

# ALOS/PALSAR in the Amazônia

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INPE experience and challenges  
in mapping and monitoring  
deforestation in the Brazilian  
Amazônia

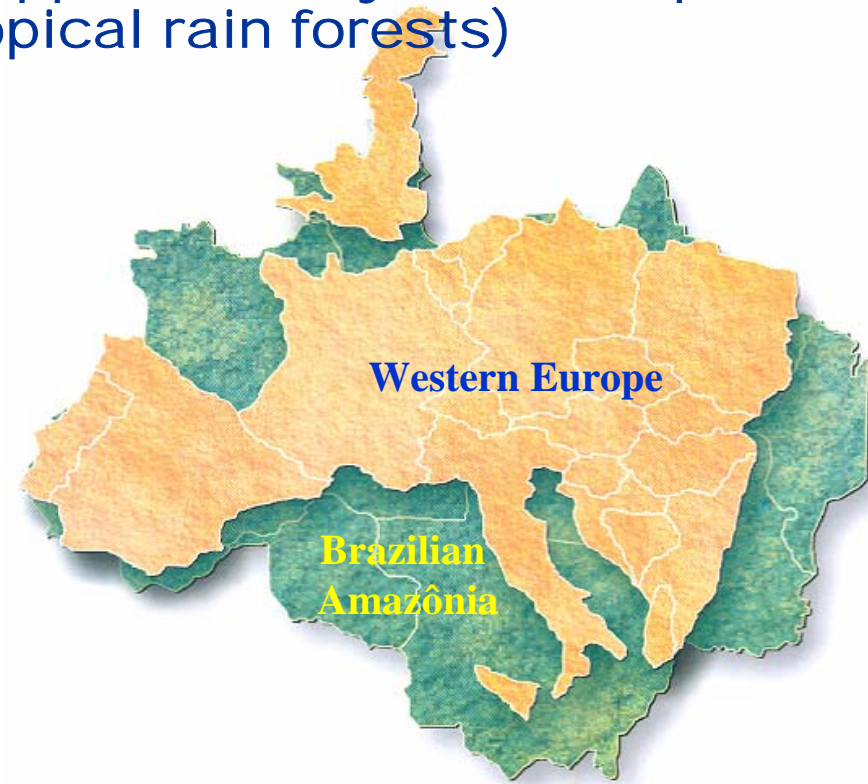
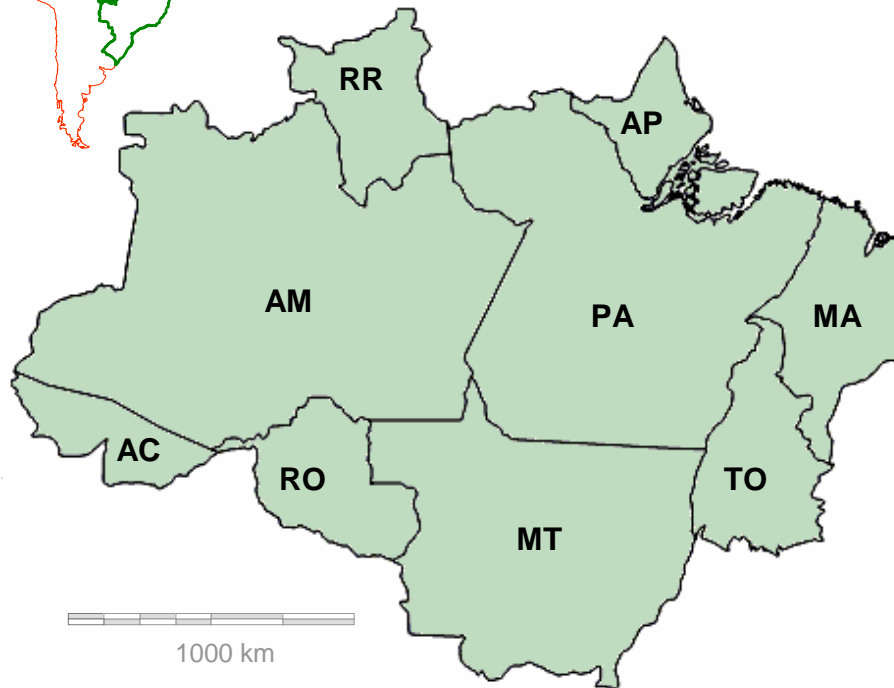


Contribution of ALOS/PALSAR



# ALOS/PALSAR in the Amazônia

Brazilian Amazônia covers approximately 5 mi of sq km (~ 80% domain tropical rain forests)



Orbital remote sensing is the only effective mean to map and monitor deforestation: *PRODES* and *DETER* Projects



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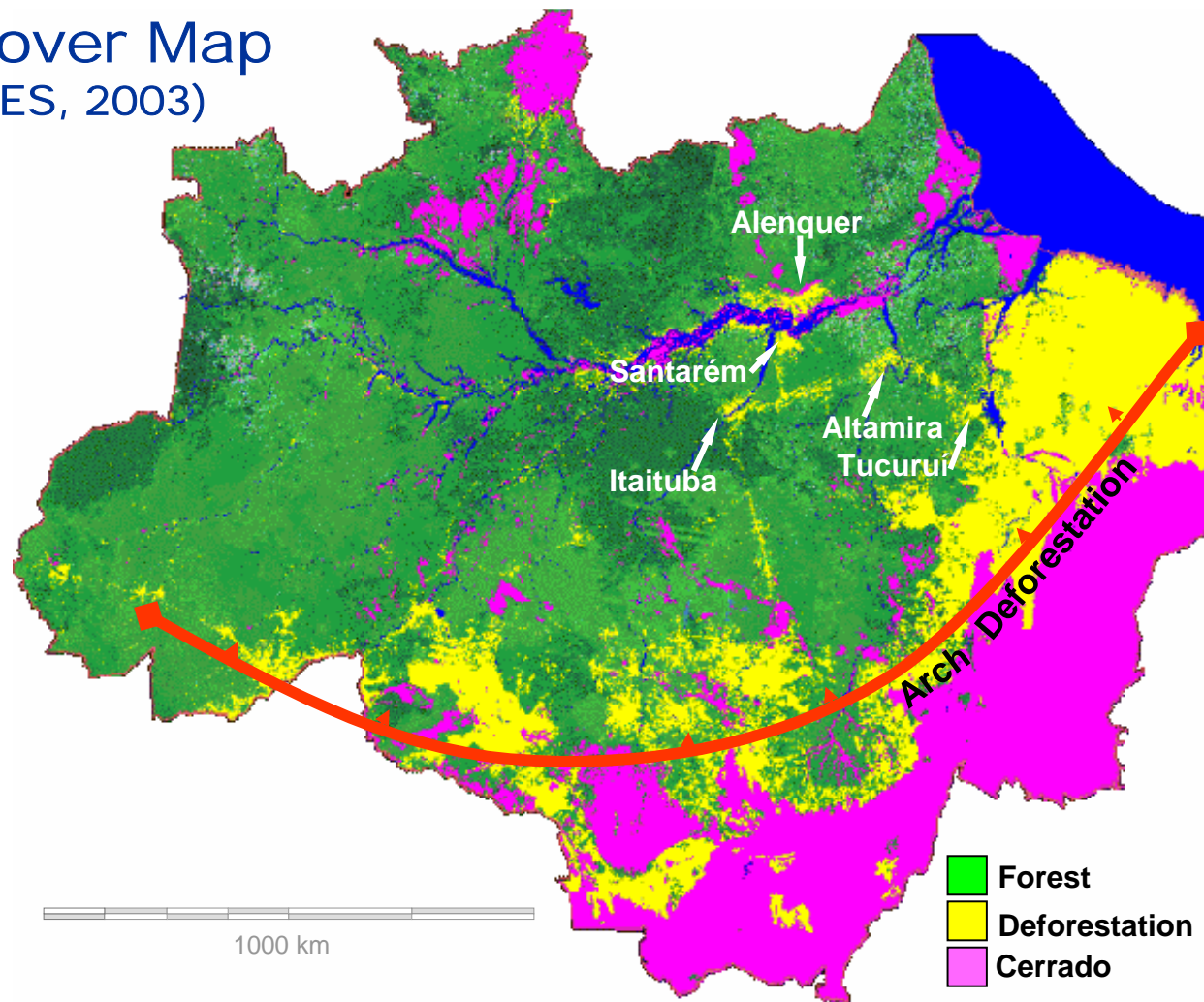
## *PRODES* Project ([www.obt.inpe.br/prodes](http://www.obt.inpe.br/prodes))

Conducted by INPE since 1988, produces the annual gross deforestation map of the Brazilian Amazônia, based on Landsat-TM images

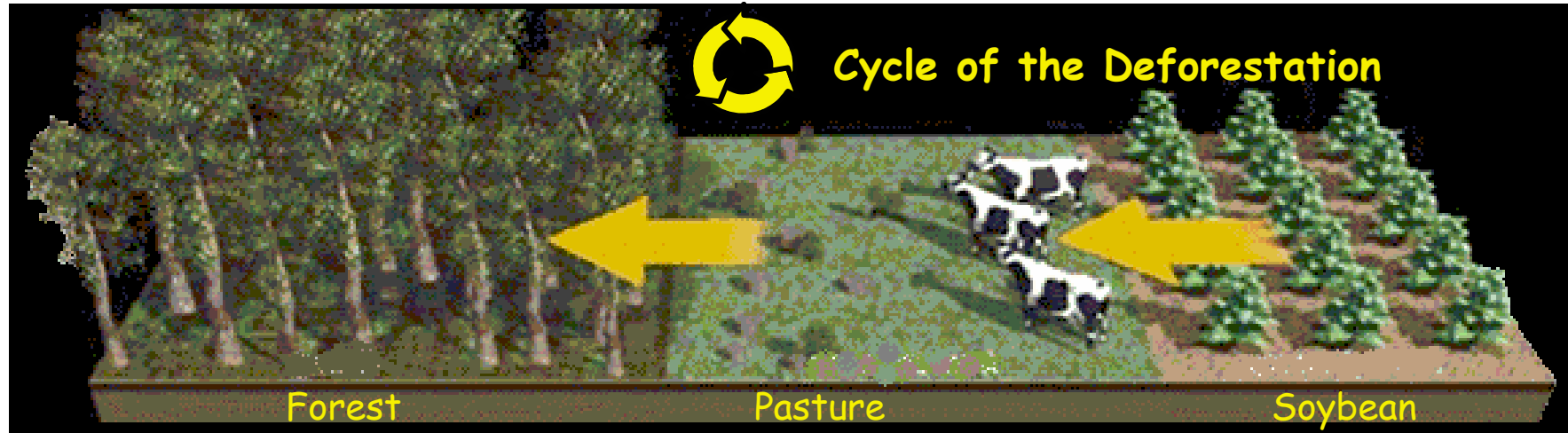


# ALOS/PALSAR in the Amazônia

Land cover Map  
(PRODES, 2003)

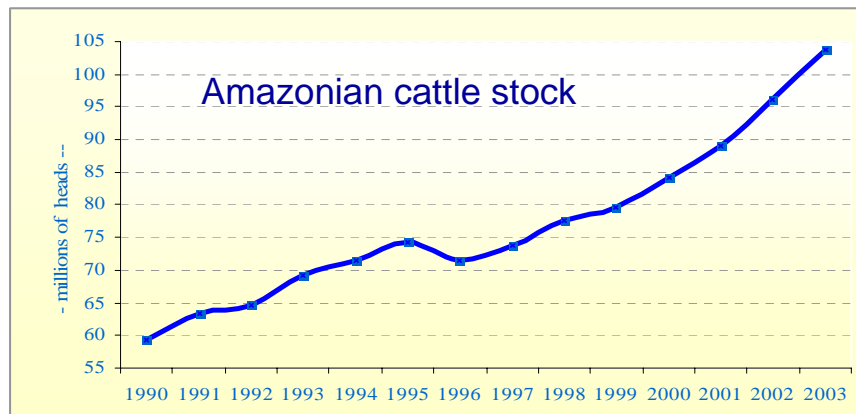


# ALOS/PALSAR in the Amazônia

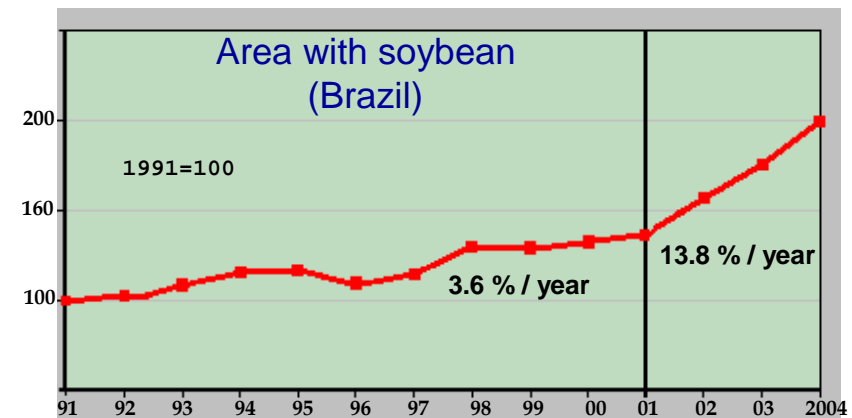


Source: VEJA

Beef & soybean: commodities for the international market



Source: IPEA



Source: IPEA

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## *DETER* Project

([www.obt.inpe.br/deter](http://www.obt.inpe.br/deter))

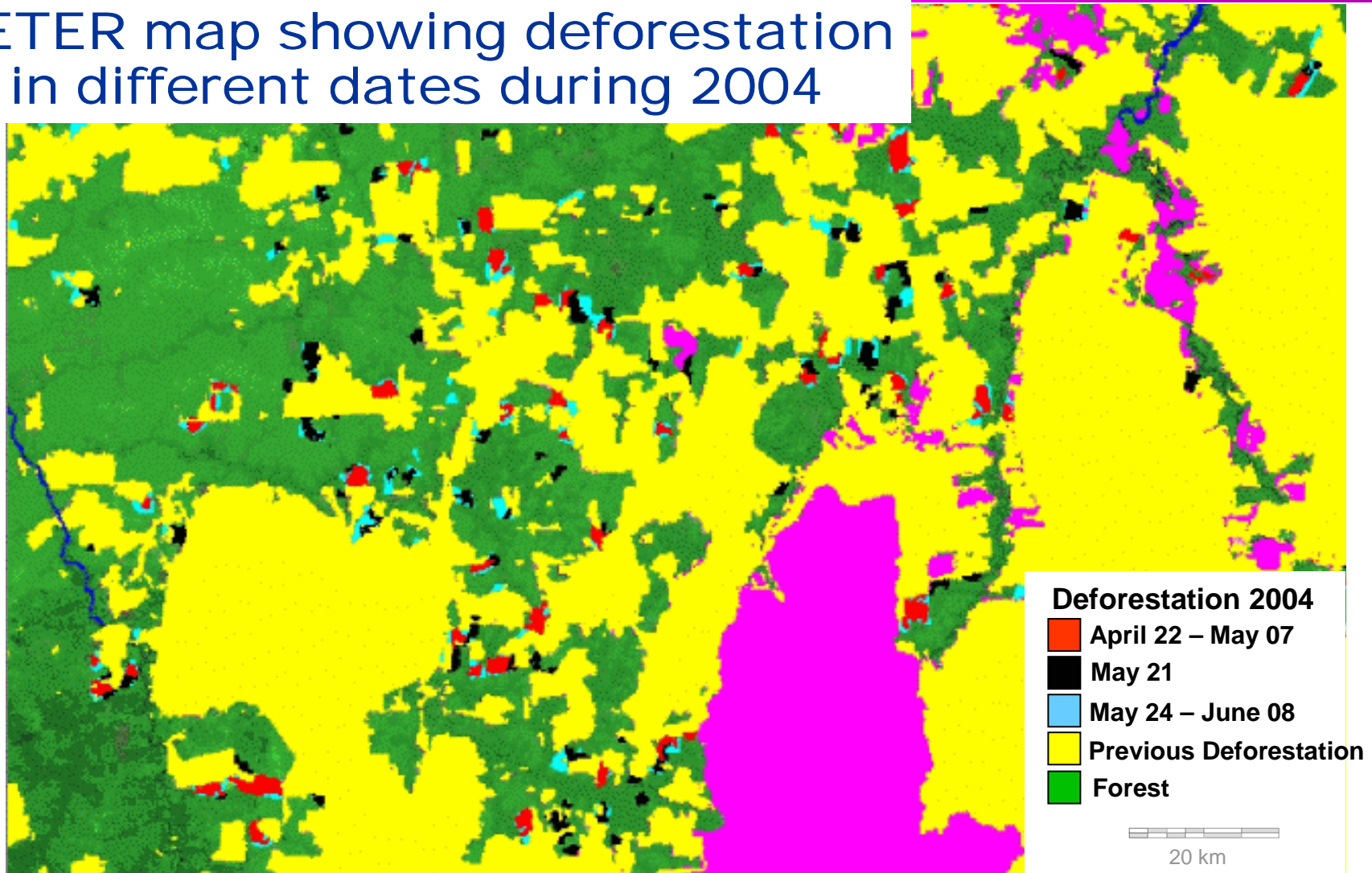
Conducted by INPE since last year. It works like an alert system to detect incipient deforestation in a quasi-real time

- **MODIS images (Terra & Aqua), at 250m spatial resolution and ~ 3-day coverage cycle;**
- **WFI images (CBERS), at 260m spatial resolution and 3-day coverage cycle.**



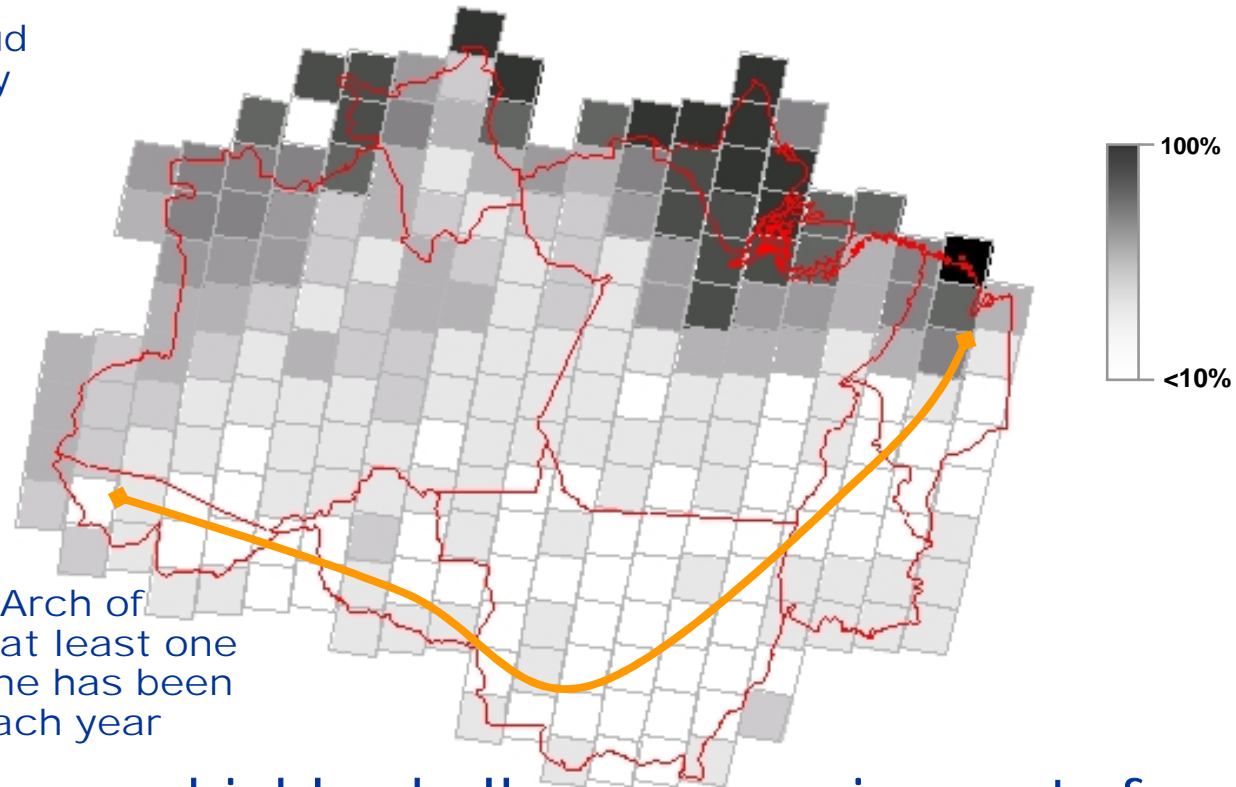
# ALOS/PALSAR in the Amazônia

DETER map showing deforestation in different dates during 2004



# ALOS/PALSAR in the Amazônia

Landsat-TM Cloud  
Cover Frequency



Along the Arch of  
Deforestation, at least one  
free-cloud scene has been  
obtained each year

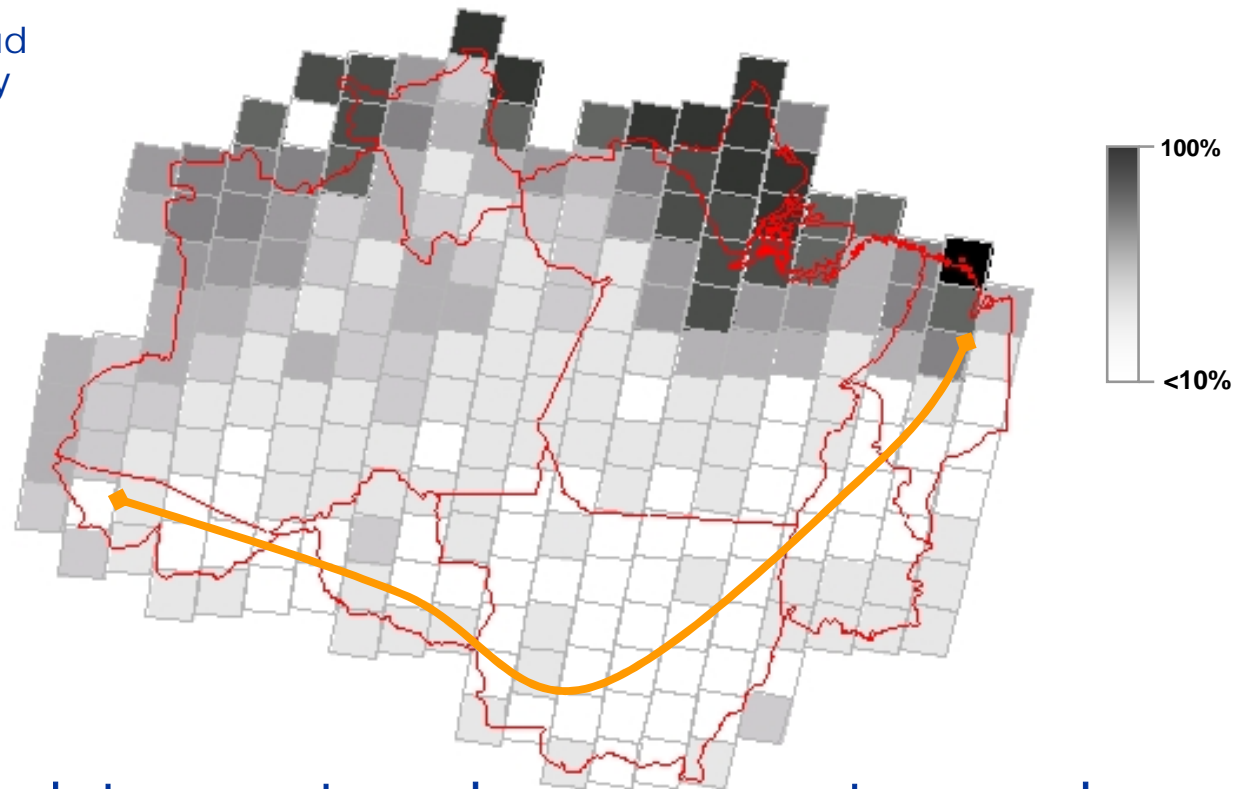
Cloud cover highly challenges requirements for an operational deforestation surveillance program at an Amazonian scale based only on optical data





# ALOS/PALSAR in the Amazônia

Landsat-TM Cloud  
Cover Frequency

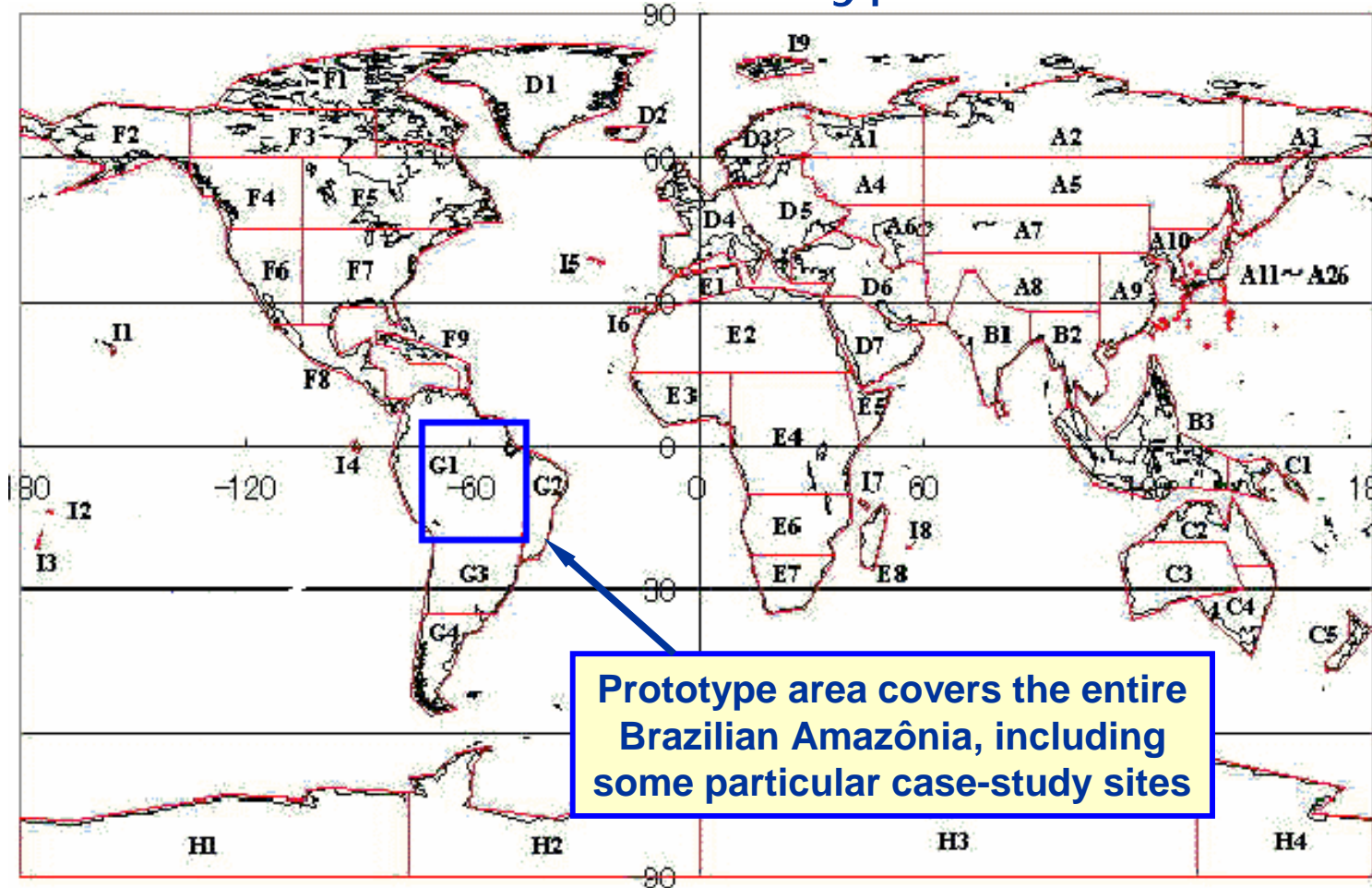


Radar data are strongly necessary to complement optical data and ALOS/PALSAR may contribute to improve contents of *PRODES* and *DETER* Projects.



# ALOS/PALSAR in the Amazônia

## ALOS/PALSAR Prototype Area



# ALOS/PALSAR in the Amazônia

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## Objectives in the Prototype Area

- To evaluate ALOS/PALSAR mosaics to map gross deforestation and estimate deforestation rates to support *PRODES* and *DETER* Projects;
- To use ALOS/PALSAR mosaics to map deforestation in areas of frequent cloud cover;
- To investigate ALOS/PALSAR data to map areas of selective logging and areas of bamboo forest;
- To use ALOS/PALSAR polarimetric data to estimate forest vertical biomass distribution;
- To use ALOS/PALSAR mosaics to monitor forest clearing and vegetation regrowth along the Urucu-Coari-Manaus Pipeline.



# ALOS/PALSAR in the Amazônia

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## Main output products

- Maps of gross deforestation over the entire Brazilian Amazônia and estimation of deforestation rates, during the years of ALOS/PALSAR activity;
- Maps in areas of selective logging over the entire Brazilian Amazônia, during the years of ALOS/PALSAR activity;
- Maps of forest clearing and regeneration along the Urucu-Coari-Manaus Pipeline;

(All these products will be included in INPE's web site)

