

*Welcome to the
6th Advisory Panel/Science Team meeting*



*of the
ALOS Kyoto & Carbon Initiative*

JAXA EORC, Tokyo, Japan
Feb.28 - March 3, 2005

KC#6 Agenda

Monday, February 28

Status up-date & Presentations

Tuesday, March 1

Input from K&C scientists

Wednesday, March 2 (a.m.)

Input from K&C scientists

Wednesday, March 2 (p.m.)

Mini presentations - summarising the input provided

Thursday, March 3 (a.m.)

Simulation results - update

Meeting wrap-up

ALOS schedule



H-IIA rocket #7 successfully launched from Tanegashima Space Center on Saturday (Feb. 26).

ALOS launch scheduled for **September, 2005**. Official announcement of launch date expected soon.

Sept-Nov, 2005 (cycles 1-2): Instrument commissioning and check-out

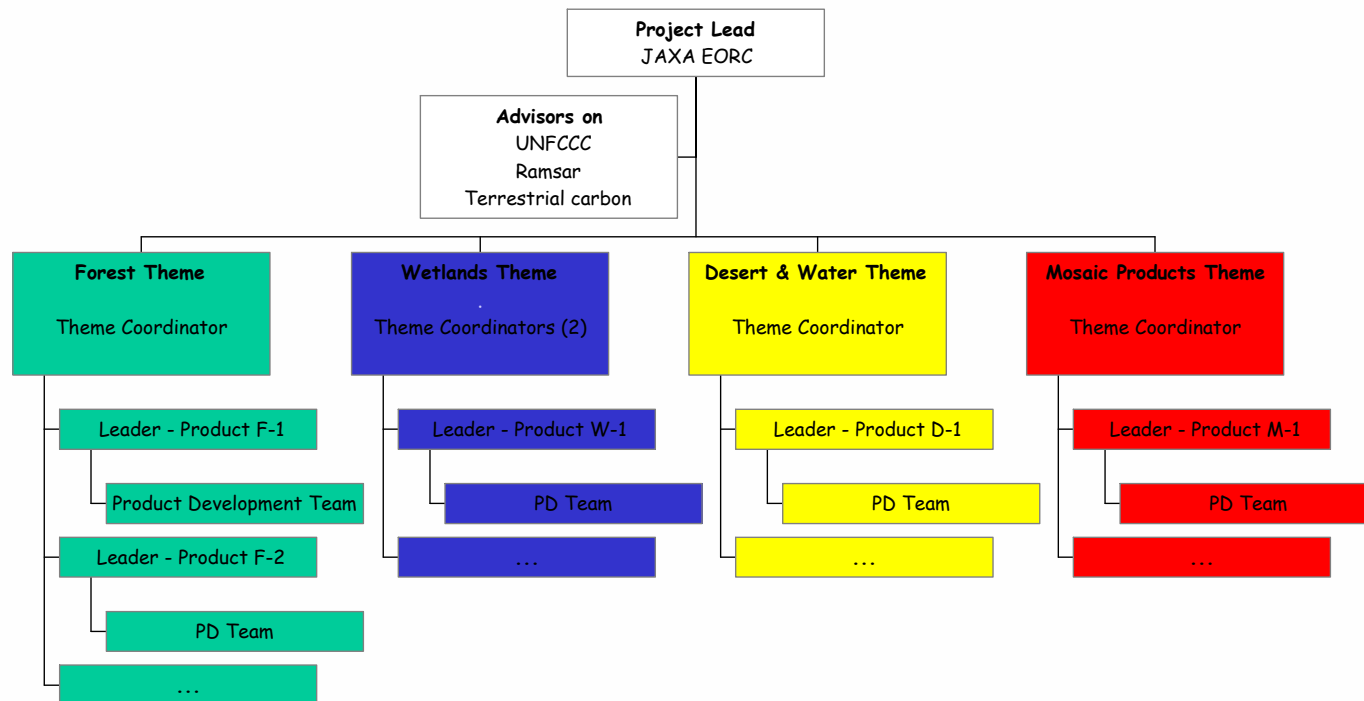
Dec.2005-May 2006 (cycles 3-6): Calibration/Validation phase.

- Delivery of test data to K&C team foreseen

June 2006 (Cycle 7+): Commencement of operational observations according to ALOS systematic acquisition strategy.

- Target: Operational processing at EORC within one cycle after acquisition.

Project organisation



Theme Coordinators:

- Forest Theme - Richard Lucas
 - Craig Dobson --> advisor
- Wetlands Theme - Laura Hess & John Lowry
- Desert & Water - Philippe Paillou
- Mosaic Theme - Bruce Chapman

Product Developers:

- 20 scientists under contract with JAXA

K&C contract status

Finalised

- Applied Geosolutions (Bill Salas)
- BOS Foundation (Dirk Hoekman)
- U. Victoria (Kevin Telmer)
- U. Victoria (Maycira Costa)
- Wetlands International (Doug Taylor/John Lowry)
- SLU (Johan Fransson/Hakan Olsson)
- U. Bordeaux-1 (Philippe Paillou)
- INPE (Raimundo Filho)
- DLR (Alberto Moreira)

In process

- U. Wales Aberystwyth (Richard Lucas)
- Friedrich-Schiller University Jena (Chris Schmullius)
- JRC (Franco de Grandi)
- Sarmap (Francesco Holecz)
- U. Chiba (R. Tateishi)

Action required

- CESBIO (Thuy Le Toan)
- UCSB (Laura Hess)

Not yet initiated

- U. New South Wales (Tony Milne)
- JPL (Bruce Chapman, Kyle McDonald)
- U. Massachusetts (Paul Siqueira)

K&C phases of implementation

0 - Implementation of the PALSAR observation strategy

PALSAR acquisitions in support to the K&C Initiative begin immediately following the completion of the commissioning and calibration/validation phases of ALOS, 9 months (6 cycles) after the satellite launch. PALSAR data are processed by JAXA EORC and delivered to the K&C Product Leaders within one cycle after acquisition.

1 - Local-scale methodology development.

This work is carried out by the Product Leaders and their Product Development (PD) teams, typically using a small number of PALSAR scenes over study site(s) that are representative for the biome(s) of interest, with ample in situ data available for verification.

2 - Regional-scale prototype demonstration.

This step constitutes the essence of the K&C Initiative during the first 3 years, and which covered within this science plan. Applying the methods and algorithms developed in the previous step, "derived products" over extensive regions - described in the theme descriptions that follow below - are generated by the PD teams. All products are made available to the public and to specific target users.

3 - Review.

3 years after the launch of ALOS, JAXA performs a review of all K&C projects and the products developed, with respect to scientific significance, accuracy levels achieved, actual relevance to CCC etc., in relation to the amounts of PALSAR data provided.

4 - Global-scale extrapolation.

Projects which are deemed successful and with a potential for application over different or larger regions are selected by JAXA for extension for another 2-year period.

The PALSAR Observation Strategy

- HH-pol acquisitions at **41.5°** off-nadir angle replace previous HH and HH+HV winter acquisitions at 43.4° (ERSDAC preference)
- (HH+HV)-pol acquisitions at **41.5°** off-nadir angle replace previous HH+HV summer acquisitions at 34.3° (JAXA preference)
- > Improved opportunities for interferometric applications
- > Improved possibilities for gap-filling.

Polarization	Off-nadir angle	Incidence range	Swath width	Resolution (4 looks)	Pass designation	Coverage
HH	41.5°	45.6°~49.0°	70 km	10 m	Ascending	Global
HH+HV	41.5°	45.6°~49.0°	70 km	20 m	Ascending	Global
HH+HV+VH+VV	21.5°	22.8°~25.2°	30 km	~30 m	Ascending	Regional
SCANSAR (HH)	5-beam	18.0 ~43.0	361 km	~100 m	Descending	Regional/Global
HH	34.3°	36.6°~40.8°	70 km	10 m	Descending	Local
HH	21.5°	21.2°~26.8°	70 km	10 m	Descending	Local

The 4 (+2) PALSAR default modes

The PALSAR Observation Strategy

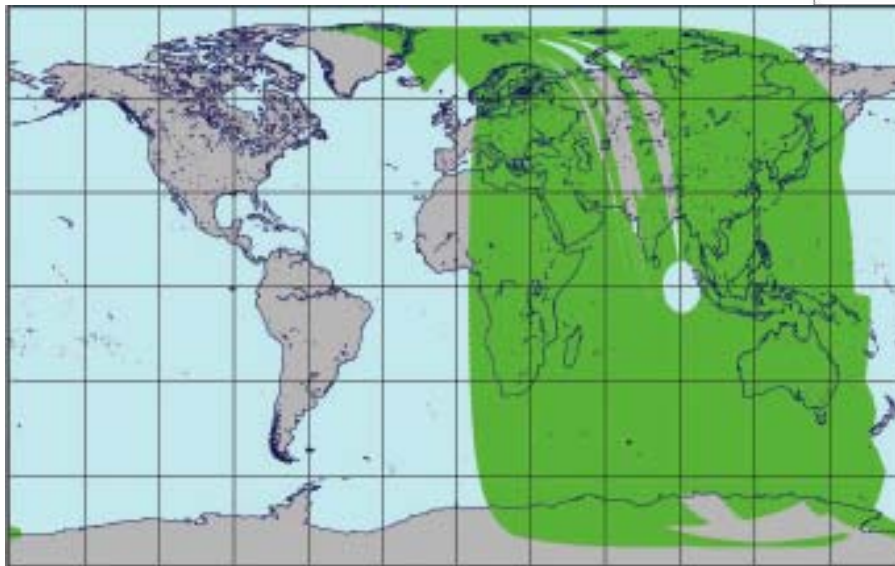
Radiometric performance of ALOS' 4 main default acquisition modes

Item	ALOS PALSAR	JERS-1 SAR
Noise Equivalent Sigma-0	-24 ~ -27 dB (single pol.@41.5) -27 ~ -30 dB (dual pol.@41.5) -30 ~ -31 dB (quad-pol.@21.5) -23 ~ -32 dB (ScanSAR 5-beam)	~ -18 dB
S/A (Range)	9 - 26 dB (single/dual pol. @41.5) 39 - 46 dB (quad-pol.@21.5 ; co-pol) 20 - 27 dB (quad-pol.@21.5 ; X-pol) 24 - 60 dB (ScanSAR 5-beam)	Not measured
S/A (Azimuth)	21 dB (single/dual pol.@41.5) 21 dB (quad-pol.@21.5) 19 - 32 dB (ScanSAR 5-beam)	22 dB
Radiometric accuracy	< 1 dB relative (within scene) < 1.5 dB absolute (between orbits)	< 1 dB relative (within scene) < 1.5 dB absolute (between orbits)
Cross-talk	< -25 dB	N/A
Gain control	Automatic or manual (0 - 44 dB)	Automatic (0 - 31 dB)
Sensitivity Time Control	0 - 7 dB	0 - 5 dB

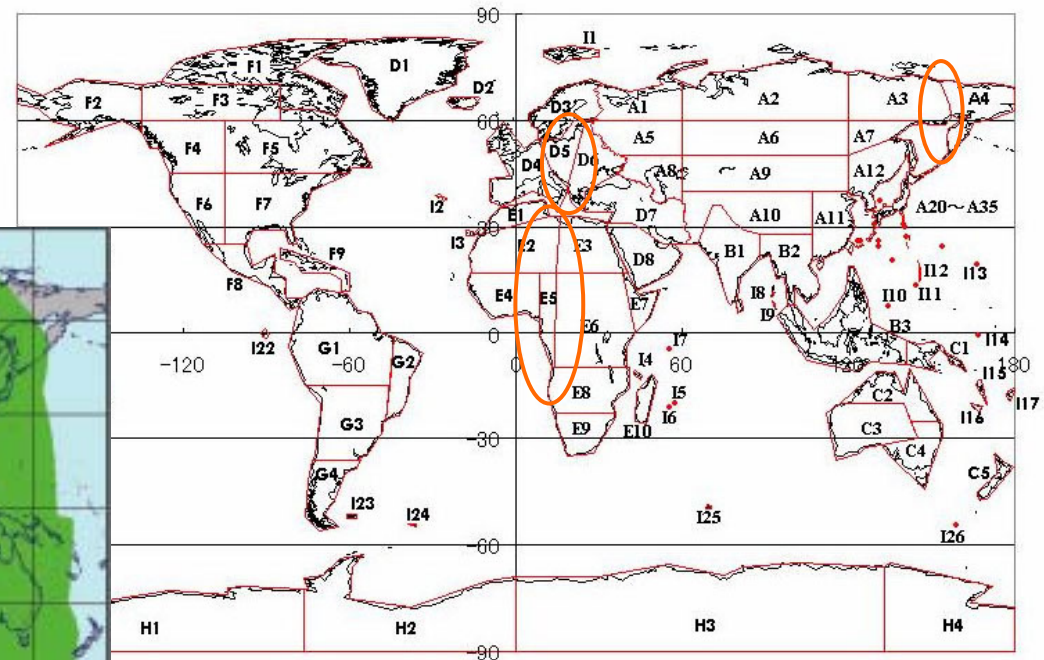
The PALSAR Observation Strategy

Modifications to the polygon definitions to improve acquisition success rate in regions at the edges of the DRTS coverage.

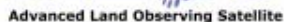
--> Division/renumbering of polygons in Siberia, Europe and Africa.



Coverage of DRTS
(satellite ground track)



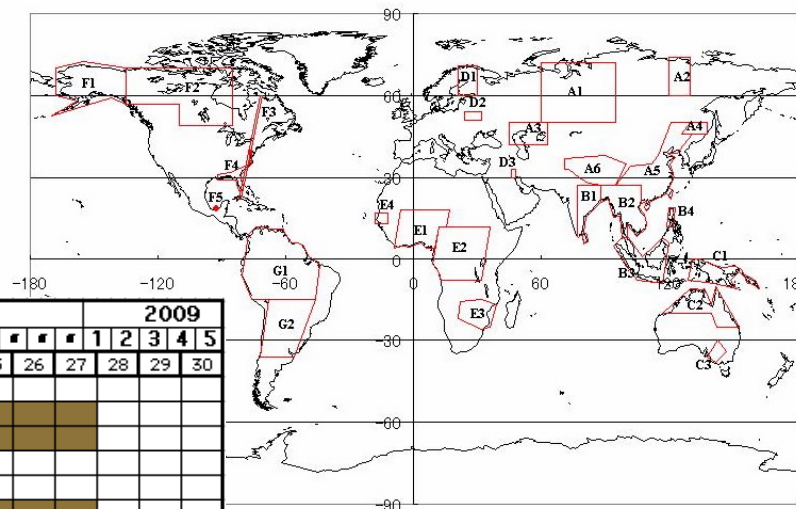
ALOS Observation Strategy - polygons



PALSAR Ascending observation plan (Jan.'05)

[illegible]

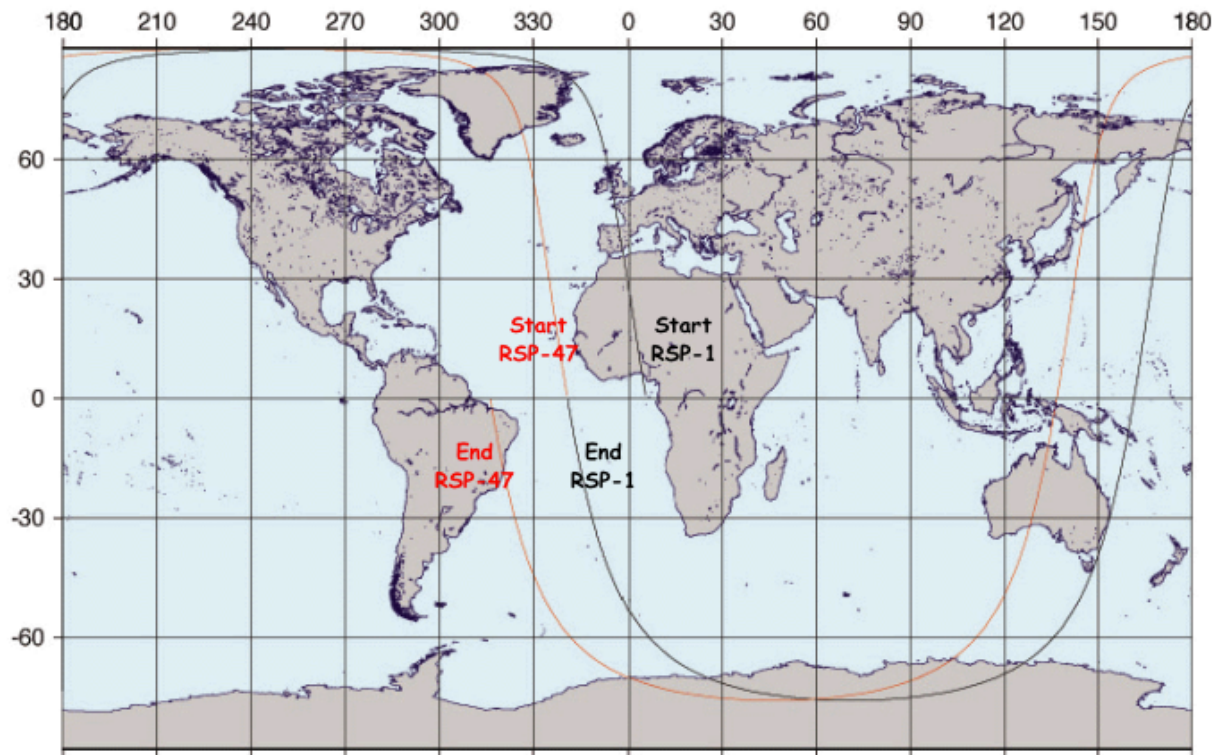
ScanSAR observations in support to the K&C Wetlands Theme



Year Month Satellite cycle		2006					2007					2008					2009																			
		6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30											
West Siberia	A1																																			
Lena Delta	A2																																			
Volga Delta	A3																																			
Amur	A4																																			
East China paddy	A5																																			
Tibet	A6																																			
India paddy	B1																																			
Mainland SE-Asia	B2																																			
Insular SE-Asia	B3																																			
Luzon	B4																																			
New Guinea	C1																																			
North Australia	C2																																			
Murray-Darling	C3																																			
Finland	D1																																			
Pripet-Biebrza	D2																																			
Tigris marshes	D3																																			
Niber Basin	E1																																			
Congo Basin	E2																																			
Okavango-Mozambique	E3																																			
Senegal wetlands	E4																																			
ASF mask	F1																																			
Canada W	F2																																			
Quebec-Everglades	F3																																			
SE USA	F4																																			
Mexico	F5																																			
Amazon Basin	G1																																			
Pantanal	G2																																			

RSP - the orbit Reference System for Planning

RSP - an orbit-based system based on the actual footprint of the observation swath will to be used within the K&C Initiative for pass identification

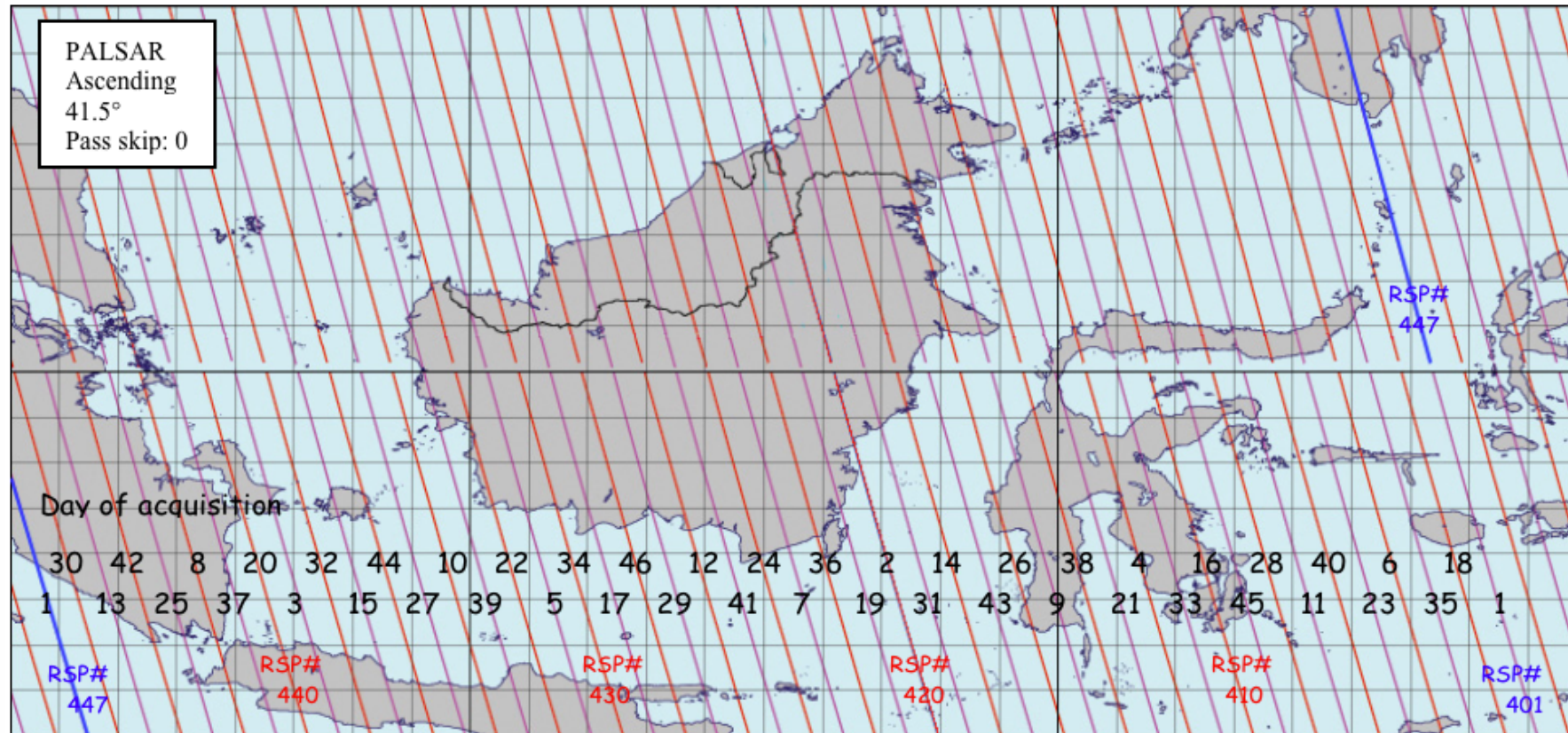


671 ALOS orbits
within a 46-day
cycle.

- A RSP pass is defined to start at the Equator in **ascending** mode, resulting in a "jump" in the numbering ($n+46$) with every ascending equator crossing (CAUTION!)

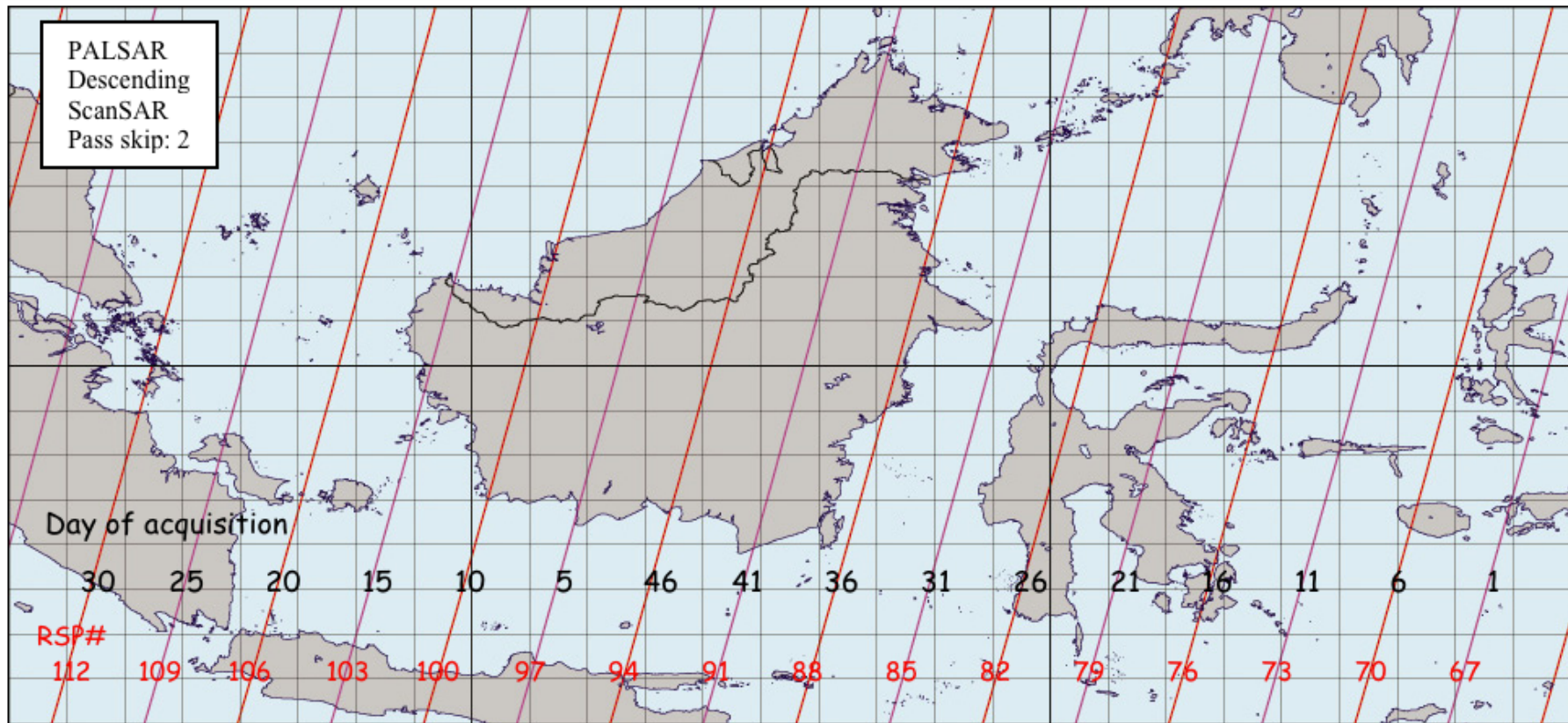
ALOS observations - temporal characteristics

Fine Beam mode (HH/HH+HV @ 41.5°)



- RSP sequential numbers from 1-671, increasing westwards (i.e. not chronological)
- 17 and 29 days' time difference between neighbouring passes in Fine Beam mode (17-17-29-17-17-29-17-17-29 -...)
- Above N 60° , every 2nd pass acquired. Pass time difference: 12 and 34 days.

ALOS observations - temporal characteristics ScanSAR



- In ScanSAR mode (350 km swath), acquisitions limited to one in every 3 passes;
- 5 and 41 days' time difference between neighbouring passes
(5-5-5-5-5-5-5-5-5-**41**-5-5-5-5-5-5-5-5-5-**41**...)

Input to be provided
during KC#6

Input to the Science Plan

Draft Science Plan sent out
for initial review/comments
on February 8.

Feed-back from Panel:

- General contents
- Theme Chapters

Specific contributions:

- Product Box: illustrative image example of foreseen product deliverable, and a brief & "Snappy" description of the project.

Mangrove extent and properties

K&C product(s): Datasets derived from PALSAR and optical imagery which will be used to map the relative biomass of regional mangrove communities, and the disturbance to regional mangrove communities from natural and anthropogenic causes.

Intended use: Monitoring impacts of anthropogenic activities (deforestation/land clearing) (illustrated below – figure 1) and natural processes (cyclones, climate change, tsunami)

Prototype areas: Kakadu and Daintree National Parks in Australia, and Crique Fouillee in French Guyana .



The conversion of coastal mangroves for firewood and aquaculture in Perak, Malaysia, as observed using a time-series of JERS-1 SAR data.

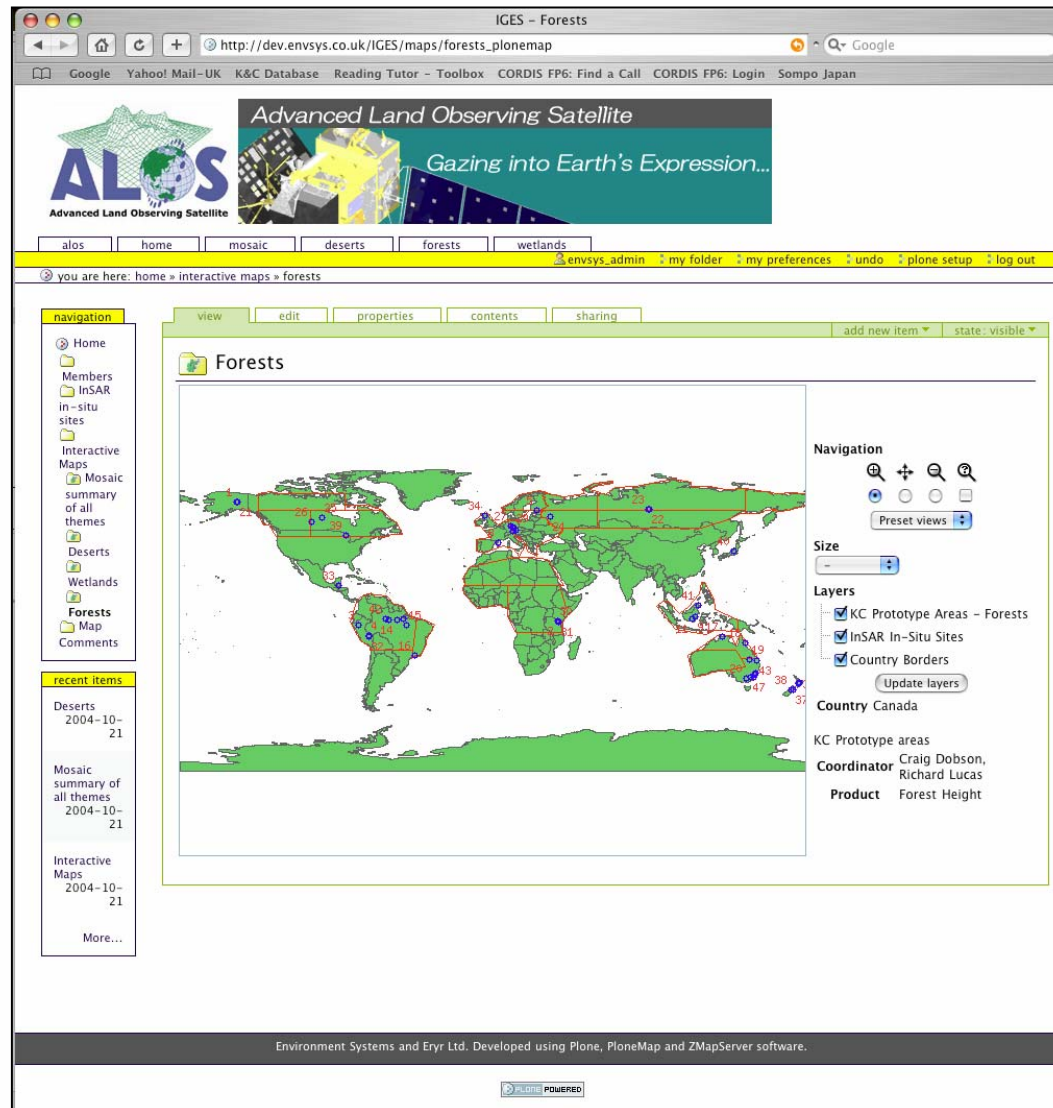


Location of the three mangrove extent K&C prototype areas

To be generated by: Richard Lucas, University of Wails *et al*

Product Box example

Input to the K&C Data Base



- A resource for the K&C Science Team
- To contain updated information about the 20 K&C projects
- Full access to all K&C Science Team members.
- Limited access for general users.
- Refined input to be provided during meeting.

Provision of detailed processing requests

Input requirements for
EORC resource
allocation for data
processing and
dissemination

- Timing, location & amounts of all K&C data requested
- Processing levels and means of data distribution

6th K&C Science meeting, Feb.28 - Mar.3, 2005

Product Leader: Ernst Ramberg

Affiliation: Hotaheiti University

Country: Fiji

K&C Theme: Forest

Ascending mode (HH or HH+HV 41.5°)			
Total #scenes	Total #passes	Average pass [km]	Data [Gbyte]
2,679	261	719	69

Descending mode ScanSAR			
Total #scenes	Total #passes	Average pass [km]	Data [Gbyte]
1,051	136	2,706	231

Summary of K&C PALSAR data requested from JAXA EORC by Ernst Ramberg

Fill in the requested information in the empty boxes.

Ascending mode HH 41.5° & HH+HV 41.5°	
Prototype area 1:	Borneo, west Java
PALSAR polygon(s)	B3
Proc. level *: SLP / GRP	
ORP-GEO / ORP-MER / MOS	SLP
Media (FTP or S-DLT)	FTP

Ascending subtotals 1			
#scenes/coverage	#pass/cov	Mbyte/cov.	
306	27	600	
#cov	#scenes	#passes	Tot. Gbyte
8	2,451	216	67.2

Satellite cycles during which data are requested (mark below with "1")																																				
Year	2006												2007												2008											
Month	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Cyclst#	3	4					7	8			10	11	12							15	16	17	18	19	20	21	22	23	24	25	26					
Req = 1							1	1					1							1	1				1				1	1						

Ascending mode	
Prototype area 2:	Iceland
PALSAR polygon(s)	D2
Proc. level *: SLP / GRP	
ORP-GEO / ORP-MER / MOS	SLP
Media (FTP or S-DLT)	FTP

Ascending subtotals 2			
#scenes/coverage	#pass/cov	Mbyte/cov.	
76	15	149	
#cov	#scenes	#passes	Tot. Gbyte
3	229	45	2.2

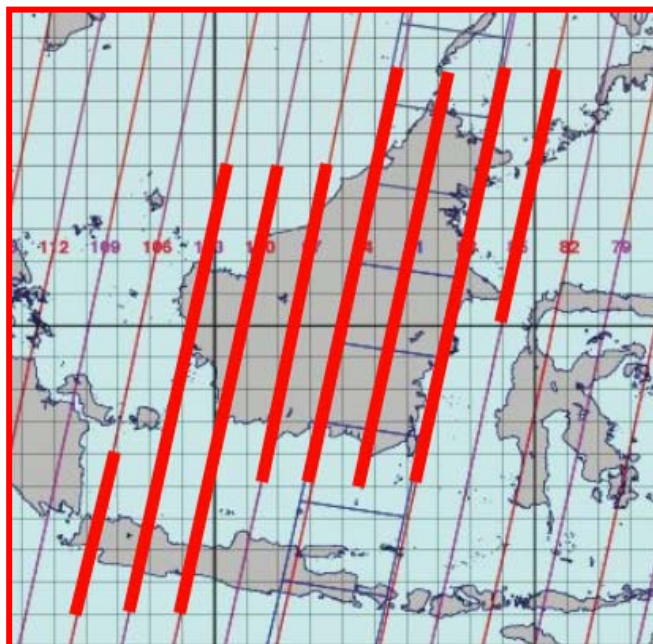
Satellite cycles during which data are requested (mark below with "1")																																				
Year	2006												2007												2008											
Month	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Cyclst#	3	4					7	8			10	11	12							15	16	17	18	19	20	21	22	23	24	25	26					
Req = 1							1						1																				1			

Ascending mode	
Prototype area 3:	
PALSAR polygon(s)	
Proc. level *: SLP / GRP	
ORP-GEO / ORP-MER / MOS	
Media (FTP or S-DLT)	

Ascending subtotals 3			
#scenes/coverage	#pass/cov	Mbyte/cov.	
0	0	0	
#cov	#scenes	#passes	Tot. Gbyte
0	0	0	0.0

Satellite cycles during which data are requested (mark below with "1")																																				
Year	2006												2007												2008											
Month	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Cyclst#	3	4					7	8			10	11	12							15	16	17	18	19	20	21	22	23	24	25	26					
Req = 1							1						1																							

Provision of detailed processing requests



Refinement of the processing requests provided at KC#5 (Nov. 2003)

RSP#
85, 88, 91, 94, 97,
100, 103, 106

- Cyle #
- RSP#
- Latitude boundaries of data segment to be processed.

6th K&C Science meeting, Feb.28 - Mar.3, 2005

Descending mode
ScanSAR

Product Leader:	Ernst Ramberg	
Prototype area:	Borneo & West Java	

RSP #	88	85	82	79	76	73	70	67	64	61	58	55	52	49	46	43	40	37	34	31	28	25	22	19	16	13	10	7	4	1
N-Lat. [XX.x deg.]	8.0	8.0																												
S-Lat. [YY.y deg.]	-5.0	0.0																												
Segment length [deg.]	13.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
# scenes (/band)	4.1	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RSP #	178	175	172	169	166	163	160	157	154	151	148	145	142	139	136	133	130	127	124	121	118	115	112	109	106	103	100	97	94	91
N-Lat. [XX.x deg.]																									-4.0	5.0	5.0	5.0	8.0	8.0
S-Lat. [YY.y deg.]																									-9.0	-9.0	-9.0	-5.0	-5.0	-5.0
Segment length [deg.]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	14.0	14.0	10.0	13.0	13.0
# scenes (/band)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.4	4.4	3.2	4.1	4.1

Set-up of a FTP transfer test

The majority of all PALSAR data will be processed and delivered by JAXA EORC

50 m Fine Beam path images

70 m ScanSAR path images

RSP-based requests

FTP transfer dummy test to be undertaken during March, 2005, by RESTEC and K&C scientists.

Data for the InSAR and Pol-InSAR groups (DLR, U-Mass, Sarmap), which will be processed and delivered by JAXA EOC in Hatoyama

Standard products, Single-Look Complex

Requests via the EOC www order system

Orders based on traditional GRS grid

Maximum 100 scenes/year