A report from the ALOS International PI meeting at Kyoto International meeting hall

Masanobu Shimada and Yousuke Miyagi
JAXA/EORC

Jan 15 and 16 2007
Disaster Prevention Institute, Kyoto University, Uji Campus, Pixel meeting

Title : ALOS PI meeting.
Place ; Kyoto International conference hall
Dates; Nov.19-22, 2007
Participants: 170 (70 foreigners)
Presentations: 120

Sessions

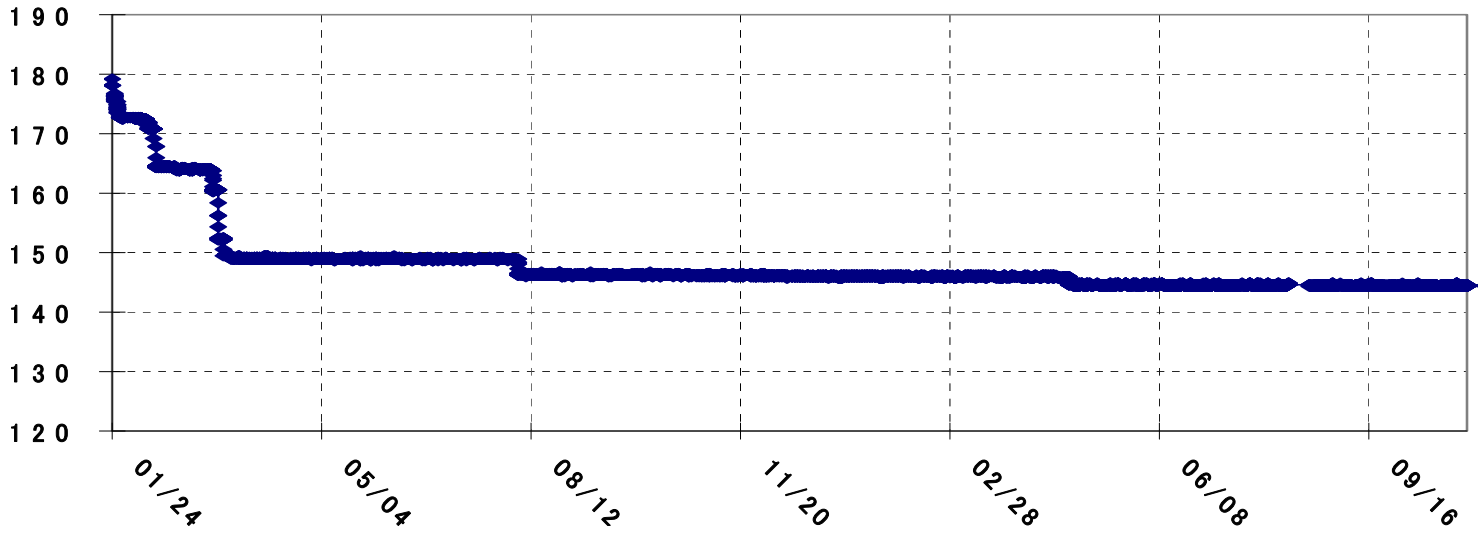
1)SAR CAL/VAL
2)OPT CAL/VAL
3)SAR polarimetry
4)Ocean (SAR)
5)Ocean (OPT)
6)International polar year and sea ice
7)Land snow ice
8)Soil moisture
9)Disaster monitoring
10)Land use-land cover and GIS
11)Geology-geography
12)Agriculture
13)Vegetation-forest-wet land
14)Kyoto carbon initiative.

Plenary

SAR CAL/VAL
OPS CALVAL
Observation Scenario
Kyoto and Carbon
Node activities
- ESA
- ASF

ALOS Satellite status (1/3)

- **The satellite bus subsystems and the three mission instruments are in good health.**
- **Telemetry, Tracking & Command : good**
  - Direct USB & inter-satellite SSA communications.
- **Attitude and Orbit control: good**
  - All functions & mode transitions operate well.
- **Mission Data Handling (MDHS): good**
  - The X-band direct & inter-satellite KSA transmissions are fine.
- **Current amount of propellant: about 144kg.**



PALSAR calibration results (summary)

items	values	NOD	spec	remarks
geometry	9.3m(RMS:distance)***	615	100m	all modes
radiometry	0.64dB****/0.17dB*	478/16	1.5dB	all modes
polarimetry	VV/HH amp ratio(dB) : 0.02dB(0.04) VV/HH phase diff.(deg) : 0.321(1.01) cross talk : 31~40dB	79 79 79	0.2dB 5deg 30dB	POL
NESZ	-34dB		-23dB	all modes
resolution(m)	azimuth : 4.49m(0.1m) range(14MHz) : 9.6m(0.1m) range(28MHz) : 4.7m(0.1m)	478 478 478	4.5m 10.7m 5.4m	all modes
side lobe(dB)	PSLR(azimuth) : -16dB PSLR(range) : -12.5dB ISLR : -8.6dB	478 478 478	-10dB -10dB -8dB	all modes
ambiguity	azimuth : zero range : ~23dB@ image end		16dB** 16dB	all modes

note)all the values are average , value in blanket is a standard deviation, * is at Sweden site,,**70km swath,***1m improved,****: 0.1dB improved

SAR calibration

13 Presentations. All are satisfied with the quality, accuracy, and the stability of the PALSAR data.

Polarimetric data calibration was succeeded with high accuracy.

New challenges for observing the ionosphere.

Amazon Deforest Watch (Santarem) JERS-1 & ALOS

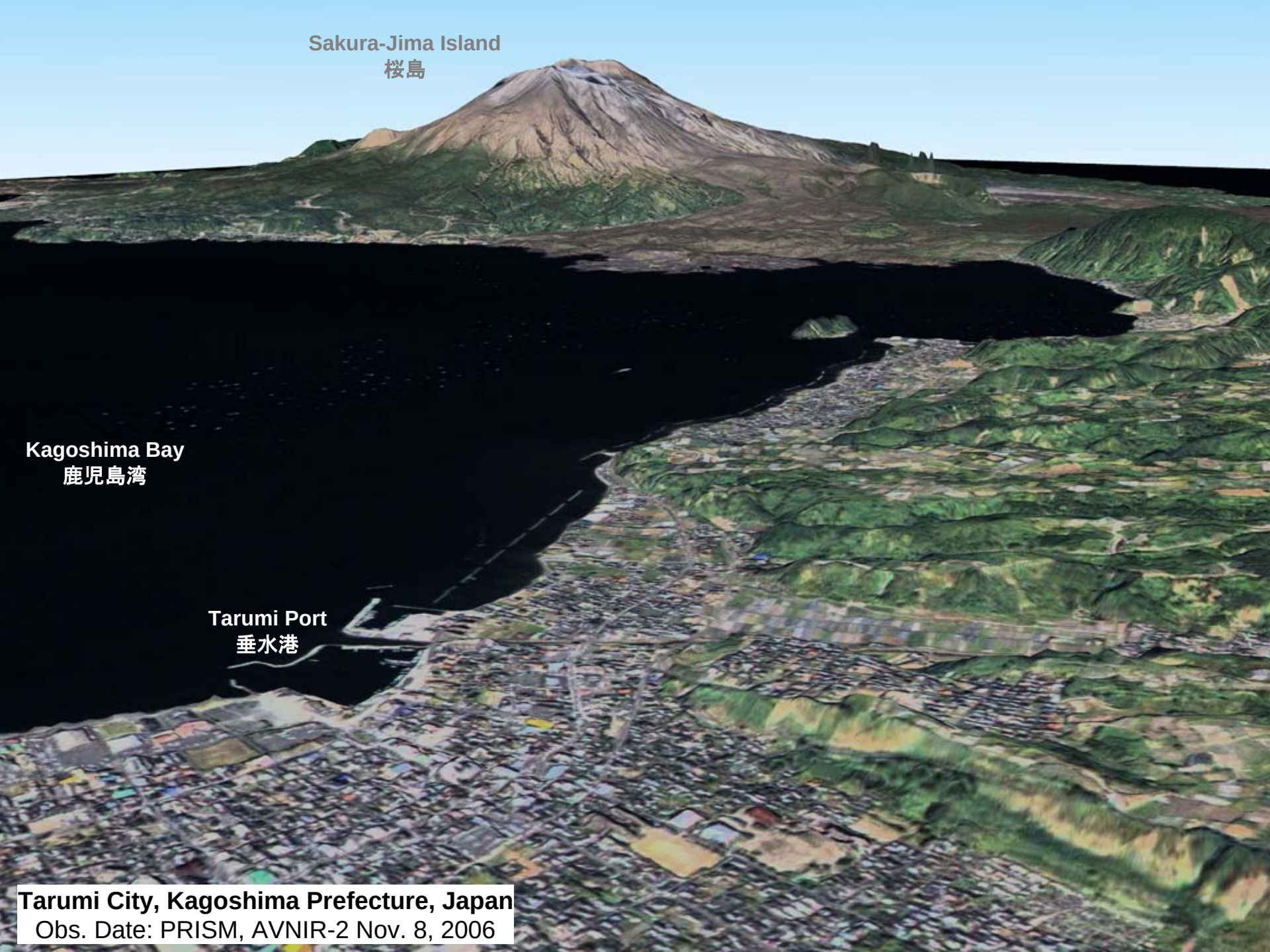
Acquisition Term

1993/6/26
～2007/9/13

JERS-1
- 1993/6/26
- 1997/5/4
- 1997/7/31

ALOS
- 2007/6/13
- 2007/9/13

Lat : S 2° 34’
Lon : W 54° 45’



Tarumi City, Kagoshima Prefecture, Japan
Obs. Date: PRISM, AVNIR-2 Nov. 8, 2006

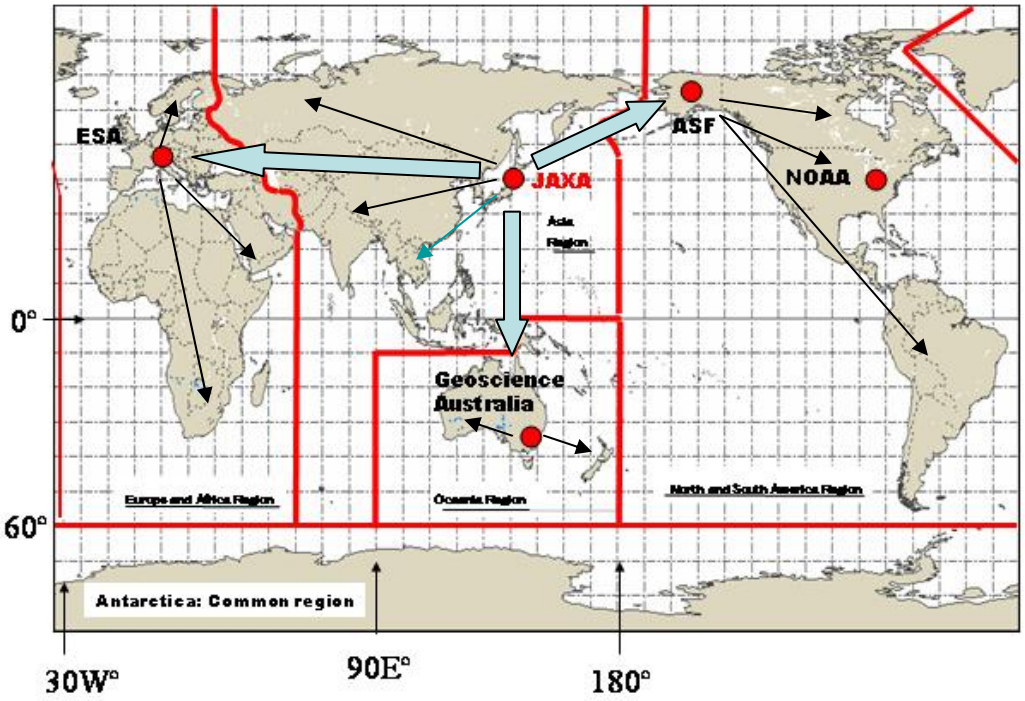
ALOS Data Node (ADN)

- Global data distribution & utilization scheme -

- **ALOS Data Node Concept**
  - to increase capacities for ALOS data processing and archiving
  - to accelerate scientific and practical use of ALOS data
  - to increase international co-operation including joint Cal/Val and joint research activities
  - to enhance services for commercial users of ALOS data by appointing Primary and Regional Distributors

Each Node is associated with a geographical zone which defines the extent of its area of activity (supporting the physical residents therein as potential ALOS users) as an ADN partner.

-ESA: Europe and Africa
-NOAA/ASF: North and South America
-Geoscience Australia (GA): Oceania
-JAXA: Asia
-GISTDA: Asian Sub-Node



PALSAR Browse Data on AUIG

- PALSAR browse data production is planned to start in Jan.-Feb., 2008.
- Target area : Starting with sea ice area and gradually expanding to other area
- Higher priority for “fresh” data. Browse data for the past data will not be produced automatically and will be handled later manually.

Format Conversion Tool

- Download will be available from AUIG 3.0
- Main Functions;
  - Format conversion (PRISM & AVNIR-2 Level 1B2 data , PALSAR Level 1.5 data in CEOS format -> PRISM, AVNIR-2 and PALSAR data in geotiff format)
  - Subsetting (Input : center lat/lon information, pixel-size and line-size)
  - Thinning-out
  - RGB synthesis for AVNIR-2 and PALSAR polarimetry mode data
  - PALSAR data output conversion (16bits -> 8bits)

PALSAR Baseline Calculator Ver. 2.1 Tool

- Download is available from JAXA EORC web site:

__*http://www.eorc.jaxa.jp/ALOS/doc/tool.htm*

- Main Function;
  - To calculate the perpendicular baseline of any combination of the PALSAR modes over assigned geographical location and search duration, in order to help selection of the PALSAR image pair for InSAR application.

Additional Info. from PI : PALSAR Tool for Interferometry

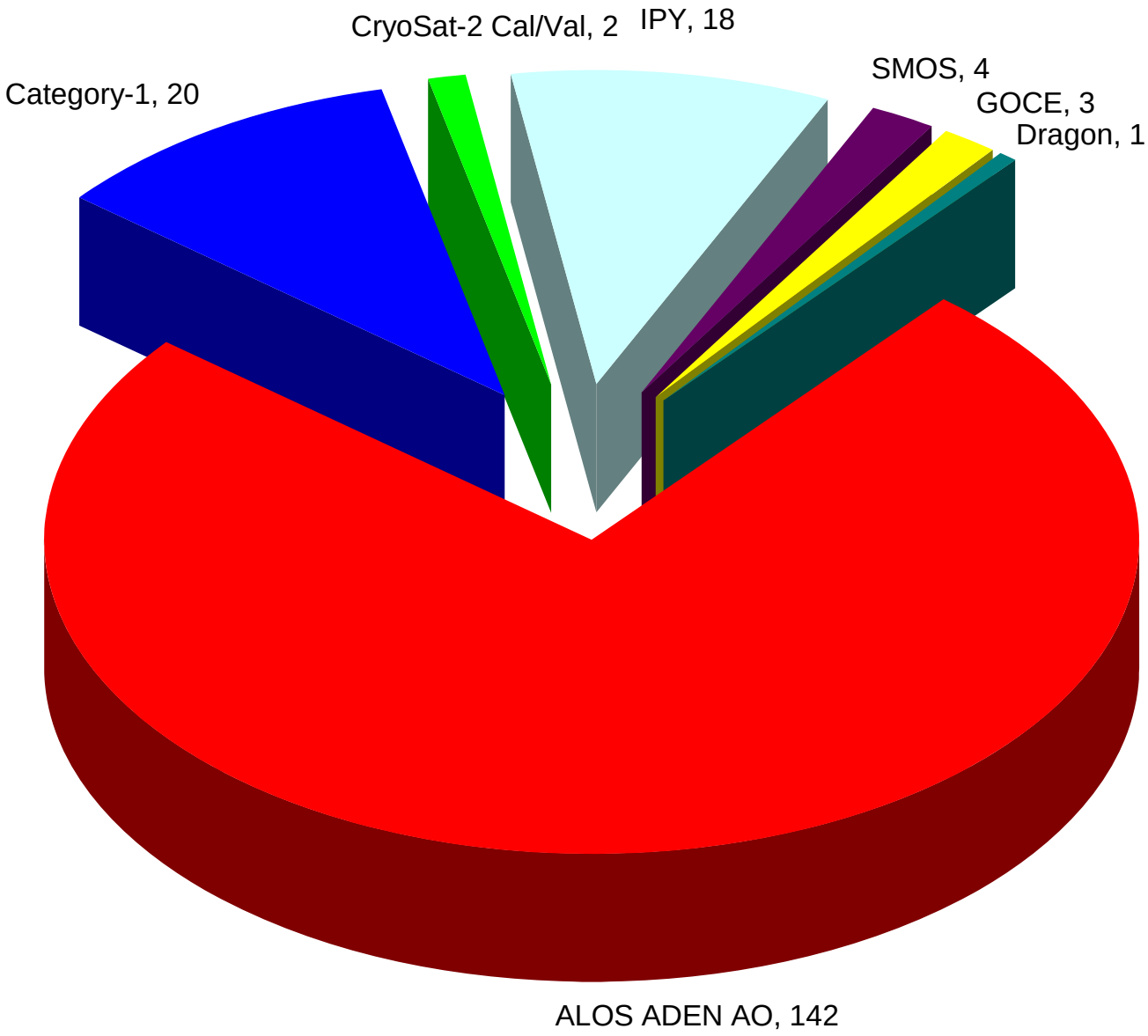
- Download is available from the following web site:

http://roipac.org/ALOS_PALSAR

- Main Function; developed by D. Sandwell and R. Mellors
  - Input: Level 1.0 PALSAR FBS or FBD
  - Four programs (ALOS_pre_proc, ALOS_baseline, ALOS_merge, and ALOS_fdb2fbs) are available freely.
  - ALOS_pre_process - Takes the raw ALOS PALSAR data and aligns the data in the near range.
  - ALOS_baseline - Takes two parameter files of an interferometric pair and calculates the approximate shift parameters needed to align the two images.
  - ALOS_merge - Appends two raw image files and eliminates duplicate lines.
  - ALOS_fbd2fbs - Converts a raw image file in FBD mode (14 MHz) to an FBS mode (28 MHz) by fourier transformation of each row of the image file (one echo).

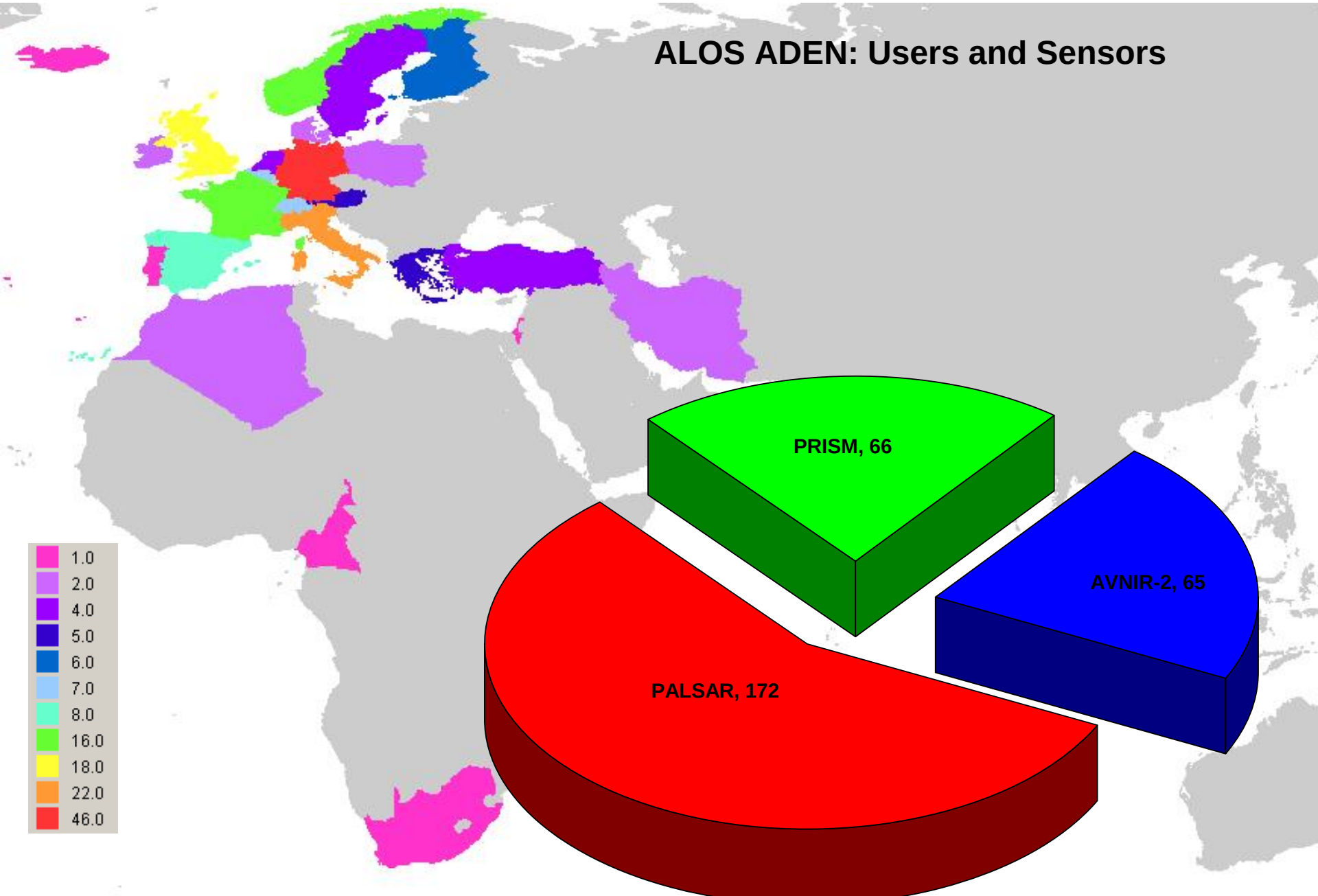
ESA

ALOS contribution to research

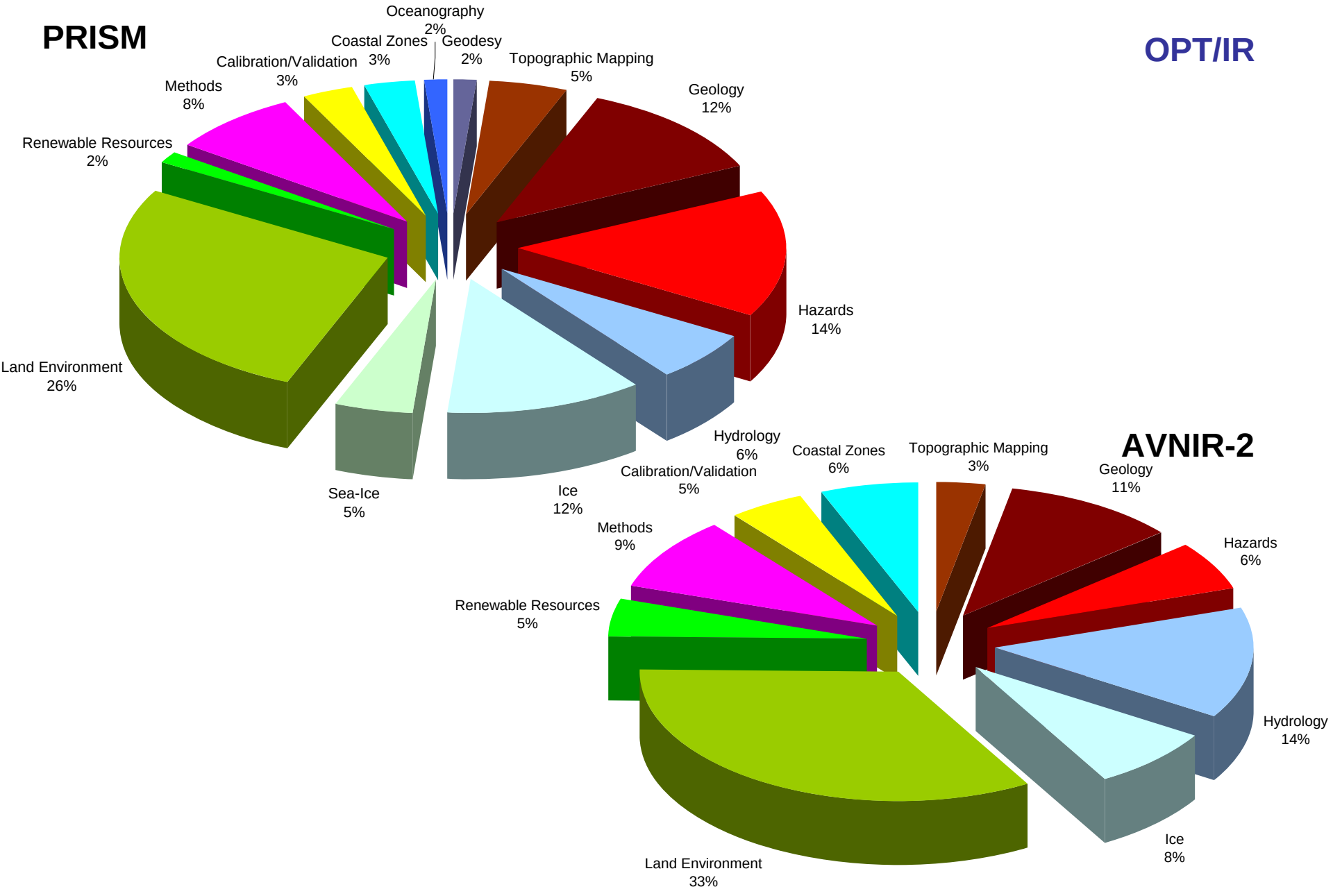


192 scientific projects using ALOS data

User's distribution

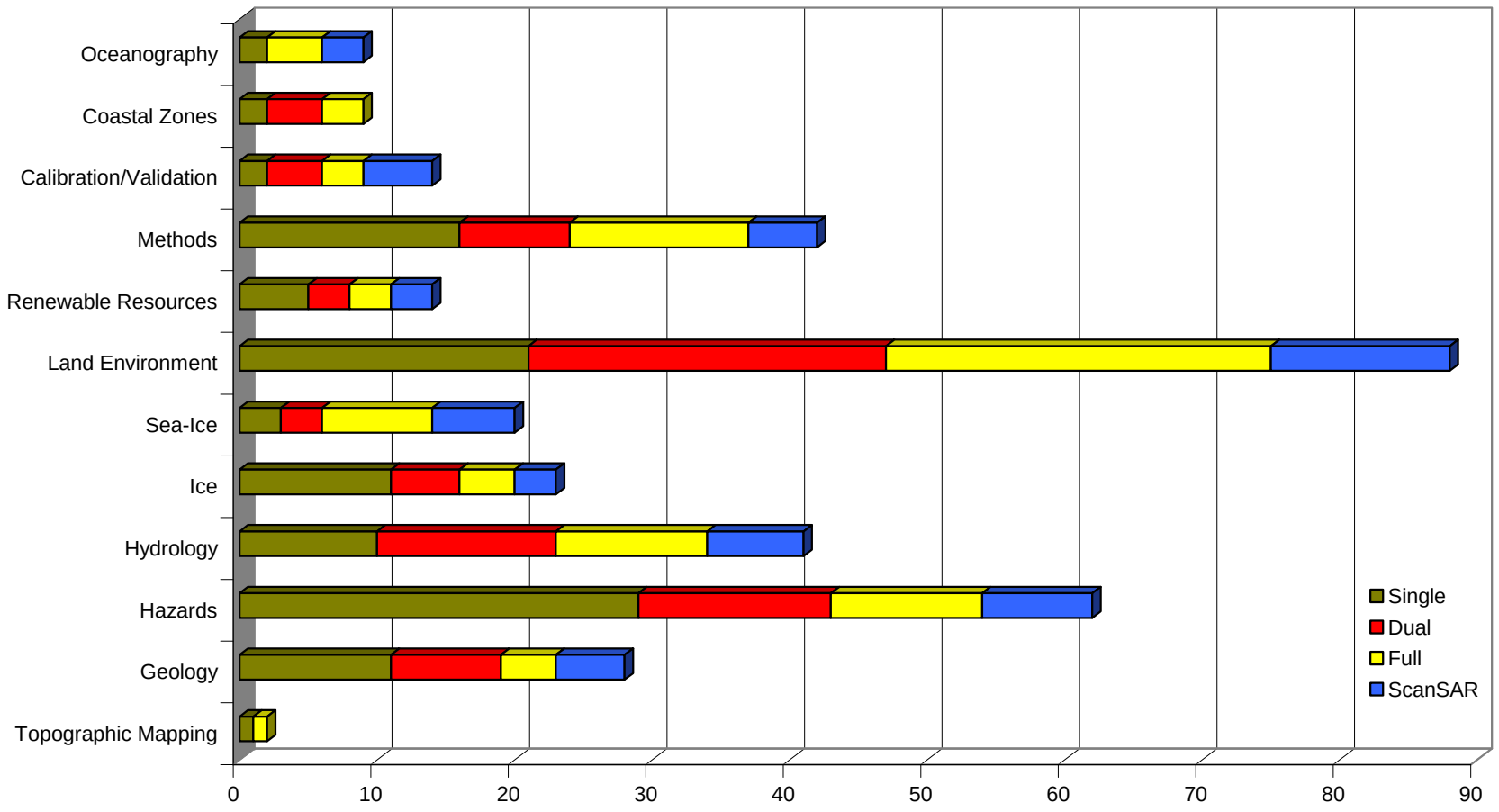


ALOS: sensor and research topic [1]



ALOS: sensor and research topic [2]

PALSAR

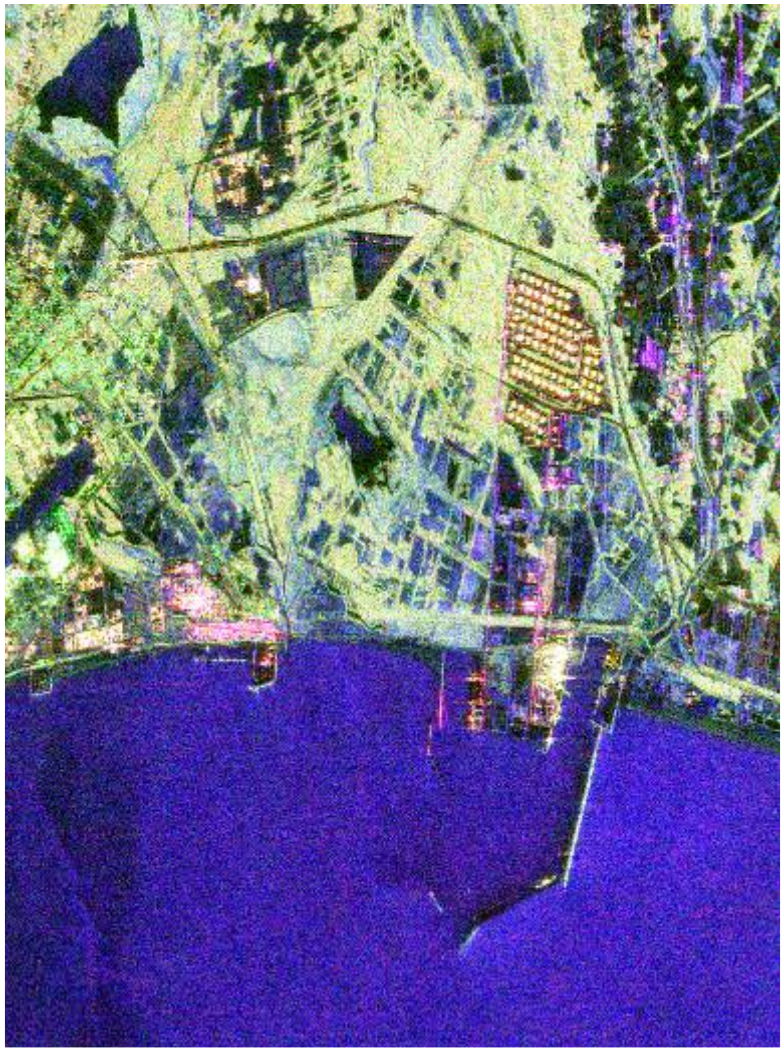


ALOS PI Symposium 2008

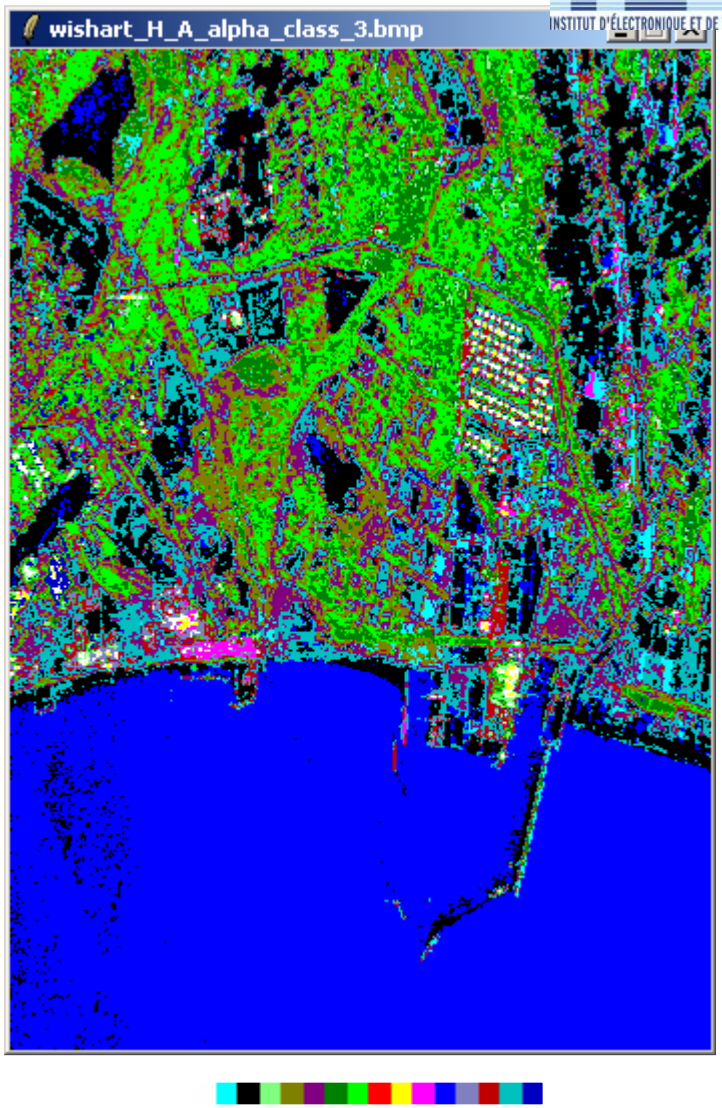
- 3-7 November 2008
- Island of Rhodes (Greece), Hilton Resort
- http://earth.esa.int/ALOS2008
- June 1st 2008: Abstract submission deadline

Examples

ALOS - PALSAR
Standard Beam Quad-POL



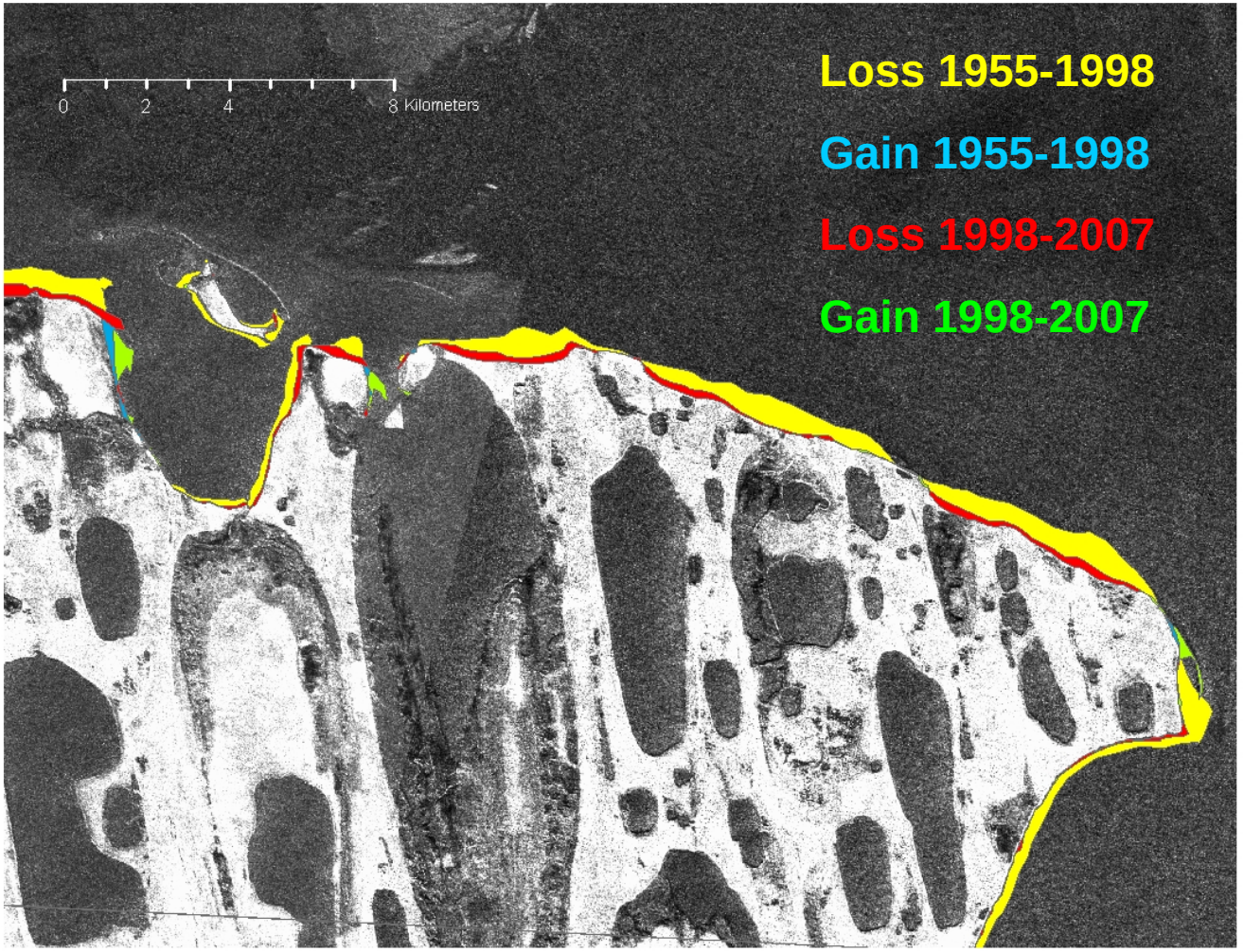

PauliRGB.bmp


wishart_H_A_alpha_class_3.bmp

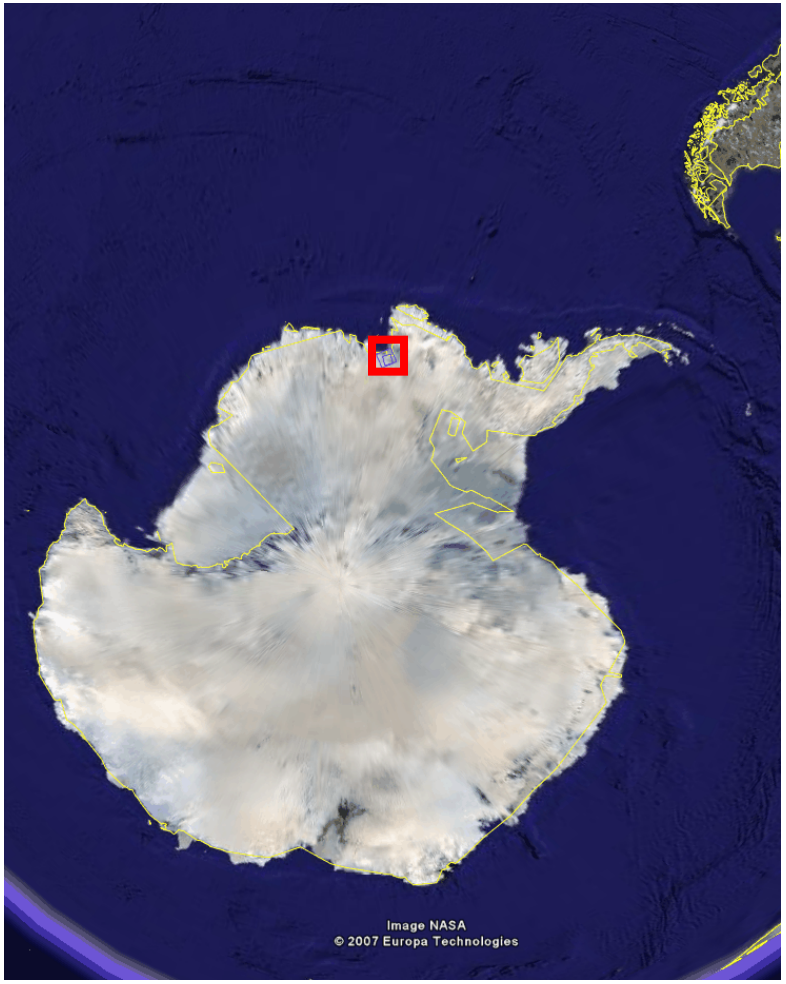
ASF

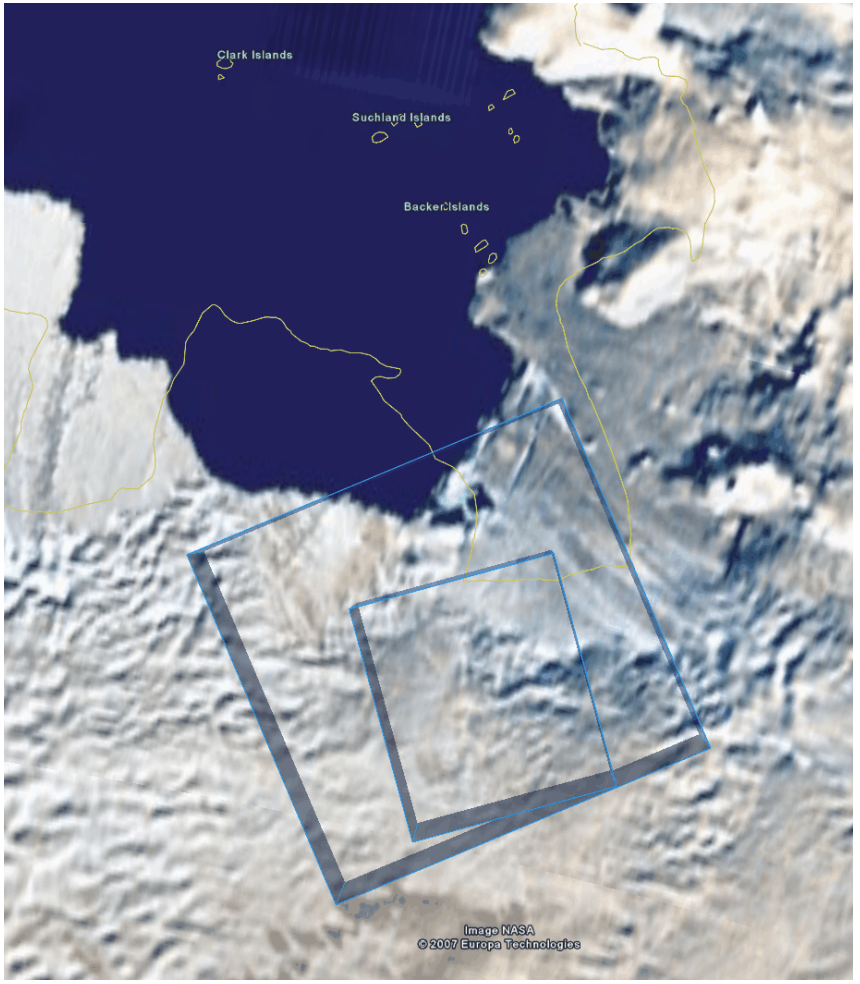
Coastal Erosion

Beaufort Sea



Crevasse Detection

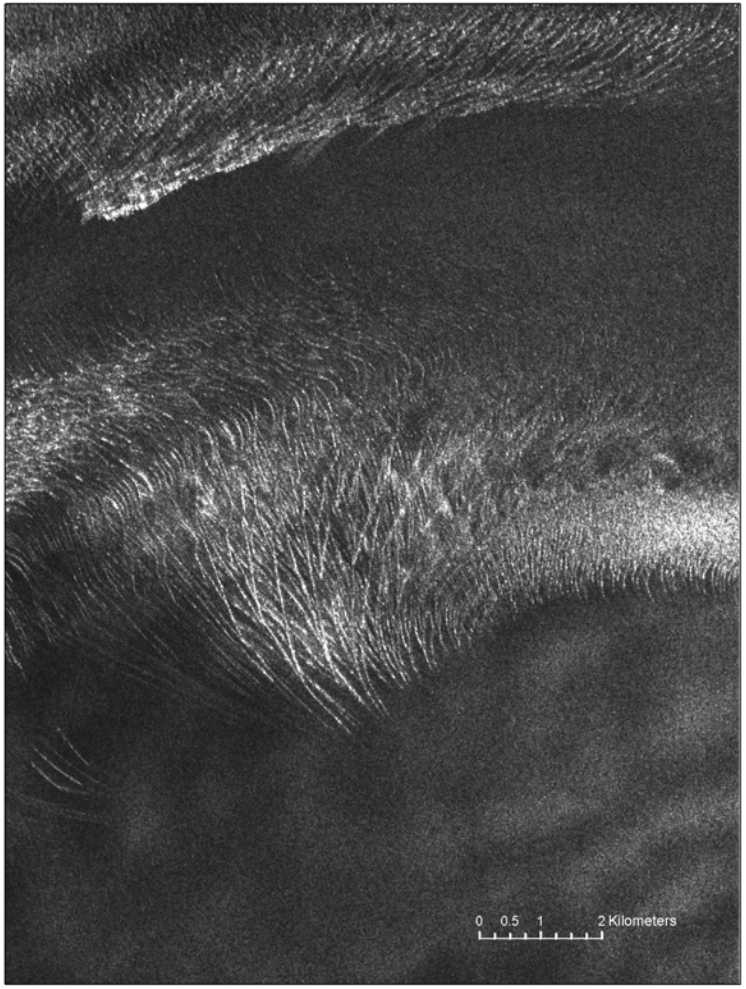




Coincident R-1 and ALOS PALSAR Images

Crevasse Detection

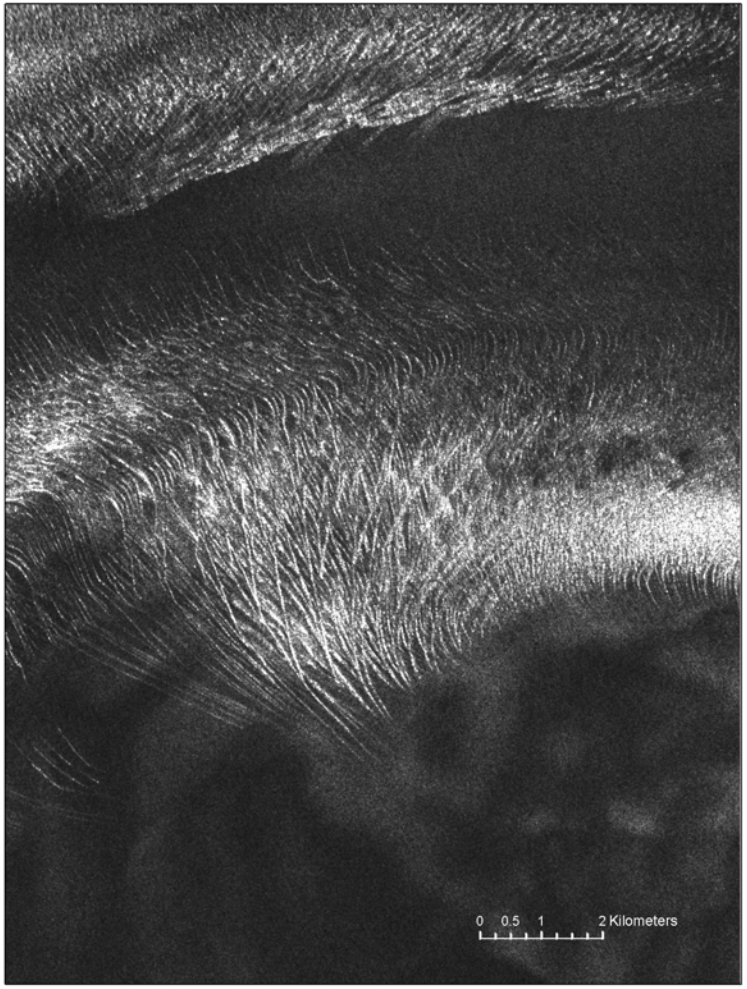
RADARSAT-1 Standard-2



PALSAR FBD HH-Pol

Crevasse Detection

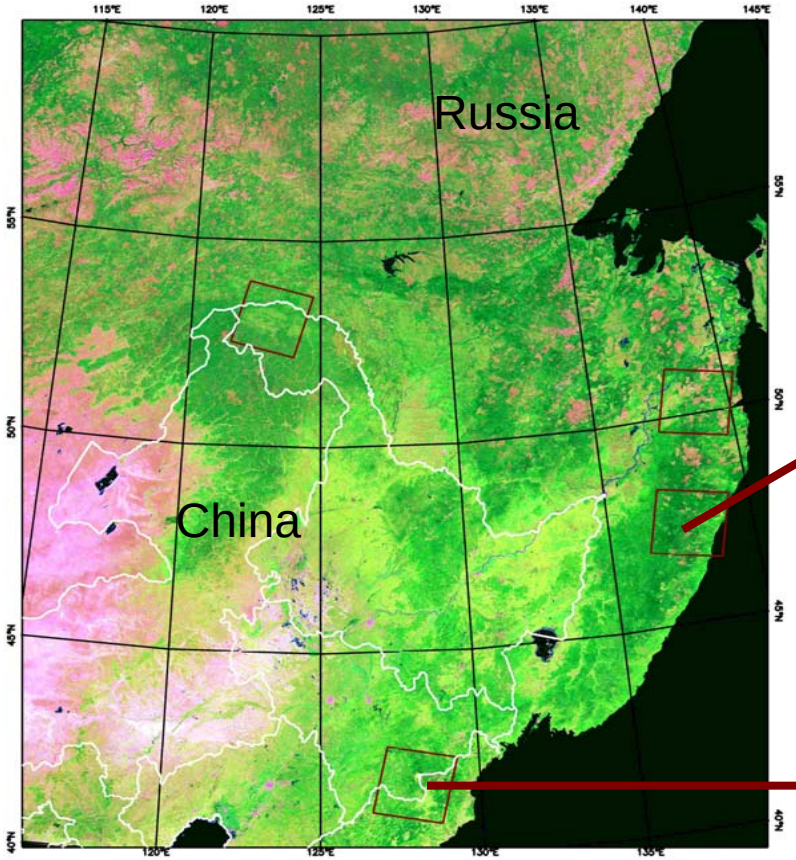
RADARSAT-1 Standard-2



PALSAR FBD HV-Pol

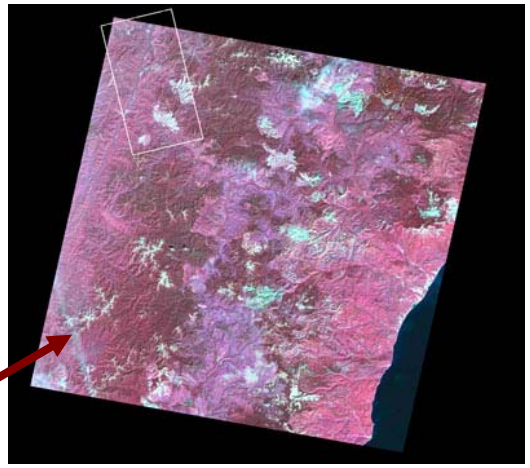
Forest session

The Northeastern of Asia

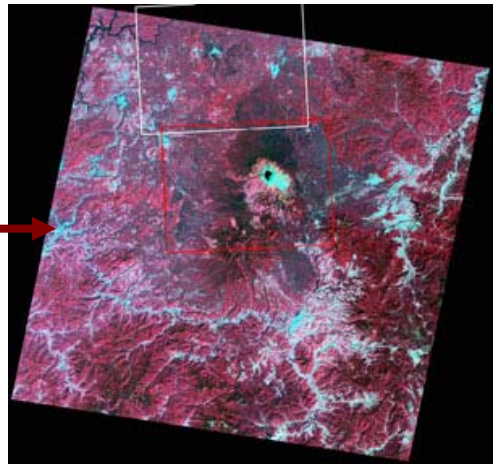


MODIS 16 days –composition in August
(R:MIR G:NIR, B: Red)

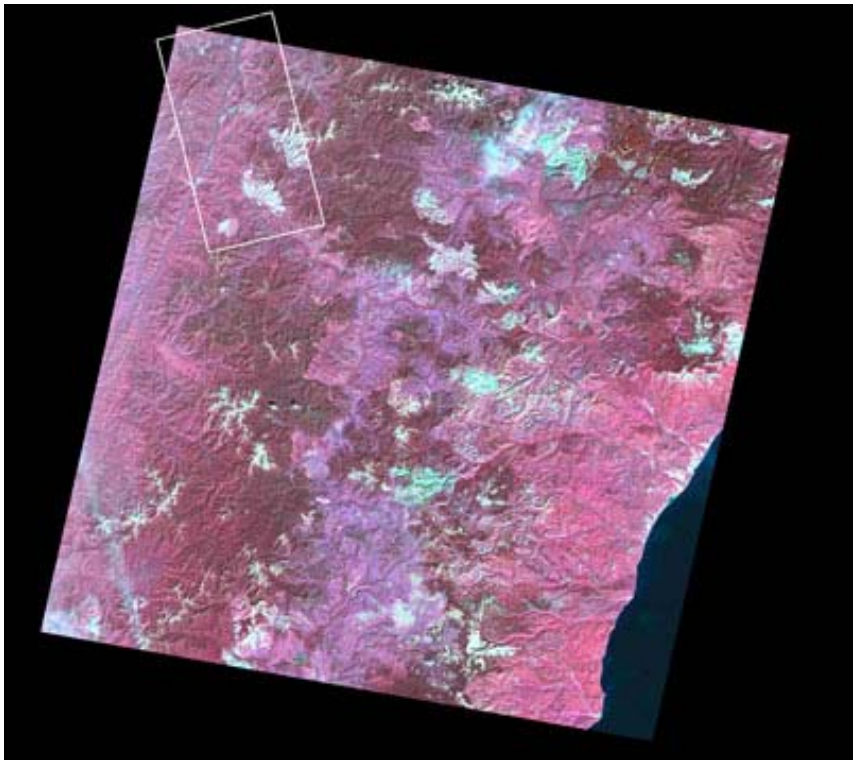
PLR in Southern Russia



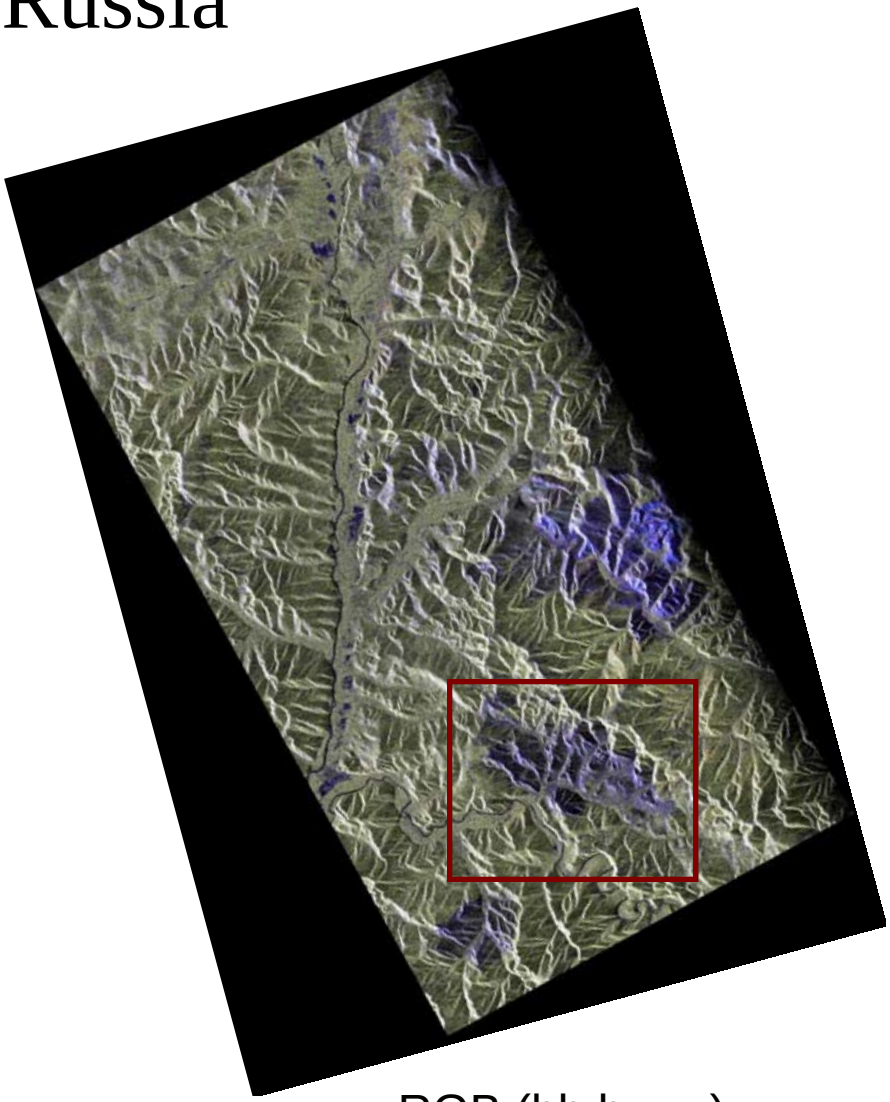
INSAR pairs In Changbai



FireScar of Southern Russia



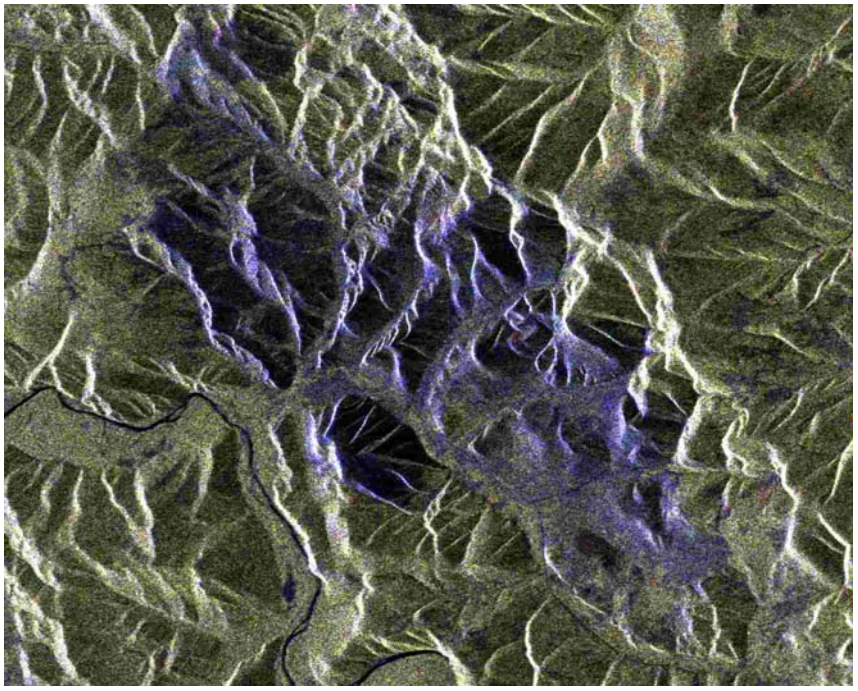
RGB:(nir,red,green)



RGB:(hh,hv,vv)

Guoqing Sun, University of Maryland, Dept. of Geography K. Jon Ranson, NASA GSFC Biospheric Sciences Branch Zhifeng Guo, Institute of Remote Sensing Applications, CAS

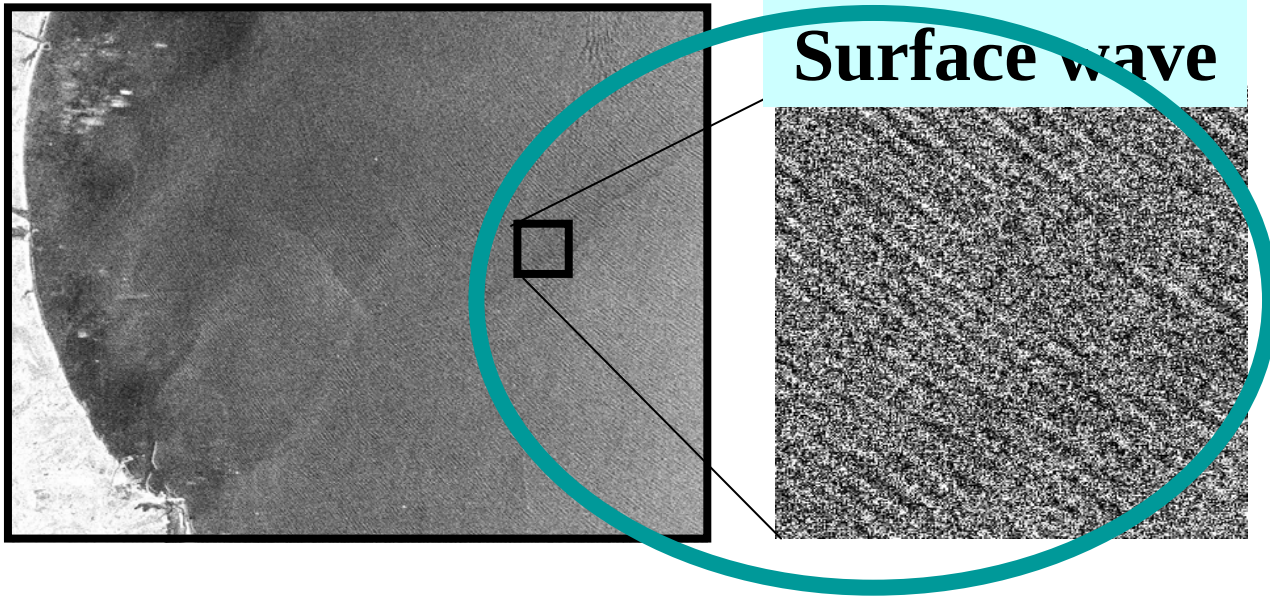
RGB:(nir,red,green)



RGB:(hh,hv,vv)

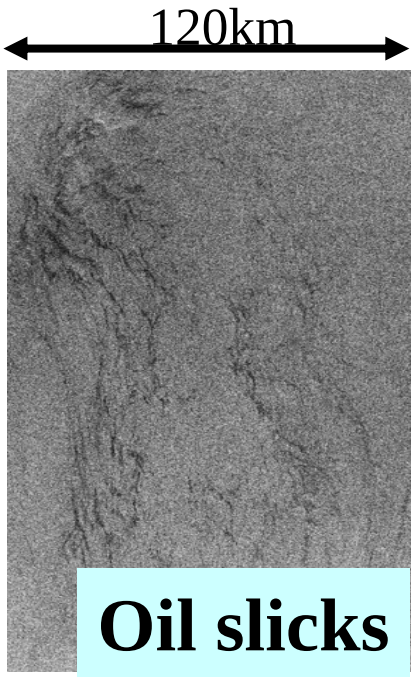
Guoqing Sun, University of Maryland, Dept. of Geography K. Jon Ranson, NASA GSFC Biospheric Sciences Branch Zhifeng Guo, Institute of Remote Sensing Applications, CAS

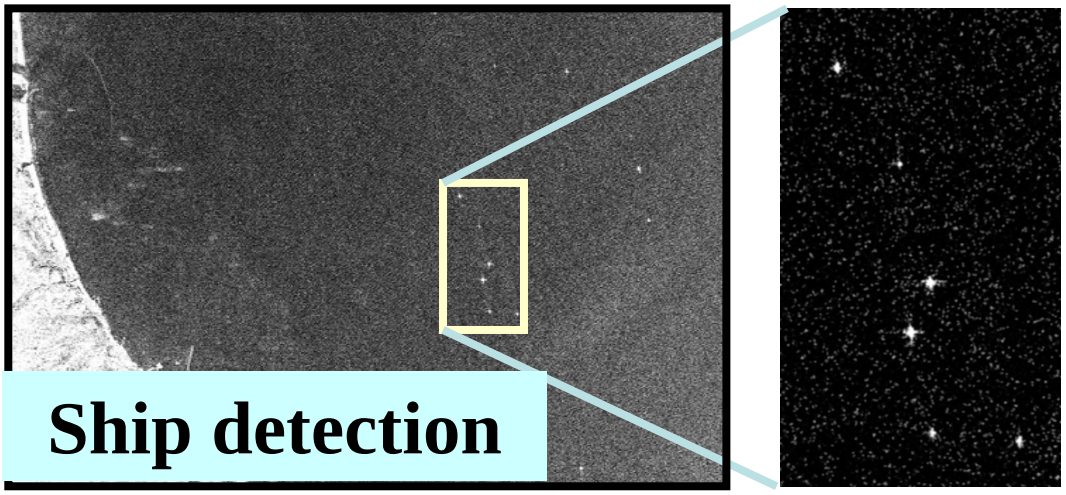
Ocean

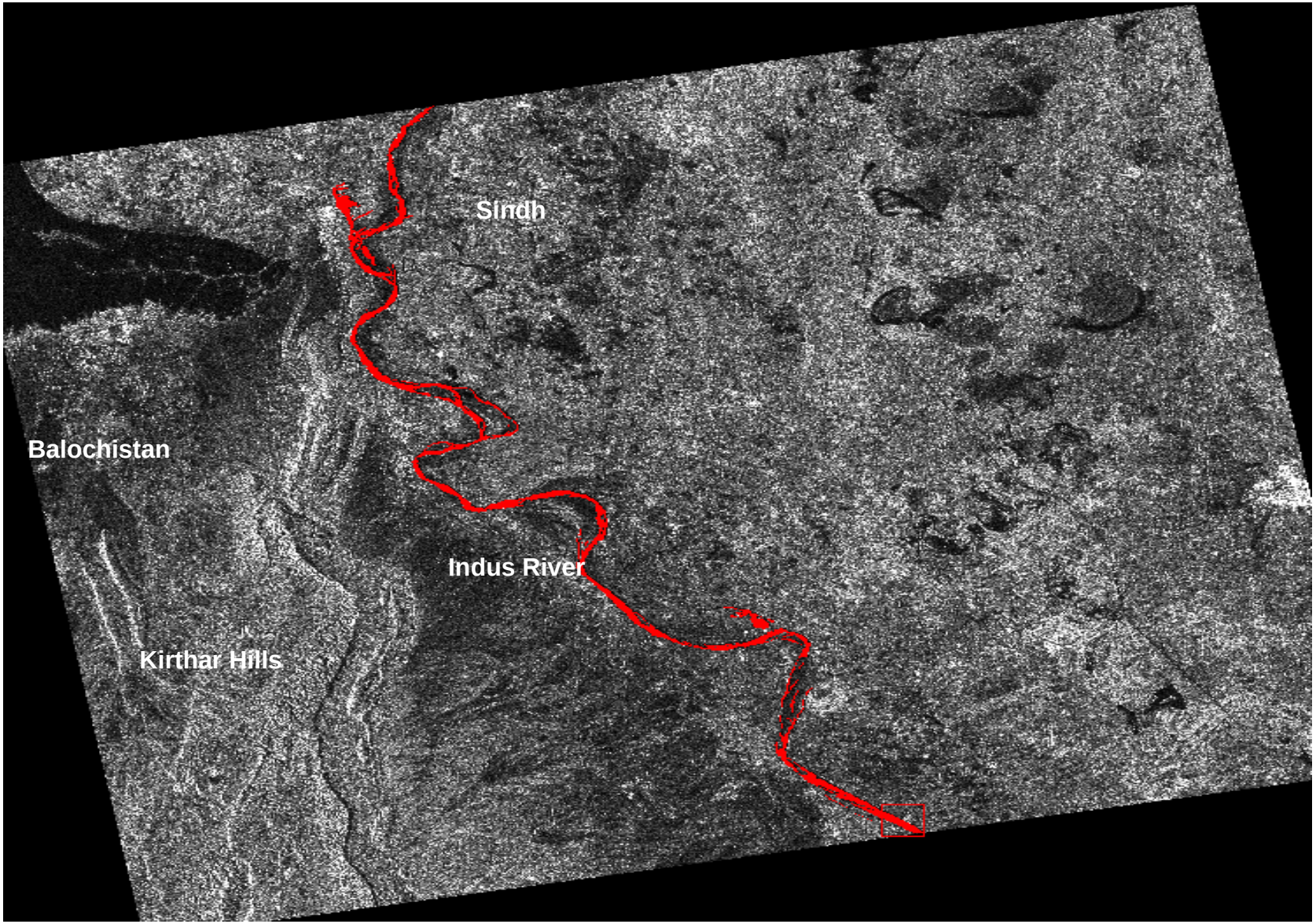


L-Band SAR Features – JERS-1 results(2)

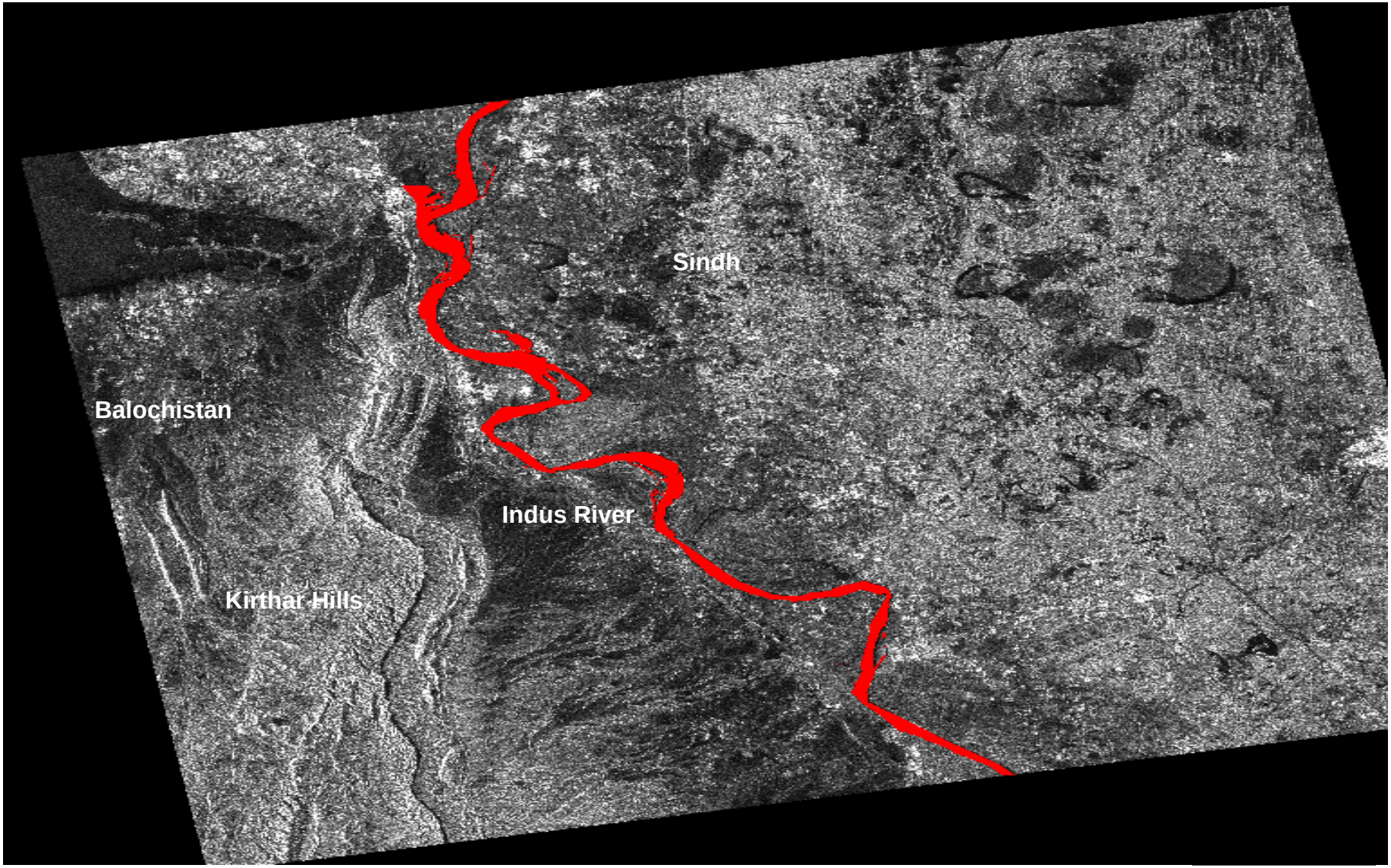
Hiroshi KAWAMURA,Graduate School of Science
Tohoku University







PALSAR image of 08 February, 2007 indicating pattern of Indus Basin, obtained from JAXA: R.Jilani (PI ALOS), S.Munir (CI ALOS), P.Siddiqui (CI ALOS) PI#352



PALSAR image of 26 June, 2007 indicating pattern of Indus Basin, obtained from JAXA

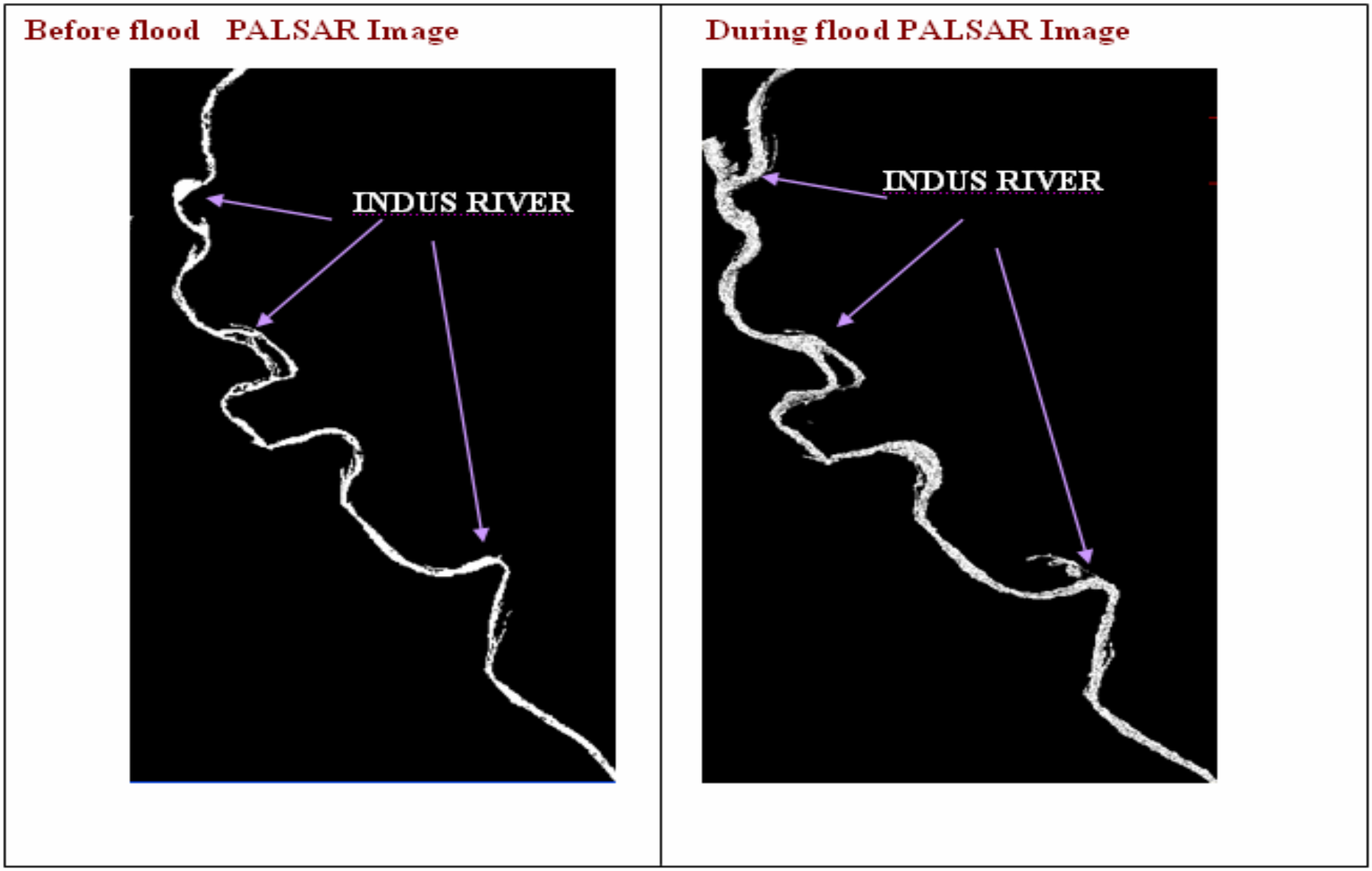


Figure is showing flood in Indus River

The First Joint PI Symposium of ALOS Data Nodes

November 19-23, 2007

Kyoto International Conference Center

****

National Institute of Cartography
CAMEROON

FONDATION AZOMARC

APPLICATION OF THE INTERFEROMETRY TECHNIQUE TO THE STUDY OF THE RECENT ERUPTIONS OF MOUNT CAMEROON

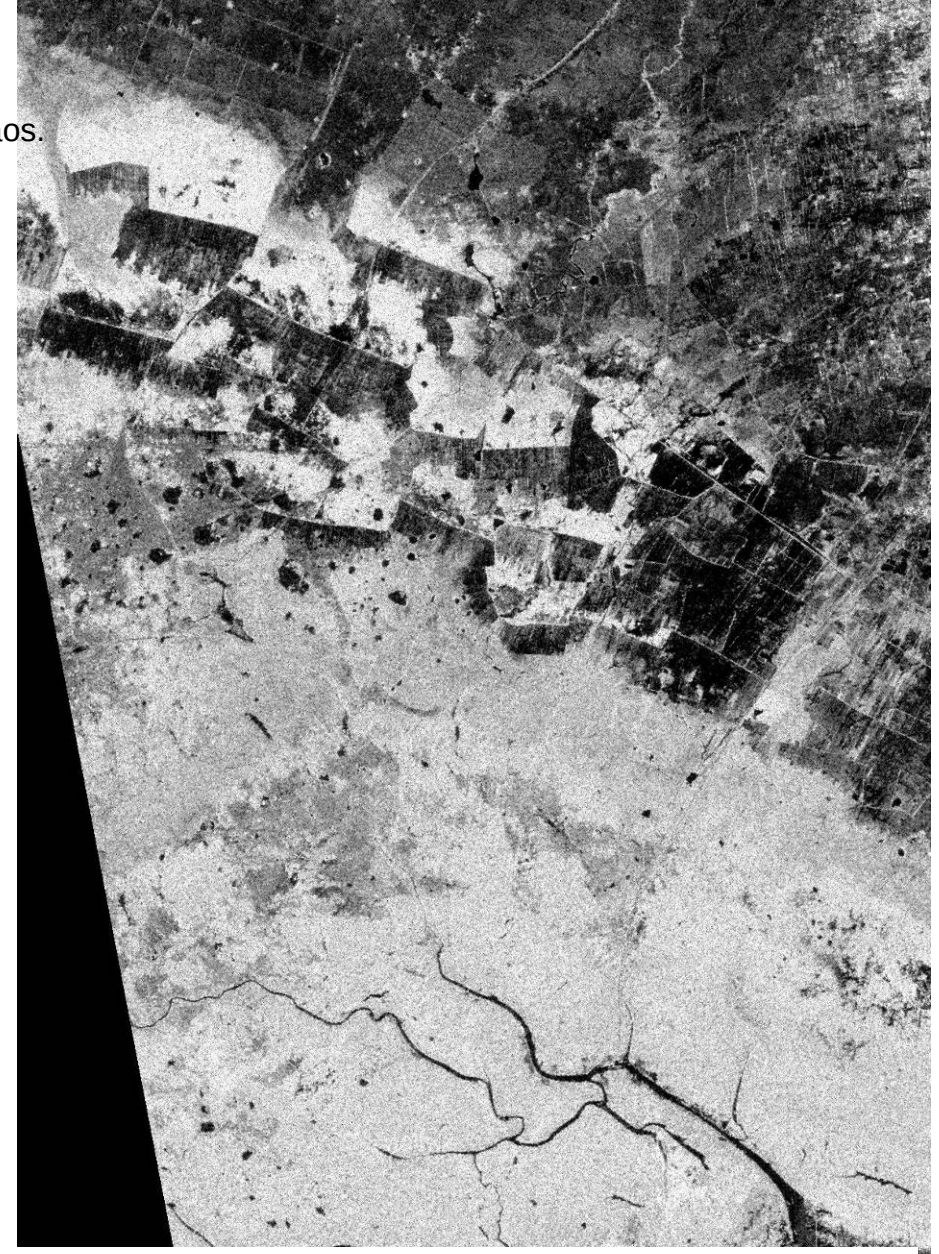
By Appolinaire ZOGNING, Chrétien NGOUANET, Joseph KAMGUIA, Narcisse TALLA TANKAM

Title of the Project :

THE CONTRIBUTION OF THE RADAR AND OPTICAL MULTI-SCALE AND MULTI-DATE IMAGERIES IN THE ASSESSMENT OF VOLCANIC, FLOOD AND LAND MOVEMENT HAZARDS AROUND MOUNT CAMEROON

Project ID : ESA-3749

Tony Milne, University of New South Wales, Sydney,
Ian Tapley, Horizon Geoscience Consulting,Perth, Australia.
and **Hans Guttman,** Mekong River Commission, Vientanne, Laos.



Assessment of Wetland Ecosystems and Flooding in the Lower Mekong River Basin using JERS-1 and PALSAR

PALSAR FBS – 28 December 2006

PALSAR FBS – 12 February 2007

SAR CAL/VAL	Successful, well performance
OPT CAL/VAL	Geolocation, noise
SAR polarimetry	Well performance
Ocean (SAR)	sensitive
Ocean (OPT)	
International polar year and sea ice	Data is being collected
Land snow ice	InSAR will be a solution
Soil moisture	Being evaluated
Disaster monitoring	successful
Land use-land cover and GIS	Forest change is detective
Geology-geography	useful
Agriculture	Being evaluated
Vegetation-forest-wet land	Well sensitive
Kyoto carbon initiative	sucessful

Conclusions

ALOS: Orbital plane will be maintained September 2008 causing change of inclination with 0.086 degrees.

Data data are being well collected.

ALOS PI workshop report (60 papers + 60 presentation) will be downloaded from JAXA EORC the end of January 2007.

ALOS observation scenario will be maintained responding to the user calls. (Polarimetry will have more observation opportunity)

Disaster mitigation (use of InSAR) and forest monitoring will be focused.

ALOS-follow-on SAR satellite designing has started.