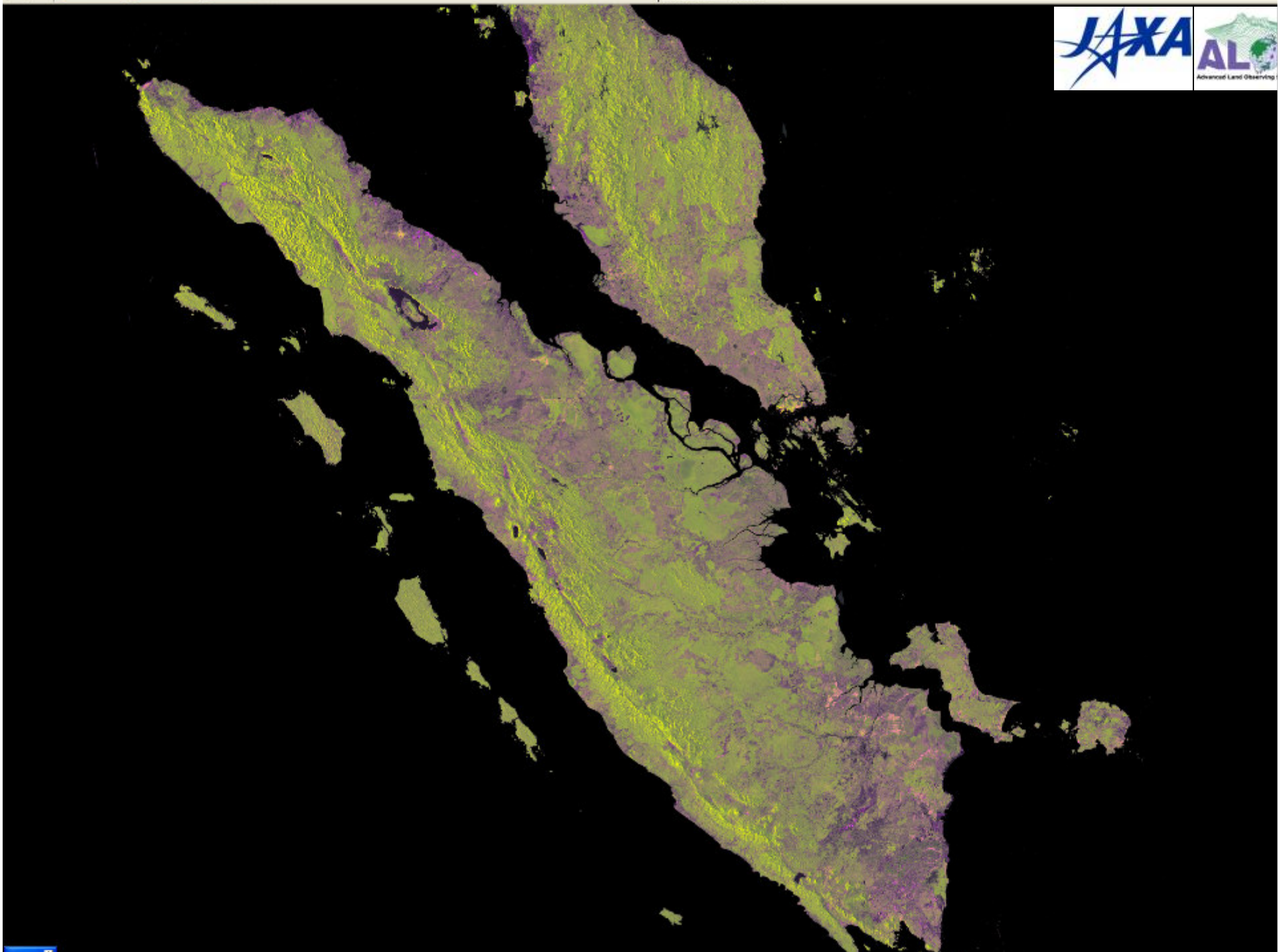


# **Perspectives on SAR**

**Shaun Quegan**

**NCEO**

**Centre for Terrestrial Carbon Dynamics**

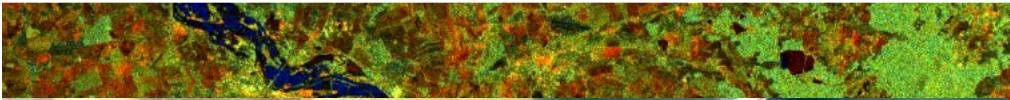


# ASAR

## C-19 iceberg monitoring in Antarctica (from May to October 2002)



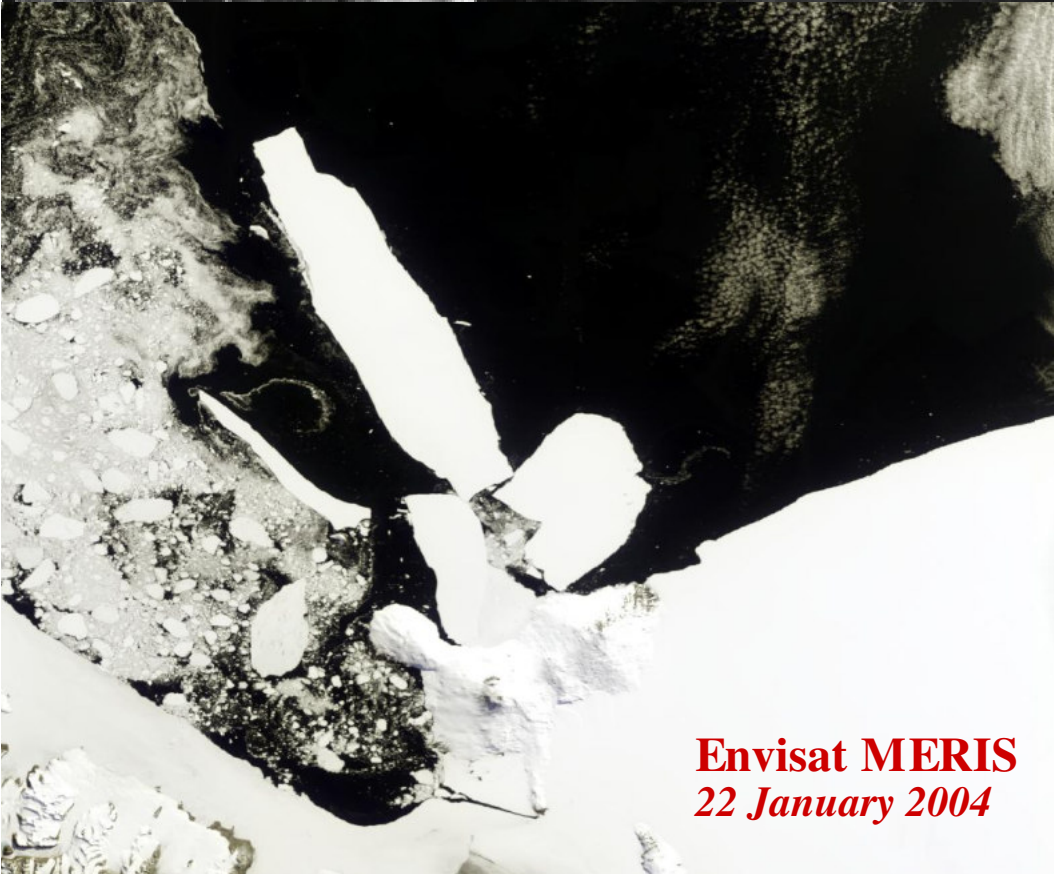
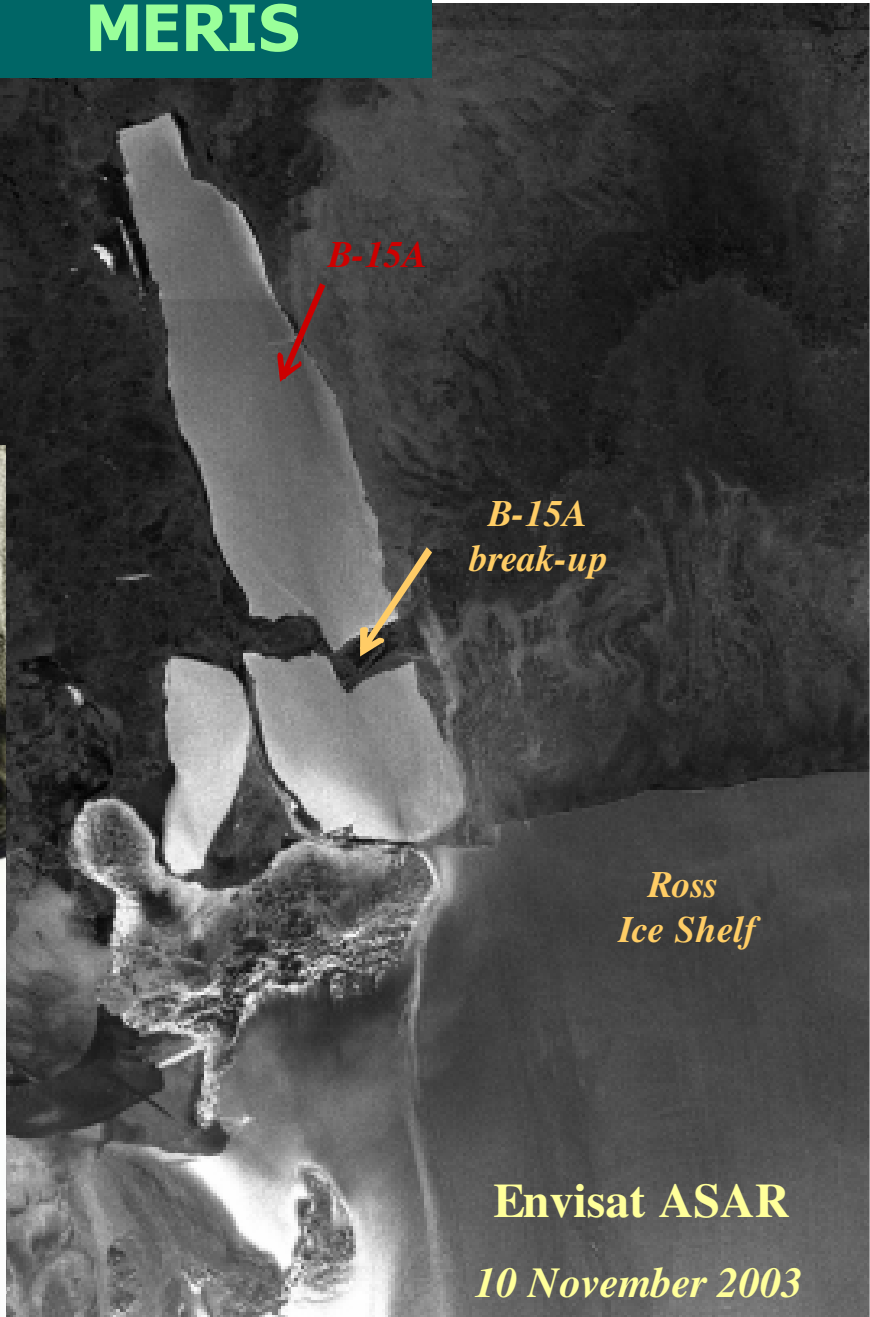
*Generated using browse images*



**ASAR**



**MERIS**



**Envisat MERIS**  
*22 January 2004*

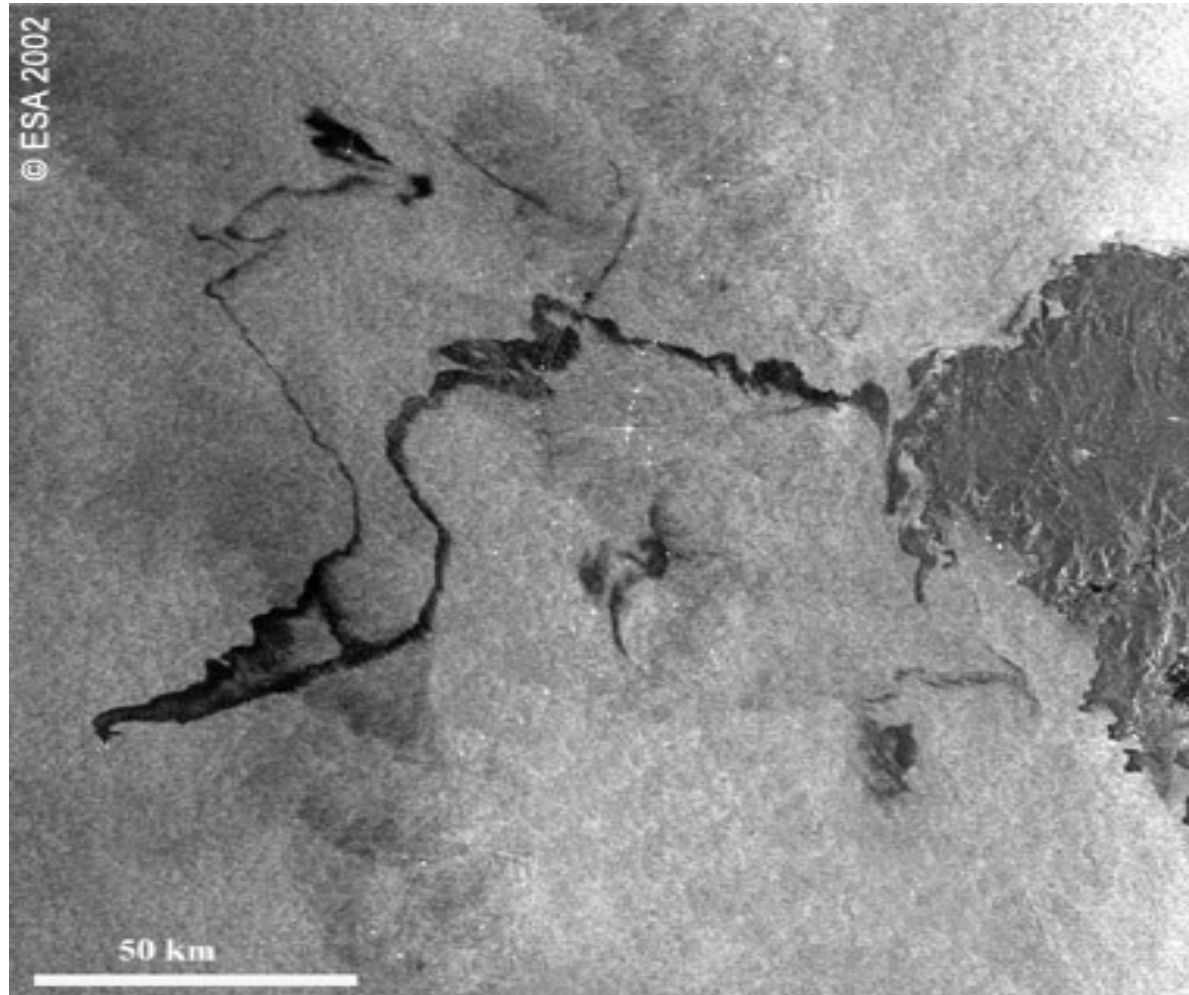
**Envisat ASAR**  
*10 November 2003*

*B-15A*

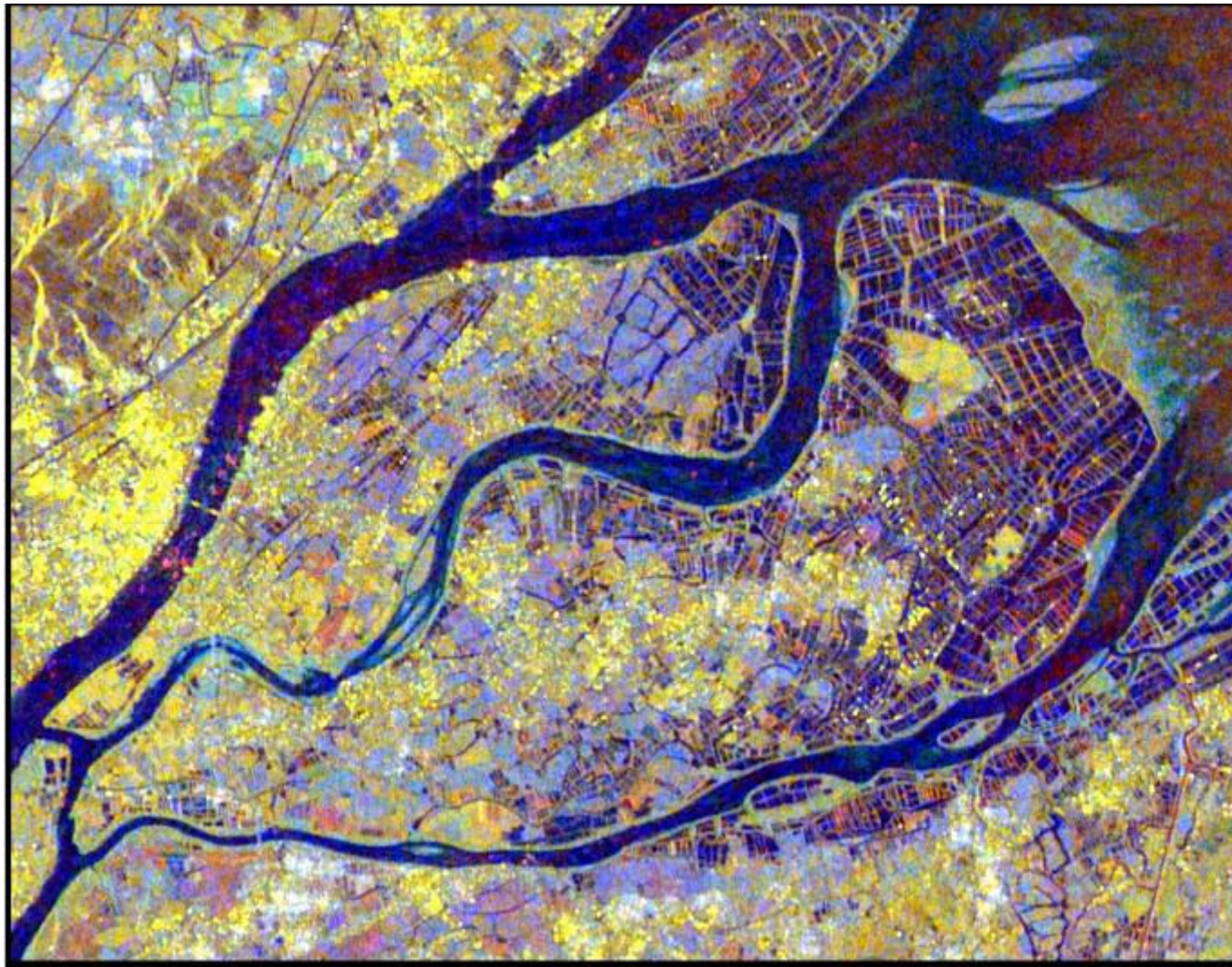
*B-15A  
break-up*

*Ross  
Ice Shelf*

## Oil slick - Galicia, Spain



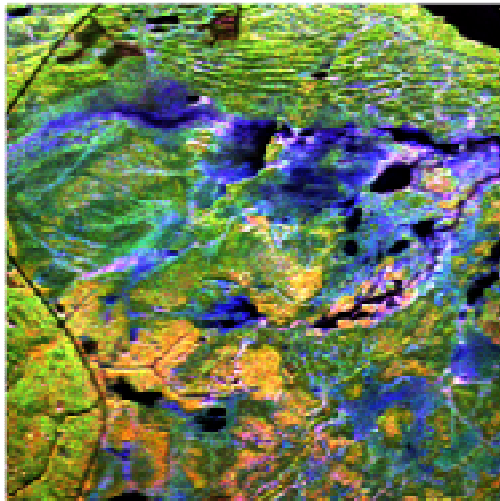
## Polarisation signature s



18-06-2005;  
R = HH;  
G = VV;  
B = HH/VV

R=mean(all 22 images) G=mean(all 22 images) B=HH/VV Image 20050618

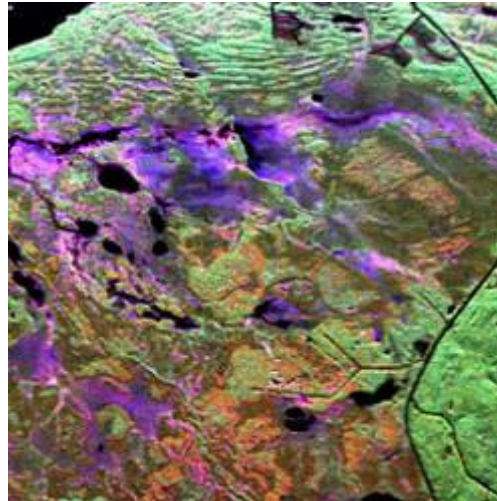
# Frequency and Polarisation



**P-band (HH, HV, VV)**

$\lambda = 70$  cm

None in space

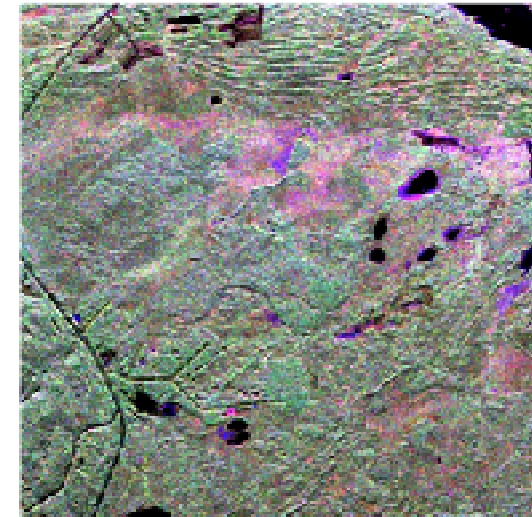


**L-band (HH, HV, VV)**

$\lambda = 24$  cm

ALOS-PALSAR

JERS



**C-band (HH, HV, VV)**

$\lambda = 6$  cm

Envisat, Radarsat

ERS

© TerraSAR-X: 12/1/09, 1m resolution

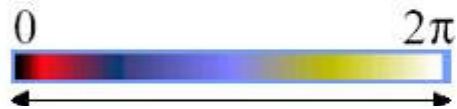




# InSAR applications 1

**28 June 1992  
Earthquake  
Landers (USA)**

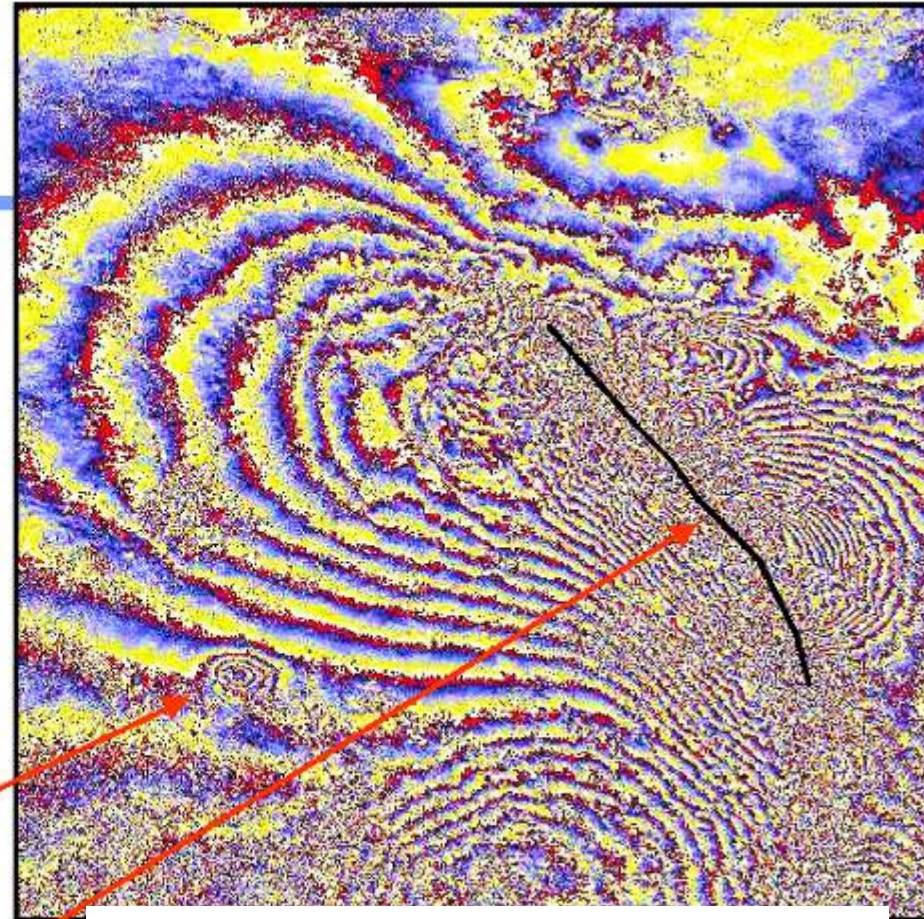
90 km x 90 km



One fringe:  
displacement of 28

cm  
Post seismic  
displacement

Main fault



Interferogram from ERS-1  
April 1992 and June 1993

# Important orbital SAR systems

Sensor	Agency	Frequency	Dates	Resolution/swath
Seasat	NASA	L-band	1978	25 m/100 km
ERS-1	ESA	C-VV	1991-97	25 m/100 km
ERS-2	ESA	C-VV	1995	25 m/100 km
Radarsat-1	CSA	C-HH	1995	10-100 m/40-500 km
Envisat	ESA	C, dual pol		
Radarsat-2	CSA	C-band, full pol		
JERS	NASDA	L-HH	1992-98	18 m/76 km
ALOS-PALSAR	JAXA	L, dual/full pol	2006-11	
TerraSAR-X	DLR	X		

# Important airborne and Shuttle SAR systems

Sensor	Agency	Frequency	Dates	
AirSAR	NASA	C, L, P		
E-SAR	DLR			
ERASME	ONERA			
SETHI	ONERA			
CARABAS	FOA	VHF		
SIR-C	ESA	X, C, L, polarimetric	1994, 2x10 days	30 m/15-90 km