

STATUS of the JRC K&C PALSAR AFRICA MOSAIC



Institute of Geography & Earth Sciences



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Tsukuba, Japan



STATUS of the JRC K&C PALSAR AFRICA MOSAIC



David Kirk – Catching the bus

**We are always late...
Therefore we invented the saying:
The later, the better**

THE JRC K&C PALSAR MOSAIKING MACHINE

Chapter 1: file transfer and data base

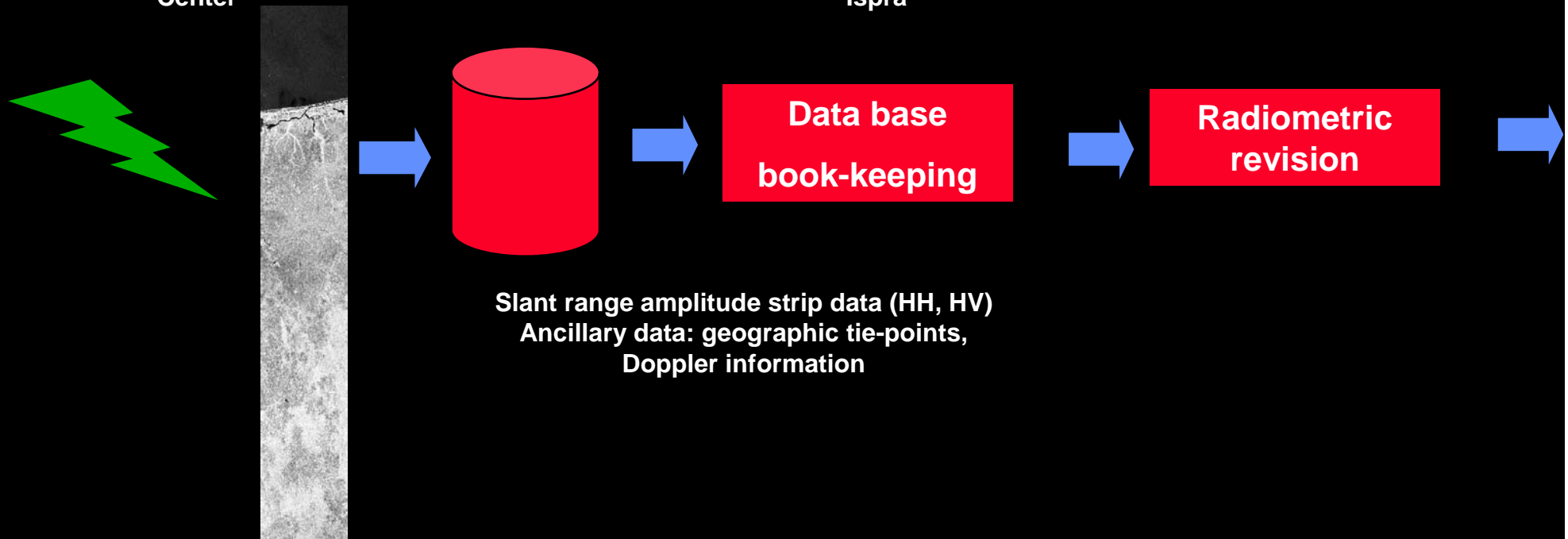


Tsukuba Space Center

ASPERA File Transfer



Joint Research Centre Ispra



RADIOMETRIC REVISION

1st step: empirical range dependence correction

Assuming that effective scattering area (flat terrain) and range spreading loss corrections are performed by SIGMASAR processor in slant range data

CASE 1

Anomalous power drop at near or far range



Correction by empirical function of range distance

CASE 2

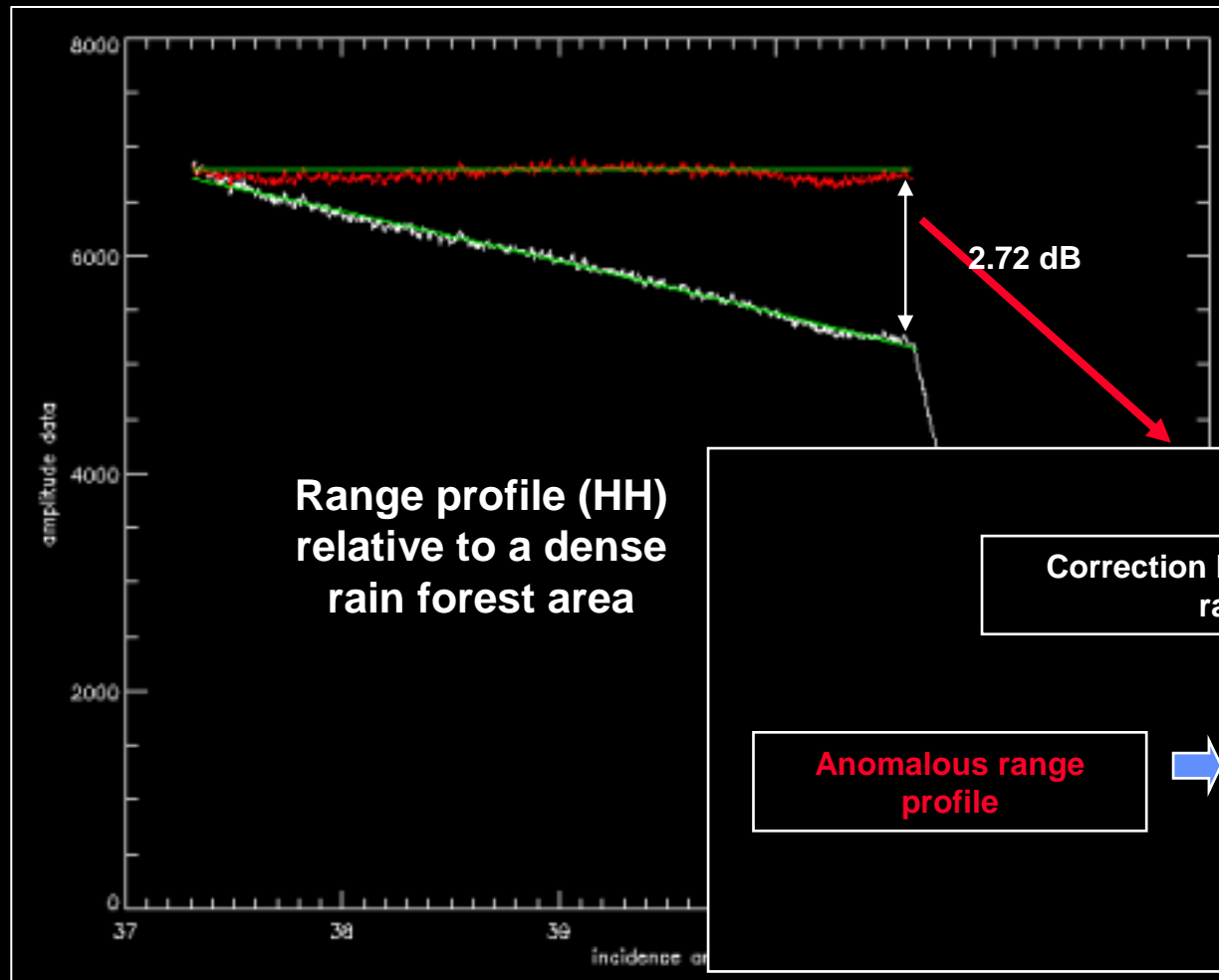
Normal range profile



Two classes problem with fuzzy boundary
High backscatter -> no correction
Low backscatter -> correction by empirical (data driven) function of incidence angle

Correction for effects induced by topography delayed to the classification (interpretation) stage

REVISION OF ANOMALOUS POWER DROP IN RANGE



Expected near-range to
far-range drop computed
by Fung's model:

HH=0.13 dB

HV=0.19 dB

Correction by empirical function of
range distance

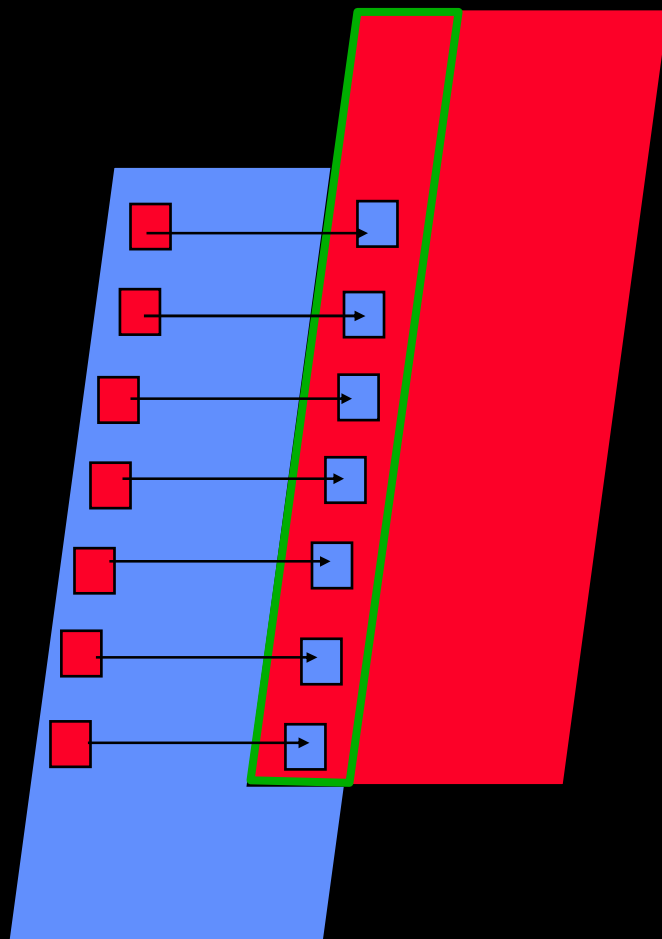
Anomalous range
profile



$$DN_{cal} = DN \times f(r_i) = DN \times \left(\frac{r_i}{r_0} \right)^4$$

RADIOMETRIC REVISION

2st step: correction based on backscatter in inter-strip homologous areas (under test)



**Point estimate of near to far
range imbalance
(first pass of mosaicking procedure)**



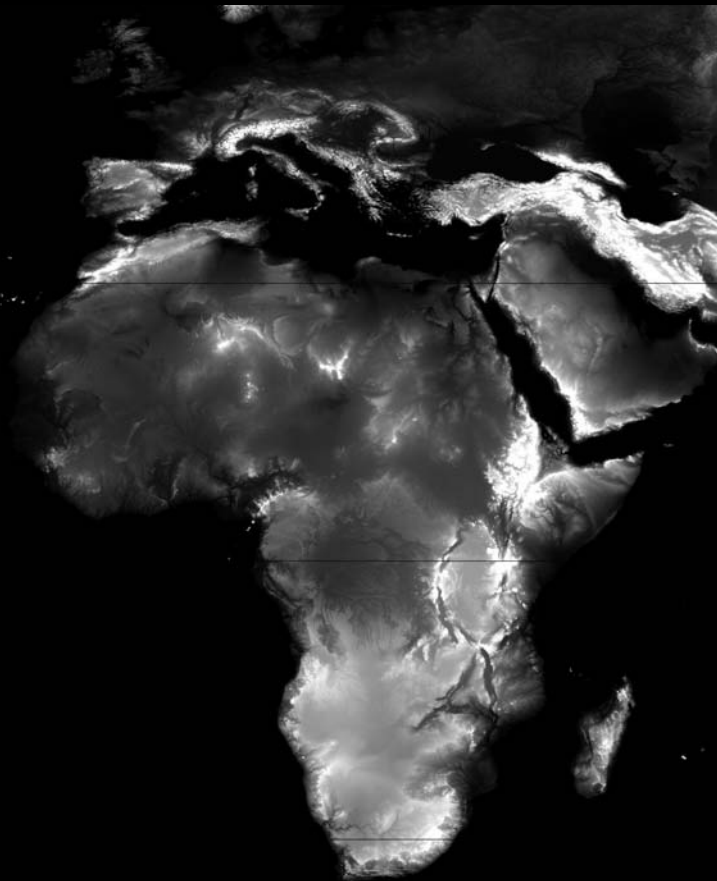
Thin plate interpolation surface



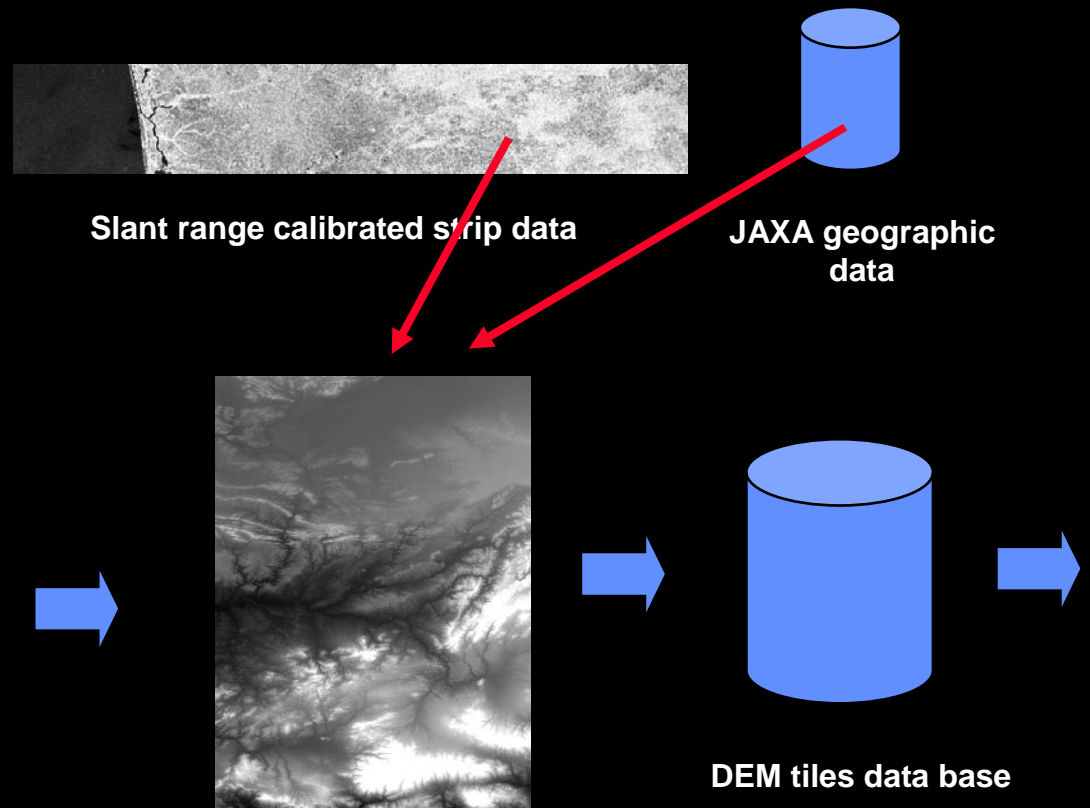
**Strip radiometric revision using the thin
plate surface
(second pass of mosaicking procedure)**

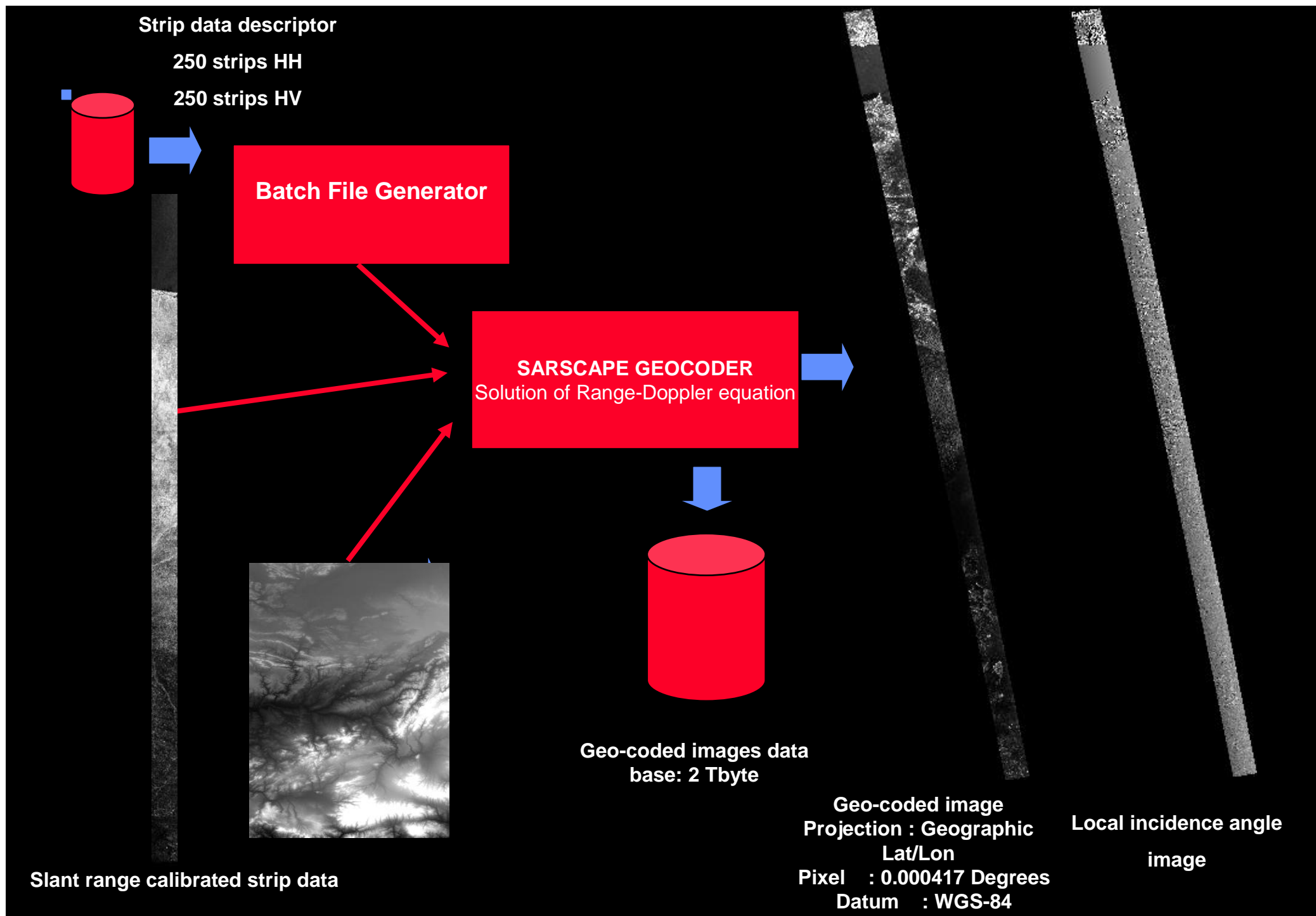
JRC global Africa DEM
SRTM with auxiliary topographic data
interpolation

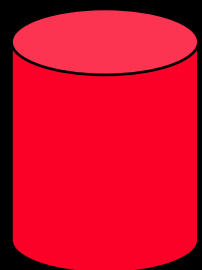
PER-STRIP DEM TILE EXTRACTION



Jarvis, A., H.I. Reuter, A. Nelson, E. Guevara,
2008, "Hole-filled SRTM for the globe Version 4,
available from the CGIAR-CSI SRTM 90m
Database: <http://srtm.csi.cgiar.org>.

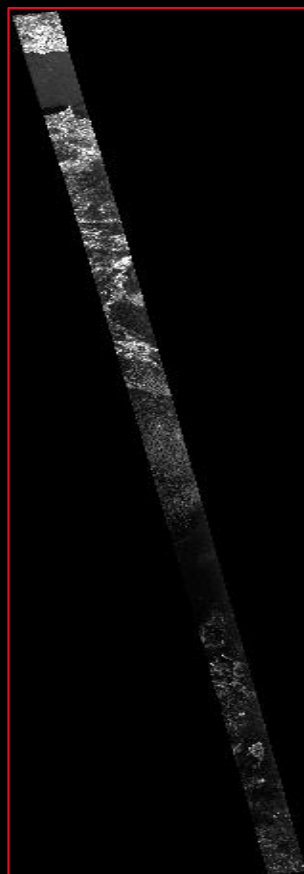






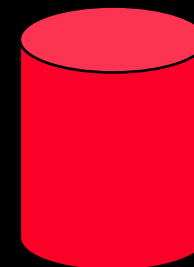
Float point

**Typical size:
3 Gb**



**Lossless geocoded
data compression**

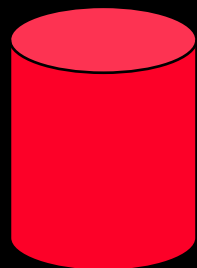
**Mean compression
factor of 26**



**Unsigned
int16**

**Typical size:
113 Mb**

Geo-coded images
data base

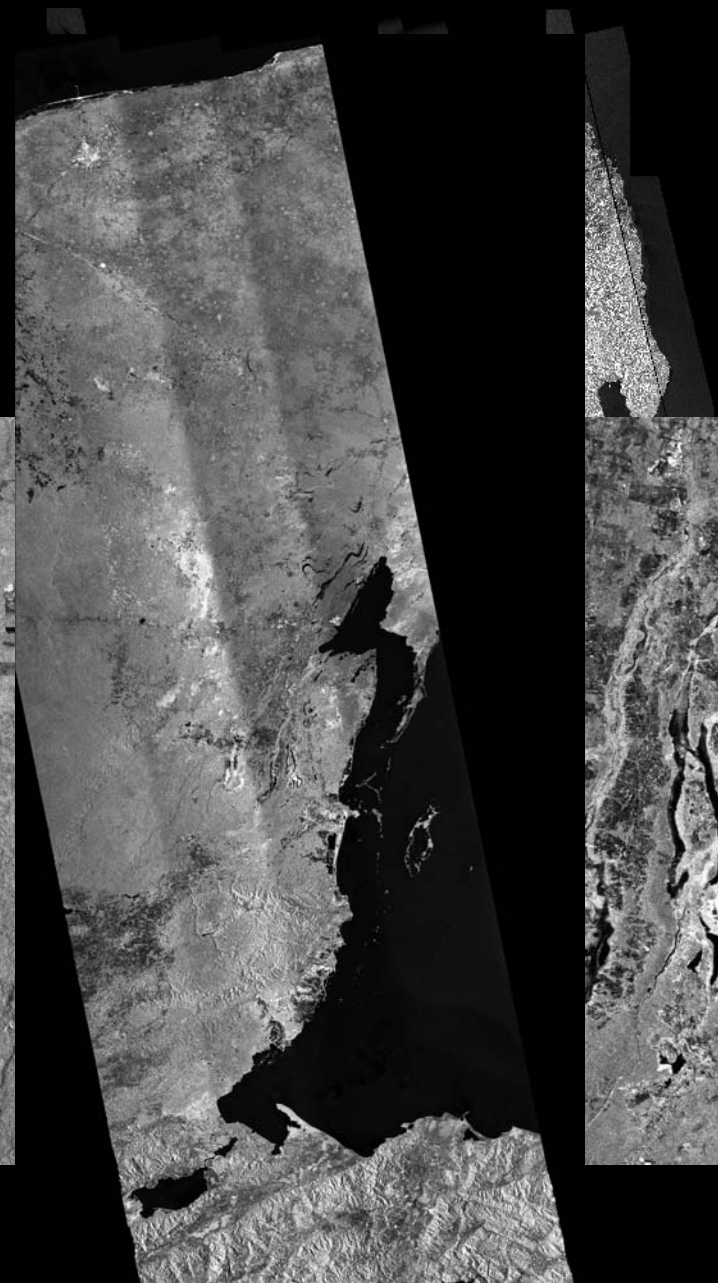
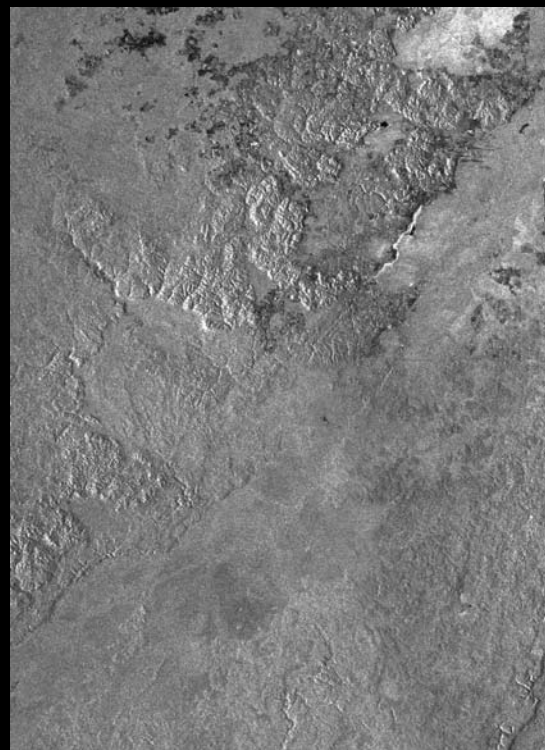
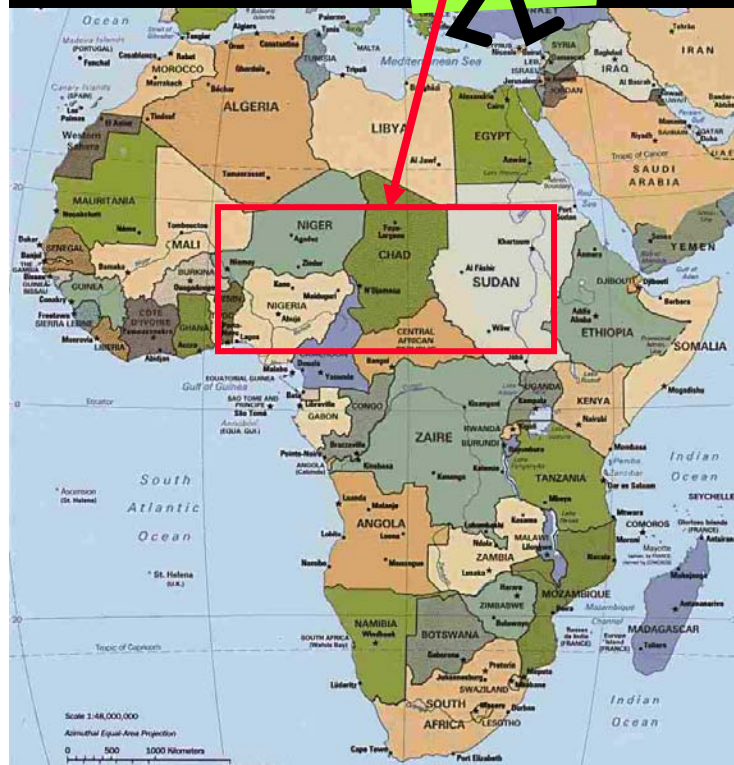


Mosaicking with inter-strip
blending

Bespoke IDL procedure

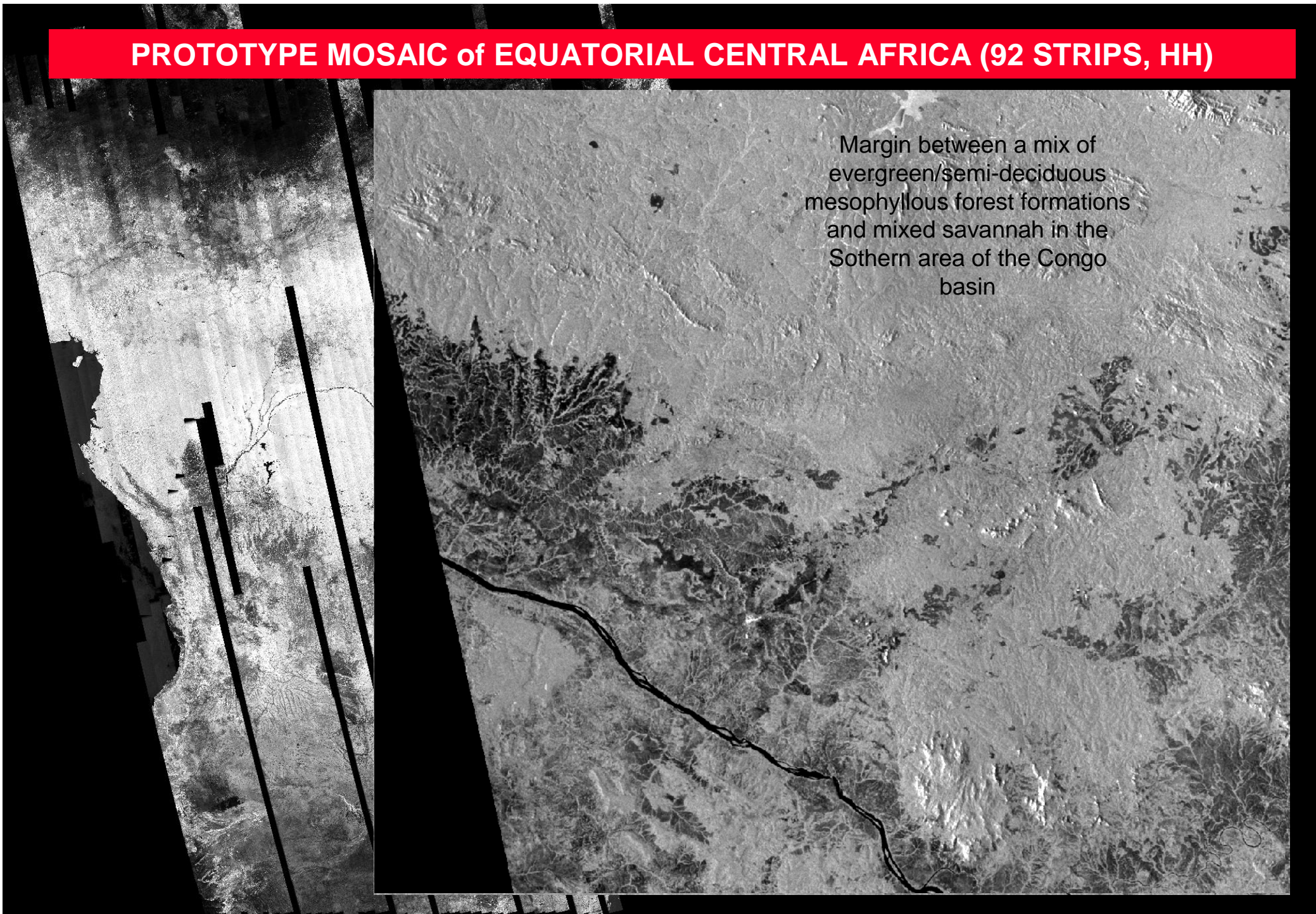


Box window

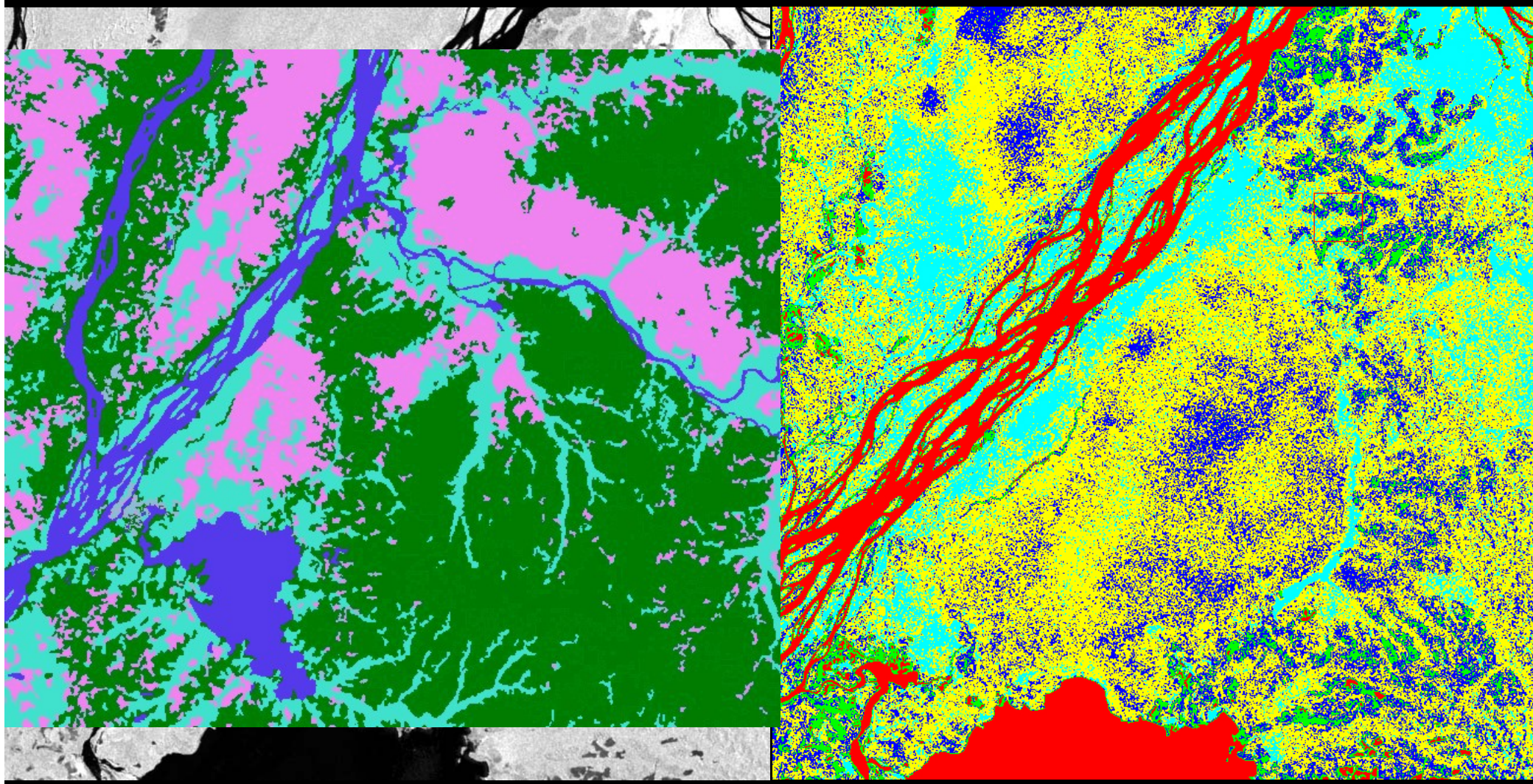


PROTOTYPE MOSAIC of EQUATORIAL CENTRAL AFRICA (92 STRIPS, HH)

Margin between a mix of
evergreen/semi-deciduous
mesophyllous forest formations
and mixed savannah in the
Southern area of the Congo
basin



SEGMENTATION EXPERIMENT USING A MOSAIC'S SUBSET (Congo Floodplain)



CONCLUSIONS



Daniel Barenboim (pianist, conductor) on Beethoven:
Beethoven's music deals with the innermost nature of
the human being: to strife for the extreme....and finally
from chaos comes a new order

Did we push too much to the extreme with
the PALSAR mosaics?

Now that we for sure have chaos, will a new
order finally appear?

Africa mosaic expected appearance

Spring 2009