Problems observed at the 9 K&C meeting. M. Shimada

1. Ibama : Distortion of geo-reference image: being checked (new version or old version of software?)

2. Cesbio:
   SCANSAR : far range brighter than near range in sigma-zero
   The products were generated in June 2006 (using the oldest version of sigma-sar. Current version may not see this problem)

   Incidence angle information
   Facter_m(). Only contains the incidence angle vs. line number of slant range, which is defined at the beginning of the scan.
   (updating of this information will be considered)

3. RSP number and mode:

Le toan could not acquire the data over her test sites. This is due to the facts that K&C data requests are not treaded as the first priority. Please let us know the RSP number and the PLSAR mode which are absolutely necessary for your data analysis.

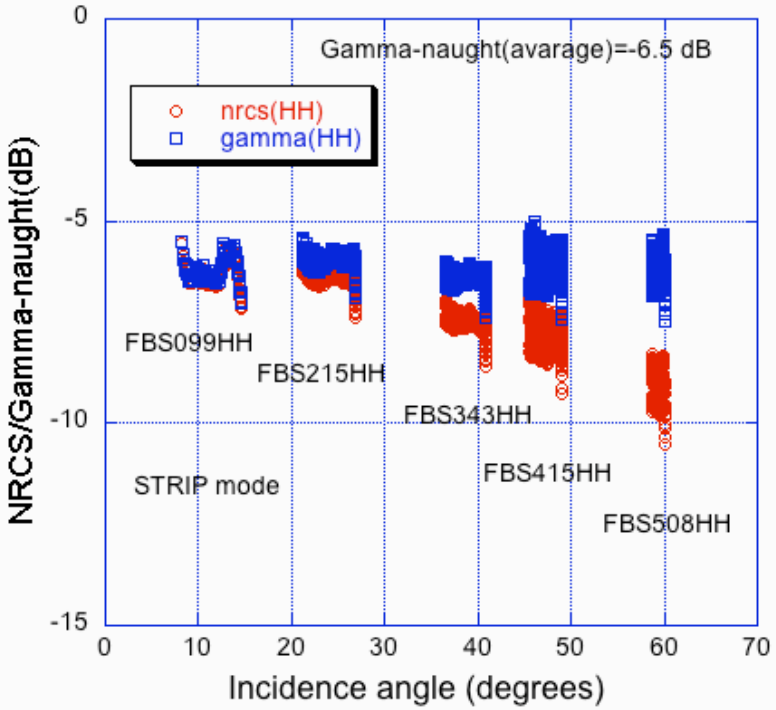
4. Possible Dividing the raw data in the path processing. (based on the request).

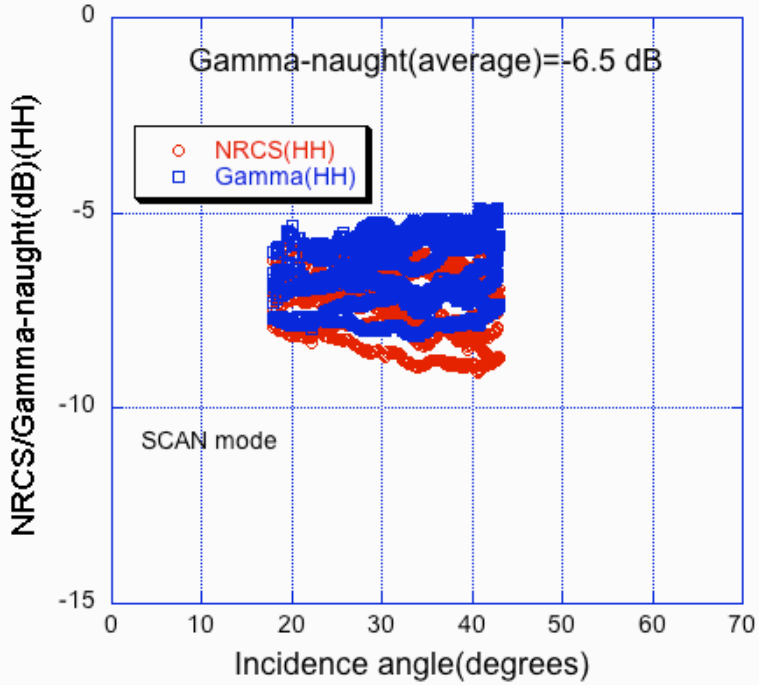
5. Location shift (10 pixel?) between SAR image and SIMulated.

To be evaluated. (Accuracy of the orbit (no -> because of the optical sensor accuracy), reading the fdfdd file, ????, fdfdd (doppler frequency, its rate, 2nd order data, as a function of azimuth time, possible non-inclusihn of this data)

5. Address of the google earth demo Today (Mukaida-sann)
please write down it again.

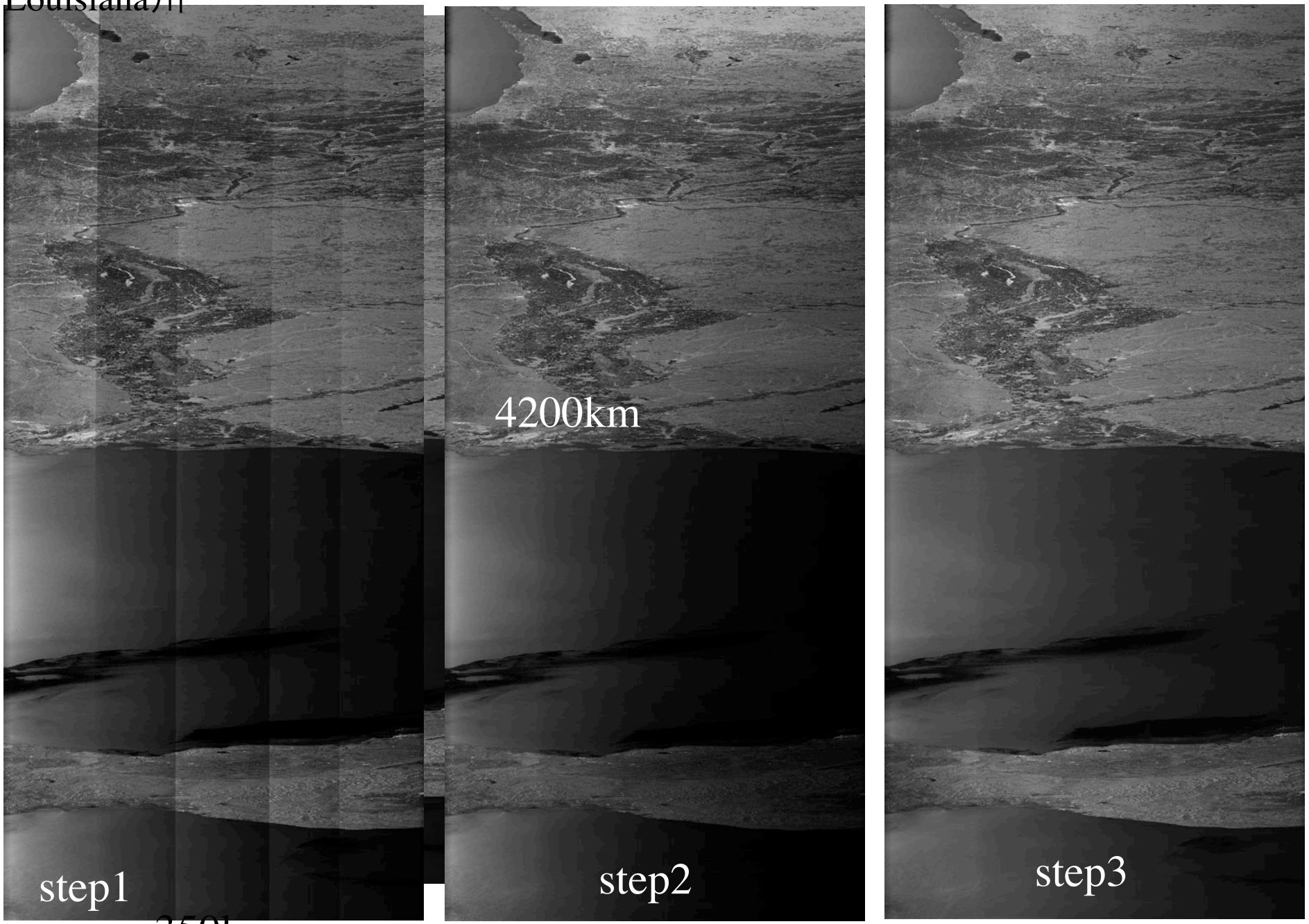
gamma-naught (sigma-zero/cos(incidence angle)) : independent of incidence angle and almost equal to -6.5 dB.



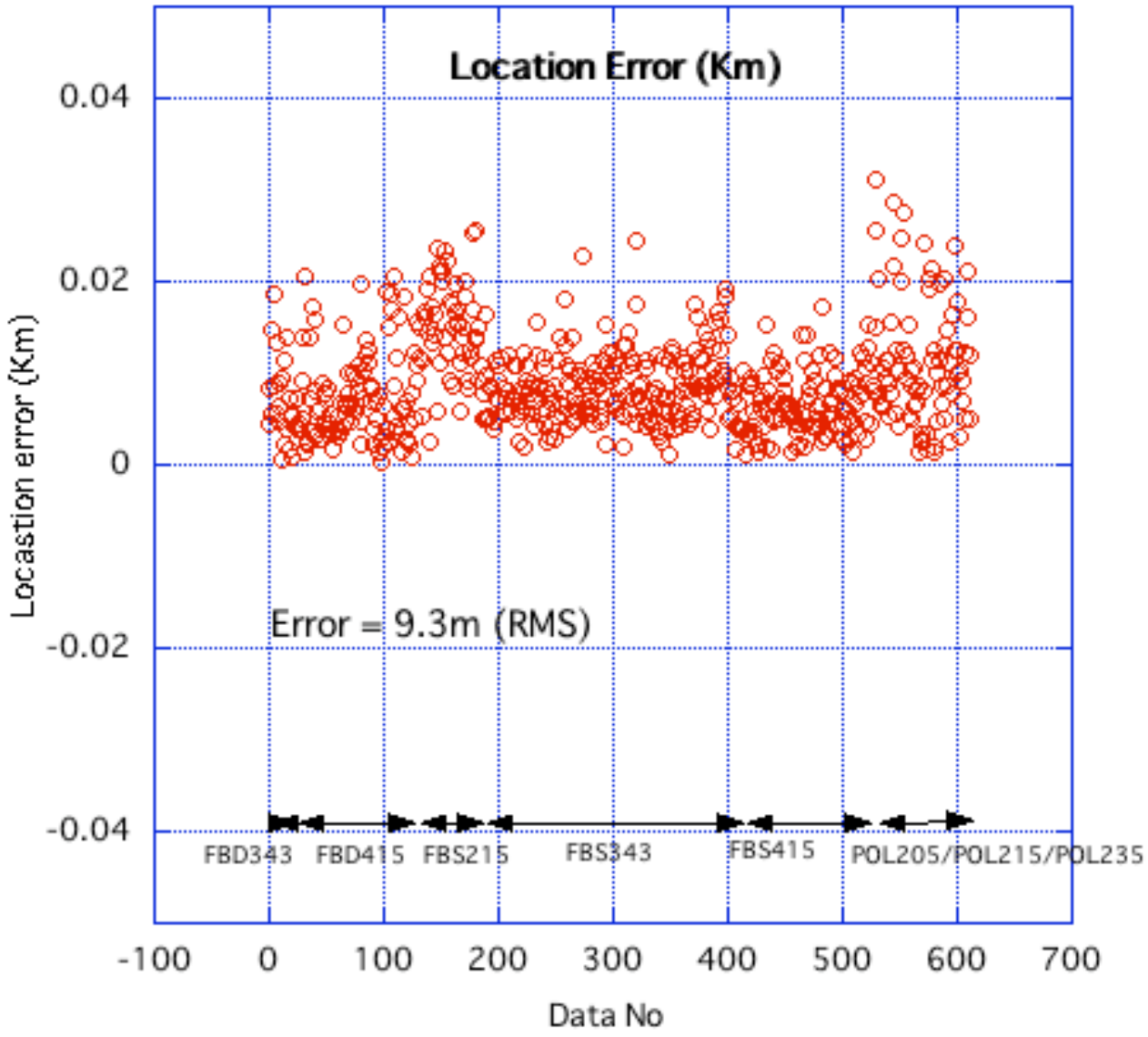


STRIP mode

SCANSAR mode


Louisiana州
4200km
step1
350km
step2
step3

Geolocation over GRS80



Connection of SCANs

Compare the overlapped area and make them connected.

$$g_i(t,T) = \frac{p_{i+1,n}(t,T)}{p_{i,f}(t,T)}$$

$$G_i(t,T) = \prod_{k=0}^{i-1} \langle g_k(t,T) \rangle$$

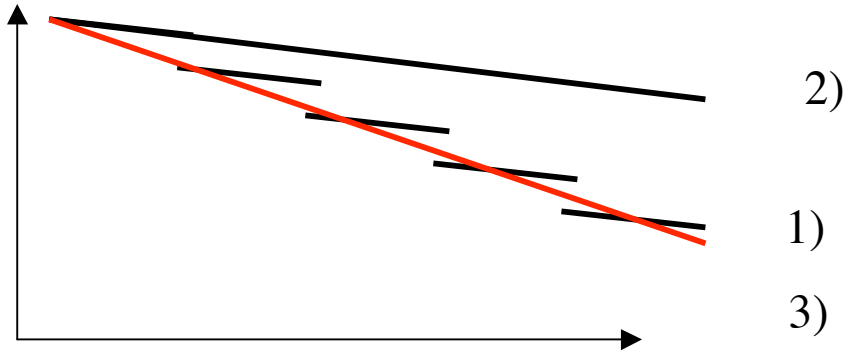
gi(t,T): Intensity ratio at the overlapped area.
Gi(t,T):accumulated power ratio at ith scan

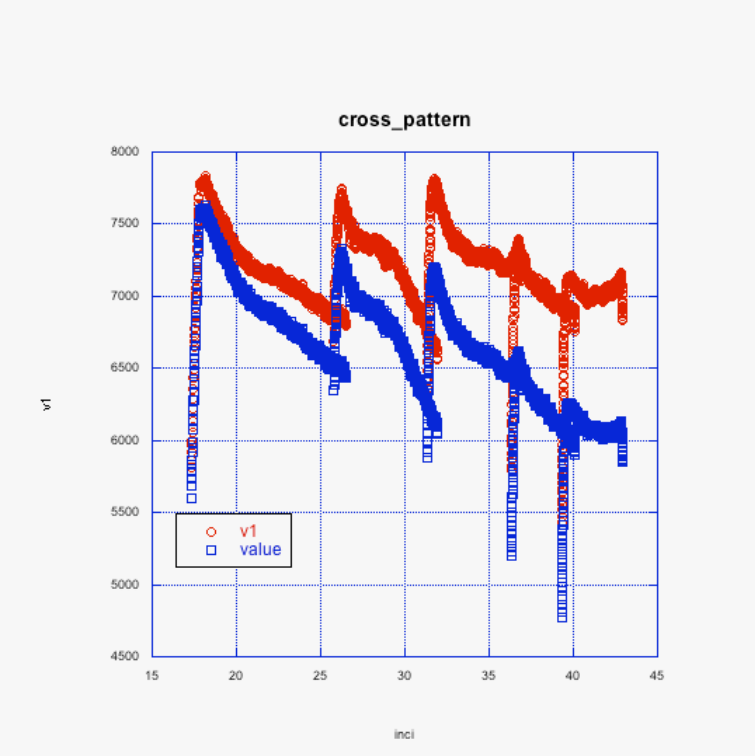
$$P_i = G_i(t,T)p_i$$

2) Correction of the overshoot

$$P_i' = \left\langle \frac{p_i}{P_i} \right\rangle P_i$$

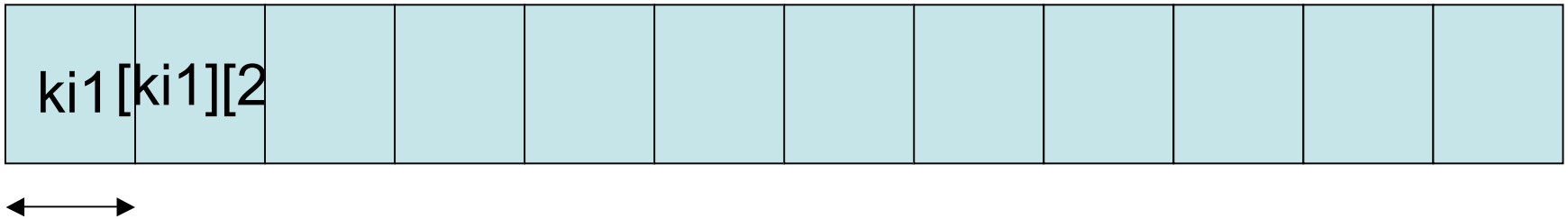
<>:Average over the range.
Assumption：Incidence angle dependence of averaged pi should be as same as the uncalibrated.
Thus, use the dependence after the destriping





Red : gamma-naught = constant
Blue : sigma-naught(Amazon)

Fdfdd file



9216 samples (every 5 seconds)-> f_d, f_{dd}, f_{ddd}, f_{dddd}, f_{ddddd}

Shift in azimuth =

$$\frac{\Delta f_D}{f_{DD}} v_g = \frac{40Hz}{500H/s} 6700m/s = 10.7\,pixel$$

Incidence angle ???

Contents of the distributed files

Image Product

Table. File Composition of Product Format

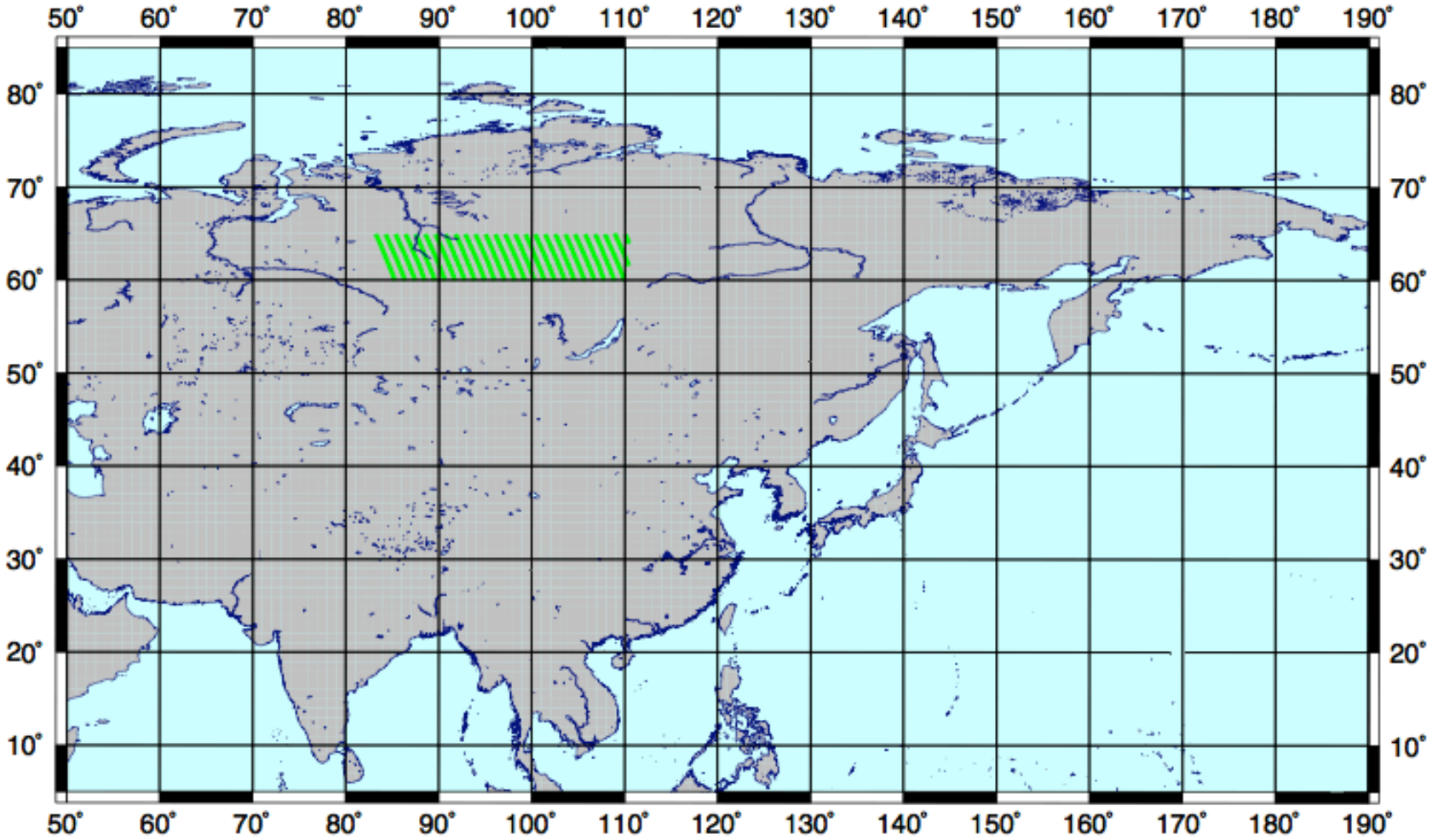
File name	Definition of File name	File type
Header File	see to 'Product ID'	ASCII
Image File	see to 'Image Summary'	16bit unsigned short
Processing Information file	facter_m.dat	ASCII
Latitude & Longitude Information	geo_factors or geo_factors_g_range or geo_factors_orthopath	Double binary (IEEE)
Orbit data File	dataf_m.dat	ASCII
L0 Leader File	LED-ALPSR	ASCII & Binary
Map projection Information	gparameter.dat	ASCII
Map projection Information	gparameter.dat_64	ASCII

The JAXA Processing Data Products are provided with the compression file.
The compression file name is as follow.

File name = XXNNNUUULLLmmmBBB.tar.Z

XX:	Cycle Number
NNN:	RSP Path Number
UUU:	Start Latitude
LLL:	End Latitude
mmm:	Sensor Operation Mode
BBB:	Processing Level Code

Maurizio and Chris request are the same



Request:FBD and FBS cycle 8, 12, 13, 20

Doppler frequency for SCANSAR:

```
a1      =       facter[218]             +       facter[714]*ki1 line number;
b1      =       facter[219]             +       facter[715]*ki1 line number;
c1      =       facter[220]             +       facter[716]*ki1 line number;
d1      =       facter[1334]    +       facter[1336]*ki1 line number;
e1      =       facter[1337]    +       facter[1339]*ki1 line number;
fd      =       a1 + b1*rs + c1*rs*rs +d1*rs*rs*rs +e1*rs*rs*rs*rs;   doppler freq.
```

```
fdd     =       0.0;  doppler chirp rate
for(i=0;i<=5;i++){
        fdd     +=      fdfdd[ki1 line number,13+i]*rs^i;
}
```

rs = slant range (km)

Strip mode doppler :

```
fd      =       fdfdd[ki1 line number,2]+fdfdd[ki1 line number, 3]*rs;
```

Ki1 line number is the burst number

Fdfdd

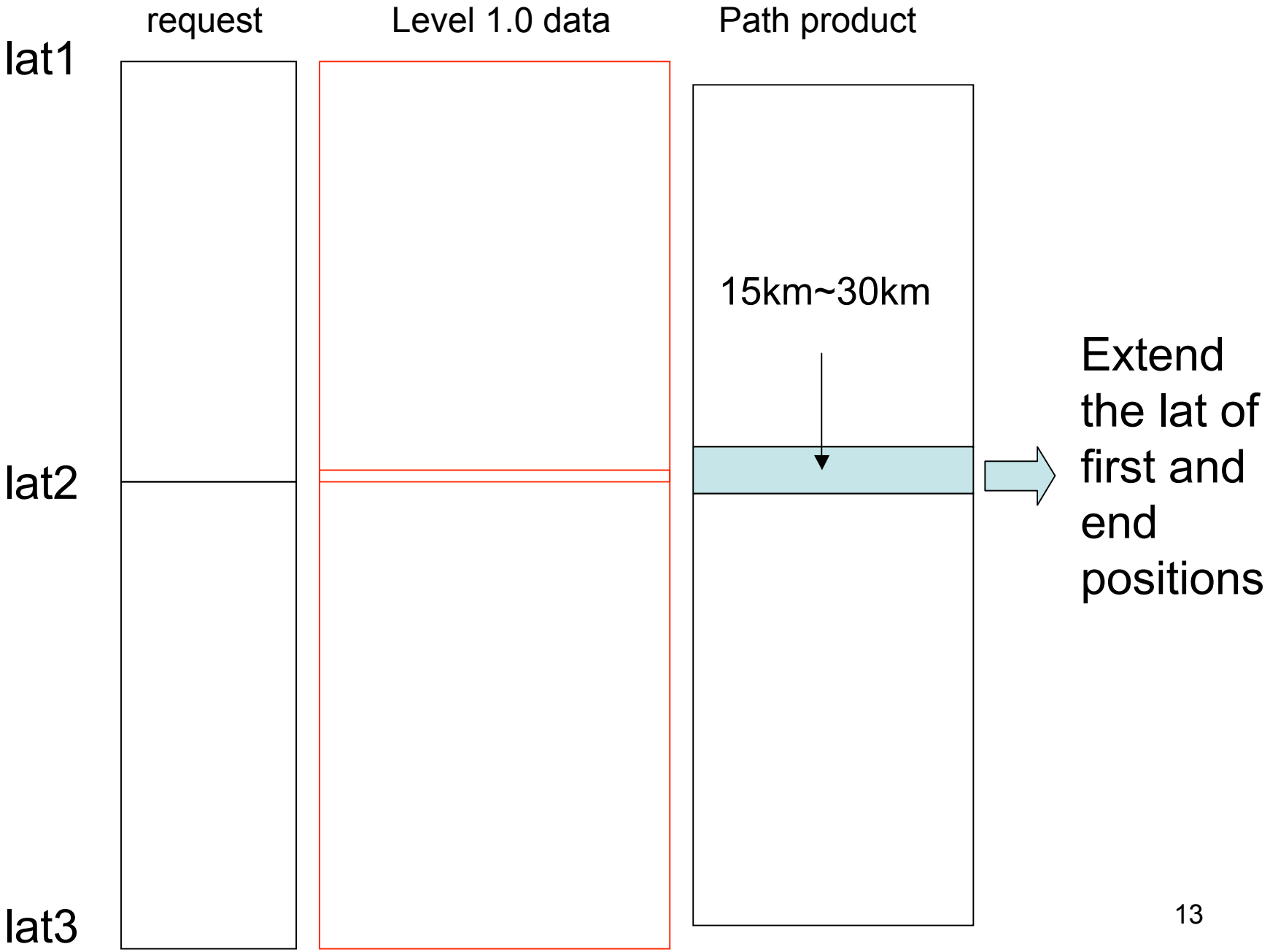
ki1
0 1 2 3 4 5 6 7 8 … 20

.
.
.

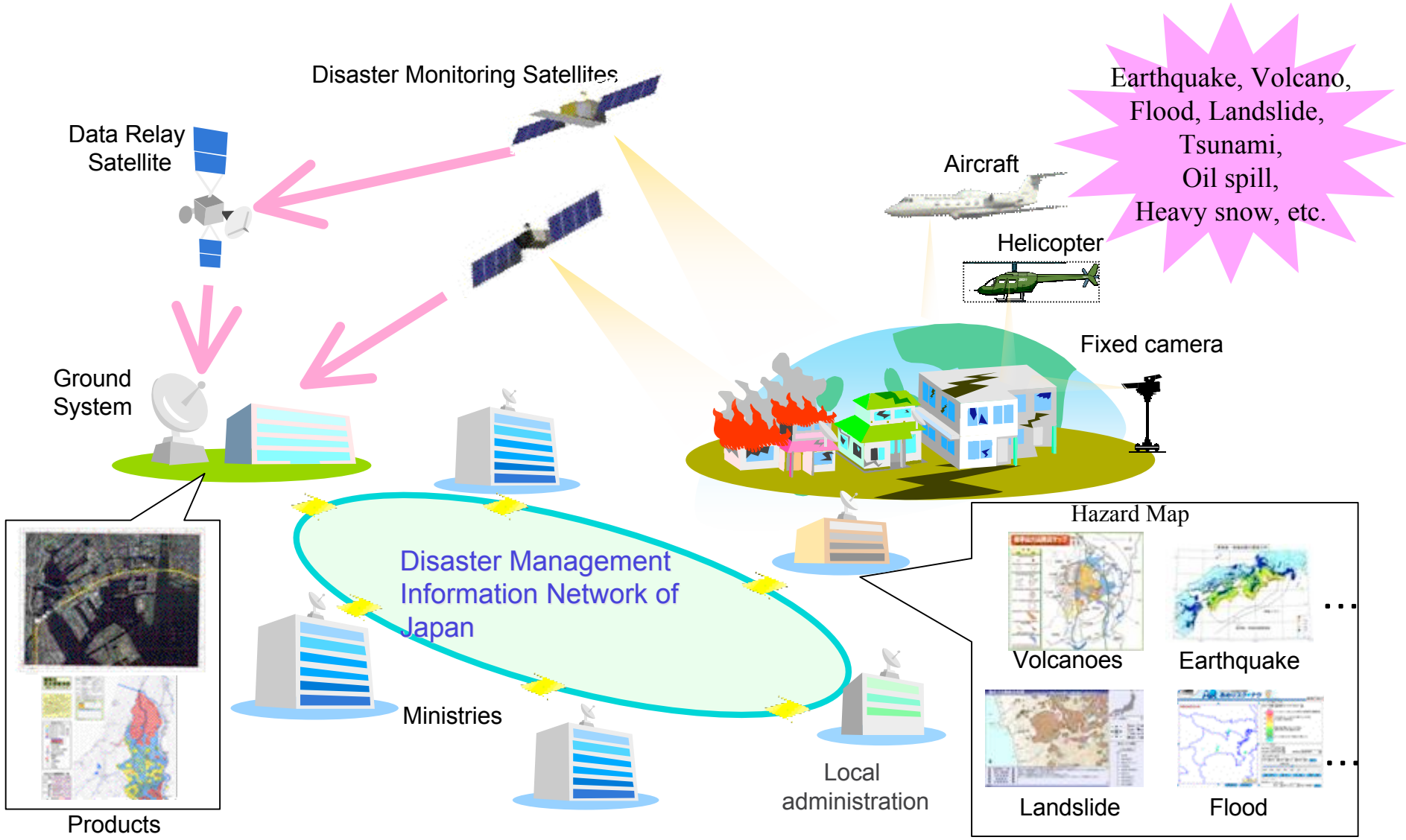
N=800 n is the number of bursts

For 42,000 lines
Ki <= f(along track j), j is the number of lines

Gapping of the processed data

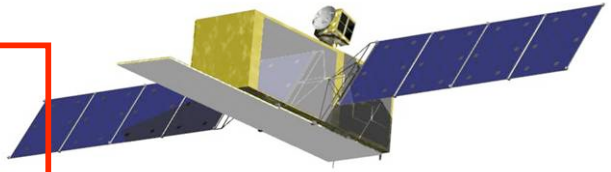


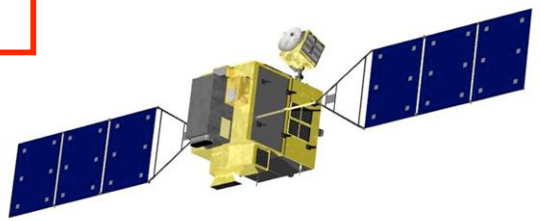
Disaster Monitoring System



Core System

- **Satellite**
  - SAR satellite
    - GSD: 3m (strip map), 3m*1m (spotlight
    - Swath: 50km
    - L-band
  - Optical satellite
    - GSD: 1m (Pan), 4m (Multi-spectral)
    - Swath: 50km
  - First satellite: launch target JFY2012





- **Ground System**
  - Quick response
    - Quick tasking (less than 1 hour)
    - Quick data processing and analysis (less than 1 hour for standard proc.)
  - Compatibile with the existing information systems of Japanese governmental users

ALOS follow-on

2 SARs + 2 OPSs

SAR satellite

Mission objectives
Quick observation and change detection monitoring (Japan)
Monitoring forest (not clearly described…)

High resolution is required. Good for Japan. But good for forest?

Now in Phase A

Questions for the PALSAR follow on

Main mission : Change detection for disaster, and forest

Which performance needs to be improved in comparison to PALSAR ?

Resolution (Range or Azimuth)	5m/5m (SLT 1 look)	
Imaging swath	70km	*
Noise equivalent sigma-zero	-23 dB~-34dB	
Ambiguities (RA and Az)	23 dB	
Polarizations (Full pol or Dual Pol.)	FBS,FBD,POL	
Data rate	240Mbps	<800Mbps

Selective logging by higher resolution

Questions for the PALSAR follow on

Main mission : Change detection

Which performance needs to be improved in comparison to PALSAR

SCANSAR

Resolution (Range or Azimuth)	5m/25(70)m	
Imaging swath	350km	
Noise equivalent sigma-zero	not measured	
Ambiguities (RA and Az)	23 dB	
Polarizations (Full pol or Dual Pol.)	HH/VV	HH+HV
Data rate	120/240Mbps	