

# Seasonal Dynamics of the Pantanal Ecosystem

## Mapping the wetlands ecosystem

- Data sets: PALSAR ScanSAR (HH) Jan, Feb, May, July, Nov, 2007  
Radarsat-2 ScanSAR (HH/HV) Aug 2008
- Method: Hierarchical polygon based classification using  
eCognition™ – Definiens software
- Present status: Temporal land-cover maps have been produced; we are continuing  
to improve the classification

Costa, Evans and Telmer  
University of Victoria, Canada)



Japan Aerospace Exploration Agency



University  
of Victoria



NATIONAL  
GEOGRAPHIC  
SOCIETY



NSERC  
CRSNG

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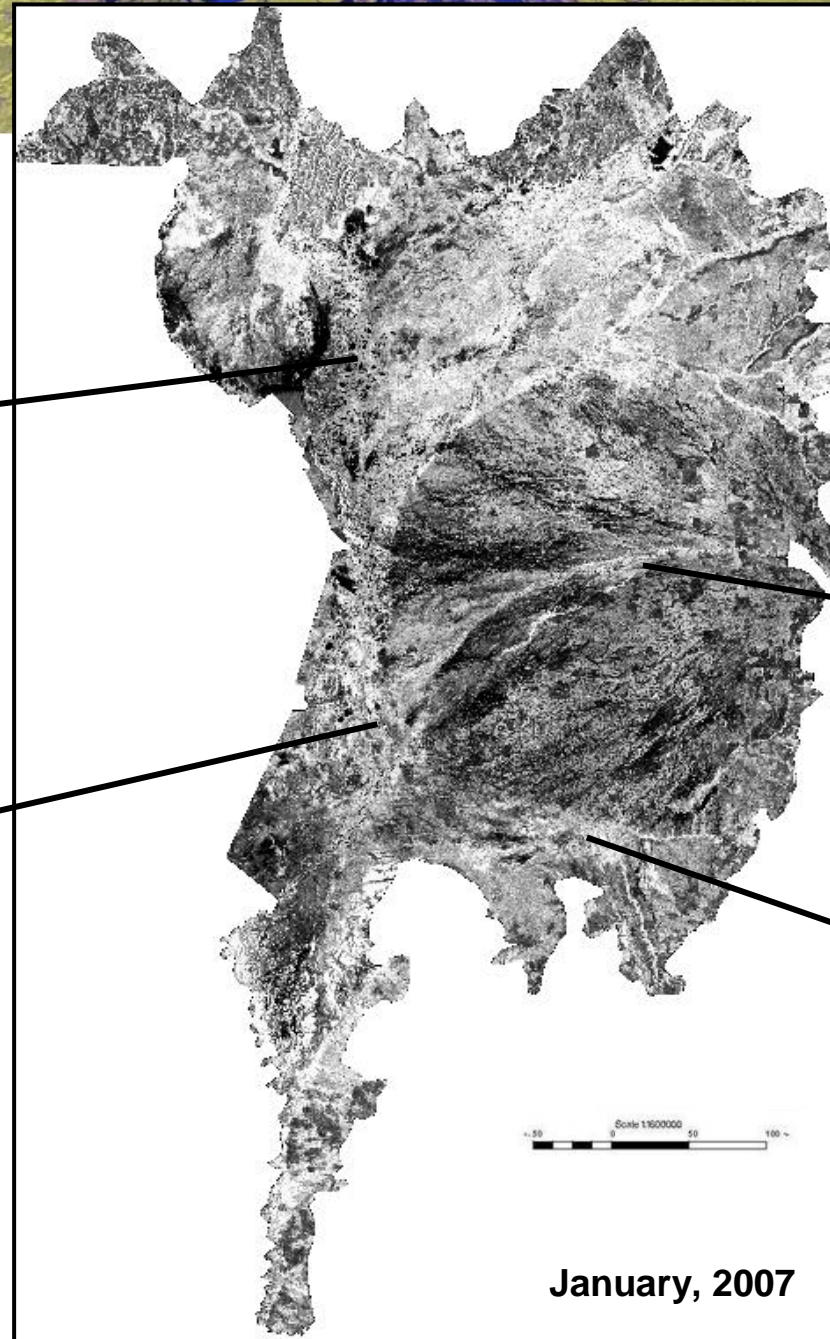
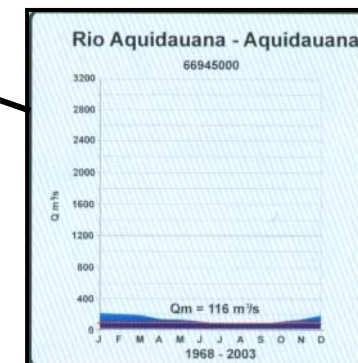
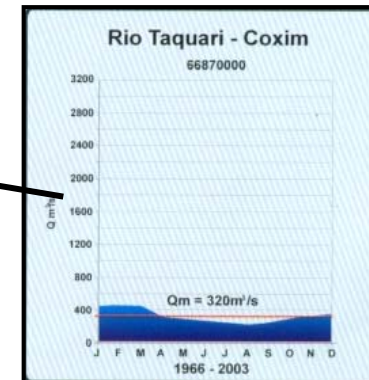
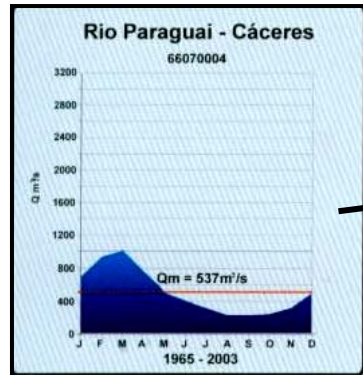


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## Temporal ScanSAR 50m HH mosaics

January, 2007



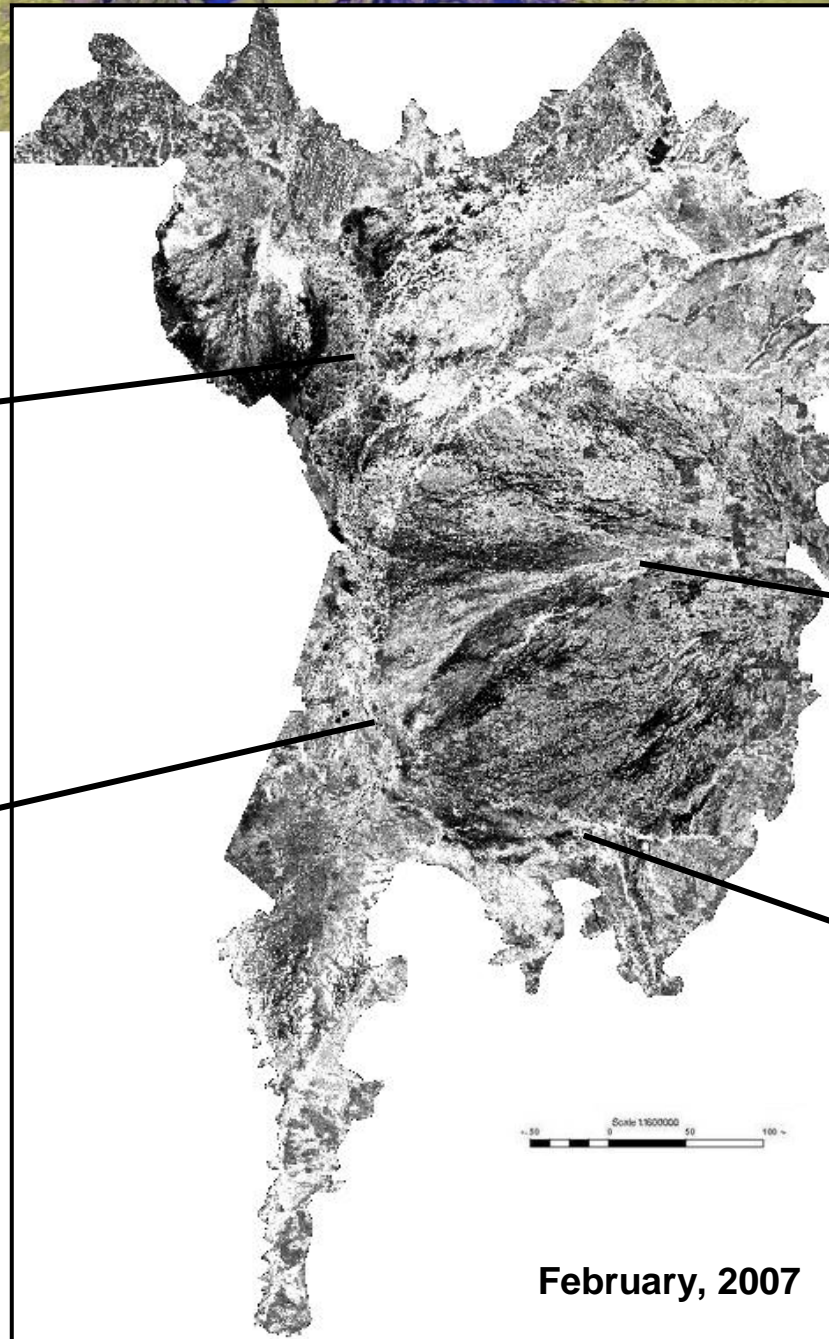
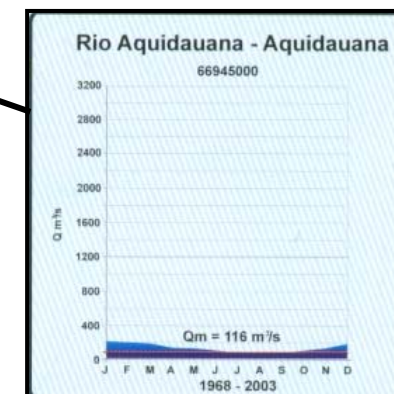
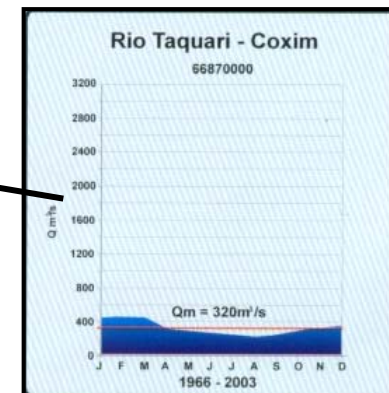
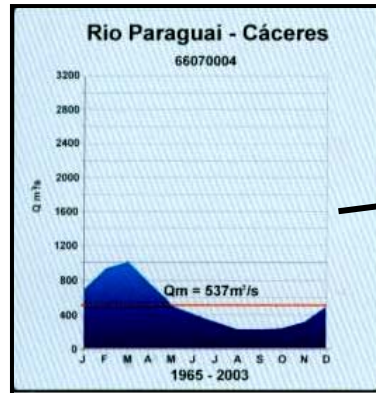


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## Temporal mosaics

February, 2007



February, 2007

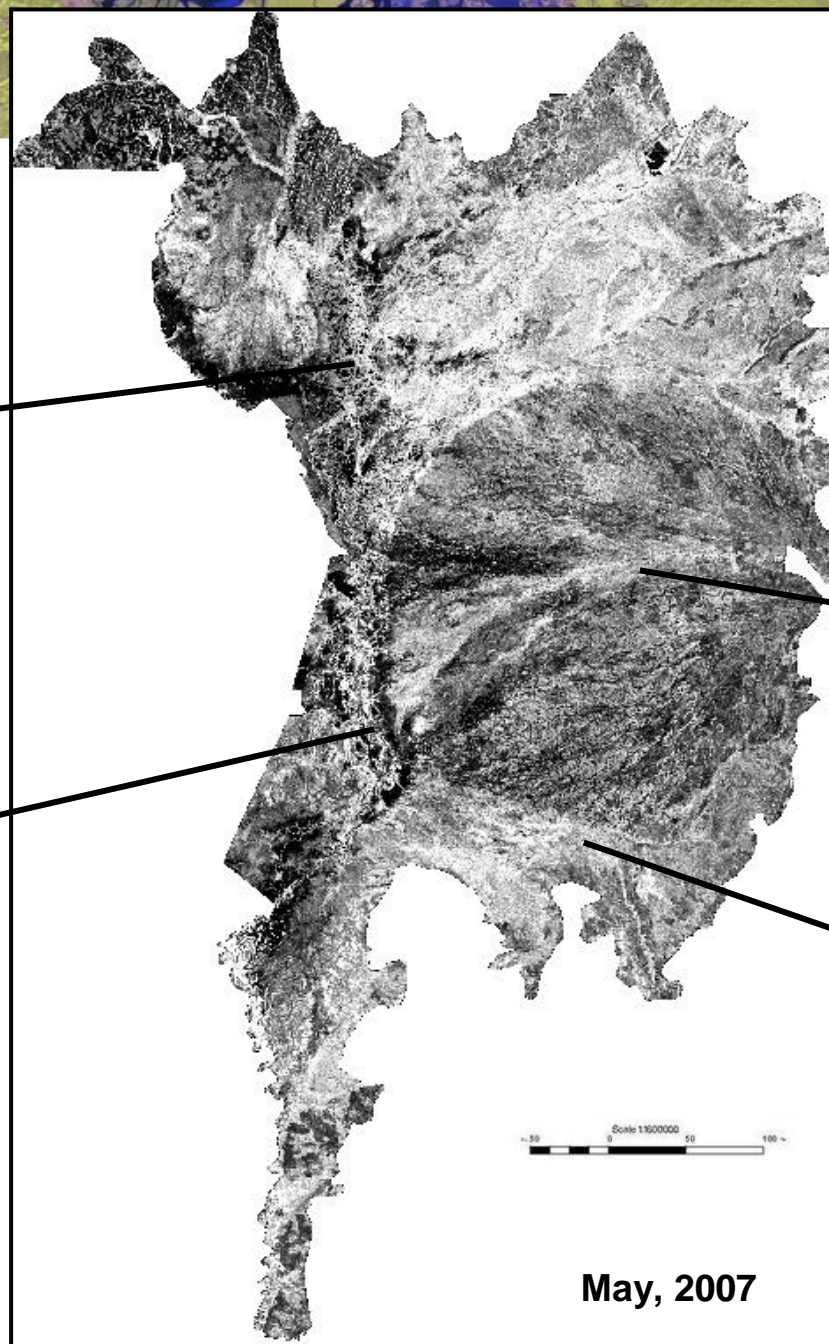
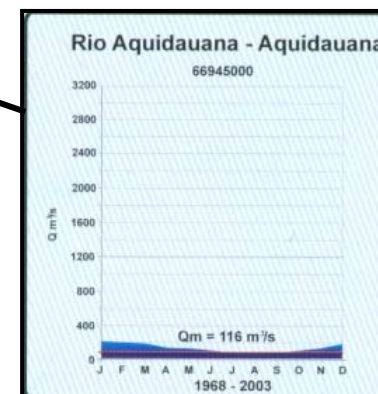
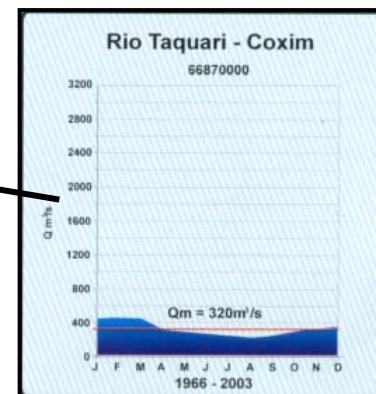
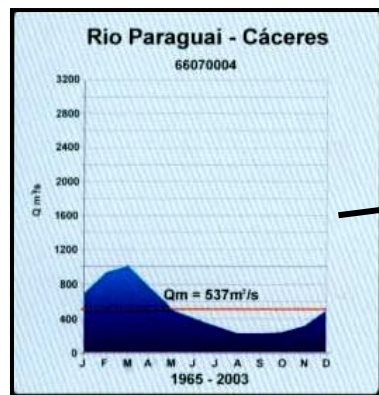


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## Temporal mosaics

May, 2007



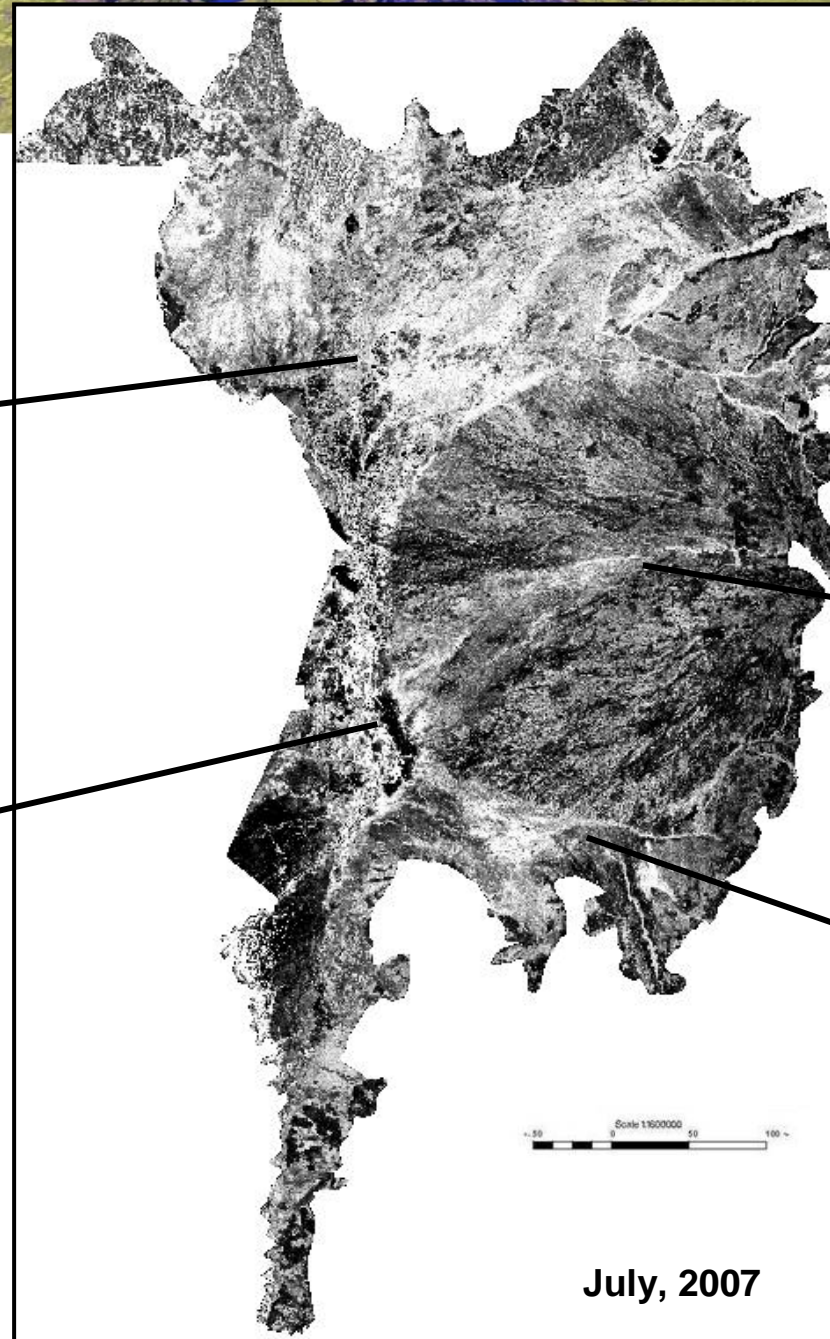
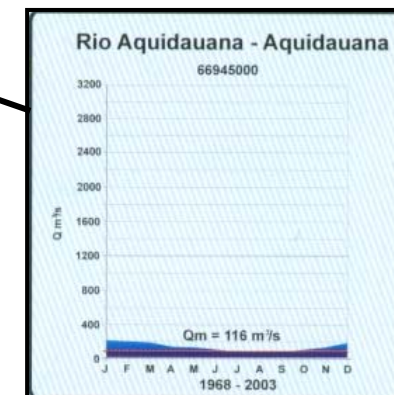
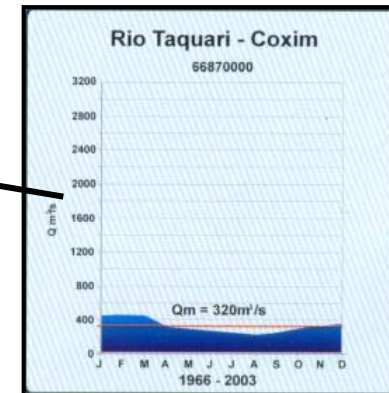
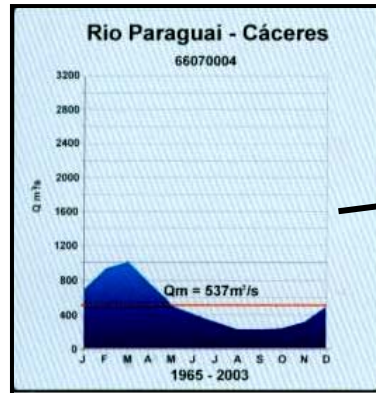


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## Temporal mosaics

July, 2007



July, 2007

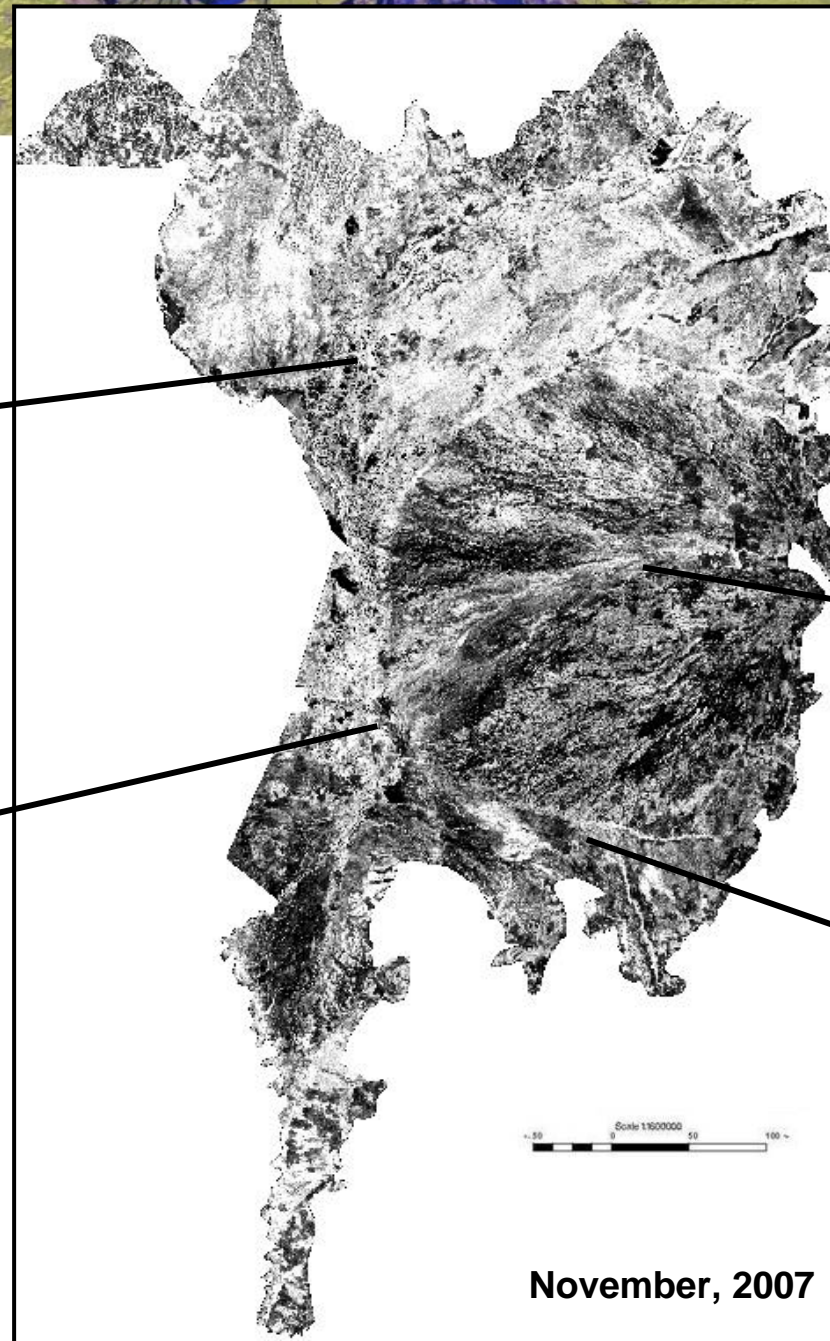
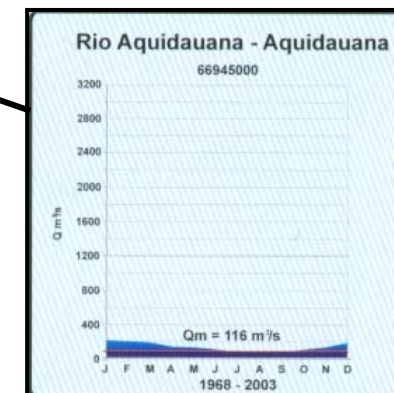
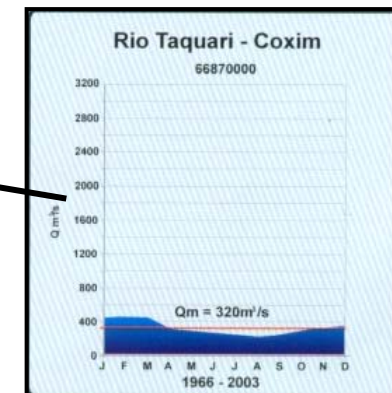
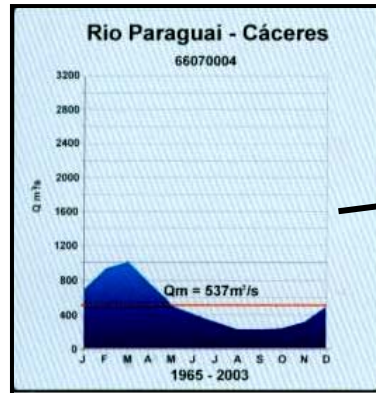


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## Temporal mosaics

November, 2007



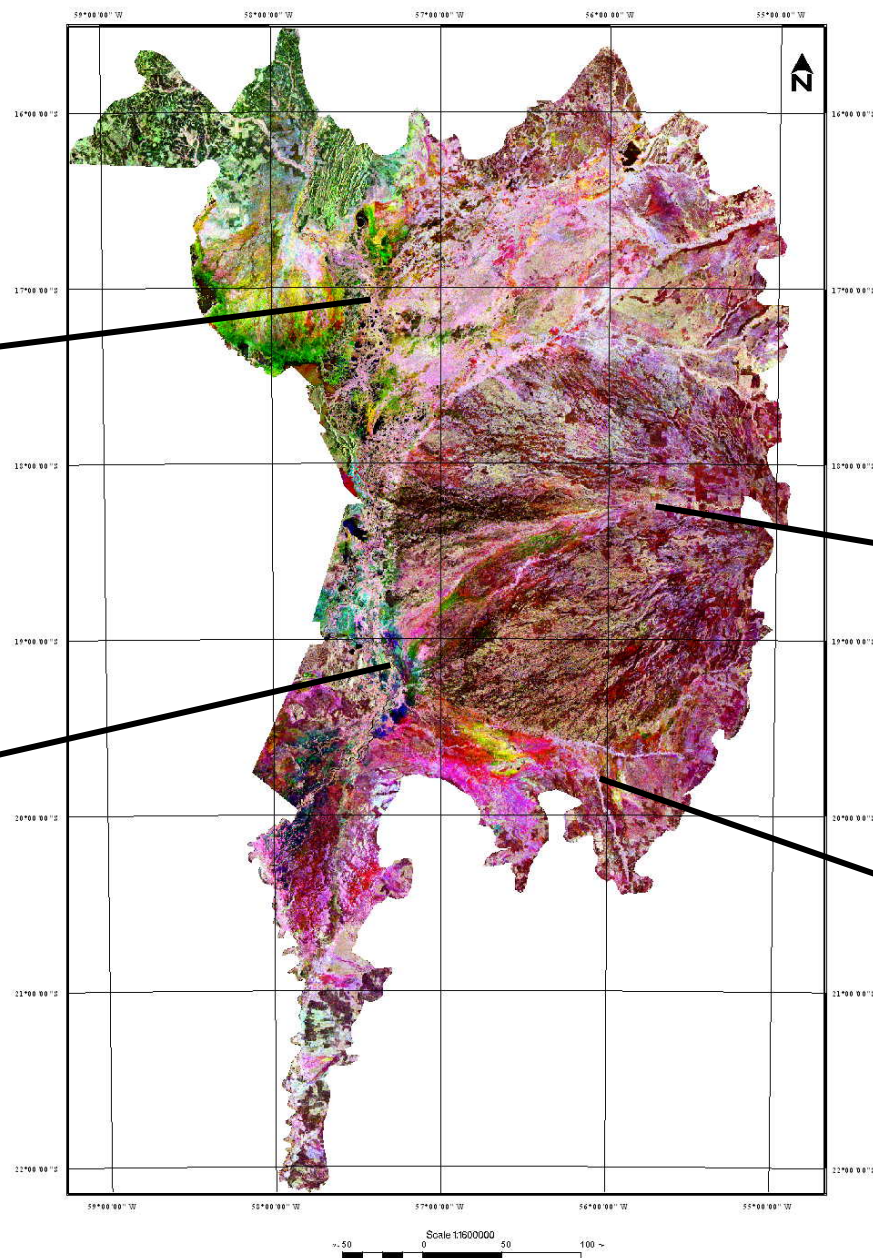
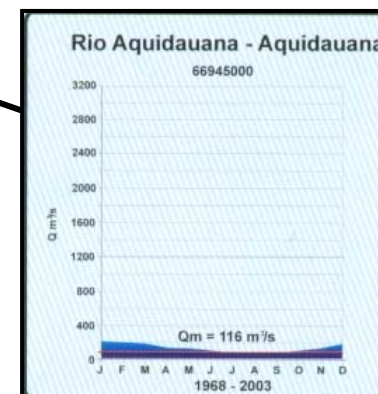
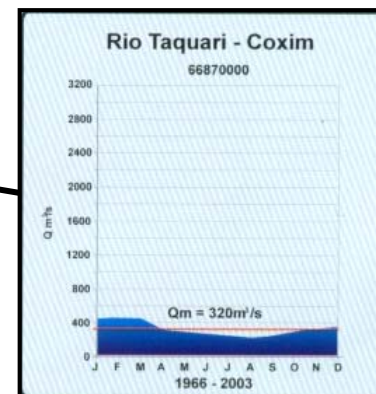
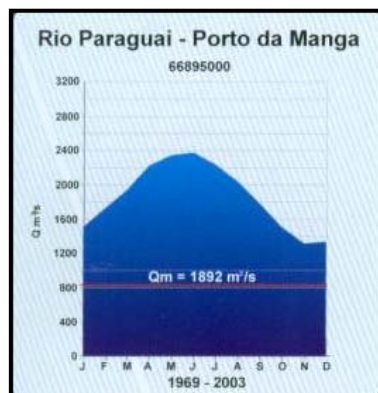
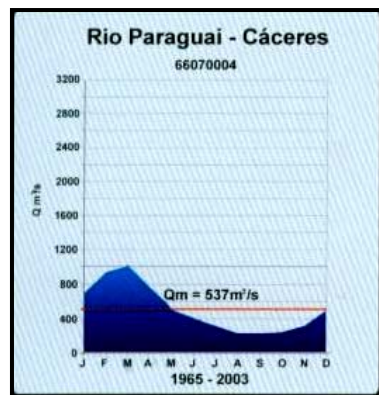
November, 2007





# THE PANTANAL

## ALOS/PALSAR ScanSar Temporal Imagery, 2007



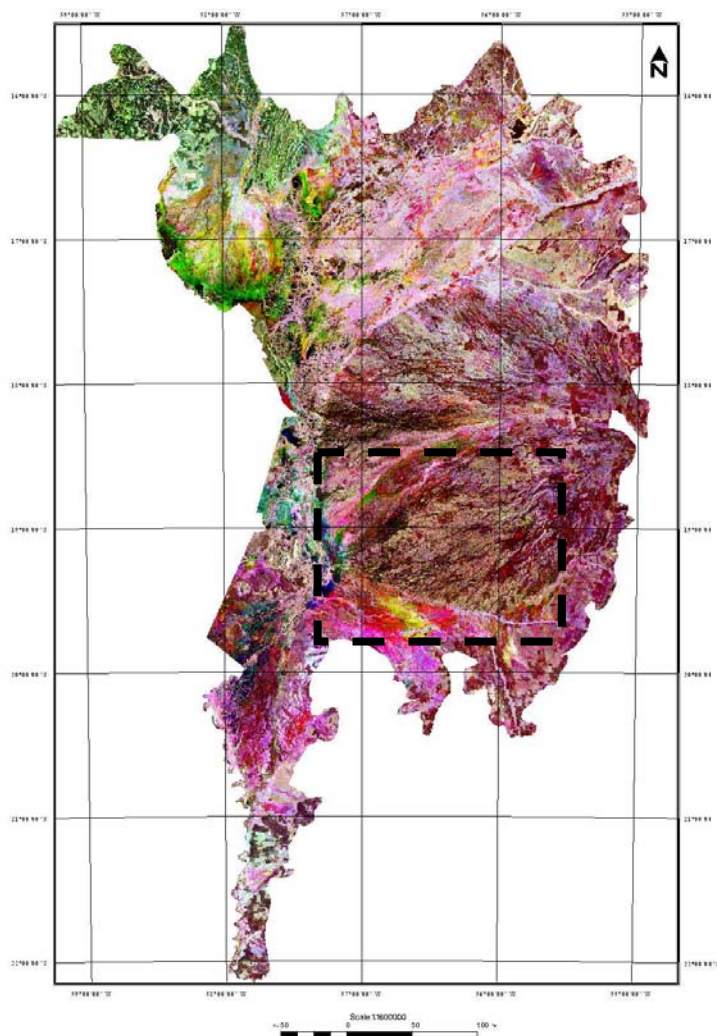
ALOS/PALSAR temporal data for 2007: Blue - February (rising water);  
Red - May (high water); Green - November (low water)



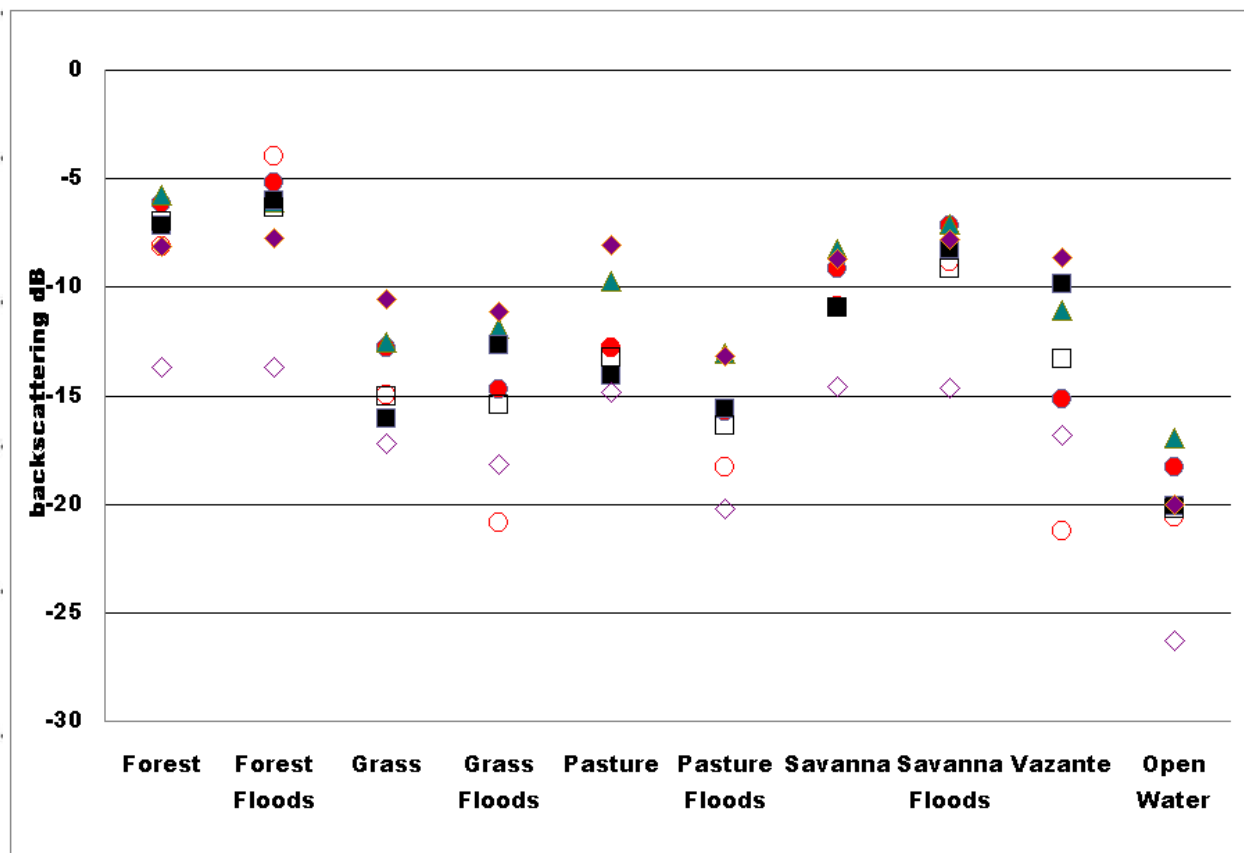
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THE PANTANAL  
ALOS/PALSAR ScanSar Temporal Imagery, 2007



ALOS/PALSAR temporal data for 2007  
Blue – February (waters rising)  
Red – May (highest water)  
Green – November (low water)



● January  
○ February  
▲ May

■ July  
□ November

◆ Rsat HH, Aug  
◇ Rsat HV, Aug



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## Hierarchical polygon-based Classification using eCognition

PALSAR ScanSAR, 2007

Radarsat-2 ScanSAR, 2008

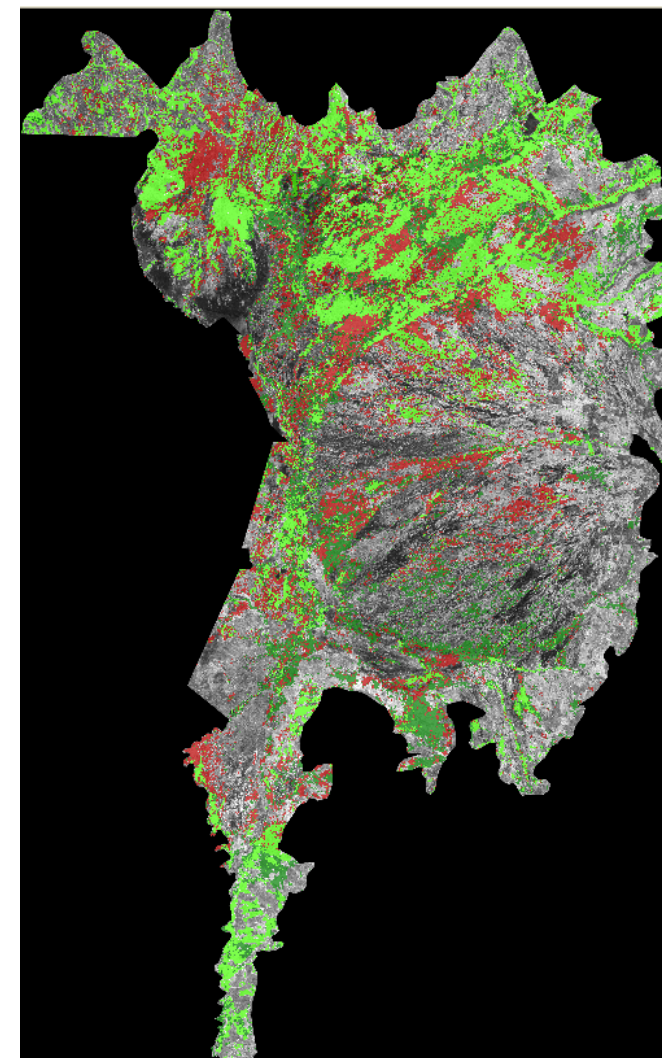
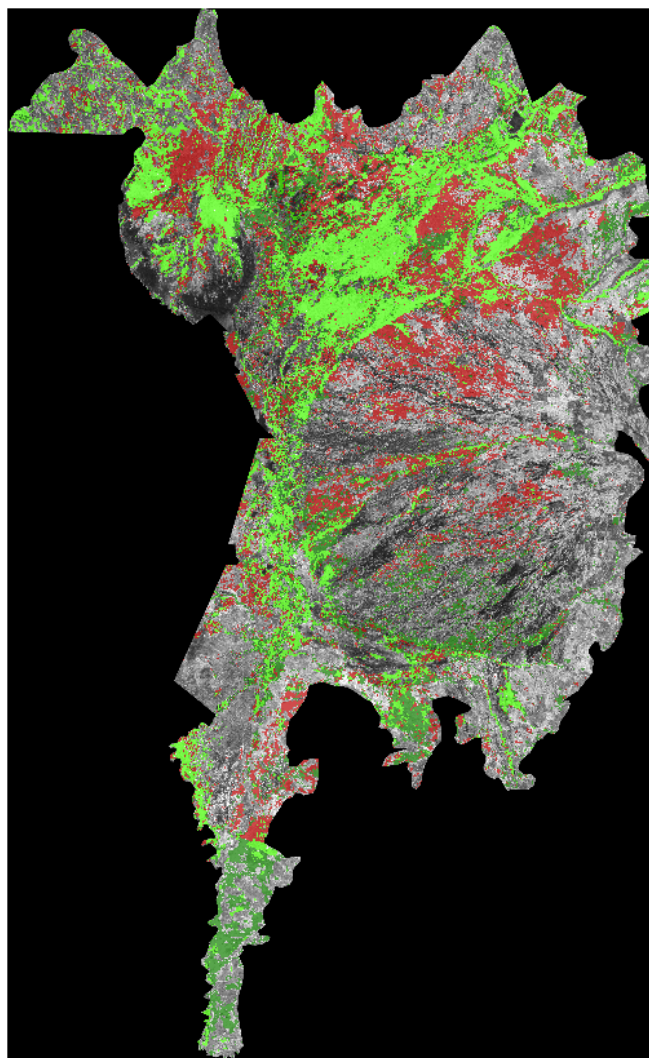
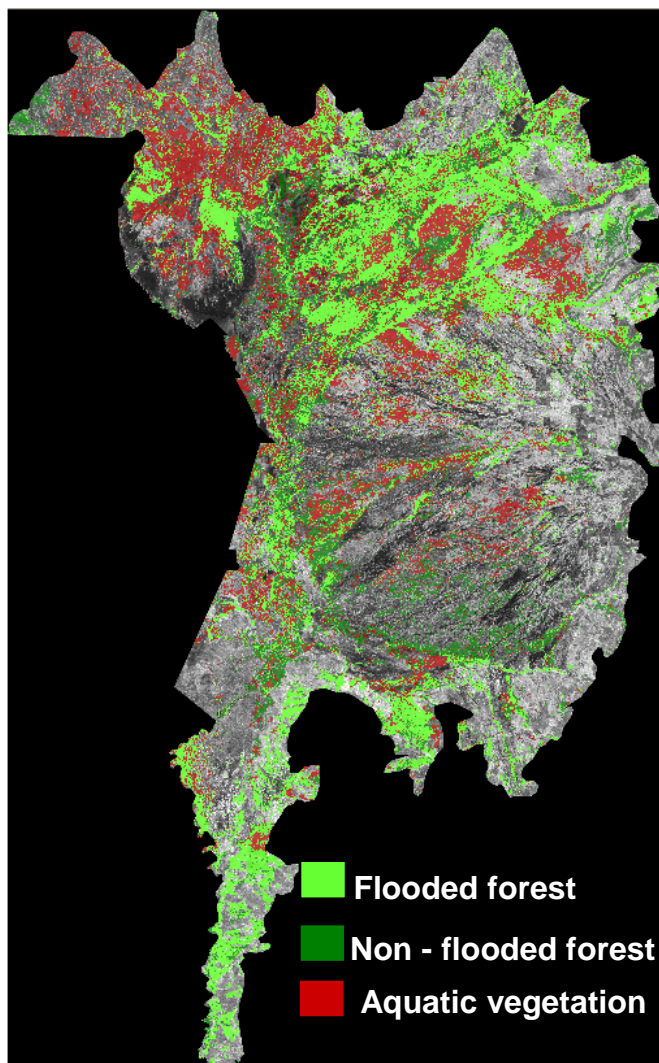
 Open water





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# Seasonal Dynamics of the Pantanal Ecosystem

## Lake mapping and field work

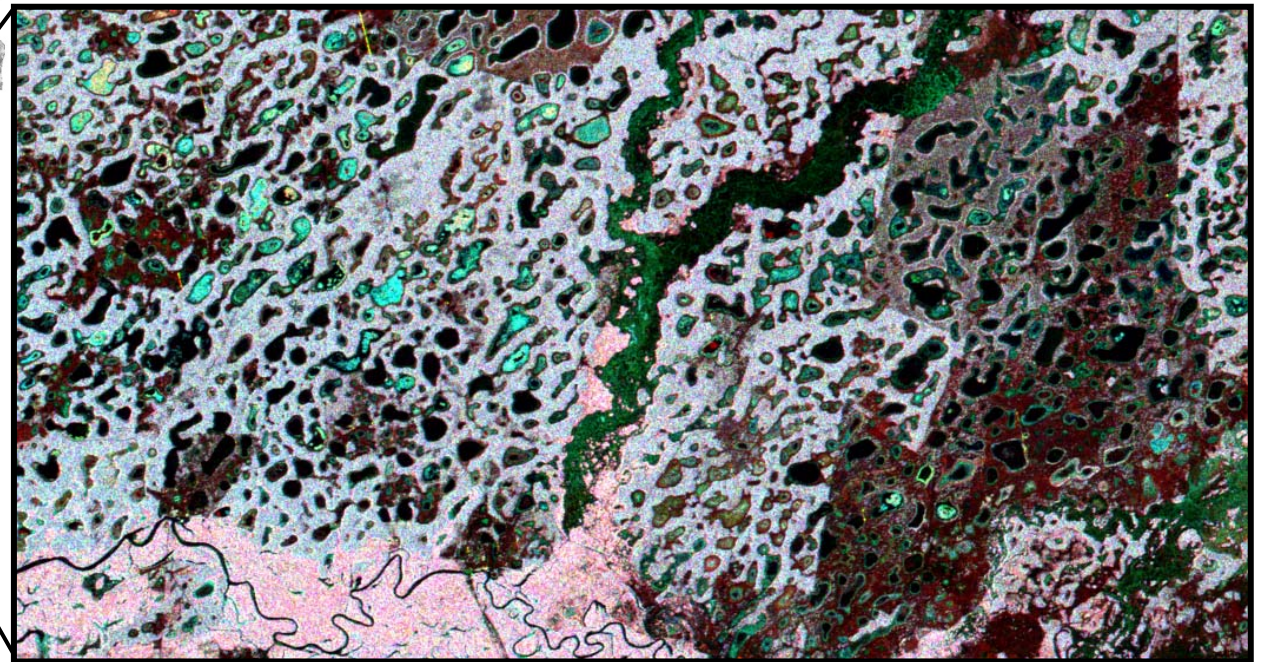
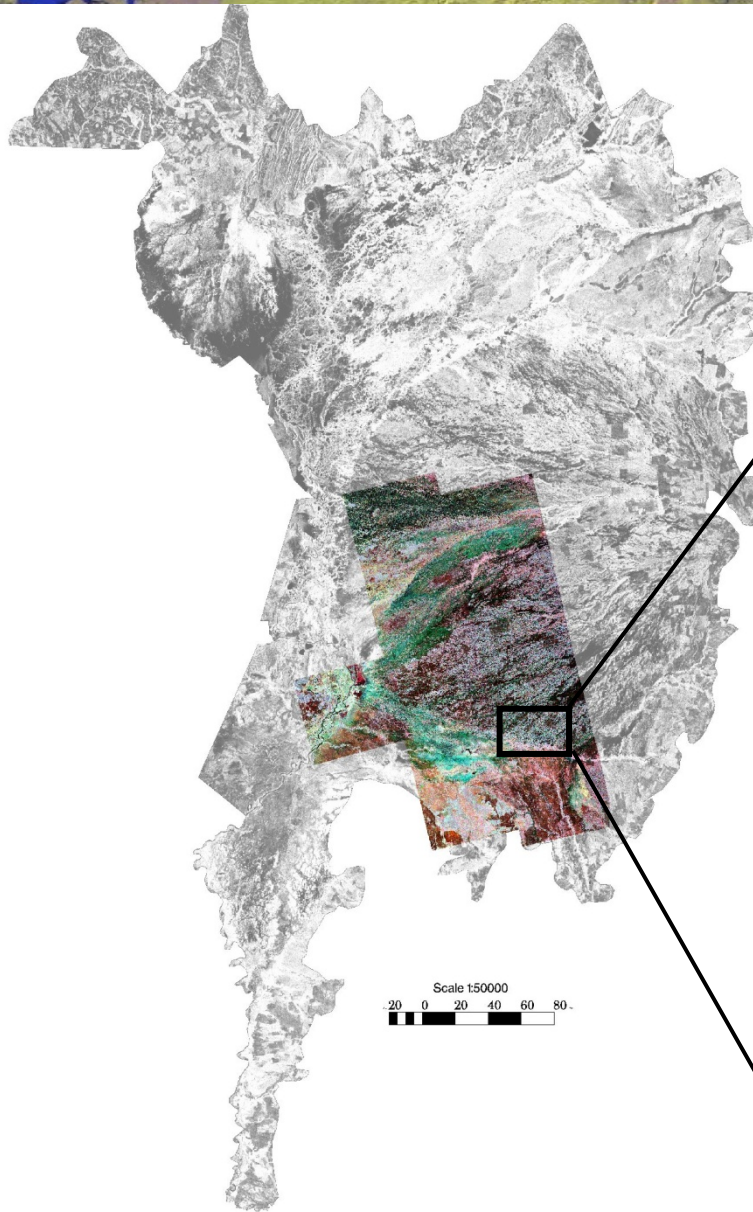
- Data set:
  - High resolution PALSAR (HH/HV)
  - High resolution Radarsat-2 (HH/HV)
  - Envisat/ASAR (HH/HV) - 2008
- Present status:
  - Field work completed in July 2008: data was gathered at 209 locations; geochemistry acquired for 75 lakes
  - fine beam mosaic created; image analysis and classification accomplished for subset; completion of lakes classification by March 2009
- Updated data requirement:
  - anticipating and ready to work with 50m strip mosaics

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## Pantanal Lakes mapping (3 types)

- Fresh soft (baias)
- Fresh hard (salobras)
- Saline (salinas)



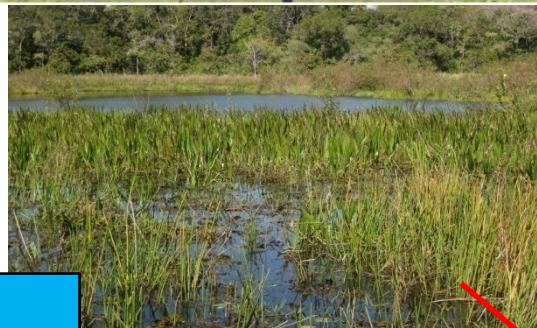
**PALSAR fine beam 2007**

February HH (R); August HH (G); August HV (B)

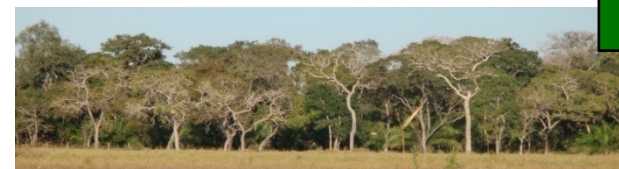




**Fresh Hard-Water Lake (*Salobra*)**



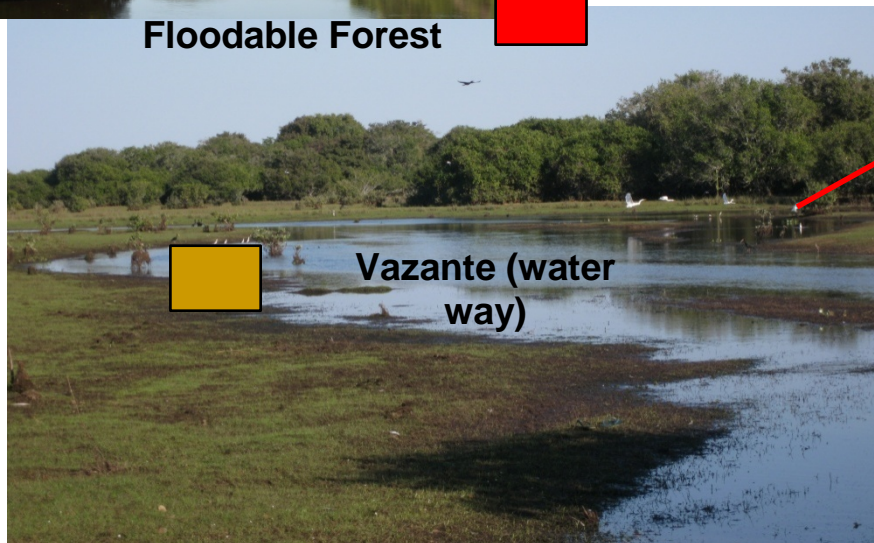
**Fresh Soft-Water Lake (*Baia*)**



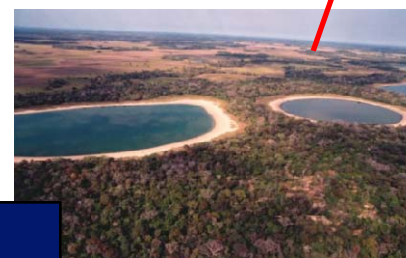
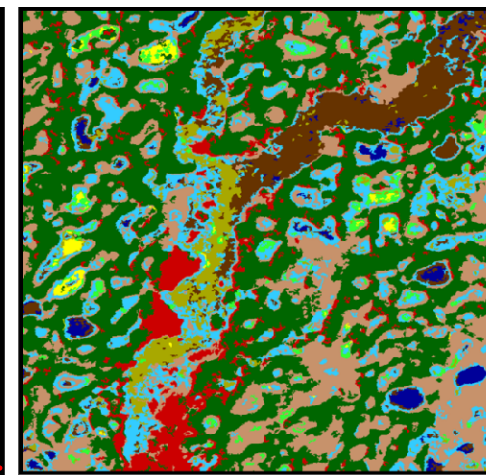
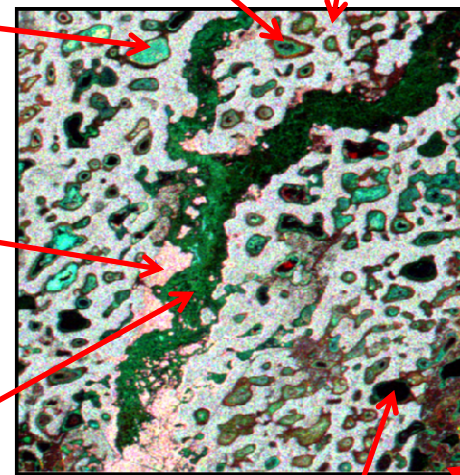
**Gallery Forest**



**Floodable Forest**



**Vazante (water way)**



**Saline Lake (*Salina*)**



**Pasture/Grasslands**



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**Thank you JAXA for the data and continuous support...**