Seasonal Dynamic of the Pantanal Ecosystem

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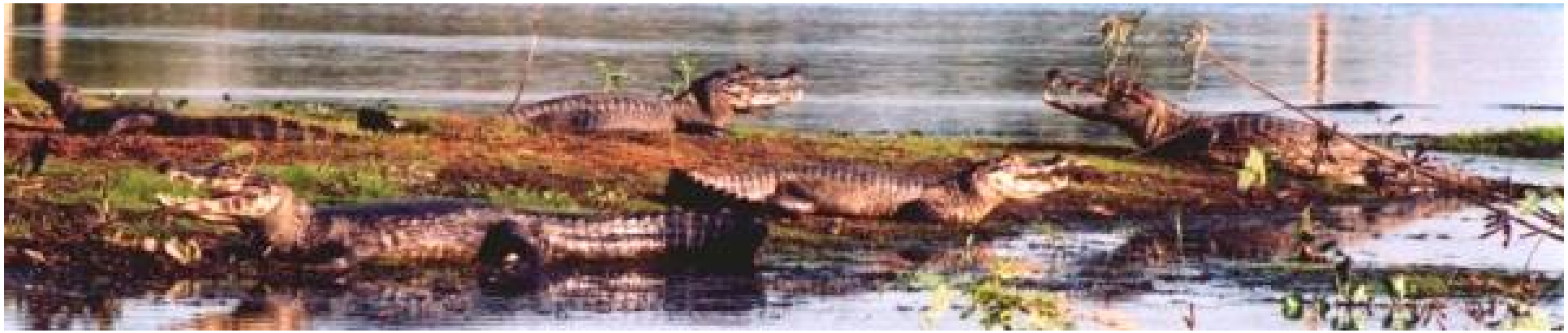
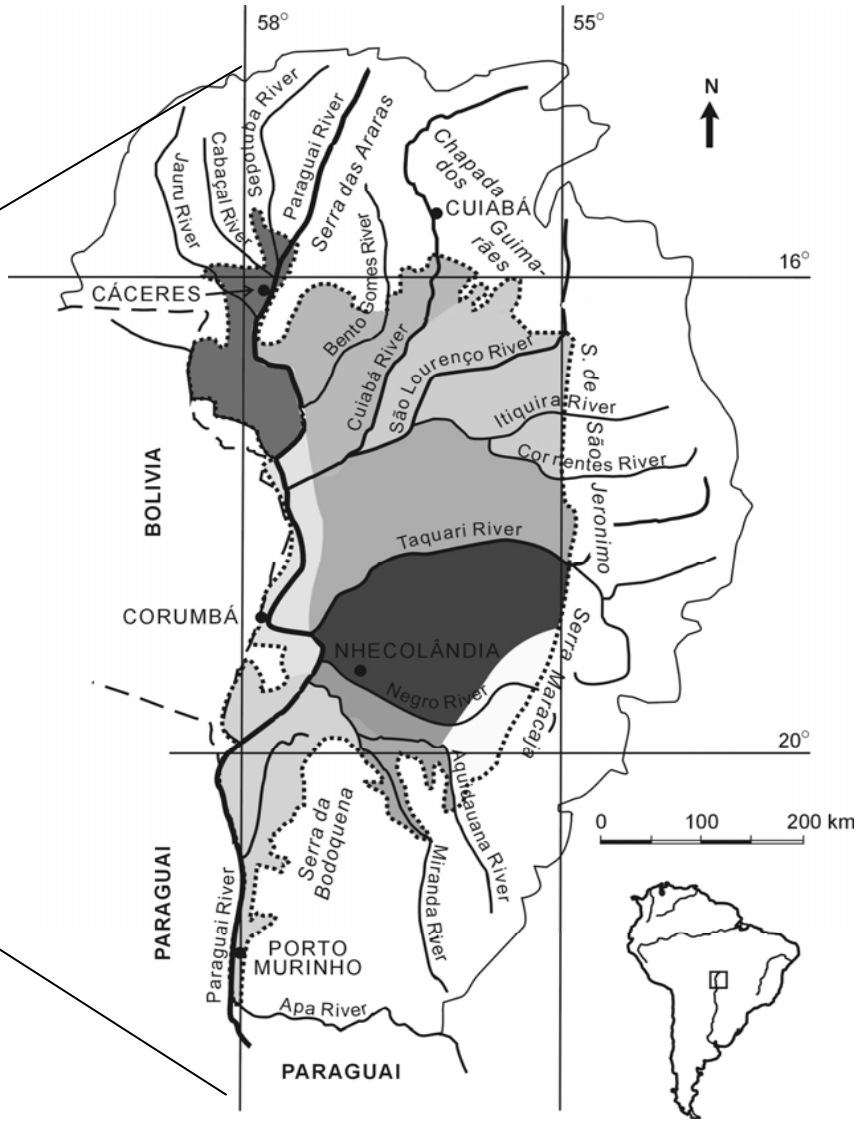
Objectives

- **Extent and seasonal patterns of inundation**
- **Different habitats: Lakes**

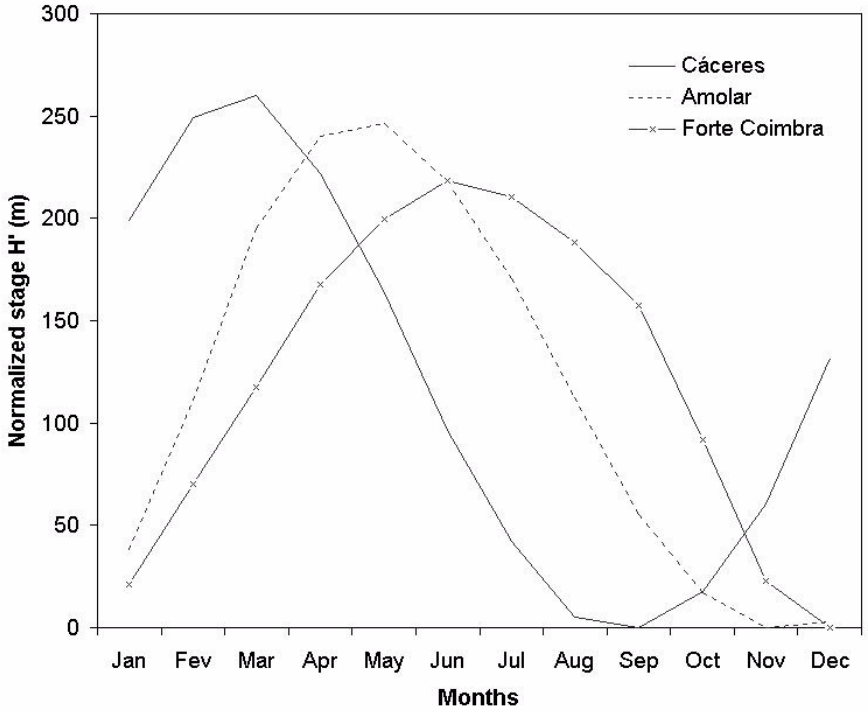


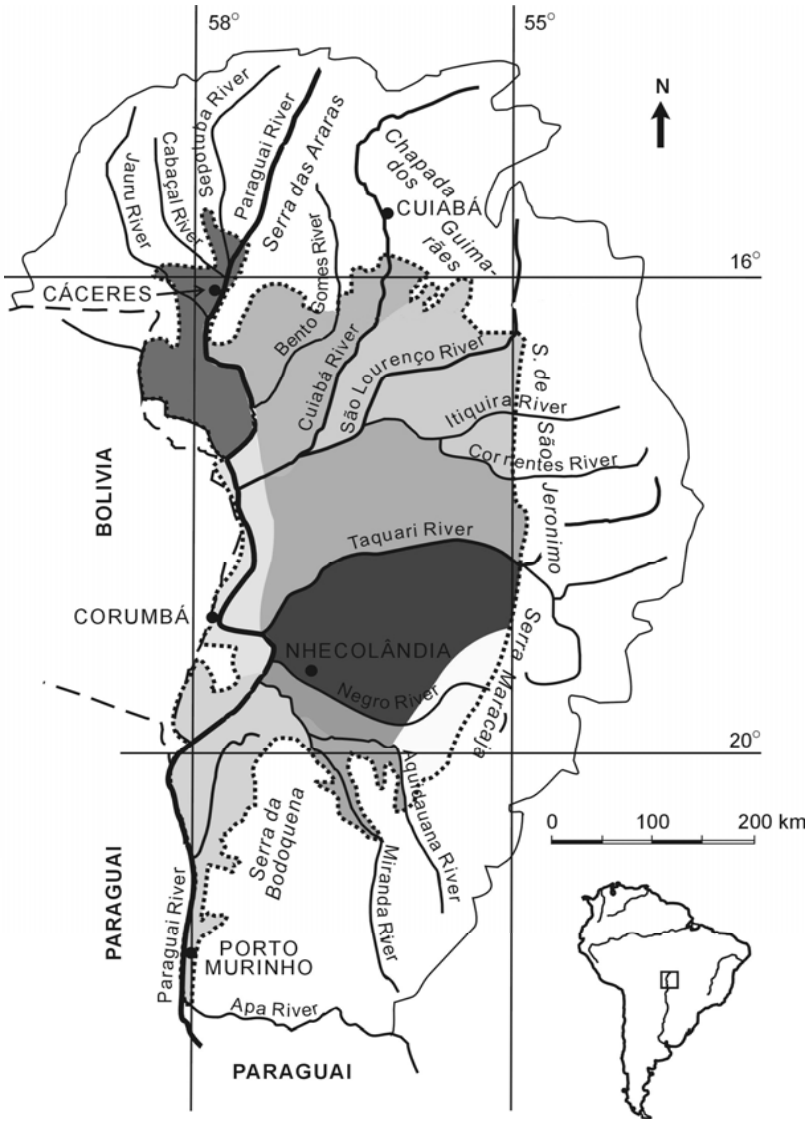
Area of study



watershed ~ 362,000 km^2
~ 138,000 km2 high water (Brazil)
~ 11,000 km2 low water (Brazil)

Area of study





Silva et al., 2004

Why?

→ Essential habitat for jaguar, caiman, capybara, over 600 species of birds including the now rare Arara Azul (Giant Blue Macaw)… many others

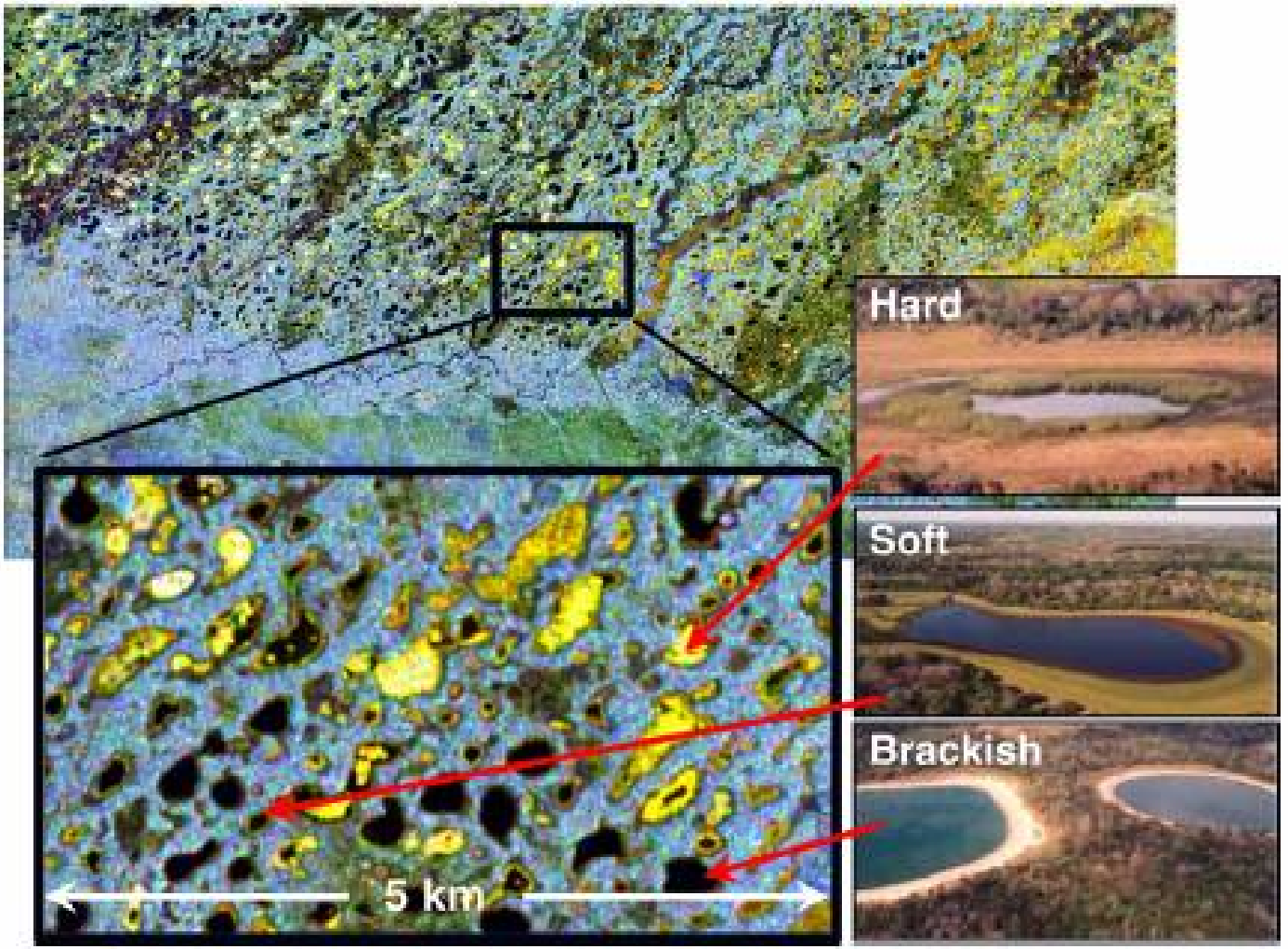
→Very little is know about the large scale biogeochemistry

Why?

- **An important fishery**
- **Sustain traditional cattle ranching**
- **Small-scale changes: Hydrovia**

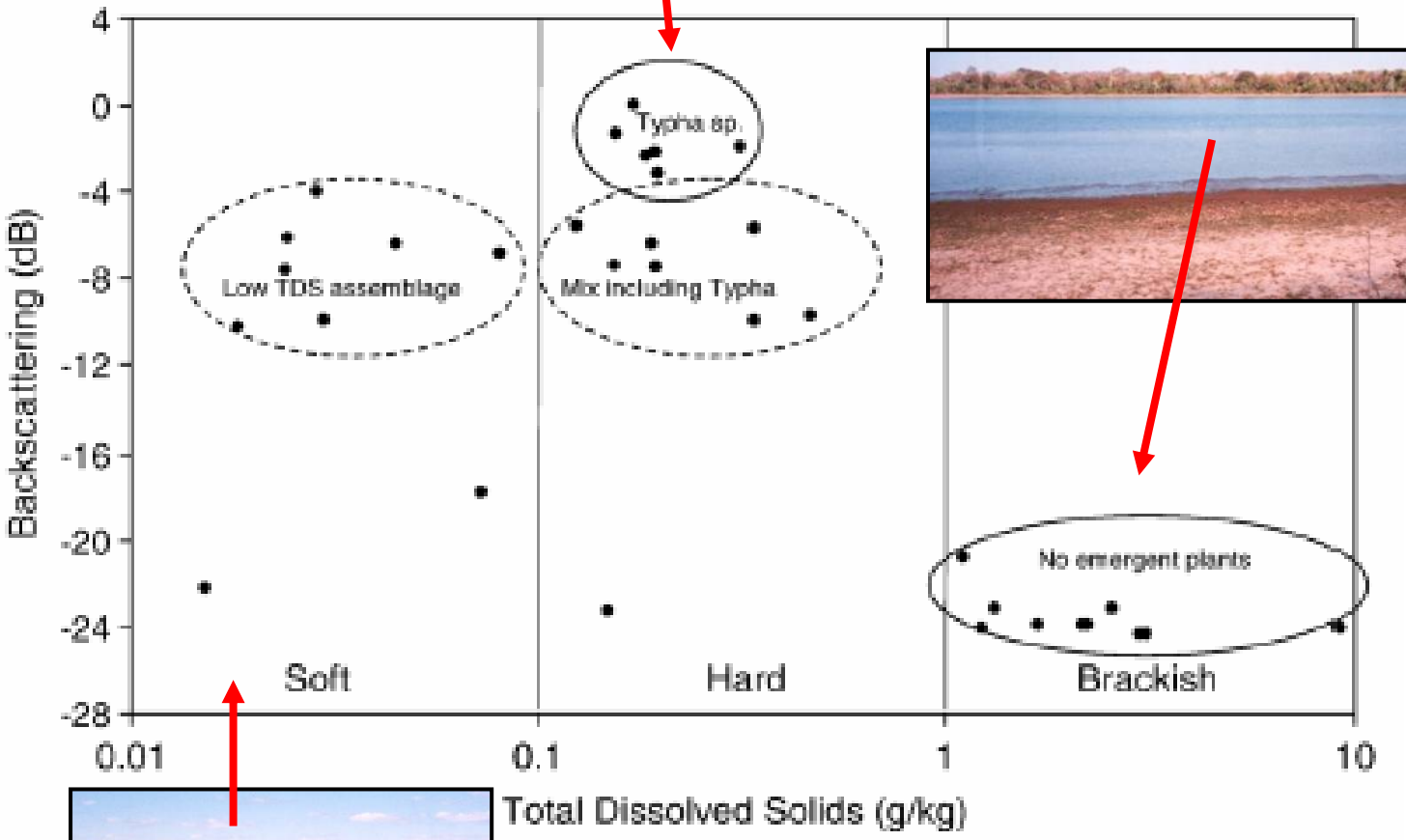
Method development

Radarsat S1, Radarsat S7, JERS-1



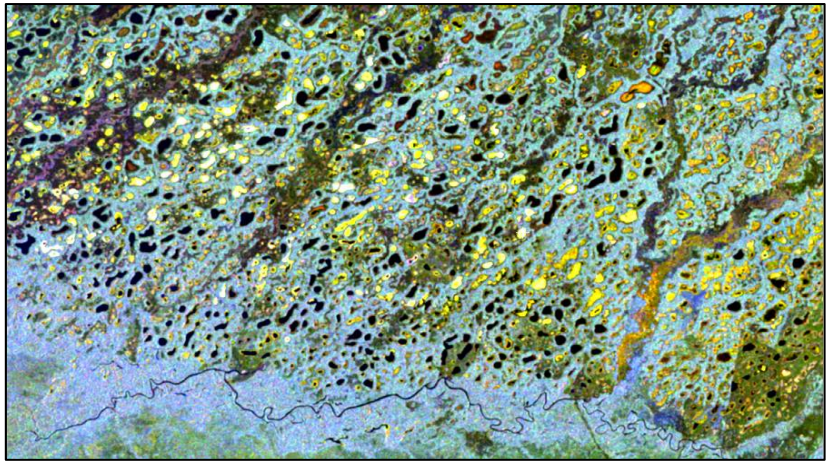
Costa and Telmer. 2006 . ***Remote Sensing of Environment.***

Method development

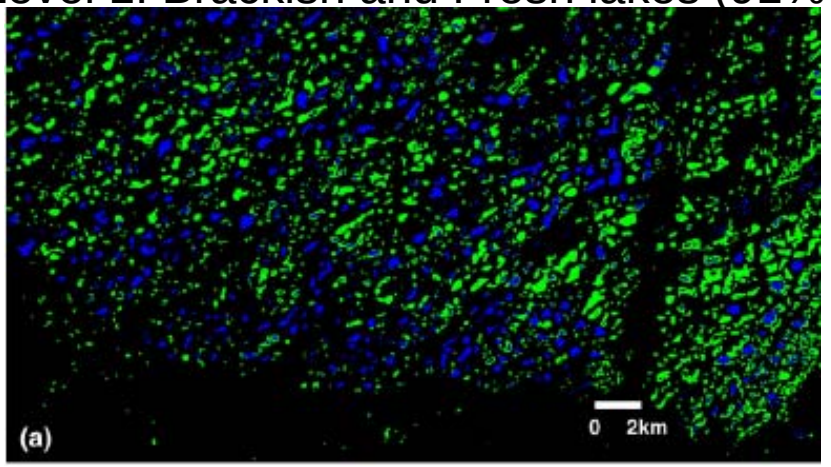


Costa and ***ote Sensing of Environment***

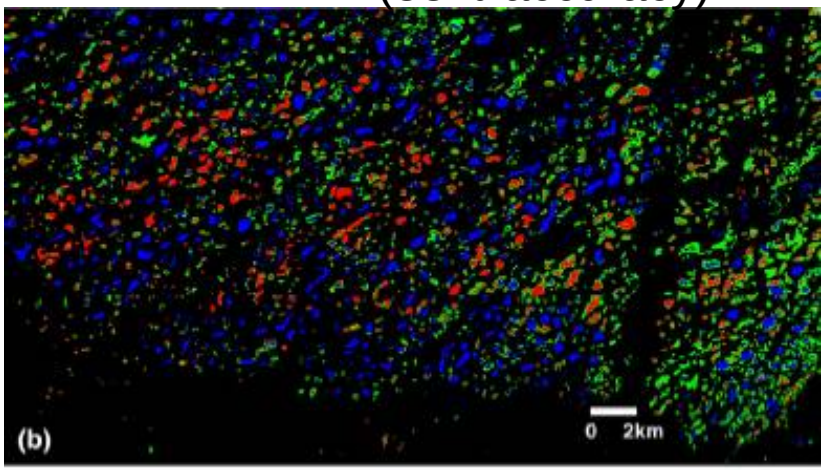
Method development



Level 1: Brackish and Fresh lakes (91% acc)

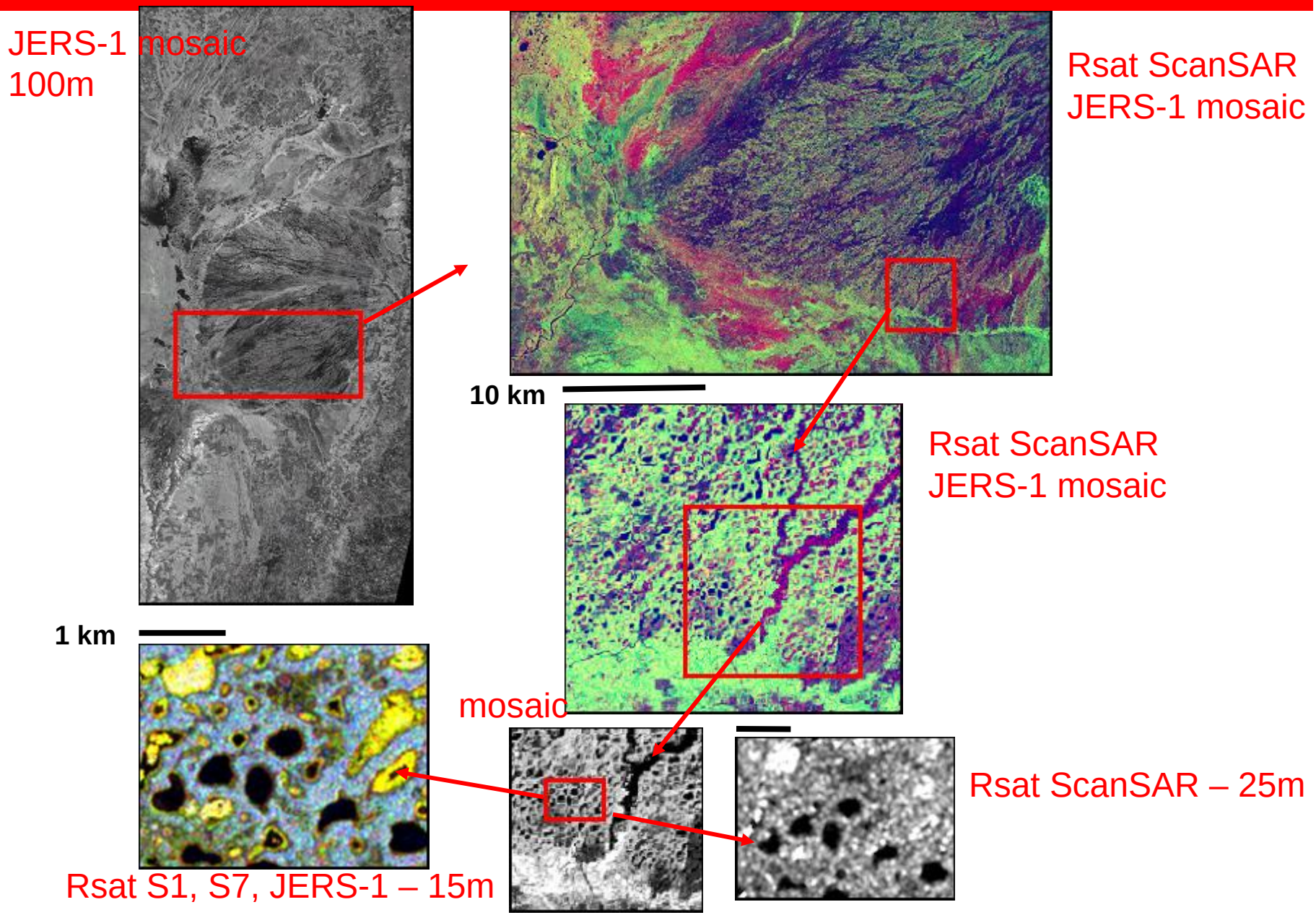


Level 2: Brackish; Fresh, and hard lakes (83% accuracy)



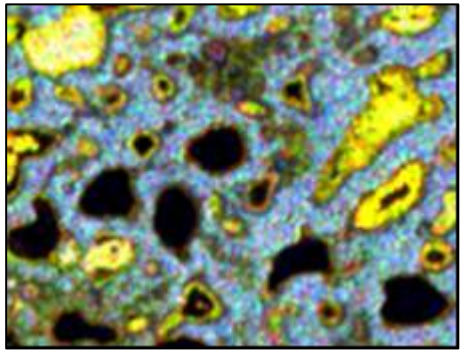
Costa and Telmer, 2006 , *Remote Sensing of Environment*

Method development: spatial resolution

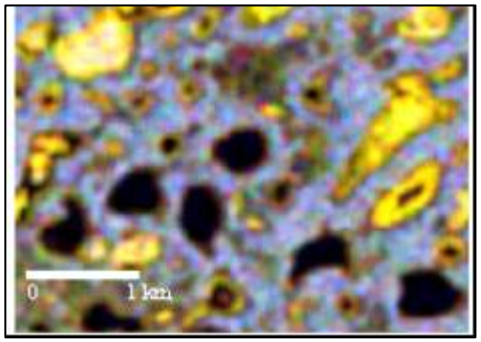


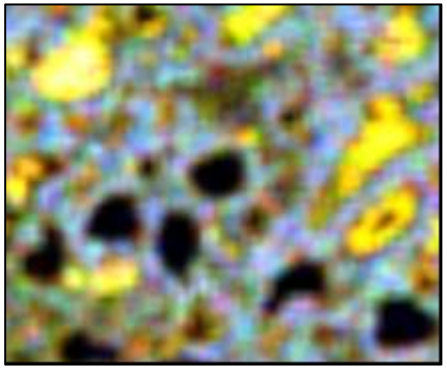
Method development: spatial resolution

15m

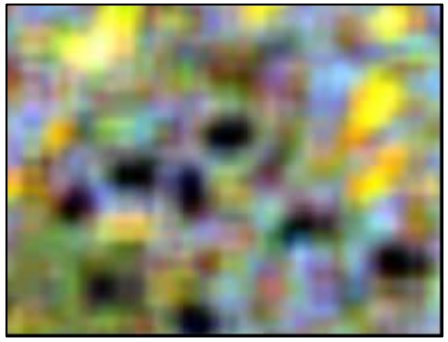


30m





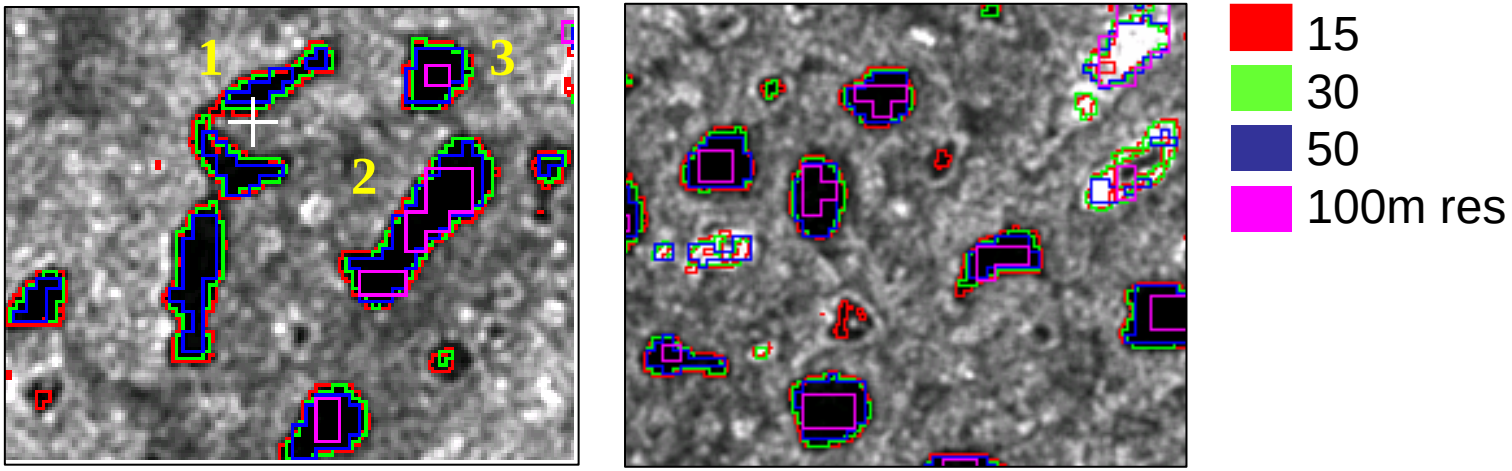
50 m



100 m

Costa and Temler (in press), *Aquatic Conservation: Marine and Freshwater Systems*

Method development: spatial resolution



Total number of lakes in the pilot study area: 1531
Smaller than 0.05 km2: 50%
At 50m res area error for < 0.05 km2 ~ 47% (allows location)
At 50 m res error for lakes > 0.05km2 ~ 30% (allows area)

Costa and Temler (in press), *Aquatic Conservation: Marine and Freshwater Systems*

Summary

- **High classification accuracy ~ 90%**
- **Lakes smaller than 0.05 km^2: 50%**
- **At 50m res area error for < 0.05 km^2 ~ 47% (allows location)**
- **At 50 m res error for lakes > 0.05km^2 ~ 30% (allows area)**
- **Need high res ALOS data: some how it is not in the plan……Published report!**

Tropical wetland extent: Amazon

Laura Hess
Maycira Costa

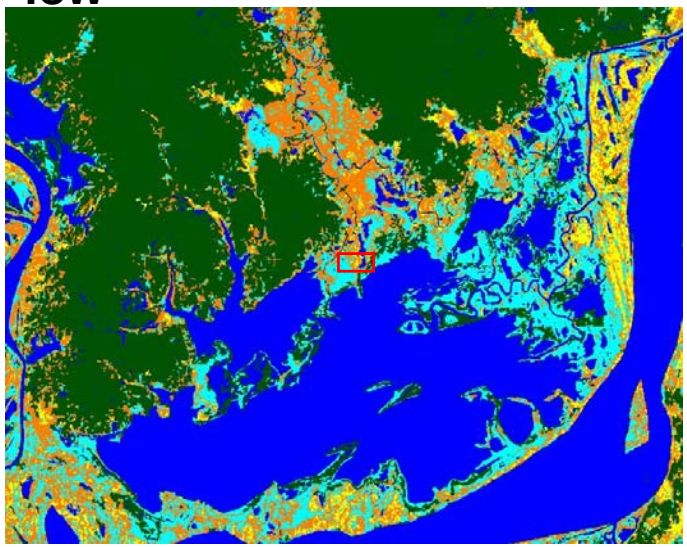
Focus areas

- Curuai Lake
- Monte Alegre Lake

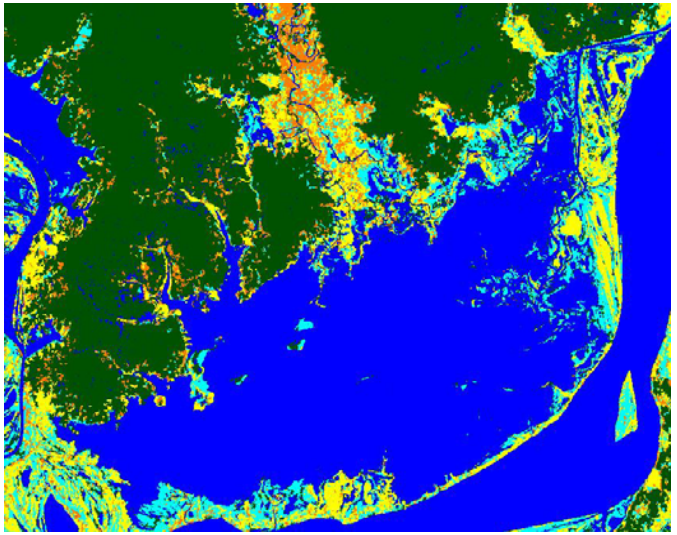
Monthly:
- Radatsat
- Envisat
- Field data: biomass
- Ph.D student already working

Method development

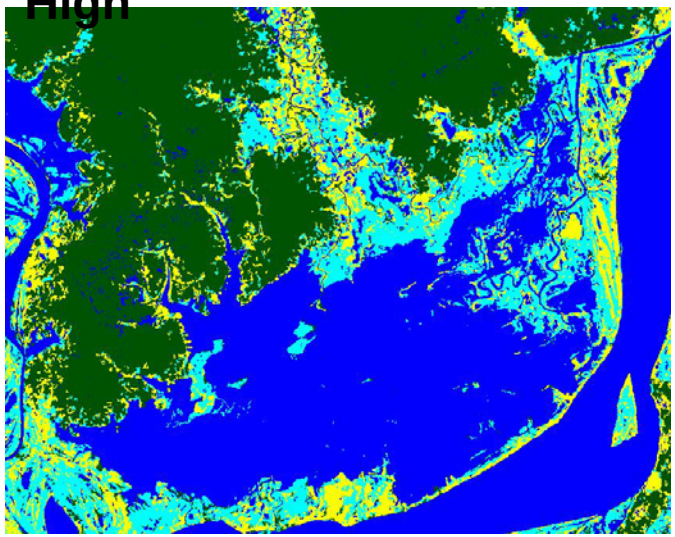
low

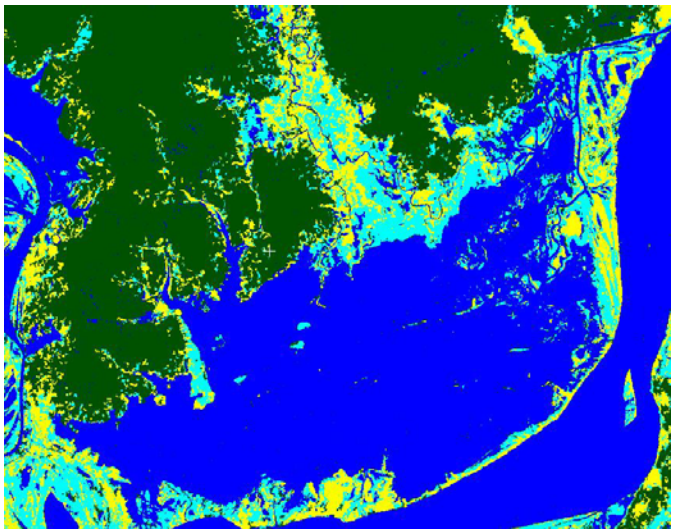


rising



High





down

Costa et al.. 2004. *International Journal of remote Sensing*

Spatial annual NPP of aquatic vegetation

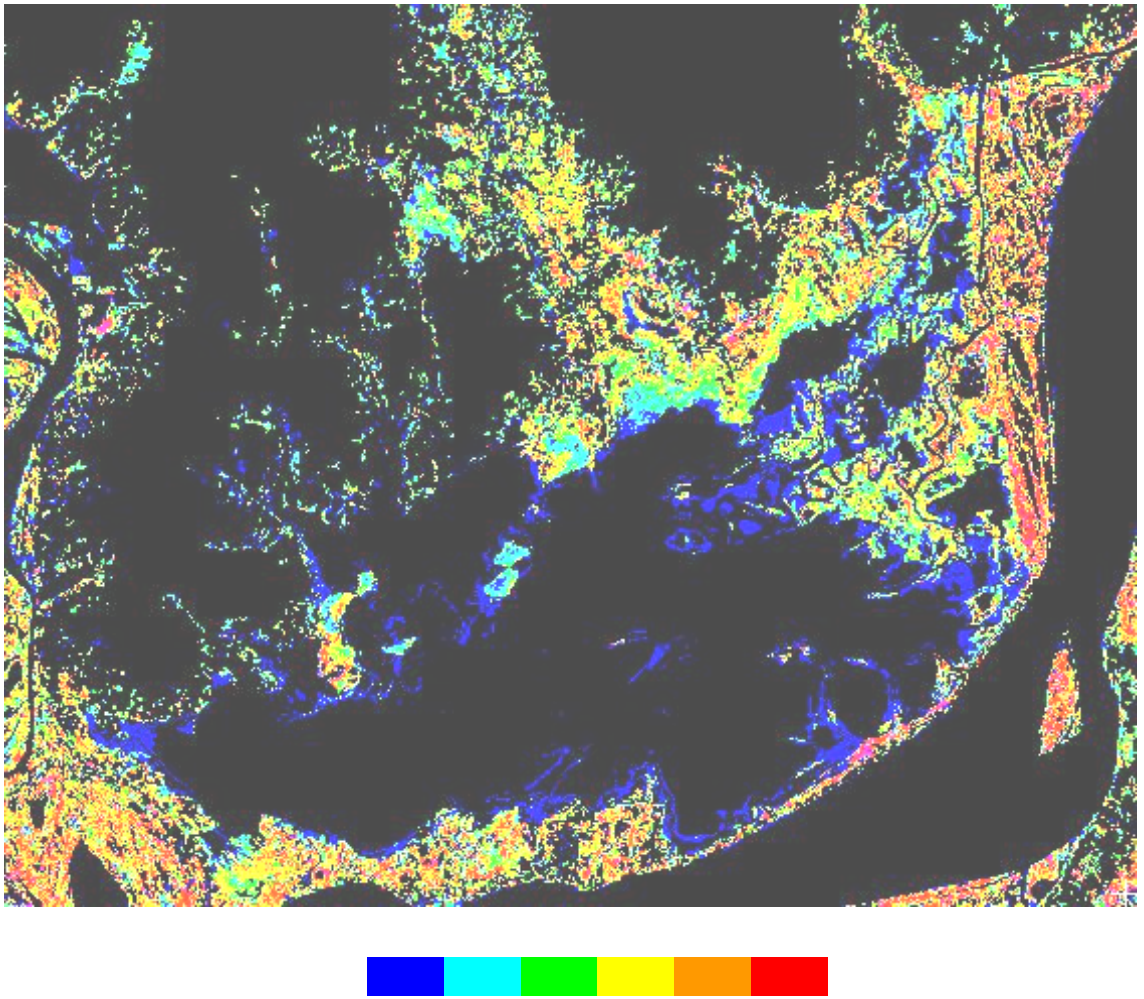


Figure 1. Spatial distribution of annual net carbon productivity of aquatic vegetation

Costa, 2005. ***International Journal of Remote Sensing***