ALOS

K&C Initiative

An international science collaboration led by JAXA

ALOS PALSAR Image Mosaics for Mapping Inundated Wetlands

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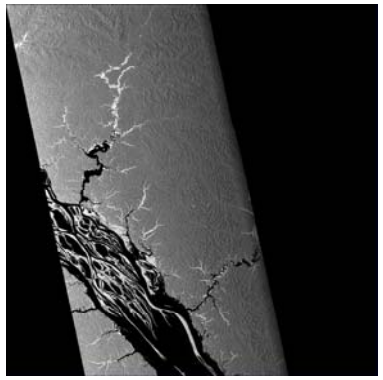
Image Mosaics - North/South America

- Dual Polarization mosaics
  - HH, HV, Ratio
  - Topography, Date, Incidence Angle
  - Inundation state (derived product)
- ScanSAR mosaics
  - HH
  - Topography, Date, Incidence Angle
  - Inundation state (derived product)
- Output projection
  - Variable by choice (EQA, UTM, Albers equal area, etc.)
  - ~1 arcsecond (30 m) resolution
- Format
  - Raw (unsigned 16 bit), Geotiff, …

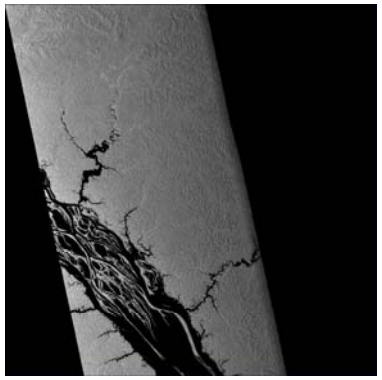
Image Mosaics

- Method for ortho-rectification
  - Using software from Gamma Remote Sensing
  - Using SRTM DEM data interpolated to 1 arcsec (~30x30 meters)
    - Using CGIAR SRTM gap-filled data
      - Careful – shifted 0.5 3-arcsec pixels relative to Standard SRTM DEM
      - Have to ‘pad’ DEM for Gamma software
    - http://srtm.csi.cgiar.org/
- Stitch SRTM-like tiles together to make continental scale image mosaics
- But – we will keep all the data, so that the image mosaics may be custom built like a jigsaw puzzle based on science objectives
  - This is especially important for the SCANSAR coverage areas, and for filling in gaps
  - Have to accommodate overlap and zero fill

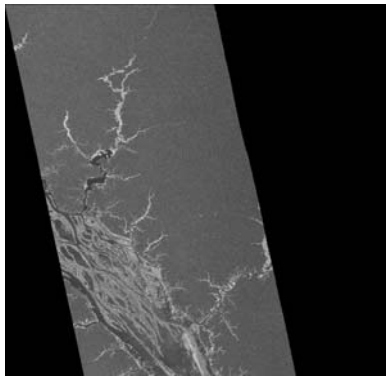
Information Layers



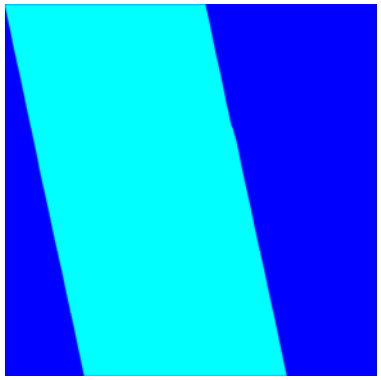
HH backscatter



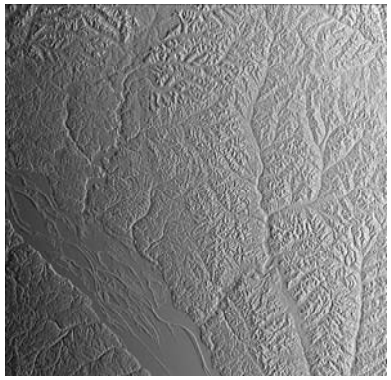
HV backscatter



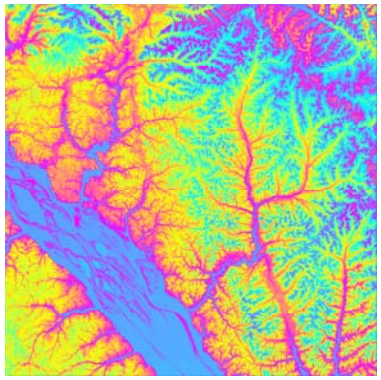
HH/HV



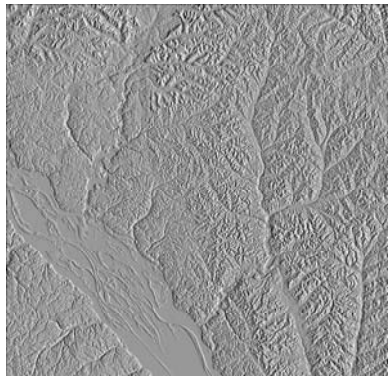
Days since Launch
(583 in this case)



Incidence Angle



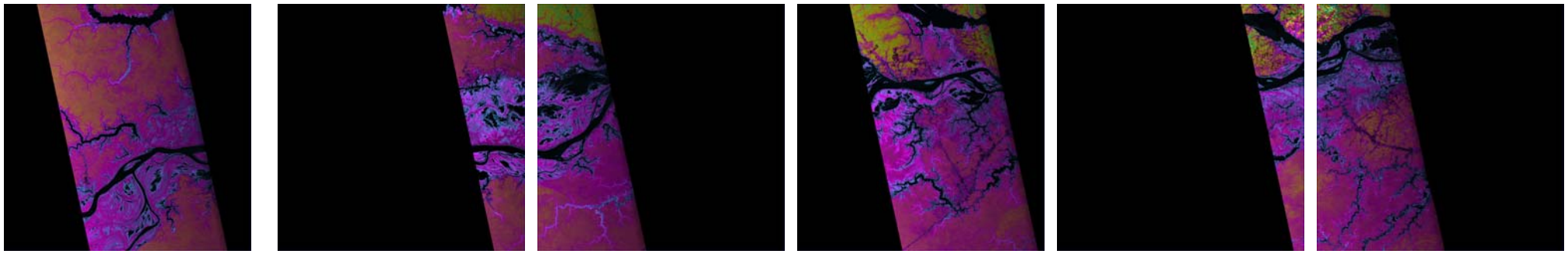
DEM ~1 arcsec



Pixel Area

A ‘replacement’ tile can be easily inserted, if desired

RSP79 RSP78 RSP77 RSP76

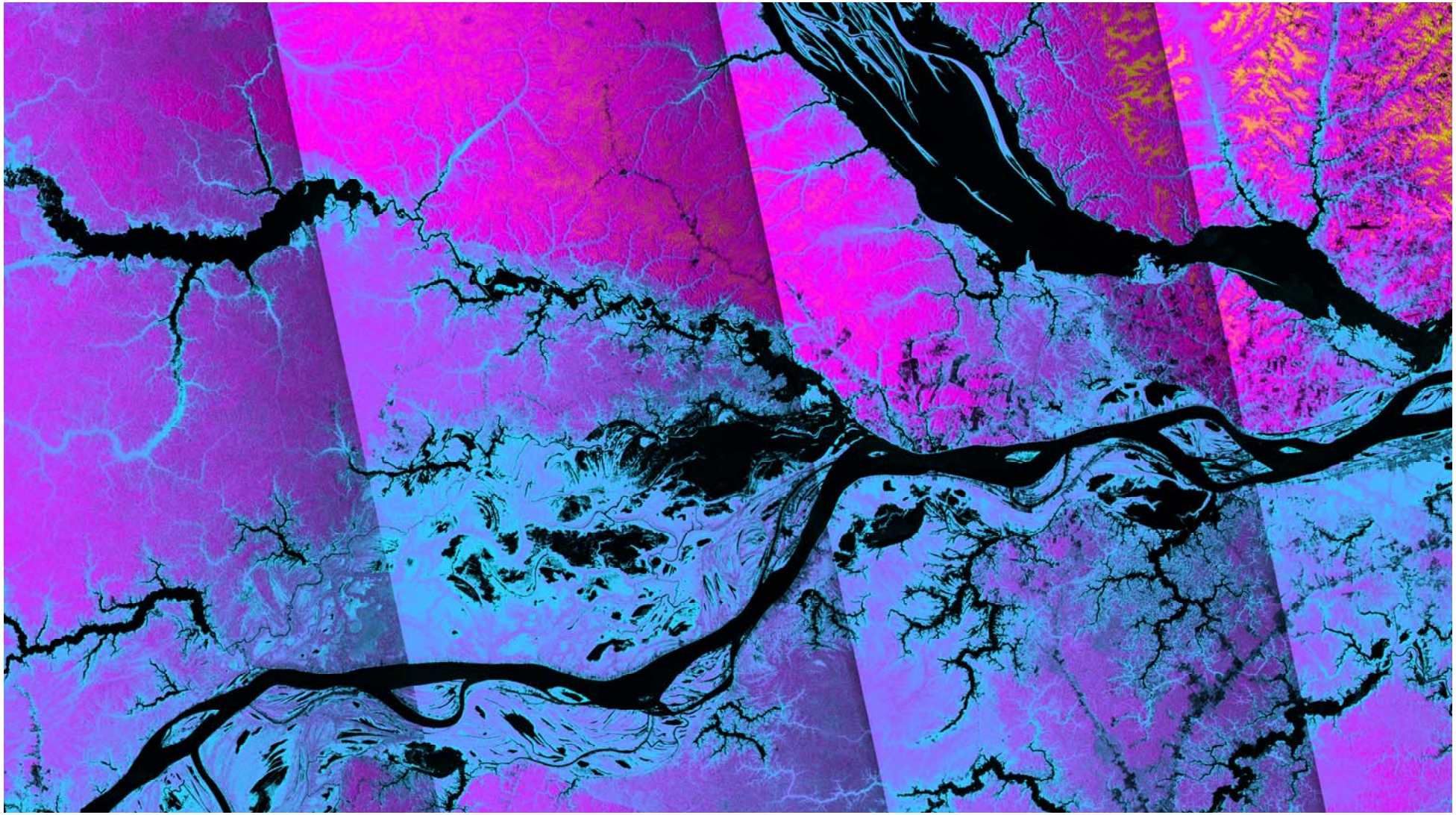


SRTM-like tiles

Scansar and Fine Beam data can be easily interchanged

Brightness : HH Backscatter
Color Wrap : 100 m height

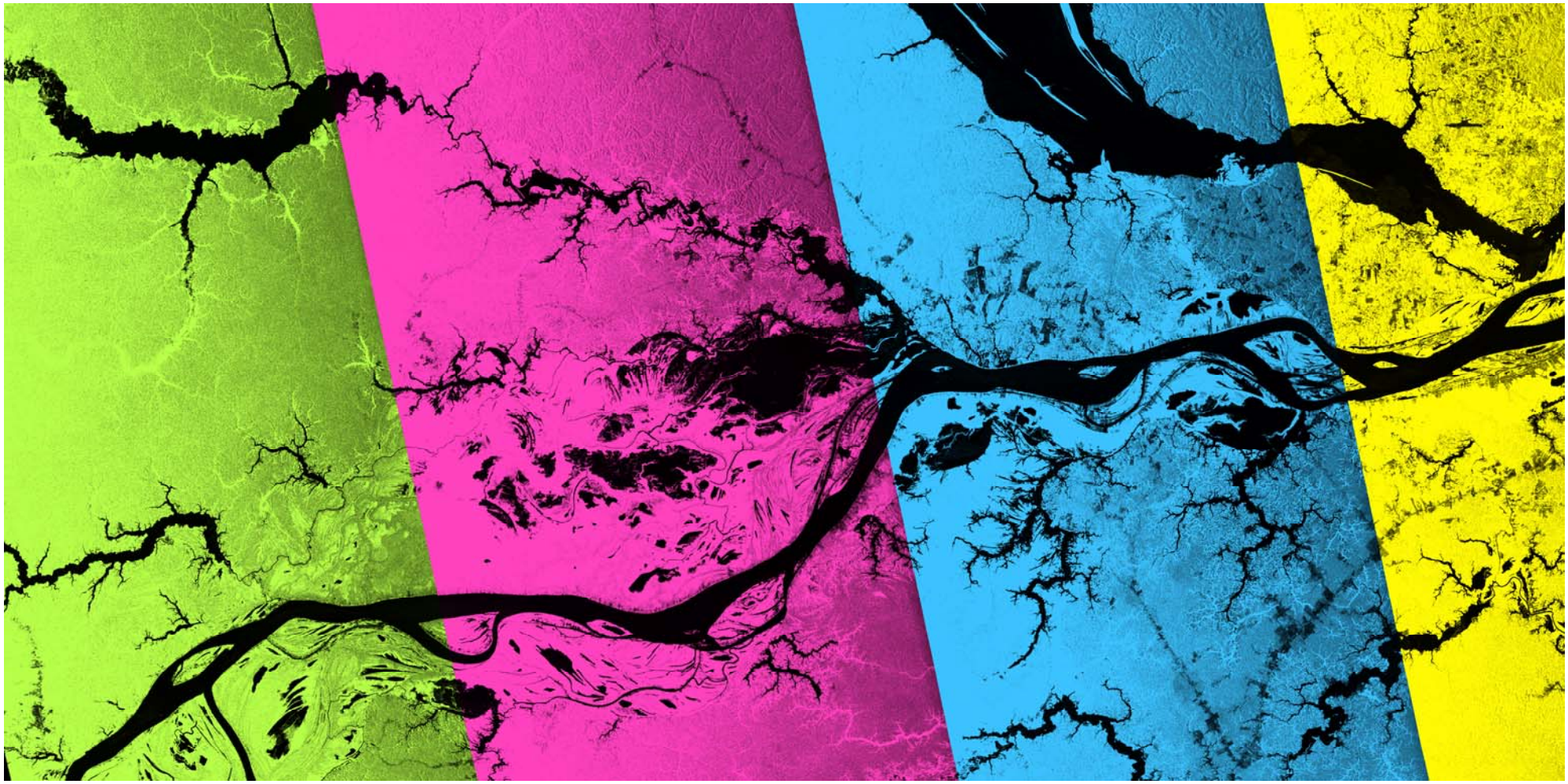
Must still accommodate zero fill and overlap areas



Still some radiometric issues to solve…

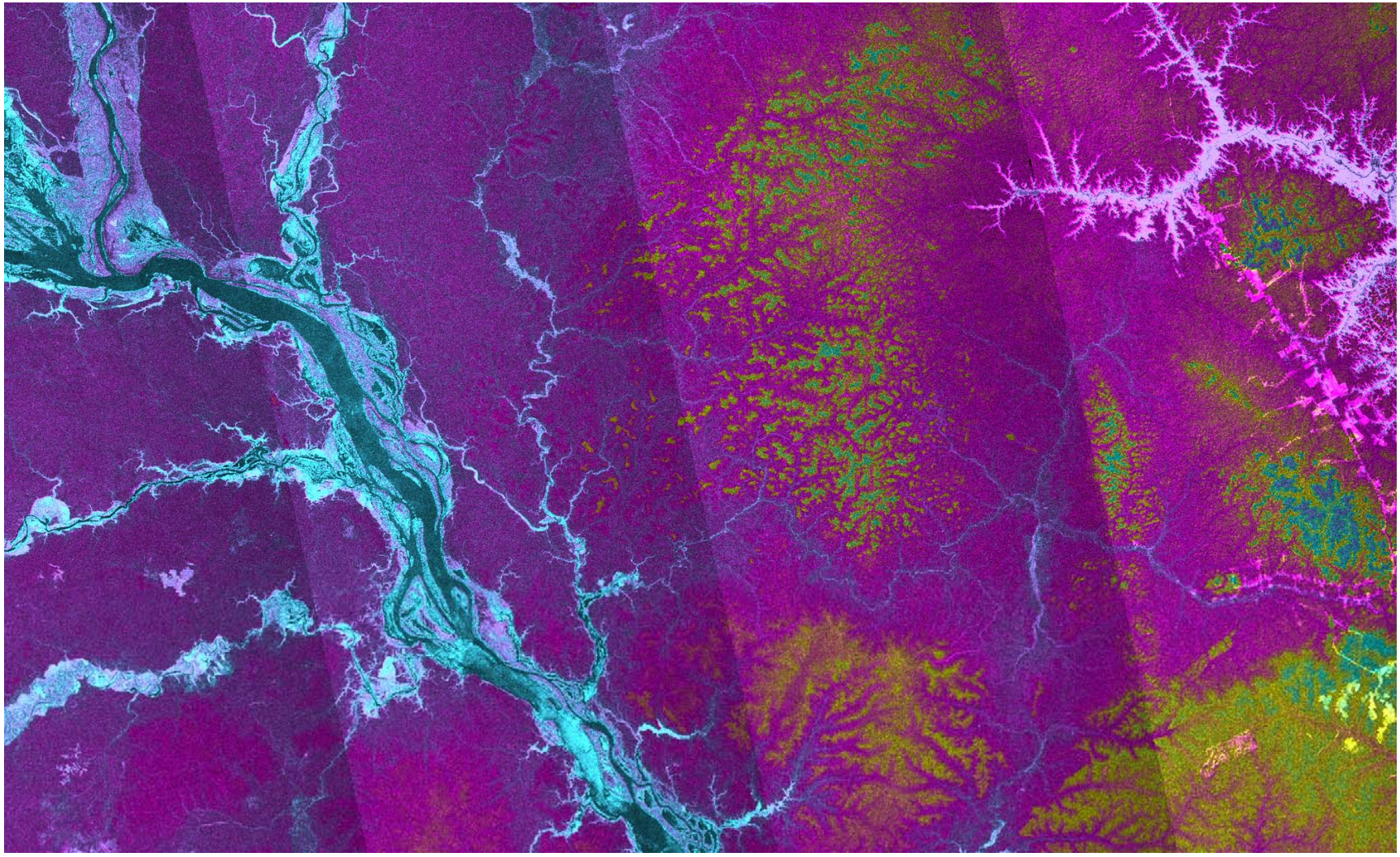
Brightness : HH Backscatter
Color Wrap : 100 m height

Filling gaps in coverage

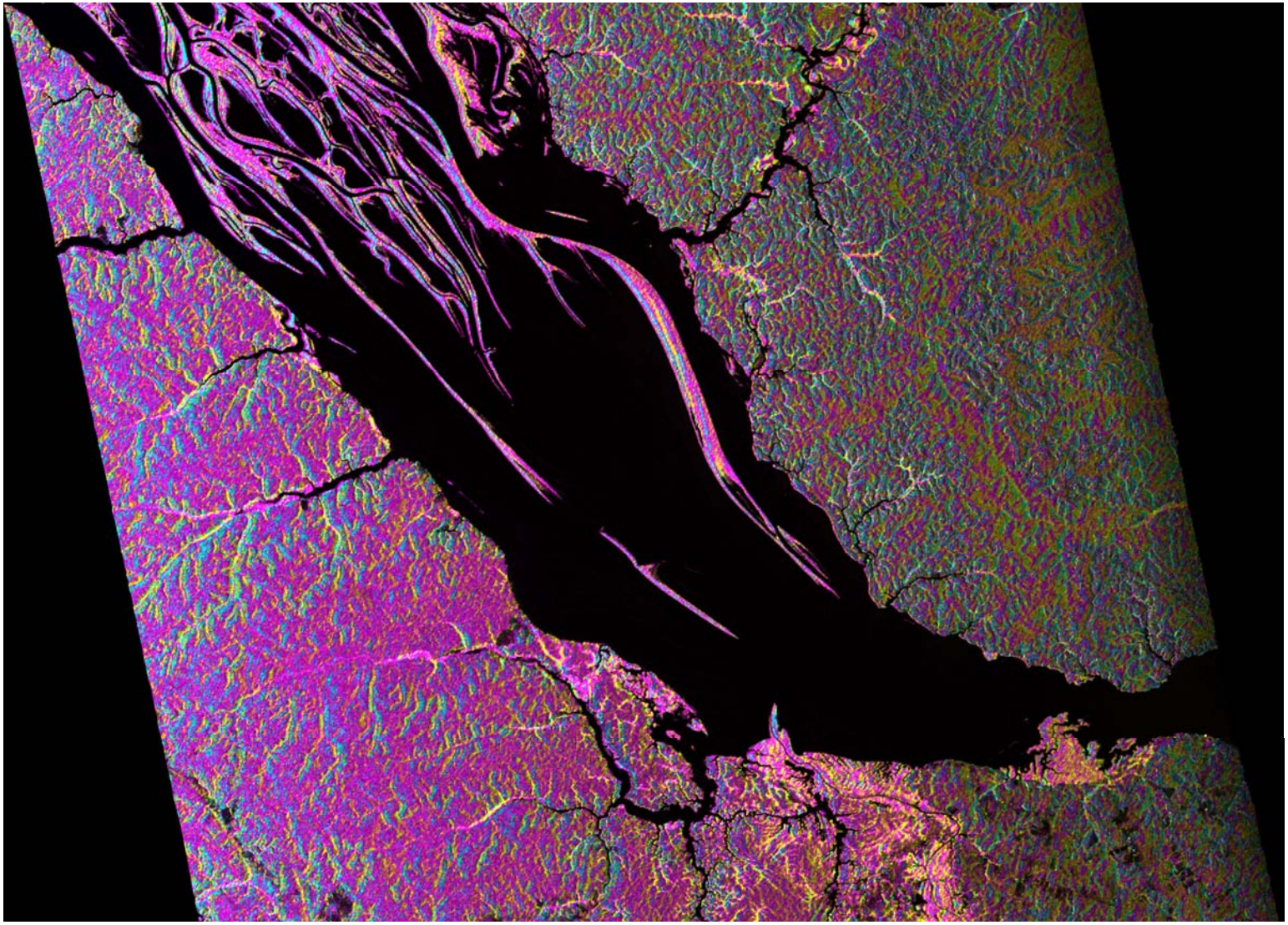


Color corresponds to Days since ALOS launch
Brightness is HH backscatter

HH/HV with topography

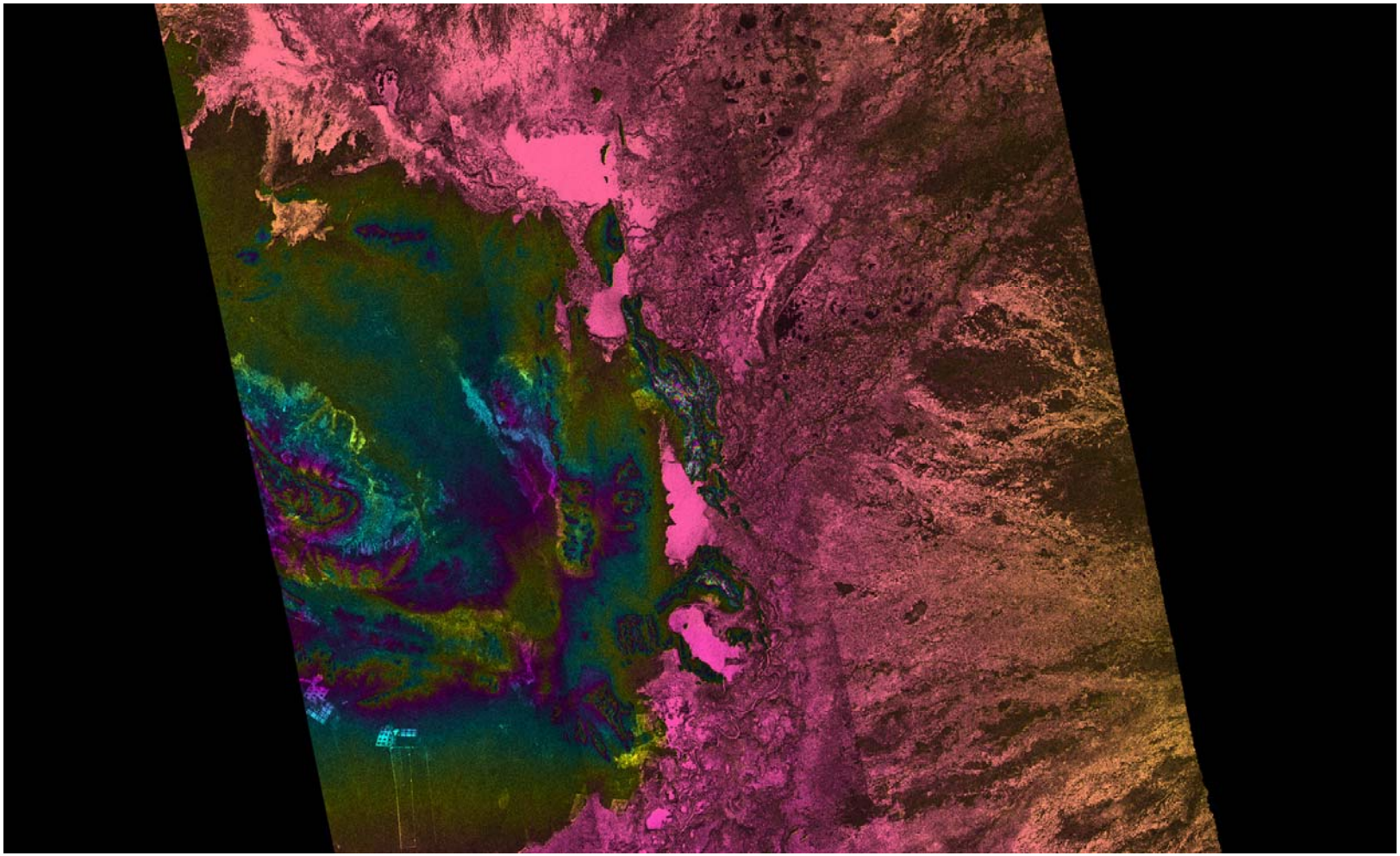


Accounting for Incidence Angle during Classification



Brightness: HH
Color corresponds to incidence angle

HH/HV with topography - Pantanal



Same strips as shown for Amazon, further south

Schedule for mosaicking

Start Date: March 2008

Milestone chart for mosaicking

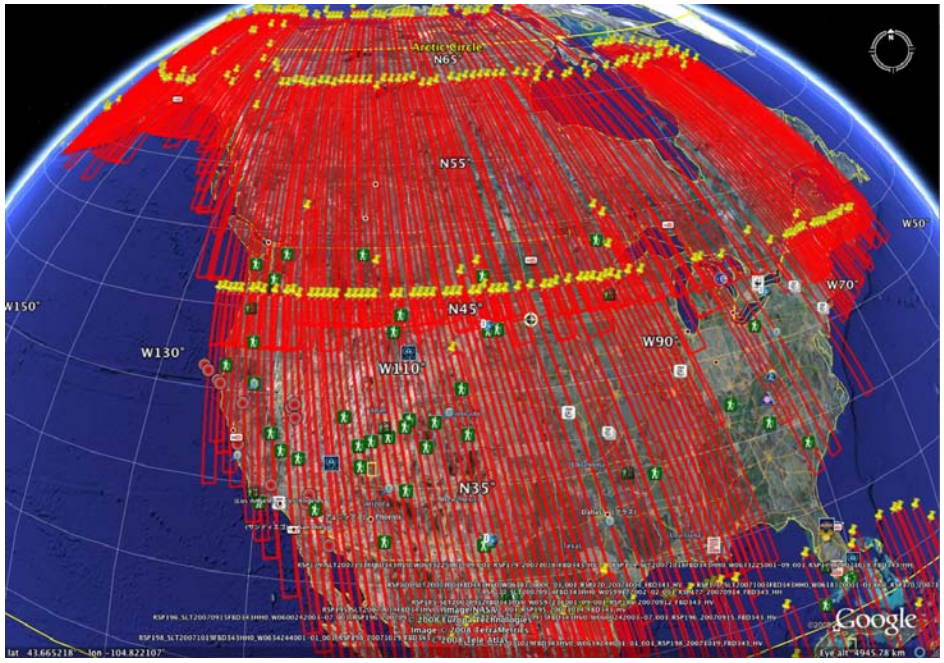
Acitivity by quarter	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Data Acquisition and Assembly																				
a. Prototype mosaics (ScanSAR and Dual Pol)																				
a. Dual Polarization PALSAR Mosaic for ScanSAR regions of North and South America																				
b. Mosaics of S. America ScanSAR data																				
c. Mosaics of N. America ScanSAR data																				
d. Dual polarization PALSAR mosaic for scanSAR regions of Africa and S.E. Asia																				
e. Mosaics of Africa ScanSAR data																				
f. All other Dual polarization mosaics																				
g. All remaining ScanSAR mosaics																				

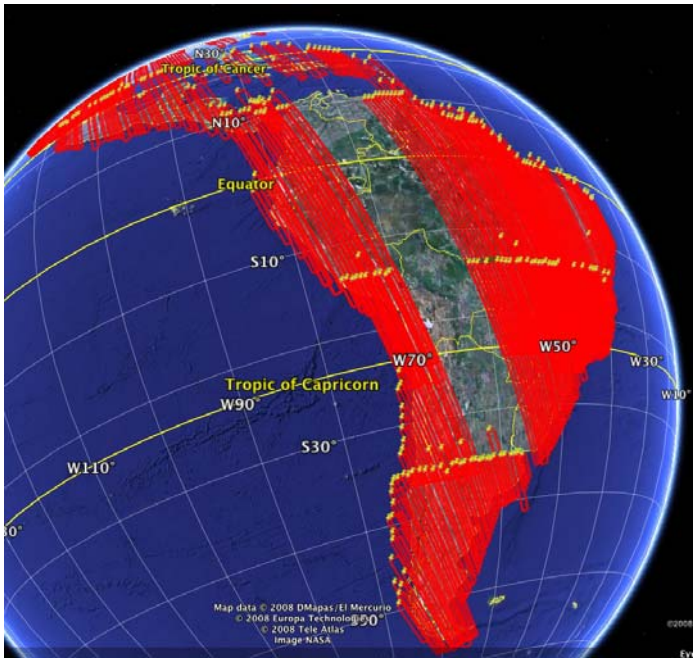
Schedule for mosaicking

KC schedule for mosaics:

1) Prototype mosaics: June 2008
2) Dual Pol mosaic N. and S. America: December 2008
3) ScanSAR mosaics: S. America June 2009
4) ScanSAR mosaics: N. America March 2010

Current Coverage (May 2008)





NASA

JPL
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Current and Future Plans

- Correct radiometric calibration error
- Determine output data format for mosaics
  - 8/16 bit, geotiff, projection, layers, etc
  - Color image mosaics products?
- Process data
  - one cpu: ~ 1 strip per day
  - process with multiple systems
- Distribution points

Thanks, again, to JAXA for making this possible!