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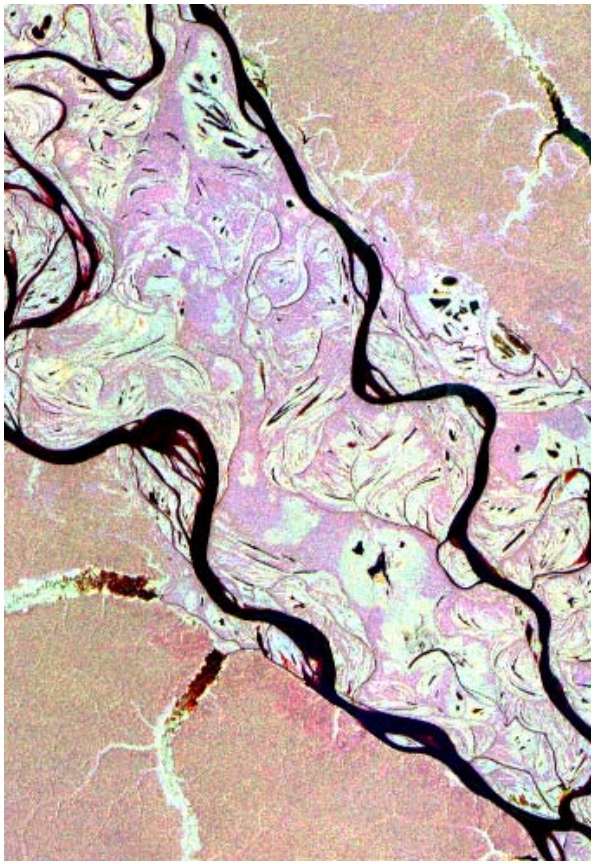
K&C Initiative

An international science collaboration led by JAXA

ALOS Kyoto & Carbon Initiative

Phase 1 Results for Amazonian Wetlands



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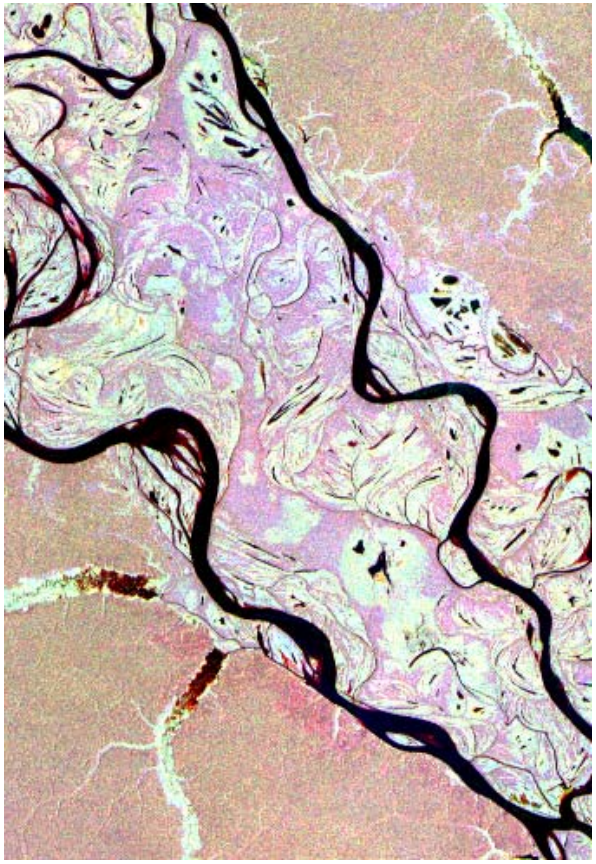
Inst. de Recherche pour le Développement (IRD)



PHASE I OBJECTIVE:

Map wetland extent, vegetation, and seasonal inundation for 3 prototype areas on the Amazon floodplain

SCIENCE GOALS:

- Estimate seasonal rates of CH_4 emissions and CO_2 evasion

-> current best estimates are based on seasonal flood mapping at 25 km scale

- Characterize and preserve the biodiversity of Amazonian wetlands

-> SAR-based mapping of "biodiversity surrogates"

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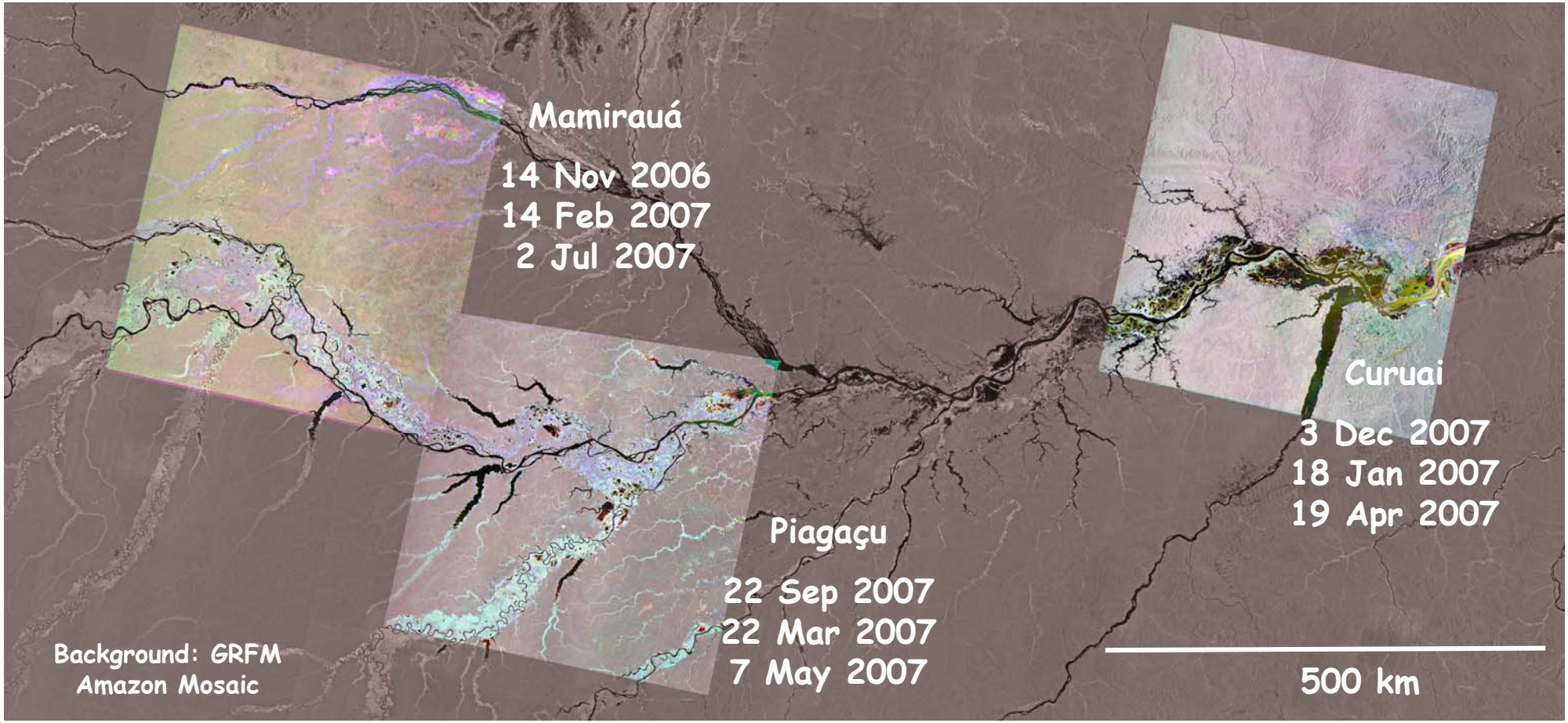
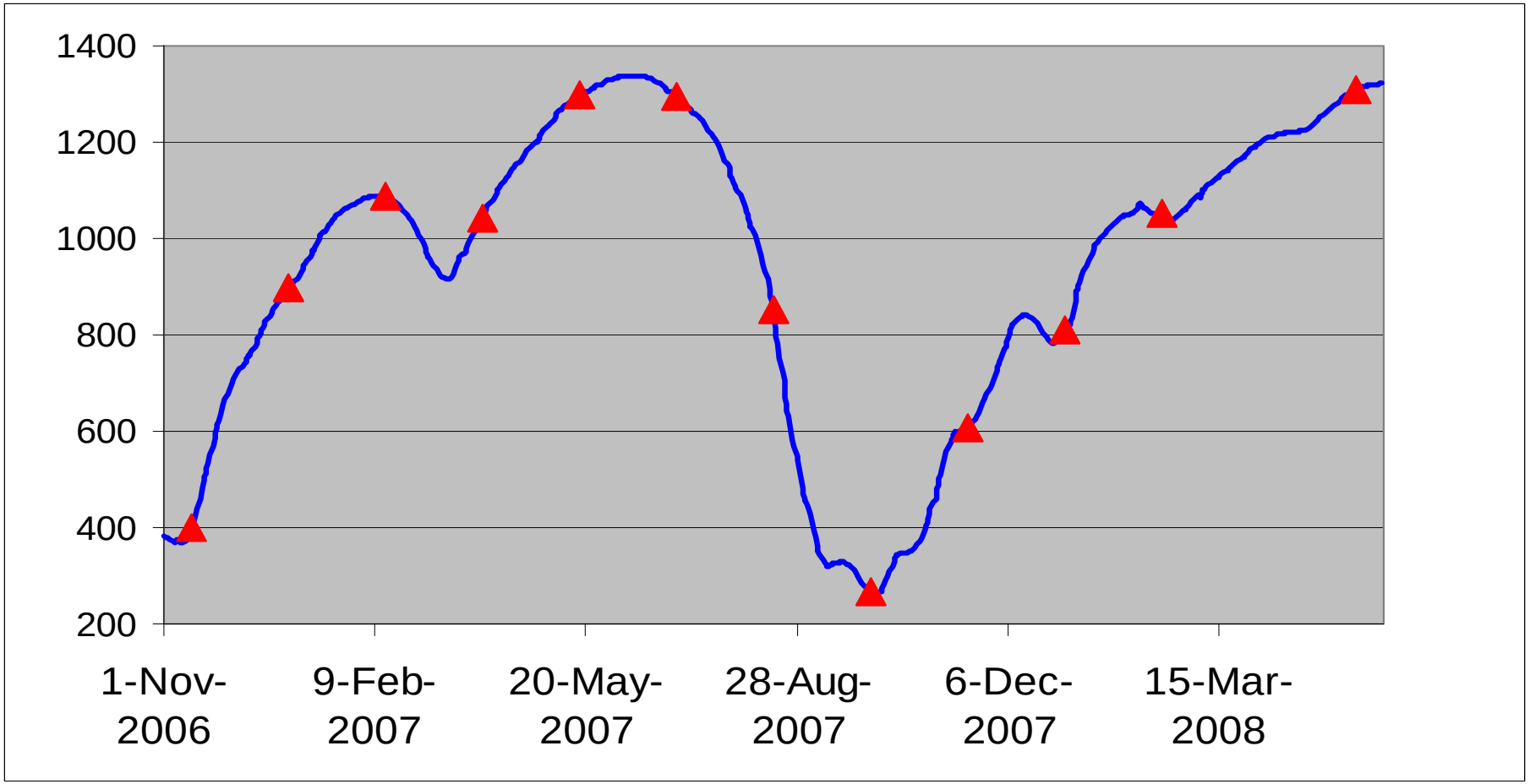
CENTRAL AMAZON PROTOTYPE REGIONS

ALOS ScanSAR composites for focus areas



ALOS ScanSAR acquisition dates relative to Amazon River stage at Tefé



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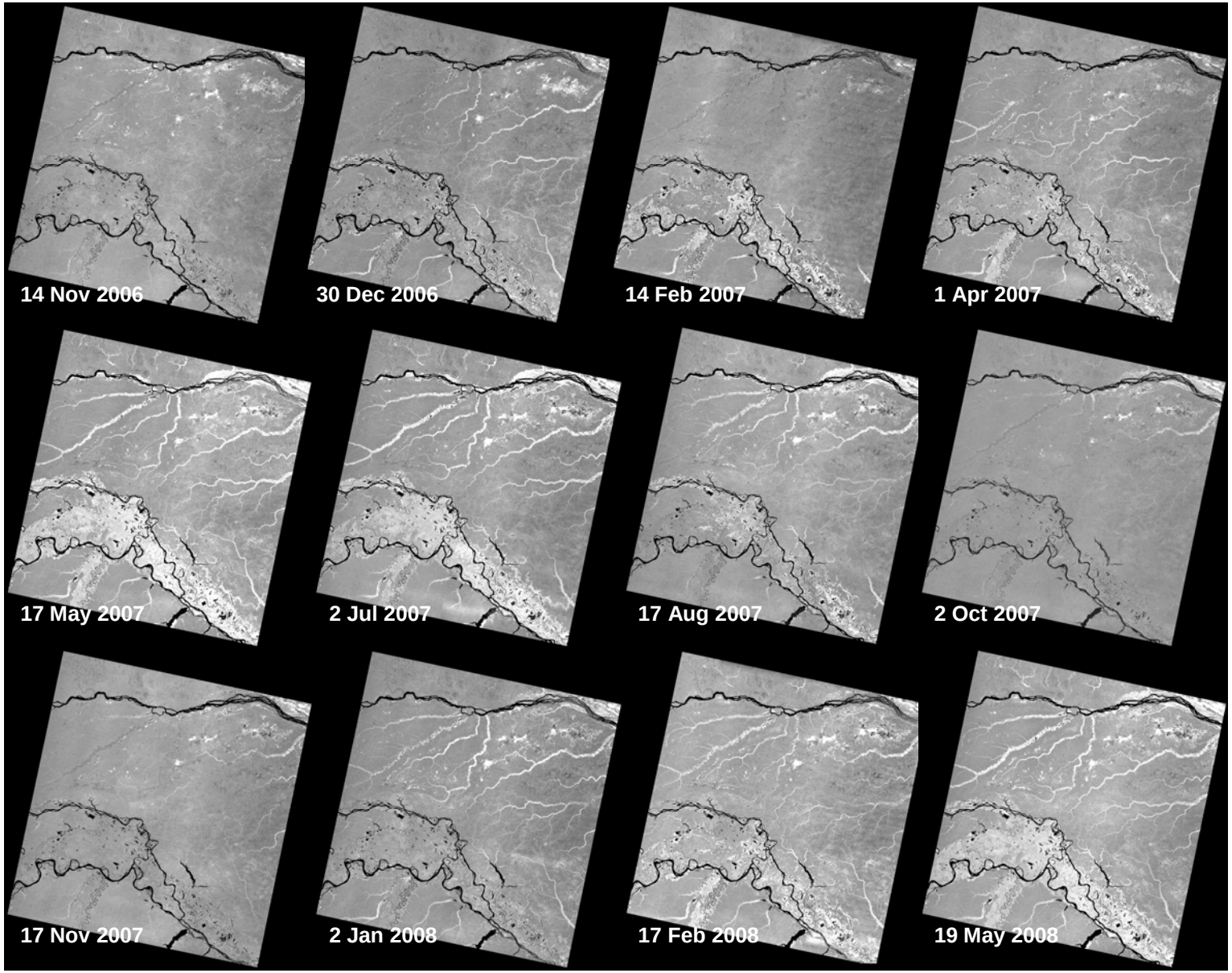
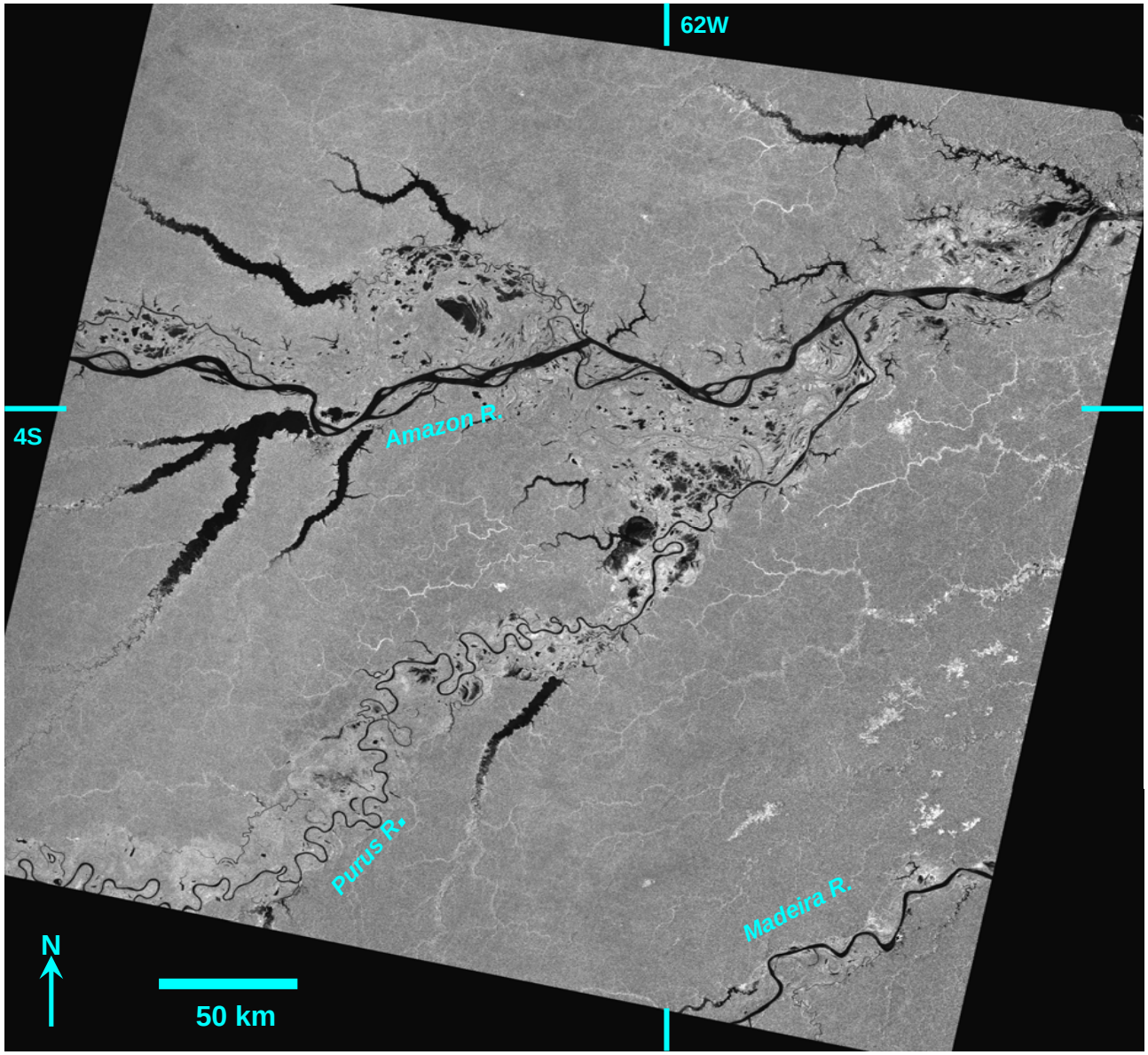


ScanSAR Time Series

Amazon, Japurá, and Negro Rivers

Flood Pulse of Amazonian Wetlands: ALOS ScanSAR Time Series

An ALOS Kyoto & Carbon Initiative Wetlands Theme Product



Start date: 4 Nov 2006

End date: 7 Nov 2007

Repeat interval: 46 days

ALOS PALSAR, ScanSAR mode
L-band, HH-pol
350-km swath width
100 m pixel

For further information contact:
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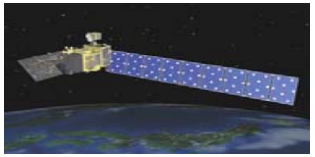

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http://www.eorc.jaxa.jp/ALOS/kyoto/kyoto_index.htm

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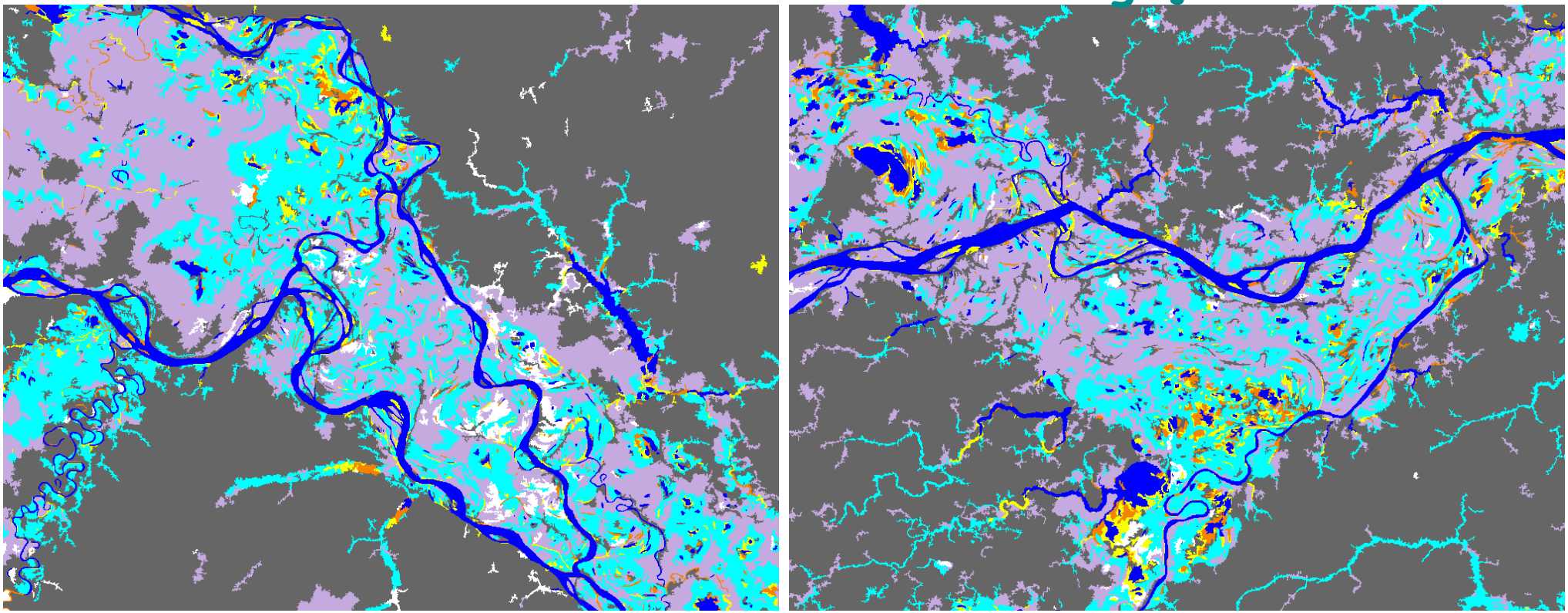
Classified ScanSAR (5 dates)

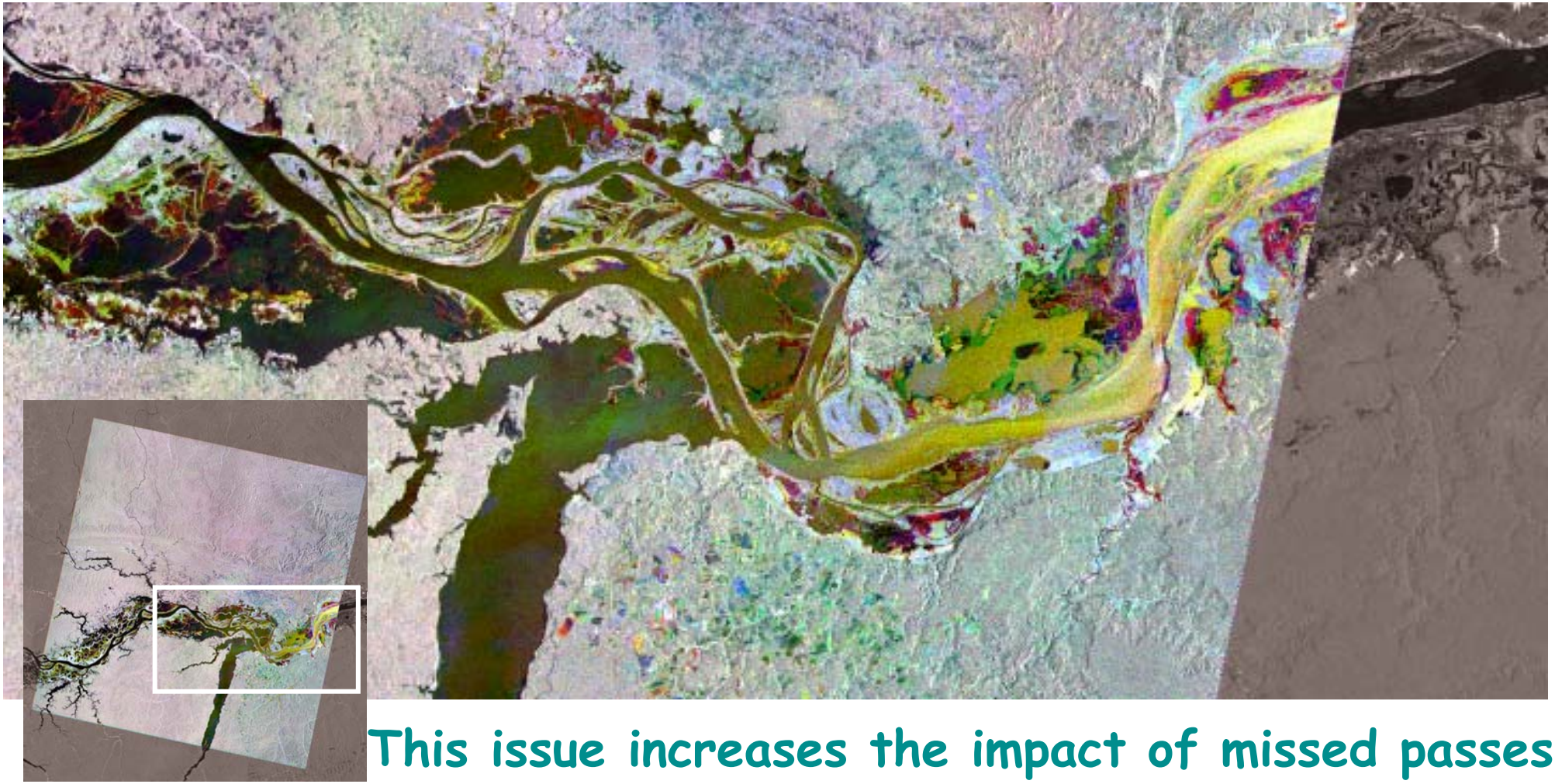
Mamirauá

Piagaçu-Purus



- Open water
- Aquatic macrophyte
- Shrub
- Non-wetland
- Forest, flooded 1-2 m/a
- Forest, flooded 3-6 m/a
- Forest, flooded > 6 m/a

Large/rough water bodies in ScanSAR near range can cause serious problems for classification



This issue increases the impact of missed passes.

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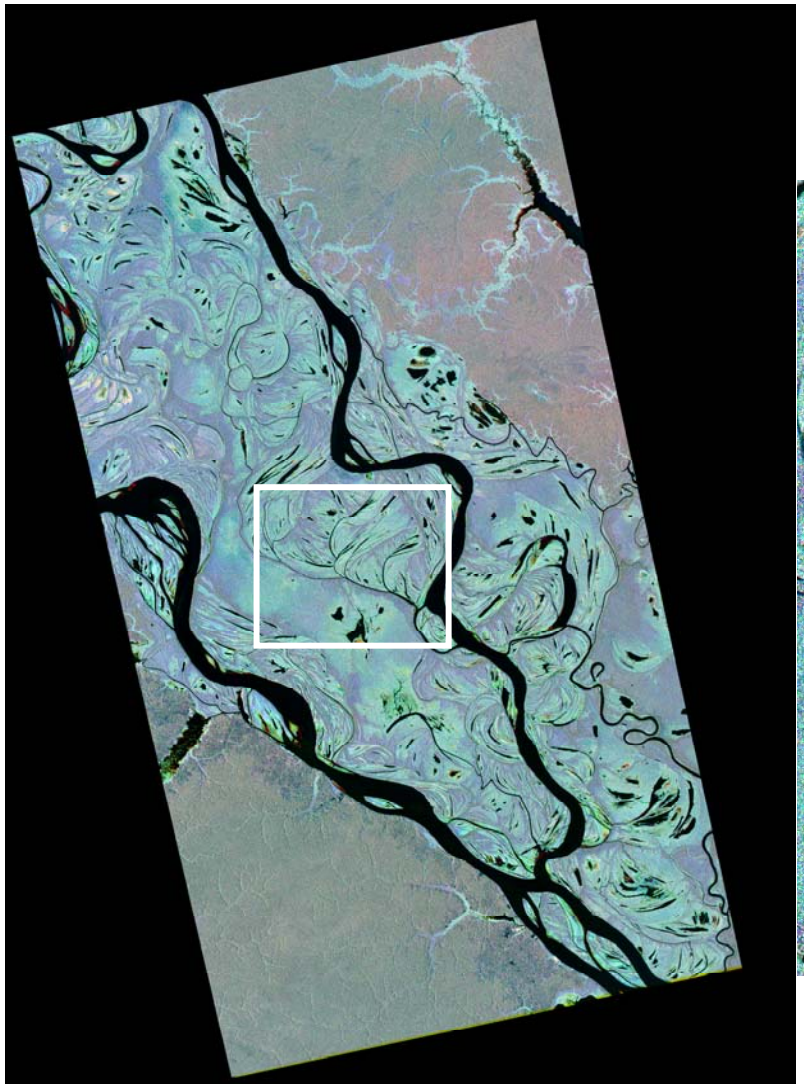

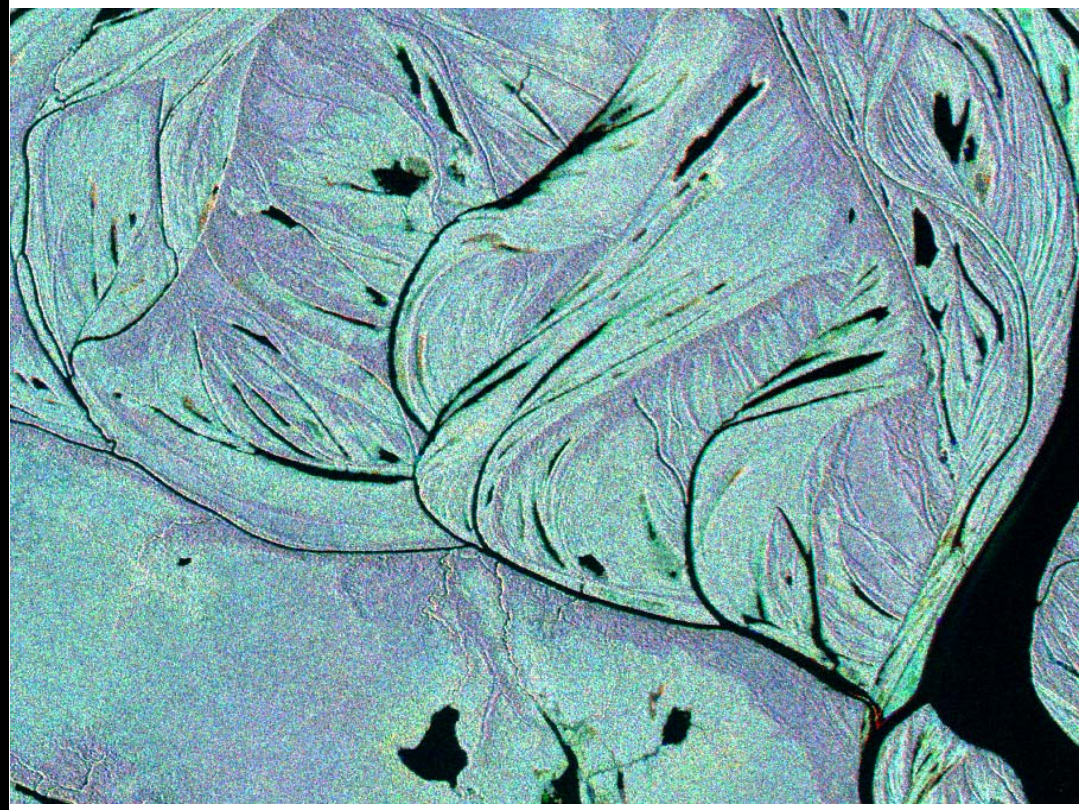

Jarauá Sector, Mamirauá Sustainable Development Reserve

Fine Beam Single Mode: 30 October 2007
Fine Beam Dual Mode: 14 June & 30 July 2007

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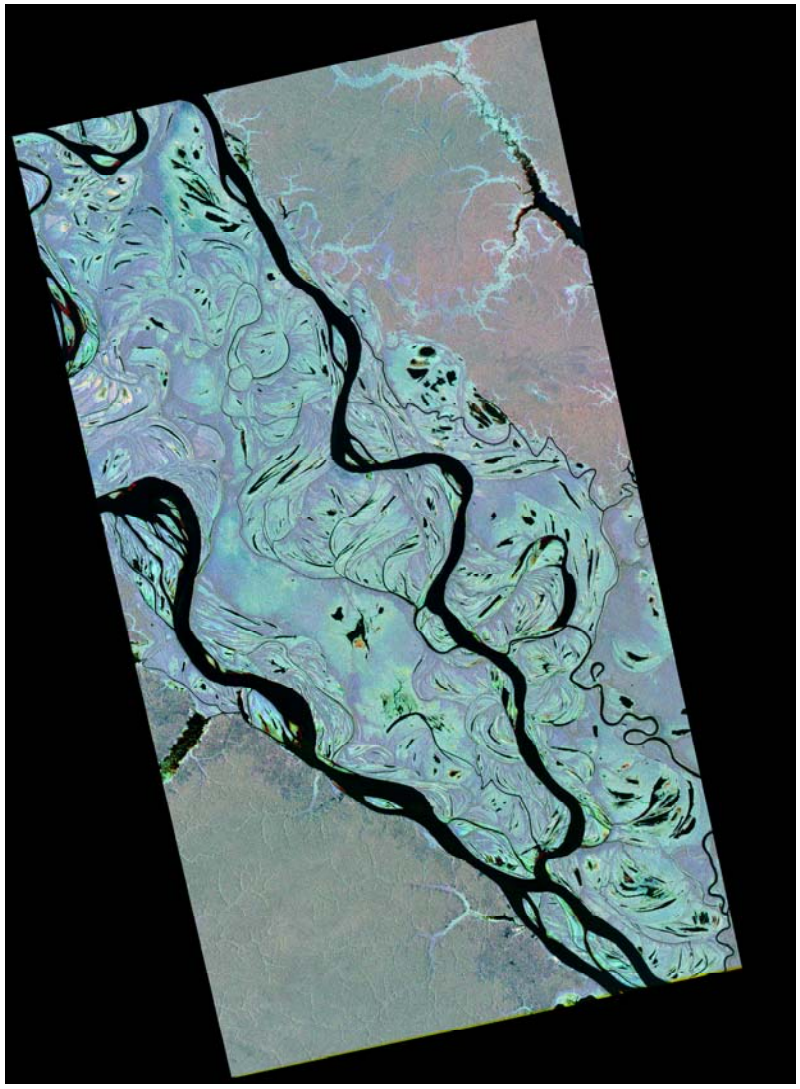

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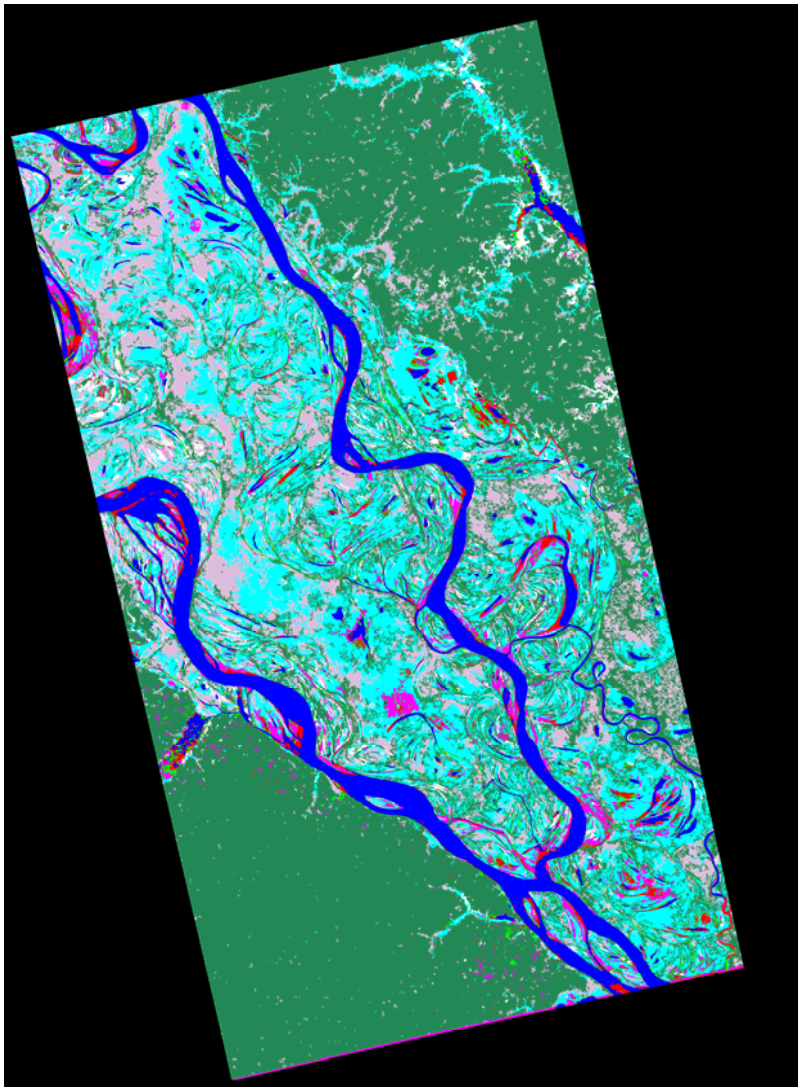


Classified image, Mamirauá Sustainable Development Reserve

Validation: Aerial Overflights

- overflight with hi-res geocoded dual-camera and laser system was postponed until 2009 (June and October flights planned)

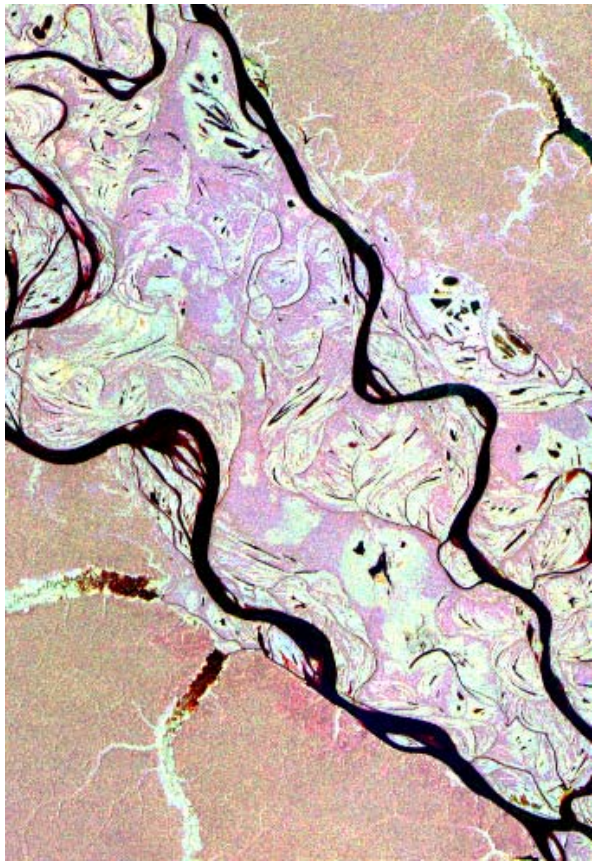
- reconnaissance survey was flown in late November 2008

Validation: 1999 dataset (high water only)

Validation: Thermochron iButtons

- deployed at Mamirauá in Nov 2009
- temperature readings every 6 hours
- testing suitability for low-cost floodplain gauging

ALOS K&C Phase I Summary



- Initial non-validated vegetation and inundation products completed for 3 sites with generally good results

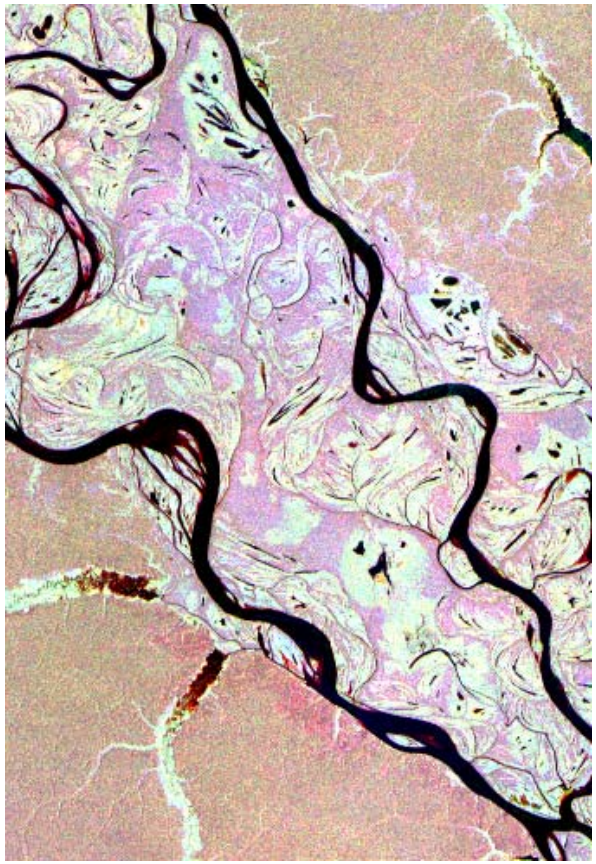
- Refined products (incorporating Nov. field survey info) by March 09

- Validation following 2009 flights

- Many enthusiastic users at SDRs,INPA

- 100 m pixels are limiting for certain geomorphologic types, e.g. scroll-bar topog

- For finer-scale habitat mapping, 3 dates are needed for good results; HH coverage on 3 dates is higher priority than dual-pol coverage (but needs to be re-evaluated using revised HV calibration coefficient)



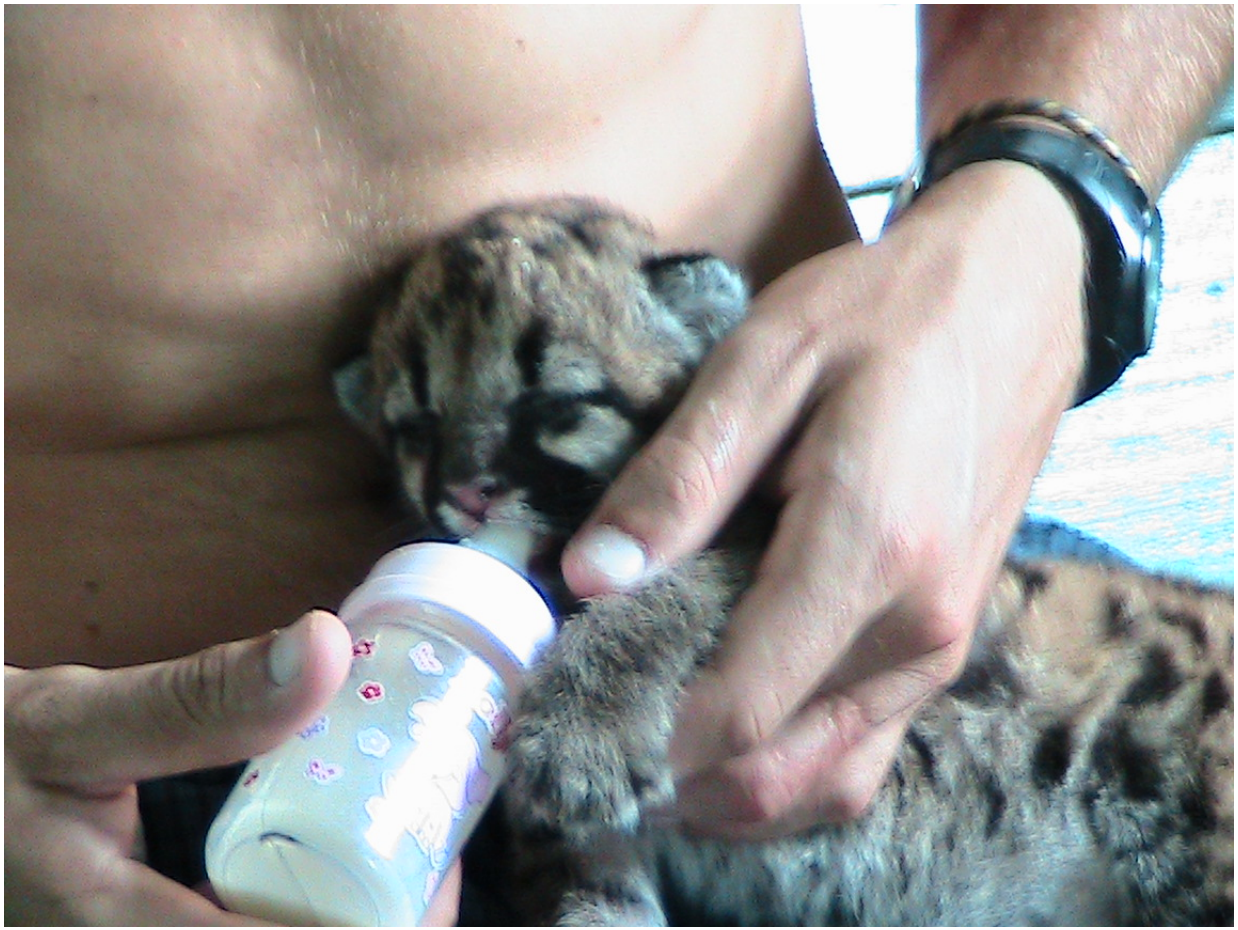
ALOS K&C Phase II

- New training/validation sites (Amapá, Juruá)

- Extend mapping to Amazon Basin (using mosaics generated by Bruce Chapman)

- Extend to other tropical and sub-tropical ScanSAR polygons

- Use to calibrate passive microwave inundation estimates to create accurate historical time series at high temporal, low spatial resolution



Thank you JAXA!