

ALOS K&C Activities in Sweden

Johan Fransson, Ph.D.
Swedish University of Agricultural Sciences (SLU)



Lars Ulander, Adj. Prof.
Chalmers University of Technology

Leif Eriksson, Ph.D., Chalmers

Mattias Magnusson, Ph.D., SLU



Gustaf Jansson, Chalmers

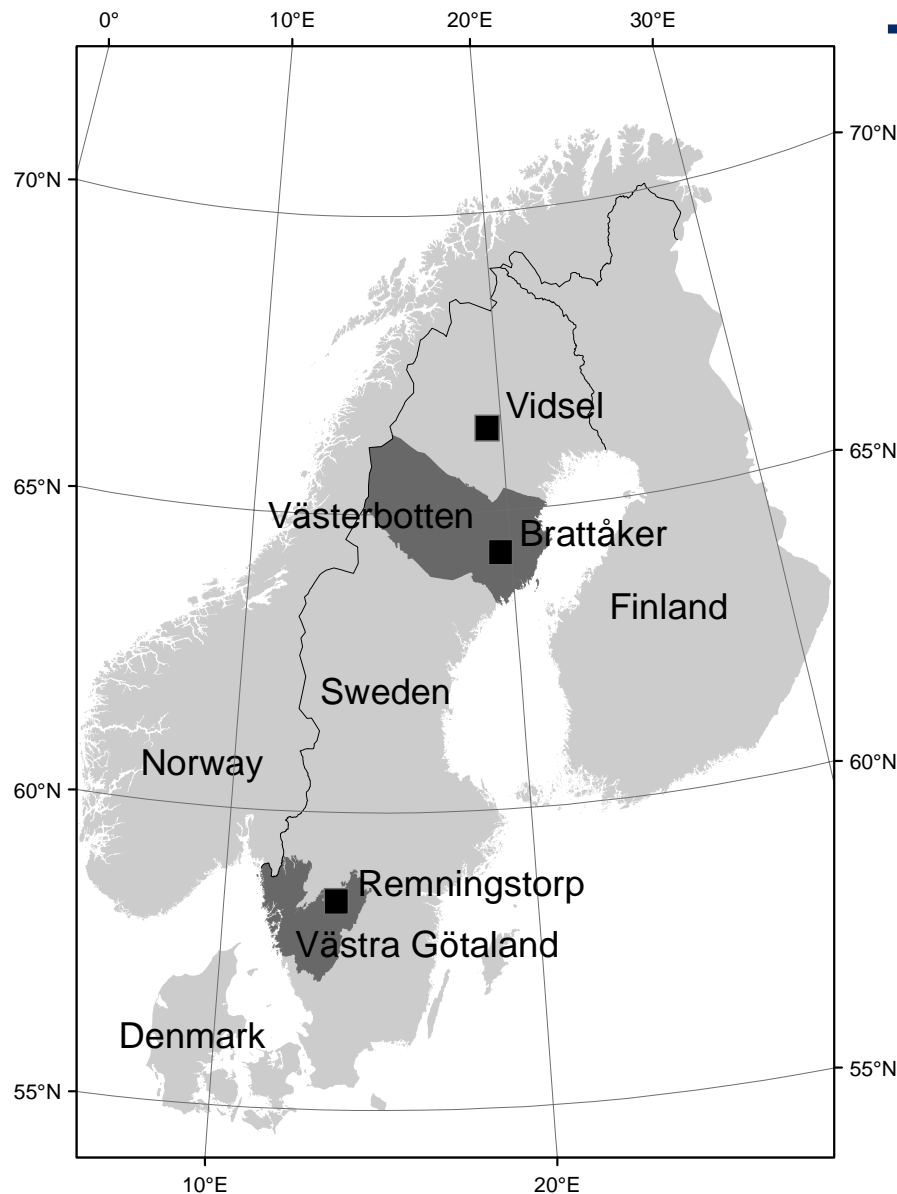
Håkan Olsson, Prof., SLU

Outline

- Goals
- Test areas and test regions
- Time table
- Current activities
- Summary

Goals

- Develop and evaluate methods for large scale mapping and monitoring of forest change.
- Main focus will be on detecting clear-cuts in boreal forest.
- If successful for our test regions the goal is to use the methodology operationally for the whole of Sweden



Test areas and test regions in Sweden

Areas for methodology development

- Remningstorp
- Brattåker

Test regions

- Västra Götaland region
- Västerbotten county

Possible extension

- The whole of Sweden

Time table for Swedish ALOS activities

2004-2005: Pre-ALOS studies with JERS-1 data

Dec. 2005: Swedish National Space Board grant funding for ALOS activities during 2006 and 2007

Jan. 2006: ALOS launch

April 2006: Deployment of reflectors for ALOS Cal/Val

Aug. 2006: Controlled cutting and thinning of forest

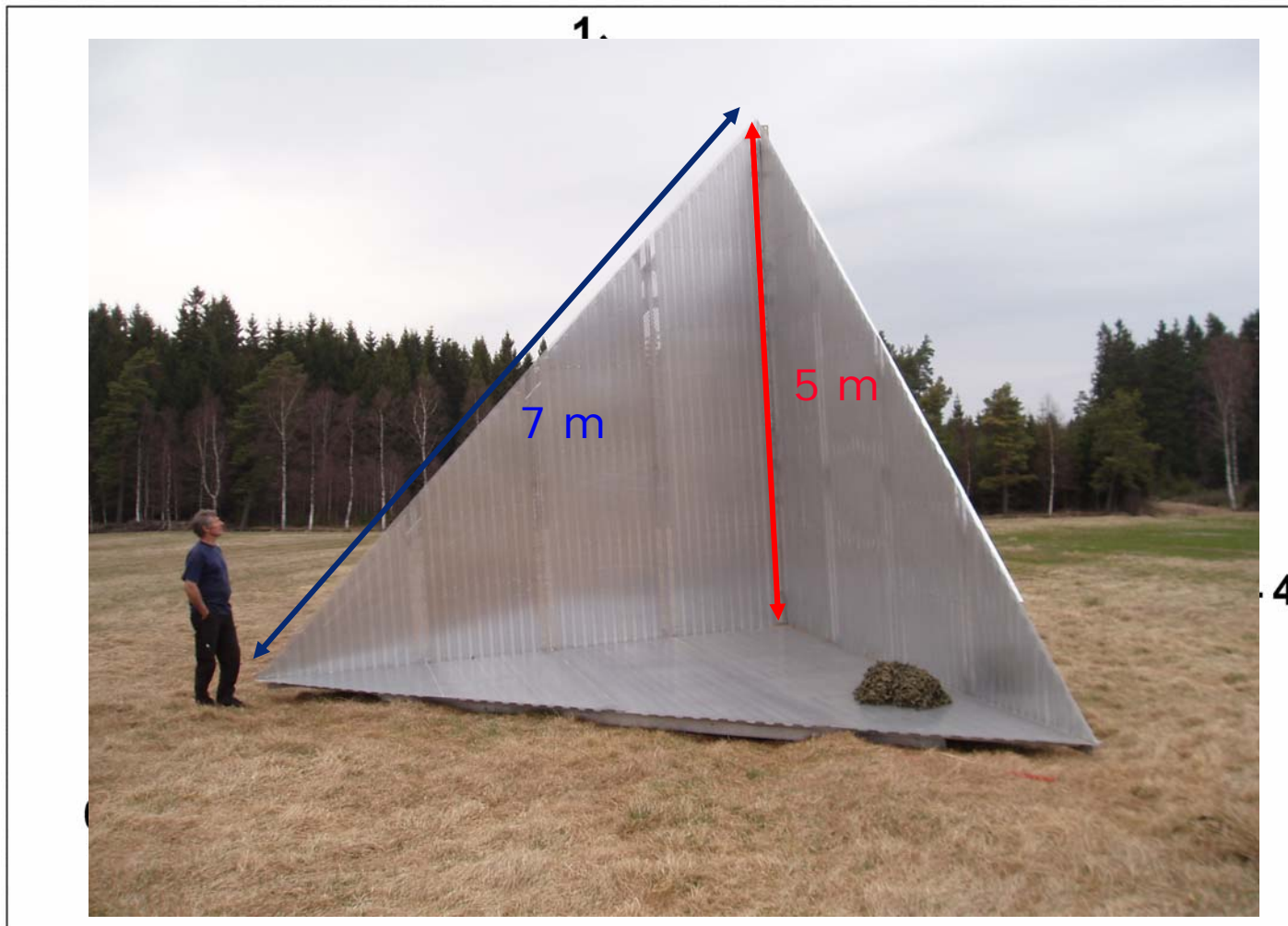
Oct. 2006: ALOS declared operational

Dec. 2006: Clearing of “simulated” storm felled forest

2007: Cal/Val and K&C methodology development

2008-2009: Main focus on K&C on a regional scale

Four trihedral corner reflectors



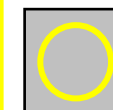
Directing the trihedrals



Three dihedral corner reflectors



Remningstorp in PALSAR FBS34.3

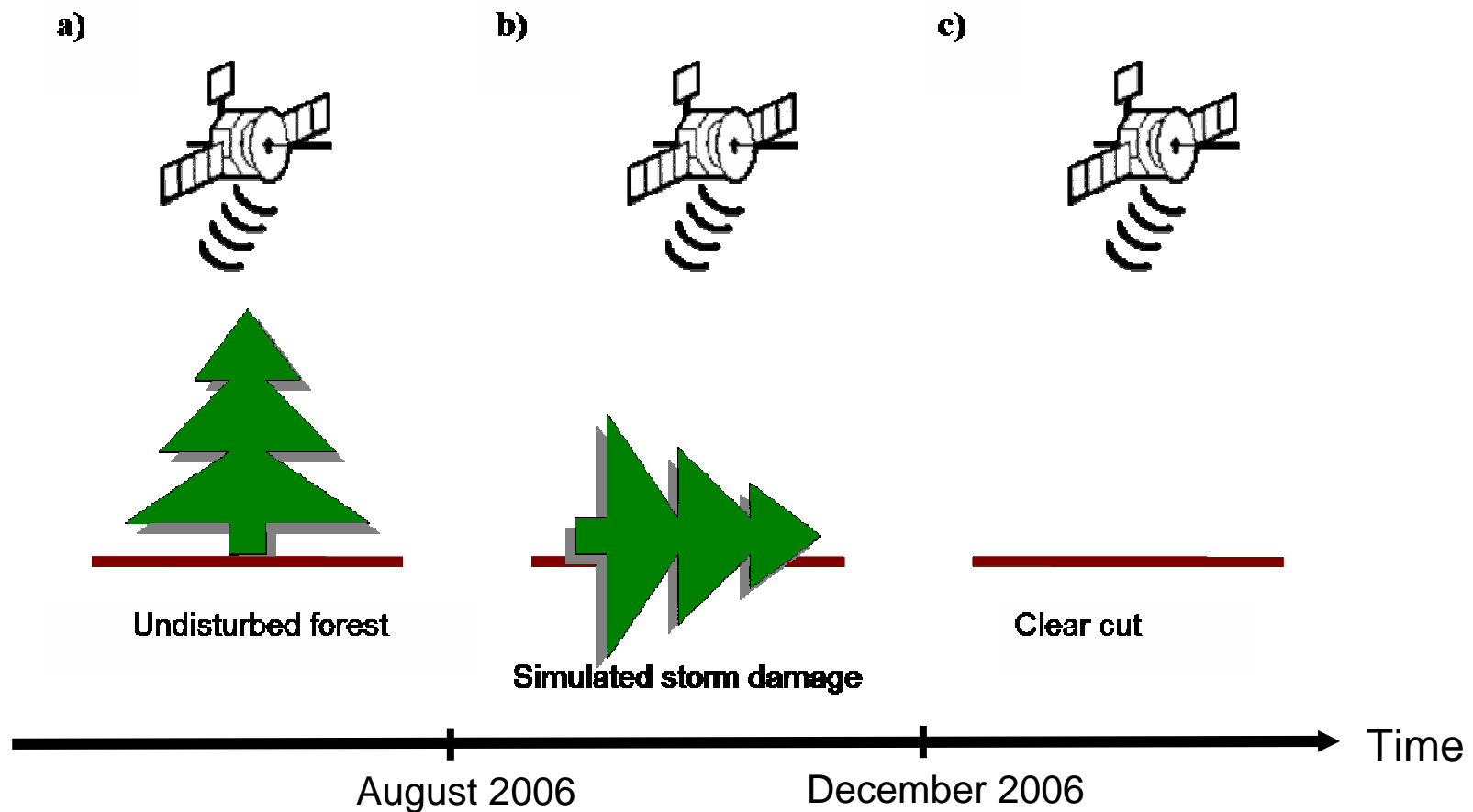


Trihedral

Observation status

Cycle	Datum	RSP	Mode	Trihedraler	Dihedraler	Ordered	Comment
3	2006-05-20	311	PLR21.5	4	0	Yes	
	2006-05-25	636	FBS41.5	4	0	Yes	Poor coverage
	2006-06-03	623	PLR21.5	4	2	Yes	Close to edge
	2006-06-08	304	FBS34.3	4	2	Yes	
4	2006-06-18	310	WB1 5Scan	0	0	Yes	No reflectors
	2006-06-23	635	FBD41.5	4	2	Yes	
	2006-07-05	311	PLR21.5	4	3	Yes	
	2006-07-07	303	FBS34.3	4	0	Yes	
	2006-07-10	636	FBS41.5	4	0	Yes	Poor coverage
	2006-07-19	623	PLR21.5	4	3	Yes	Close to edge
5	2006-08-03	310	FBS21.5	0	0	Yes	No reflectors
	2006-08-08	635	FBD41.5	4	2	Yes	
	2006-08-20	311	PLR21.5	4	3	Yes	
	2006-08-25	636	FBD41.5	0	0	No	Cancelled by JAXA
	2006-09-03	623	PLR21.5	0	0	Yes	Close to edge - No reflectors
	2006-09-08	304	FBS34.3	4	0	Yes	
6	2006-09-18	310	FBS21.5	4	0	Yes	
	2006-09-23	635	FBS41.5	0	0	No	Cancelled by JAXA
	2006-10-05	311	PLR21.5	4	3	Yes	
	2006-10-07	303	FBS34.3	4	0	Yes	
	2006-10-10	636	FBD41.5	0	0	Yes	Poor coverage - No reflectors
	2006-10-19	623	PLR21.5	4	3	Yes	Close to edge
7	2006-11-03	310	FBS21.5	0	0	No	Cancelled by JAXA
	2006-11-08	635	FBS41.5	4	0	Yes	
	2006-11-14	289	FBD50.8	0	0	Yes	No reflectors
	2006-11-25	636	FBS41.5	0	0	No	Cancelled by JAXA
	2006-12-04	623	PLR21.5	4	2	Yes	Close to edge
8	2006-12-14	307	WB1 5Scan	0	0	No	Cancelled by JAXA
	2006-12-14	629	FBS34.3	4	0	No	Cancelled by JAXA
	2006-12-24	313	WB1 5Scan	0	0	Yes	
	2006-12-30	289	FBD50.8	0	0	Yes	
	2006-12-31	630	FBS34.3	4	0	Yes	

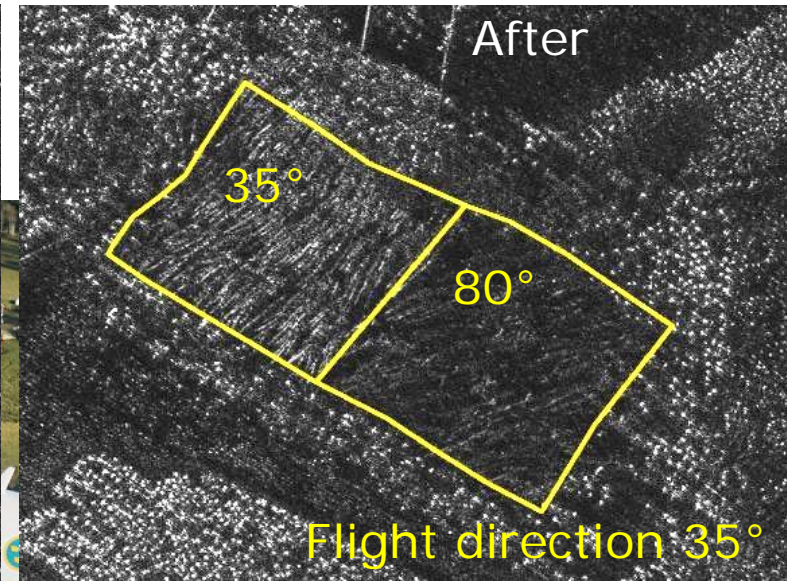
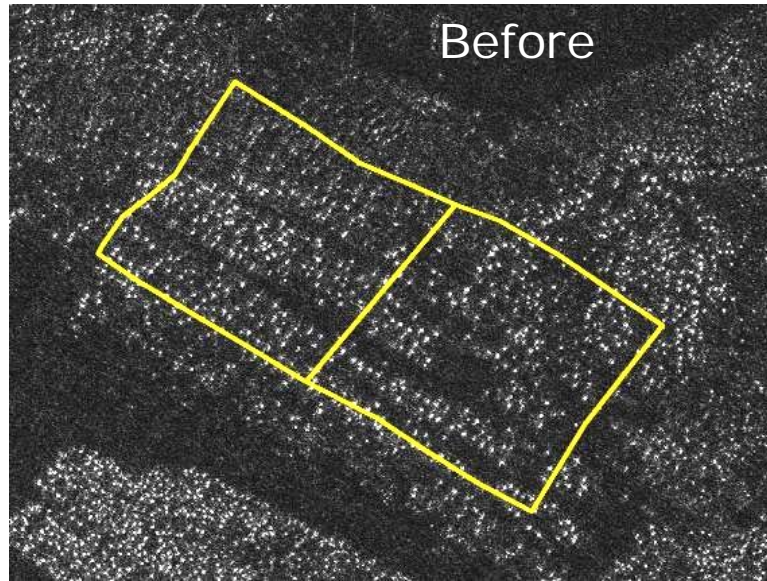
Detecting storm damage and clear-cuts



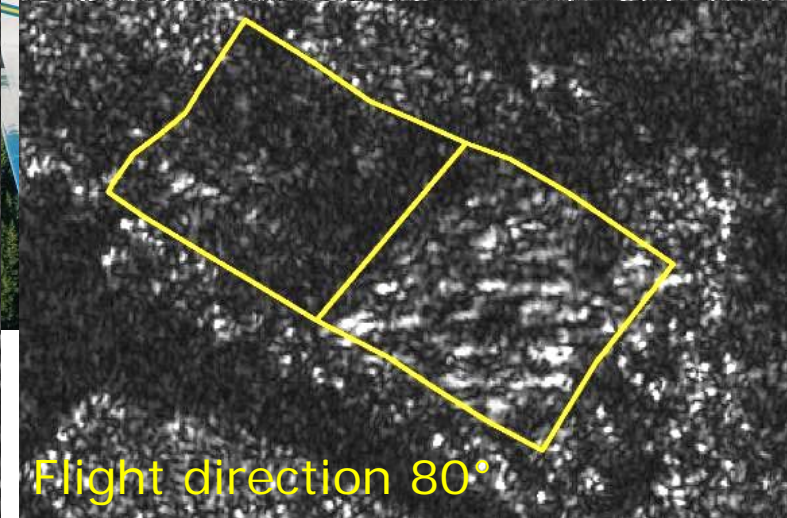
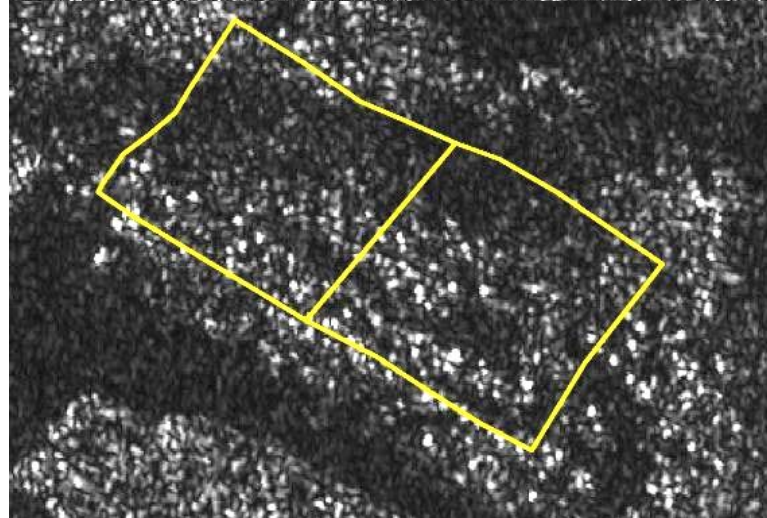


Airborne data

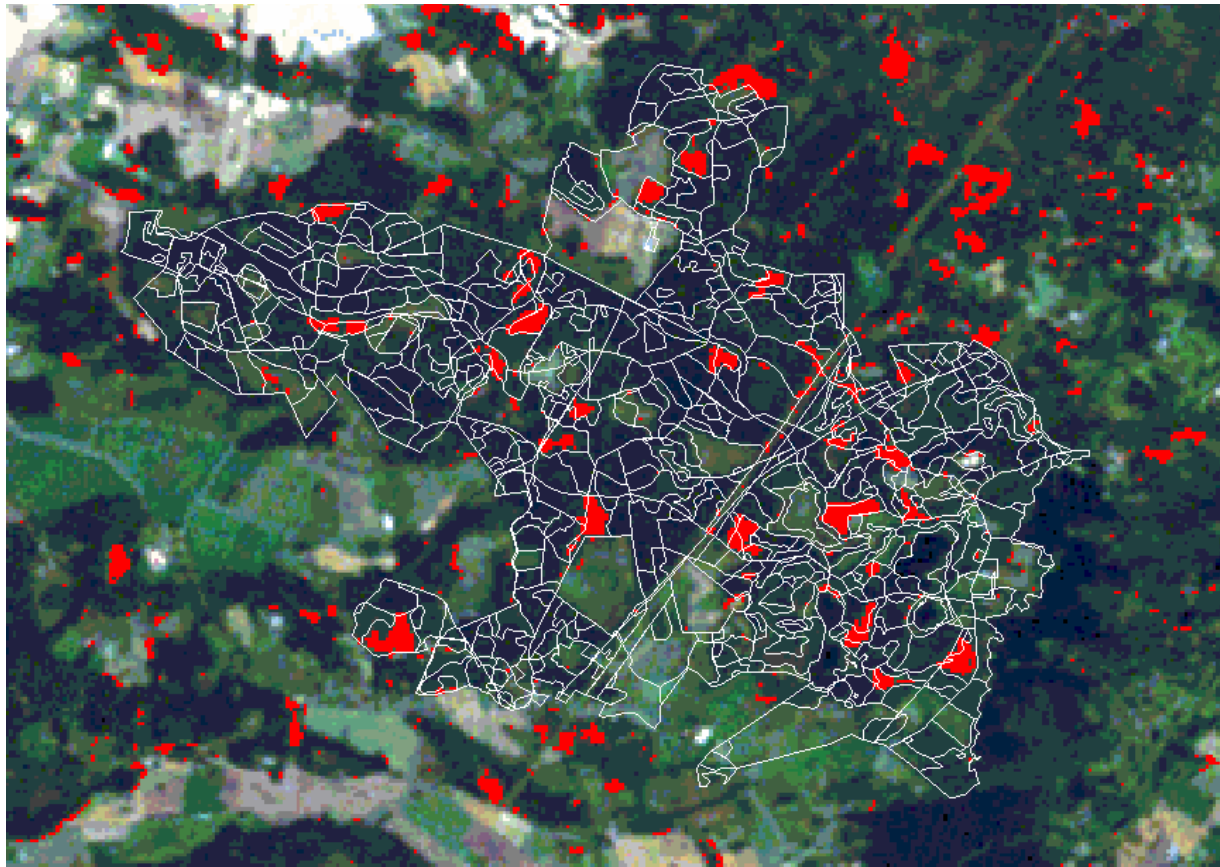
LORA
P-band



CARABAS
VHF-band

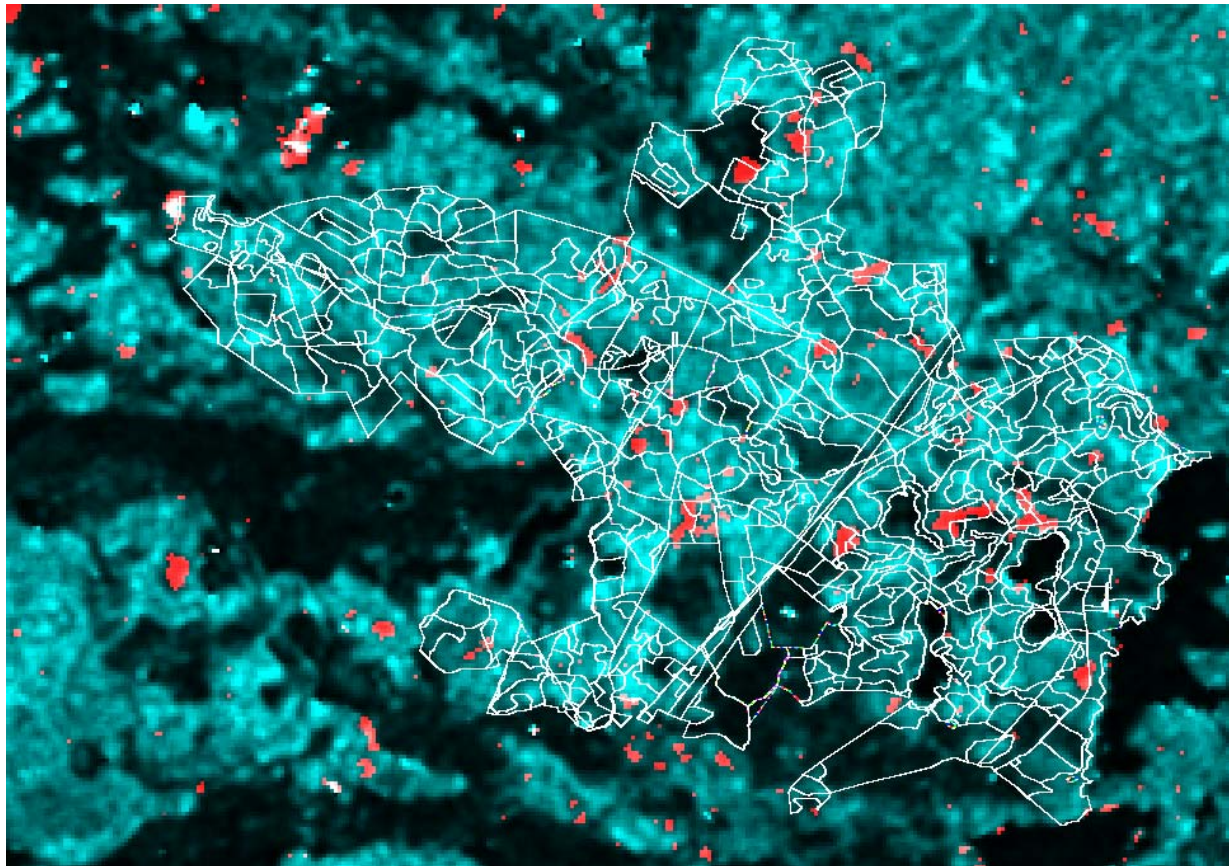


Change detection with Landsat



Landsat TM images from 1992 and 1999

Change detection with JERS-1 backscatter

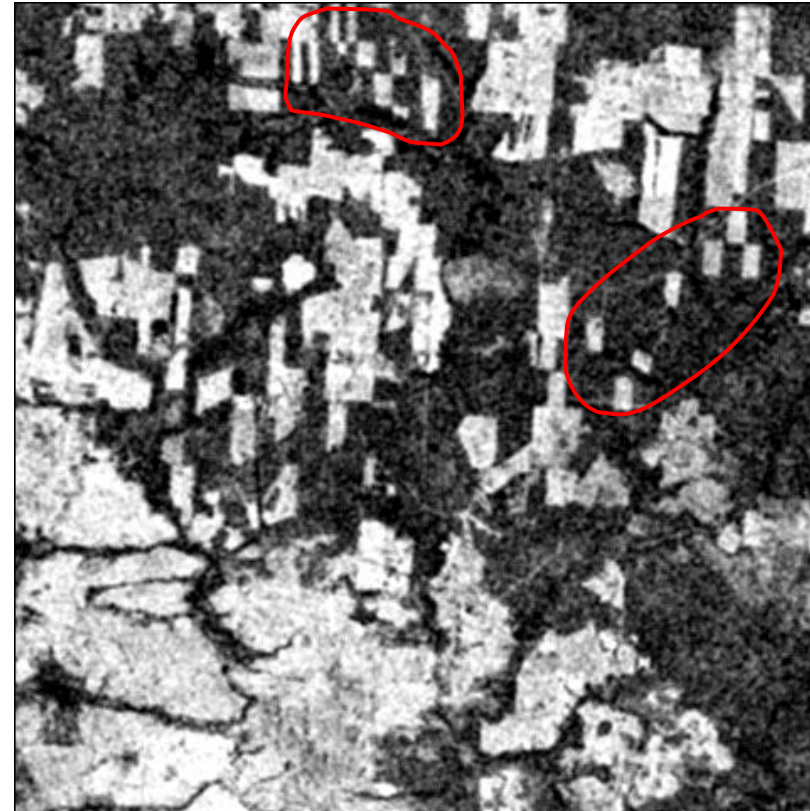


Red: difference 930613 and 980705 Green: 980705 Blue: 980705

Change detection with coherence



JERS Coherence 1993-12-29 – 1994-02-11



JERS Coherence 1996-01-17 – 1996-03-01

Summary

- SLU and Chalmers are involved both in ALOS Cal/Val and K&C, which give synergies in data availability, funding and knowledge
- The methodology development has started
- Positive experience from clear-cut detection with JERS-1 data
- Storm damage “simulations” were performed at the Remningtorp test site in August 2006
- The first PALSAR image with clear-cuts was acquired on the 31st of December 2006