



Kyoto & Carbon Initiative Data Acquisition Strategy

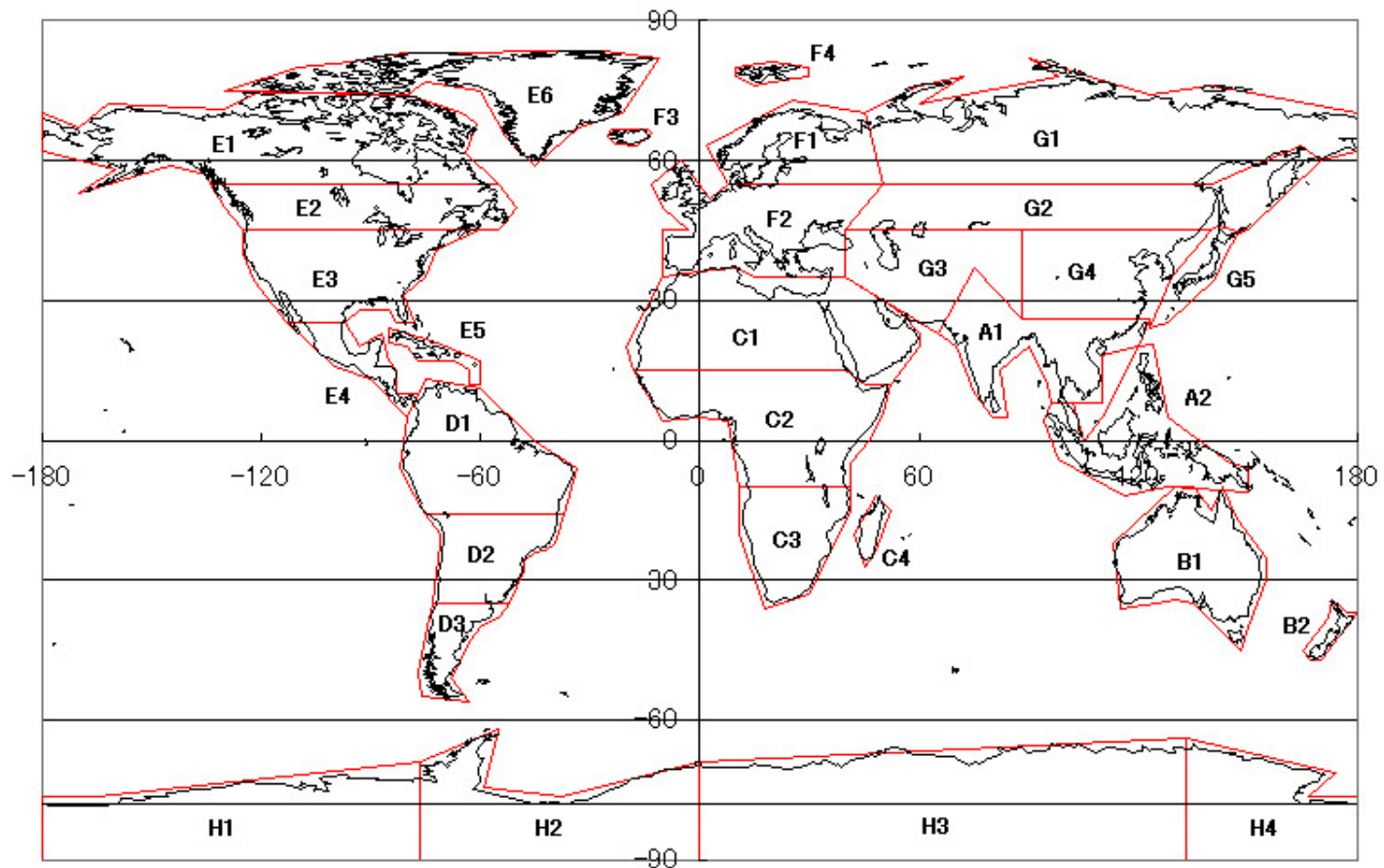
Plans and simulations for ALOS PALSAR

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NASDA EORC

2nd Science Advisory Panel meeting
UCSB, Santa Barbara, USA
May 14-15, 2002

K&C Data Acquisition Strategy

Geographical division



Data acquisition plan (v. May-2002)

PALSAR - ascending mode

Ake Rosenqvist, April 19, 2002. 12.00

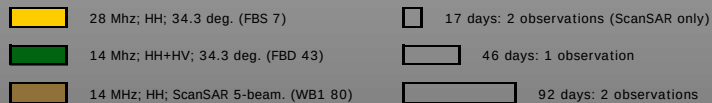
Kyoto Forest & Biomass - Ascending																																													
AREA NAME	Map code		2002						2003												2004												2005												
			8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7							
S & SE-Asia	A1	ASC																																											
Insular SE-Asia	A2	ASC																																											
Australia	B1	ASC																																											
New Zealand	B2	ASC																																											
N. Africa	C1	ASC																																											
C. Africa	C2	ASC																																											
S. Africa	C3	ASC																																											
Madagascar	C4	ASC																																											
S. America North	D1	ASC																																											
S. America Mid	D2	ASC																																											
S. America South	D3	ASC																																											
I. Canada & Alaska	E1	ASC																																											
S. Canada	E2	ASC																																											
USA	E3	ASC																																											
Central America	E4	ASC																																											
Carribean Islands	E5	ASC																																											
Greenland	E6																																												
Europe North	F1	ASC																																											
Europe South	F2	ASC																																											
Iceland	F3	ASC																																											
Svalbard	F4	ASC																																											
N. Siberia	G1	ASC																																											
S. Siberia	G2	ASC																																											
Far East	G3	ASC																																											
China	G4	ASC																																											
Japan	G5	ASC																																											

Yellow 28 Mhz; HH; 34.3 deg. (FBS 7) Changes from file "Kyoto-Forest-AscDesc_18APR.xls"
Green 14 Mhz; HH+HV; 34.3 deg. (FBD 43) Lime Change from FBD 43 to FBS 7 (cal/val period only)
 46 days: 1 observation
 92 days: 2 observations

Data acquisition plan (v. May-2002)

PALSAR - descending mode

Ake Rosenqvist, April 18, 2002. 23.30

[illegible]

Data acquisition plan (v. May-2002)

PALSAR - ScanSAR wetlands

Ake Rosenqvist, April 18, 2002. 23.30

Kyoto CH4																																							
AREA NAME	Map code	asc/ desc	2002					2003												2004												2005							
			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	12	1	2	3	4	5	6	7	
Amazon Basin	A	ASC																																					
Congo Basin	B	DESC																																					
W. Siberian Plain	C	DESC																																					
SE Asia Paddy	D	DESC																																					
Kakadu (AU)		DESC																																					
Alaska transect		DESC																																					

 14 MHz; HH; ScanSAR 5-beam. (WB1 80)

 17 days: 2 observations (ScanSAR only)

 46 days: 6 observations

ALOS PALSAR

Simulation results - May 2002

Request							Request					Result	
Current simulation (May, 2002)							Previous simulation (April 9, 2002)					Result	
NASDA内部要求 プロジェクト名	センサ	要求量(シーン) (伸張前)	要求量(シーン) (伸張後)	取得可能量(シーン) (伸張後)	取得量(シーン) (部分採用込み)	取得量(シーン) (完全採用)	要求量(シーン) (伸張前)	要求量(シーン) (伸張後)	取得可能量(シーン) (伸張後)	取得量(シーン) (部分採用込み)	取得量(シーン) (完全採用)		
PRISM-オルソ/DEM(Default)	PRISM	1,106,814	1,755,708	1,104,170	443,094	314,925	2,868,042	4,522,938	2,828,421	986,264	553,944		
京都・温泉マップ	PALSAR	7,924	9,092	1,413	316	267	857	976	857	472	183		
京都・世界森林/バイオマスマップ	PALSAR	880,408	1,026,117	864,368	587,625	515,894	1,410,507	1,648,068	1,340,484	6,366,946	452,533		
PALSAR-オルソ/DEM	PALSAR	683,307	797,673	676,155	456,733	419,130	772,880	902,767	743,196	344,323	275,190		
地盤変動マップ	PALSAR	205,164	251,184	203,658	132,024	101,248	225,467	283,596	216,126	110,608	79,002		
海水分布図	PALSAR	118,964	137,877	118,964	124,407	44,129	118,964	137,877	118,964	87,468	21,932		
土壌水分分布図	PALSAR	470	706	470	47	37	15,429	16,830	13,778	143	0		
積雪分布図	PALSAR	4,710	6,108	4,500	81	80	1,565	2,123	1,092	720	546		
アルベド・土地被覆図	PRISM	76,068	117,468	75,131	24,272	18,629	341,420	474,620	251,741	151,816	73,649		
	AVNIR-2	19,017	21,843	19,017	7,389	6,731	174,421	206,671	127,758	62,098	41,830		
植生分類図	PRISM	12,501	26,991	12,501	5,782	4,903							
	AVNIR-2	3,132	4,809	3,123	2,063	1,858							
AVNIR2-オルソ(Default)	AVNIR-2	276,678	328,824	276,322	135,724	121,553	79,431	93,194	79,431	639,062	73,266		
CAL/VAL							前回(4/9)の解析結果						
プロジェクト名	センサ	要求量(シーン) (伸張前)	要求量(シーン) (伸張後)	取得可能量(シーン) (伸張前)	取得量(シーン) (部分採用込み)	取得量(シーン) (完全採用)	要求量(シーン) (伸張前)	要求量(シーン) (伸張後)	取得可能量(シーン) (伸張前)	取得量(シーン) (部分採用込み)	取得量(シーン) (完全採用)		
PALSAR全陸域観測	PALSAR	76,479	89,609	76,479	106,451	72,389	76,479	89,609	76,479	72,625	67,582		
PALSARアンテナパターン	PALSAR	84	894	84	60	60	84	894	84	44	44		
PALSAR校正係数	PALSAR	972	13,434	972	3,256	684	972	13,434	972	526	495		
PRISM校正	PRISM	189	5,049	135	40	34	1,296	25,596	213	41	34		
AVNIR-2校正	AVNIR-2	153	2,133	135	88	88	648	11,016	135	88	83		
OPS(PRISM)	PRISM	96	1,896	96	51	50	504	8,604	159	43	64		
OPS(AVNIR-2)	AVNIR-2	71	1,000	71	56	55	320	4,692	75	64	42		
地盤変動マップ検証	PALSAR	180	2,340	180	70	58	180	2,340	180	40	31		
DEM(PALSAR)検証	PALSAR	5,832	28,392	5,797	2,742	2,616	5,832	28,392	5,797	1,590	1,445		
京都・世界森林マップ検証	PRISM	21	351	21	53	13	124	1,774	194	48	37		
	AVNIR-2	82	1,108	82	82	78	460	5,576	234	76	78		
	PALSAR	325	1,888	325	299	295	361	2,152	361	211	204		
土壌水分・積雪分布図検証	PRISM	9	279	9	24	6	72	1,422	54	19	12		
	AVNIR-2	110	1,039	110	78	182	616	6,170	221	93	94		
	PALSAR	441	3,837	429	190	166	441	3,837	429	176	166		
アルベド図検証	PRISM	624	1,884	583	124	117	3,228	11,328	1,507	230	207		
	AVNIR-2	1,566	3,054	733	148	148	9,126	21,630	4,214	780	759		
植生分類図検証	PRISM	45	945	44	28	29							
	AVNIR-2	21	405	21	21	21							



ALOS PALSAR

Simulation results (May 2002)

- ~ 290,000 scenes/year requested
- Current K&C success rate ~ 59%
- ScanSAR (Wetlands) success rate <5%
- Utilisation of only one DRTS (2nd DRTS cancelled) has severe impact on acquisition plan;
- 240 Mbps downlink major bottleneck;
- Conflicts with other users also significant;
- Revision of acquisition plan on-going;
- ALOS simulation software recently obtained at EORC, enabling more frequent simulation tests;
- Next ALOS simulation planned for July, 2002



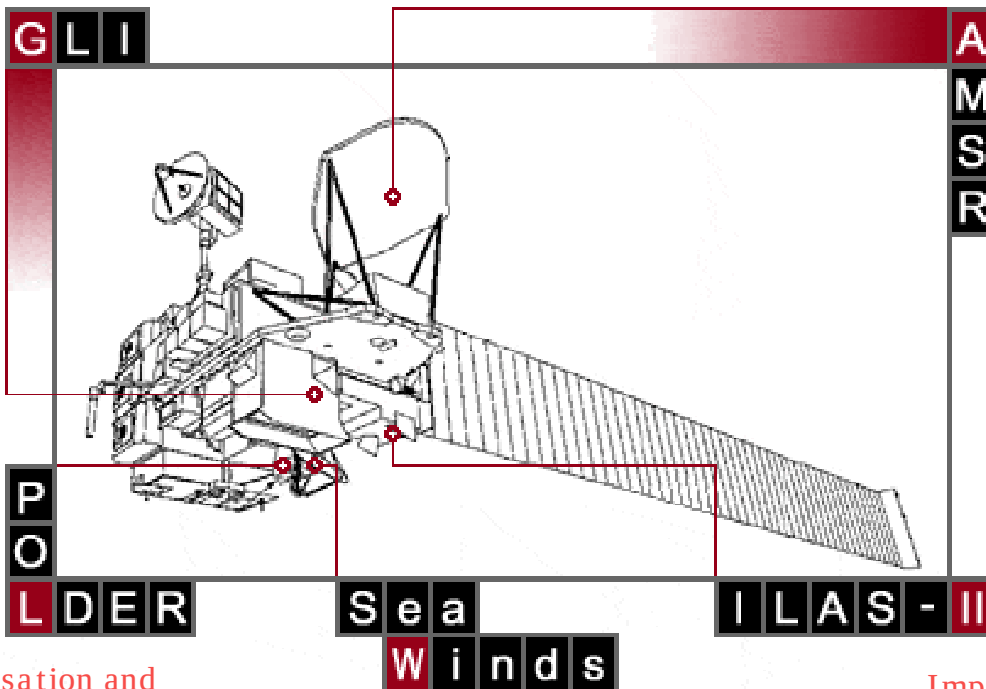
Kyoto & Carbon Initiative Data Acquisition Strategy

Plans and simulations for
ADEOS-II GLI

ADEOS-II - Launch November 2002

Global Imager

NASDA



Advanced
 Microwave
 Scanning
 Radiometer
 NASDA
 (AMSR-E on
 Aqua)

Polarisation and
 Directionality
 of the Earth's
 Reflectances
 CNES

Radar scatterometer
 NASA JPL

Improved Limb
 Atmospheric
 Spectrometer
 Environmental
 Agency

Global Imager - Spectral characteristics

VNIR

(1km resolution)			
ch1	380(10)	O	A C
ch2	400(10)	O	
ch3	412(10)	O	
ch4p	443(10)	O L A C	
ch5p	460(10)	O L A C	
ch6	490(10)	O	
ch7p	520(10)	O	A C
ch8p	545(10)	O	A C
ch9	565(10)	O L	
ch10	625(10)	O	
ch11	666(10)	O	
ch12	680(10)	O	
ch13	678(10)		L A C
ch14	710(10)	O	
ch15	710(10)		L A C
ch16	749(10)	O	
ch17	763(8)		L A
ch18	865(20)	O	
ch19	865(10)		L A C
(p:piecewise linear)			

(250m resolution)			
ch20	460(70)		L A C
ch21	545(50)		L A C
ch22	660(60)		L A C
ch23	825(110)		L A C
unit [nm]			

SWIR

(1km resolution)			
ch24	1050(20)		L A C
ch25	1135(70)		A
ch26	1240(20)		L A C
ch27	1380(40)		A
(250m resolution)			
ch28	1640(200)		L A C
ch29	2210(220)		L A C
unit [nm]			



APPLICATION CODE

O : OCEAN
L : LAND
A : ATMOSPHERE
C : CRYOSPHERE

MTIR

(1km resolution)			
ch30	3.715(0.33)	O	A C
ch31	6.700(0.5)		A
ch32	7.300(0.5)		A
ch33	7.500(0.5)		A
ch34	8.600(0.5)		O L A C
ch35	10.80(1.0)		O L A C
ch36	12.00(1.0)		O L A C
unit [μm]			

Cross tracking scan

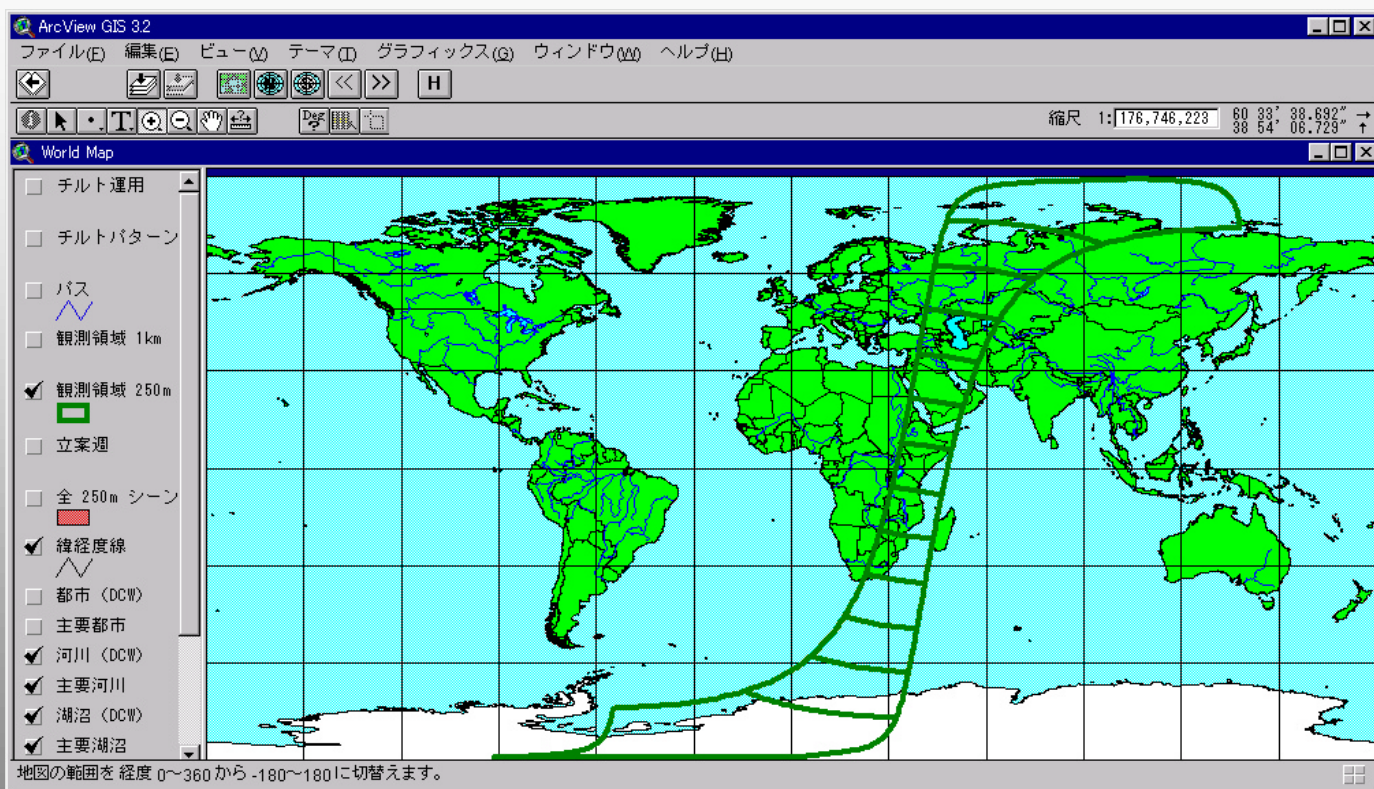
Altitude	:803 km
Inclination	:98.6 deg.
Swath width	:1600 km
Resolution	: 1 km
(subpoint)	: 250 m
Tilt angle	:20 deg.
Period	:101 min.
Recurrent Period	:4 days
Local time	:10:30AM
Data rate	:4.1Mbps

NASDA/GLI/GAIT

30 bands @ 1 km

6 bands @ 250 m

GLI Orbital Characteristics



57 passes/rec. cycle (4 days)

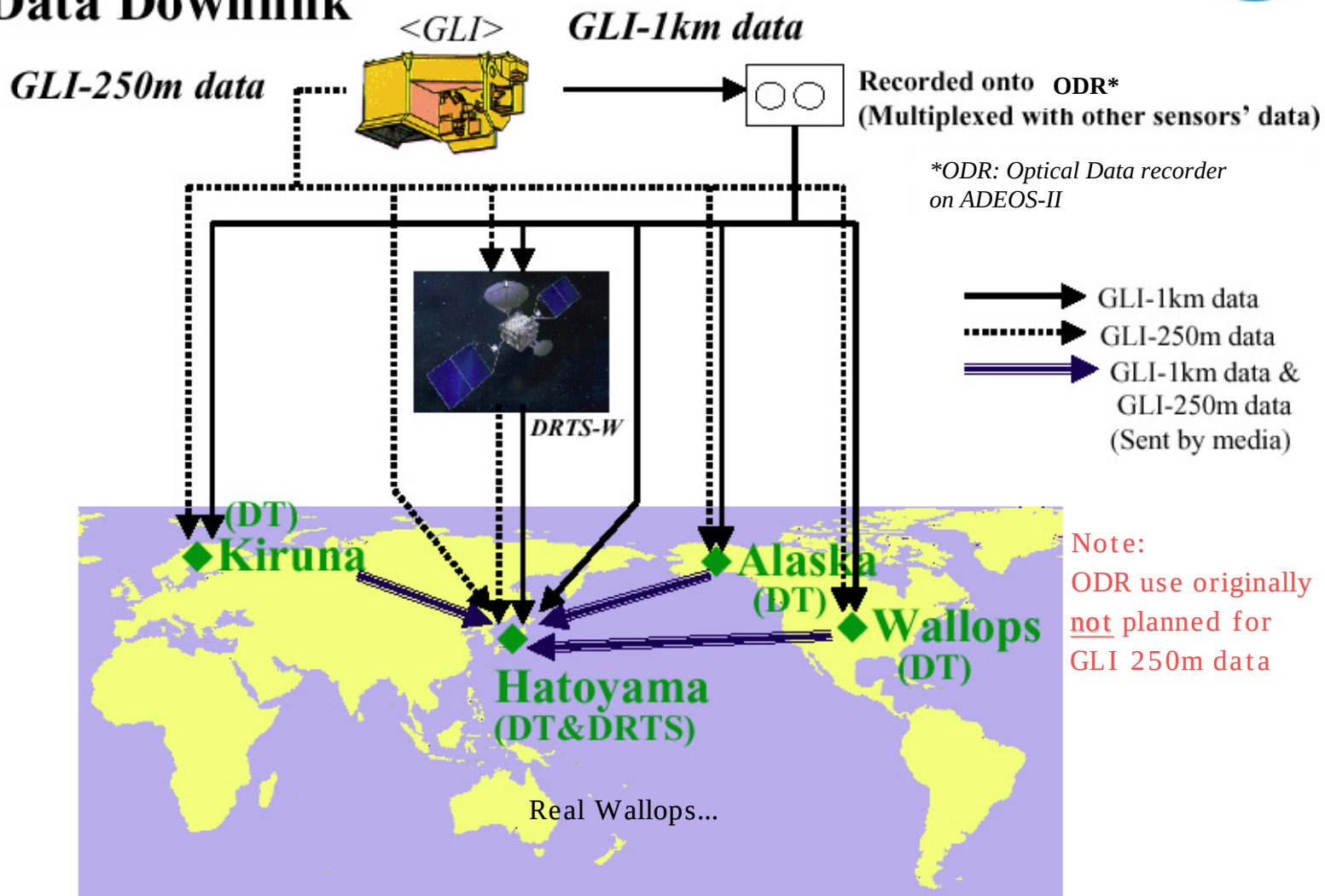
13 (descending) frames/pass

Total: 741 scenes for global coverage

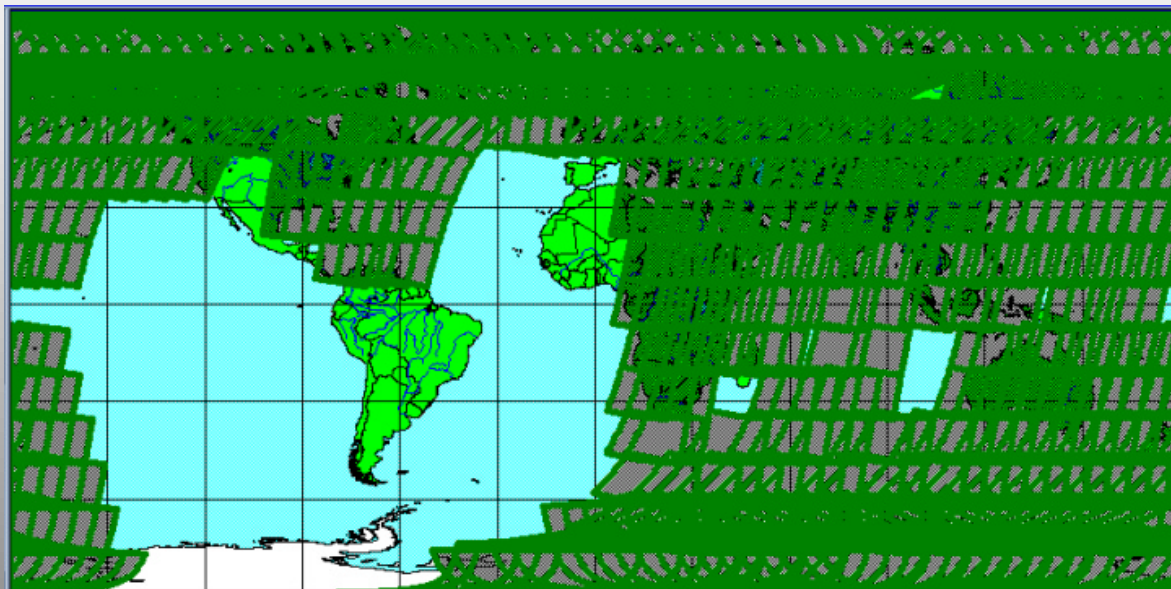
Land: ~330 scenes (~255 with reduced redundant overlap)

1. ADEOS-II Mission Operation

1.2 Data Downlink

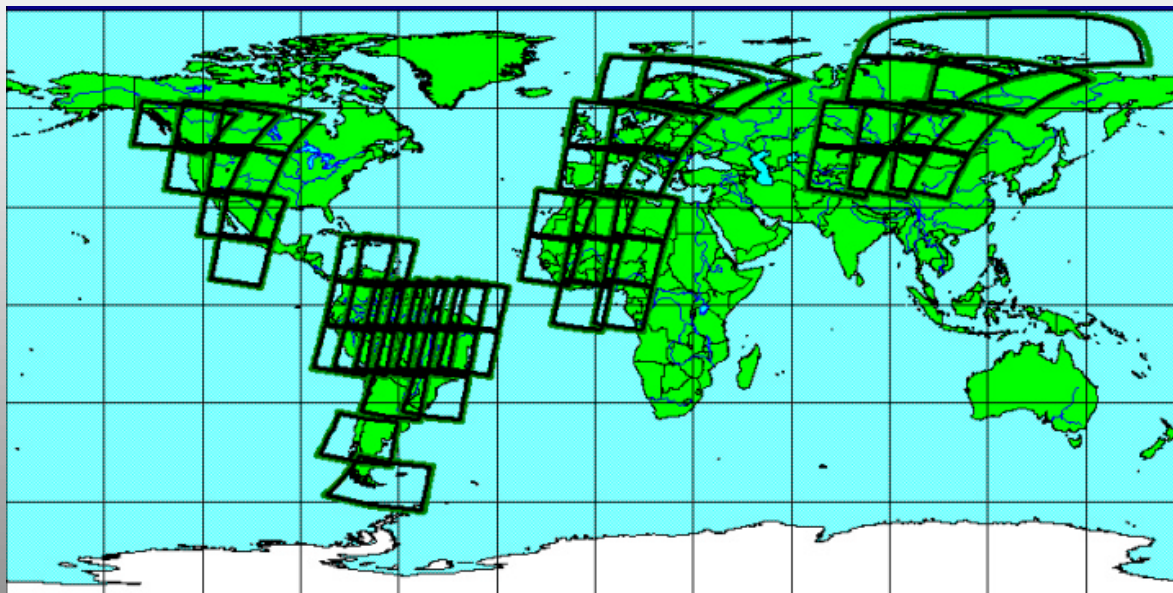


GLI regional coverage
using DRTS (E 90°) and direct down-link (DT) to the
4 main ground stations (EOC, ASF, KRNS & WFF)



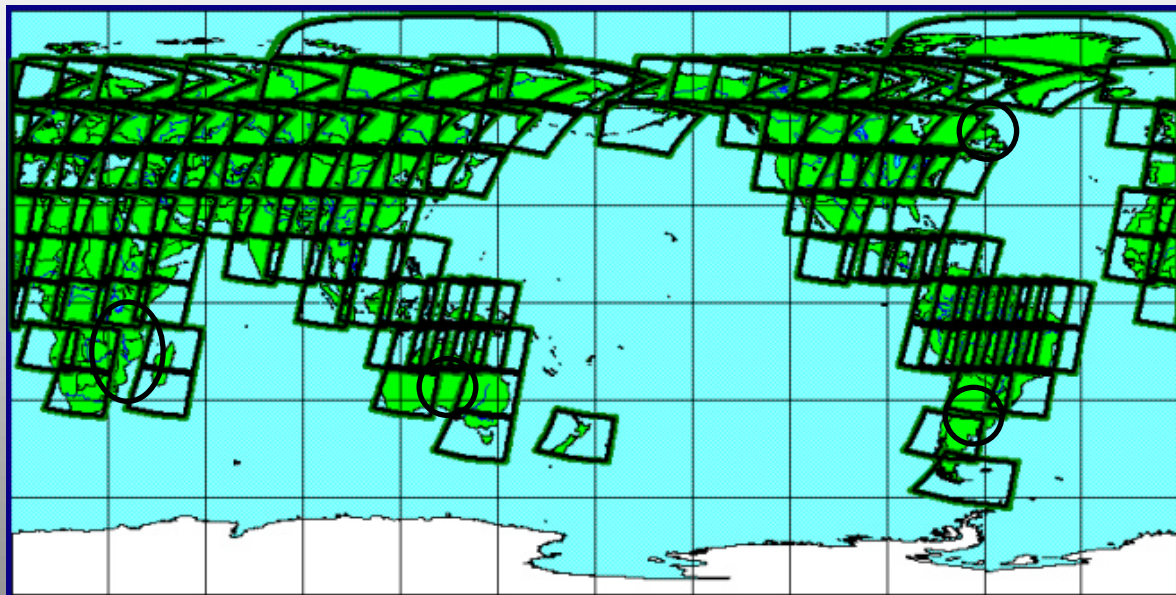
Insufficient coverage over South America, Western
USA, South Europe, West Africa & Central Siberia.

Kyoto & Carbon Initiative Observation plan for GLI



Areas approved to be acquired by use of the
Optical Data Recorder (ODR)

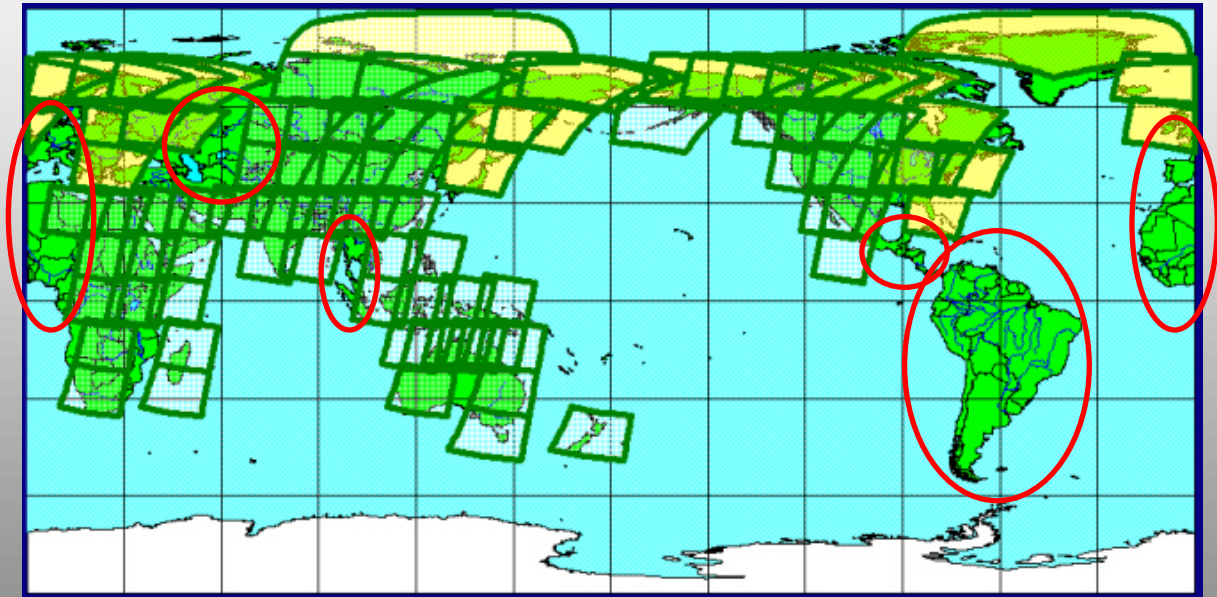
Kyoto & Carbon Initiative Observation plan for GLI



Areal coverage for preliminary
K&C observation plan (v.Feb-2002),
using DT, DRTS and ODR.

First simulation results (Feb-2002)

Simulation period: 2003/02/03 - 07/13 (40 cycles)



- Significant gaps remain in regions planned to be covered by the ODR
- Cause of problems under investigation
- Next simulation round - June 2002