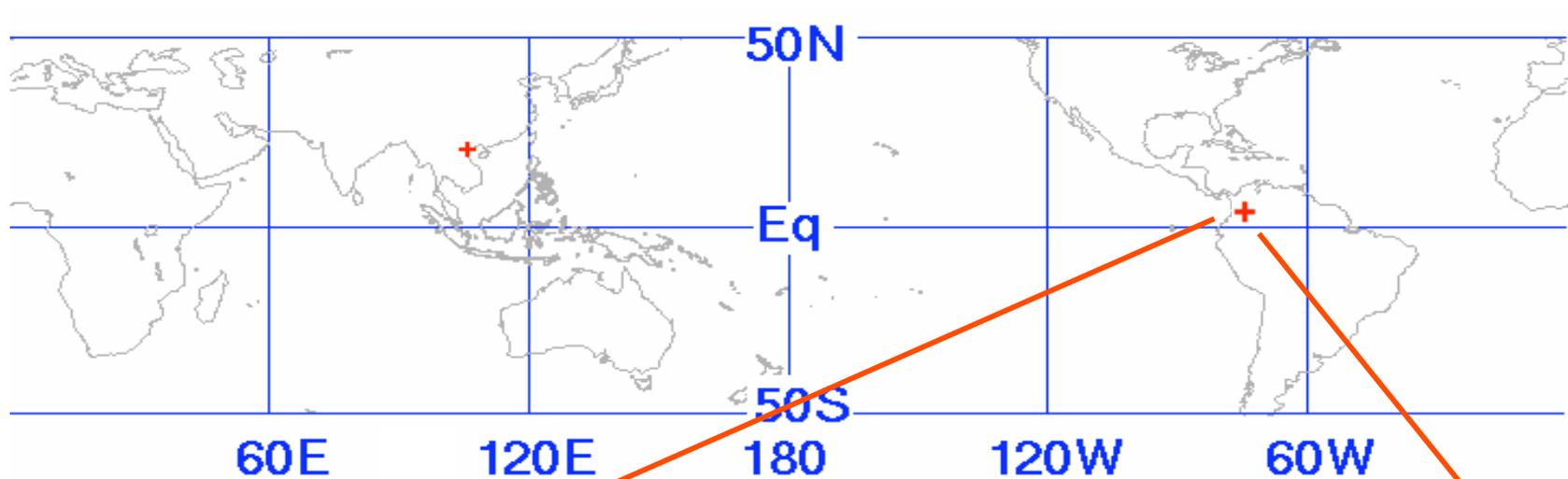


Hurricane Mitch

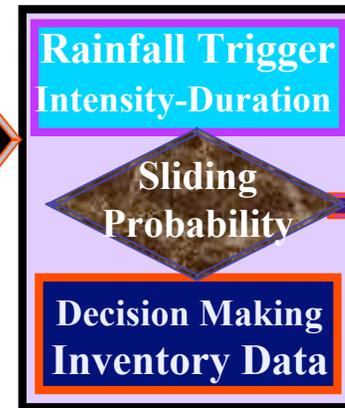
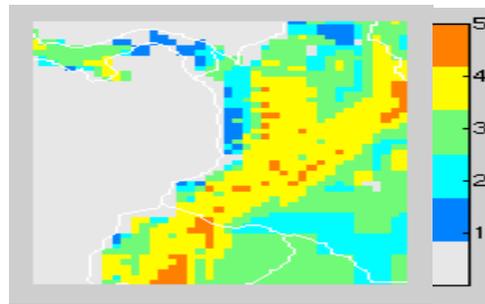
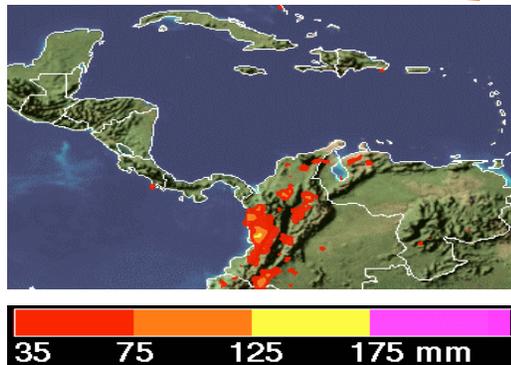
(Oct 26-31, 1998)



# Near Real-time Global Rainfall-induced Landslide Detection



Rainfall Map → Intensity-Duration → Susceptibility/ → Landslide Warning



High Probability of Landslide in Region

## TRMM Near Real-Time Rainfall at location 76.875 W, 4.125 N

- 1) the last 24 hour rainfall accumulation > 103mm
- 2) The Susceptibility Map shows high or very high susceptibility

**News Report:** 13 Apr 2006, **At least 34 people missing in Colombian mudslide**