

註) (Remote Sensing) ( ) ,  
가 .  
가 ,  
가 .

**Rectification :**

(rectification) Geocoding Georeferencing ,  
( ) 가  
가 , 가 가 .  
가 , 가 가 .

1) ( )

2)

가 ,  
가

가 .

(Data Fusion)

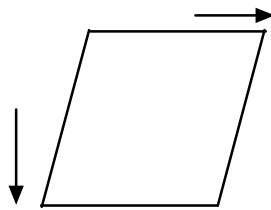
가 ,

가

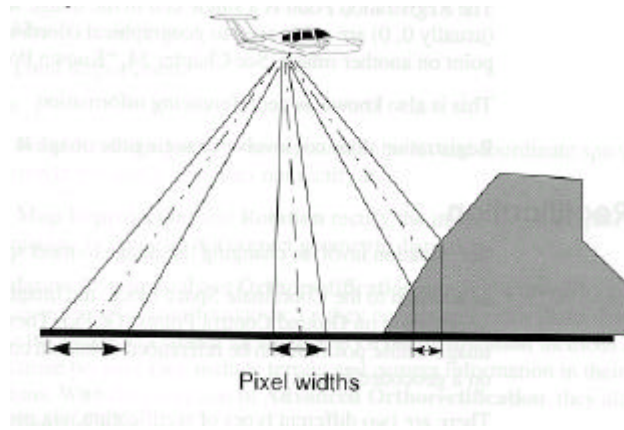
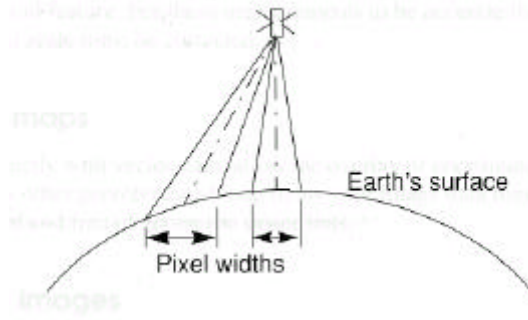
가

가

(skew)

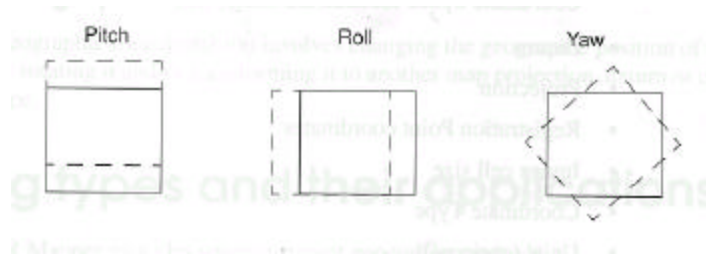


가

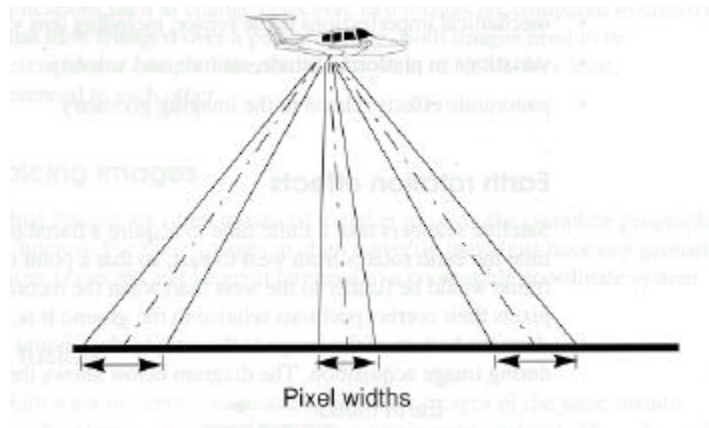


가

(Pitch), (yaw), (Roll),



가



- (Geometric correction)

- (Geographic correction)

가

- :

x,y

x,y

가

(i.points)

●

:

가

가

● **rectification :**

ulation, Polynominal, Ortho- rectification

, Triang-

( )

, Ortho- rectification

( )

가

가

. **Ortho - Rectification**

● **Rubber Sheeting**

가



# Imagery Overview

`imagery` - GRASS

## GRASS IMAGE PROCESSING

GRASS

"GRASS Tutorial : Image Processing"

### GRASS

( )  
가 ( , band)  
가

GRASS "LANDSAT multi-  
spectral scanner (MSS)" (i.tape.mss), "ANDSAT thematic mapper  
(TM)" (i.tape.tm), "SPOT"  
(i.tape.other)  
GRASS (support file) 가가 ,

GRASS가  
GRASS가  
x,y UTM 가 가  
imagery x,y 가  
GRASS

[g.help](#)

"Setting Up a GRASS

Database"

**CELL HEADERS ( )**

x, y  
, )

**CELL HEADER(**

.  
1  
가 1 가  
. GRASS  
가 ( 가  
..^ ^). (-)  
가 가  
가 ,

x, y

가

0.5  
0.5 가 ,  
0.5 가  
, [d.where](#)

가 100- 500 , 가 200- 800  
가 가

north: - 99.5  
south: - 500.5  
west: 199.5  
east: 800.5  
ns res: 1.0  
ew res: 1.0

**(REGION)**

**(MASK)**

가 ,  
가 GRASS (Region)가  
가 ,

(region)

(region) . GRASS

g.region

(mask)

(region)

가 가

가

r.mask

**(GROUPS)**

(group) 가

가

1,2,3

nhap.1, nhap.2, nhap.3

nhap

nhap

GRASS i.group

**(Registration)**

**(Rectification)**

가

(i.points)

(i.rectify)

target (i.target)

## (IMAGE CLASSIFICATION)

`(i.maxlik)`, `(i.cluster)`,  
`(i.maxlik)`.

`(i.group)`

가

`(i.maxlik)`

## RECTIFIED VS. UNRECTIFIED ANALYSIS

가  
`(i.points)`,  
`(i.rectify)`,  
`(i.rectify)`,  
`(i.maxlik)` . GRASS  
GRASS target  
target  
GRASS  
`i.rectify`  
,  
(resample) 가

GRASS Tutorial: Image Processing

`d.where`  
`g.region`  
`i.cluster`  
`i.group`  
`i.maxlik`

i.points  
i.rectify  
i.tape.other  
i.tape.mss  
i.tape.tm  
i.target  
r.mask

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18. Sept. 2000, under GPL

# i.group

**i.group** - (group)

(GRASS Image Processing Program)

i.group

i.group

가

i.points,

i.rectify, i.ortho.rectify

i.cluster, i.maxlik

i.group

가

GROUP: \_\_\_\_\_ (enter 'list' for a list of groups)

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE  
(OR ^C TO EXIT)

list

i.group .

1. Select a different group
2. Edit group title
3. Include new raster (cell) files in the group  
or remove raster (cell) files from the group
4. Assign colors to the group
5. Create a new subgroup within the group

가

RETURN to exit

**1. Select a different group :**

1 , 가 .

Please enter the group to be created/ modified

GROUP: \_ \_ \_ \_ \_ (enter 'list' for a list of groups)

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE  
(OR ^C TO EXIT)

list 가 ,

**2. Edit group title :**

2 ,

TITLE \_ \_ \_ \_ \_

Look ok? (y/n).

**3. Include new raster (cell) files in the group or remove raster (cell) files from the group :**

가

3 ,

LOCATION: location GROUP: spot MAPSET: demo

If you wish to delete a file from group [spot], remove the 'x' from in front of the file name.

```

,
x
.

x_ spot.1 in demo
x_ spot.2 in demo
x_ spot.3 in demo
```

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE

(OR <Ctrl-C> TO CANCEL)

,

LOCATION: location GROUP: spot MAPSET: demo

Please mark an 'x' by the files to be added in

```
가
x
group [spot]
```

MAPSET: demo

```
x_ composite1
x_ spotclass1
_ _ spotclass2
```

AFTER COMPLETING ALL ANSWERS, HIT TO CONTINUE

(OR Ctrl-C> TO CANCEL)

, 가

'x'

Group [spot] references the following raster files

```
-----
spot.1      in demo
spot.2      in demo
spot.3      in demo
composite1  in demo
spotclass1  in demo
-----
```

Look ok? (y/n)

y

.i.group

가

Group [spot] updated!

n , , ,  
x , , ,  
 , i.group

#### 4. Assign colors to the group :

4 , 가 .

Please indicate which files to use for red, green, and blue colors. You may leave any color out. You may specify more than one color per file. However, each color may only be specified once. For example, to get a full color image, specify r,g,b for 3 different files. To get a grey scale image, specify rgb for a single file.

(red), (green), (blue)

r,g,b

rgb

b\_ \_ spot.1  
g\_ \_ spot.2  
r\_ \_ spot.3  
\_ \_ \_ composite1  
\_ \_ \_ spotclass1

<<< r,g,b can only be specified once >>>

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE

(OR <Ctrl-C> TO CANCEL)

, (composite) (classified)  
 가

Look ok? (y/n)

**5.Create a new subgroup within the group:**

( )

.  
.

LOCATION: location

MAPSET: spot

GROUP: spot1

SUBGROUP: \_ \_ \_ \_ \_ ('list' will show available subgroups)

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE

(OR <Ctrl-C> TO CANCEL)

, 가 .

Mark an 'x' by the files to form subgroup [123]

x\_ spot.1  
x\_ spot.2  
x\_ spot.3  
\_ \_ composite1  
\_ \_ spotclass1

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE

(OR <Ctrl-C> TO CANCEL)

Subgroup [123] references the following raster (cell) files

[123]

\_ \_ \_ \_ \_  
spot.1 in demo  
spot.2 in demo  
spot.3 in demo  
\_ \_ \_ \_ \_

Look ok? (y/n)

n

,  
가 .

i.group

12

GRASS Tutorial: Image Processing

i.cluster

i.maxlik

i.points

i.rectify

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## i.points

**i.points** - (rectified) ,  
(matrix) ,  
i.rectify

(GRASS Image Processing Program)

### i.points

i.points ,

. i.points i.points  
i.rectify

(Rectification)  
(transformation) . x,y  
GRASS (planimetric)  
. , x,y  
(UTM SP ) ,

i.points ,  
, x,y ,  
. i.points ,  
(matrix) .

RMS (root mean square) . i.points  
' (i.rectify )' , 'RMS

i.points 가  
(Zoom) , target

target

i.points

. i.points

PLOT RASTER

i.target

가

RMS

. i.points

i.target

가

ERROR: Target information for group [spot] missing

Please run i.target for group [spot]

가

Use mouse now...

imagery filename (mag)	target filename (mag)
QUIT ZOOM PLOT RASTER ANALYZE	

가

Double click on raster map layer  
 to be plotted  
 Double click here to cancel

Mapset demo	
spotclass	spot.1
composite	spot.2
spot.3	

가

(i.rectify)

가

**(ZOOM)**

ZOOM . zoom  
가

Cancel	Box	Point	Select type of ZOOM
--------	-----	-------	---------------------

(Box)

가 가

**(Marking Points)**

가

가

가

Point 1 marked on the image at IMAGE X : 1023.77 IMAGE Y : - 164.41	
Enter CONTROL COORDINATES as east,north:	

(easting)

(northing)

( )

RETURN

**PLOT RASTER(CELL)**

, target

PLOT RASTER

Cancel	Indicate which side should be plotted
--------	---------------------------------------

가

Double click on Raster(CELL) map layer to be plotted  
 Double click here to cancel

Mapset demo	
tm.rectified	
tm.classified	
Mapset PERMANENT	
elevation	geology
slope	soils
aspect	
roades	
streams	
airfields	

가

input method - - >	keyboard	screen
--------------------	----------	--------

KEYBOARD

SCREEN

target

가

Point 5 marked on the IMAGE at IMAGE X : 1023.77 IMAGE Y : - 164.41  Control Point location Ease : 679132.57 North: 4351080.67	
use mouse now...	

target

( )

target

가

**(ANALYZE)**

(4 - 7)

RMS

ANALYZE

#	error			image		target	
	row	col	target	east	north	east	north
1	0.0	- 0.9	1.0	1048.5	- 144.8	679132.5	4351080.6
2	0.4	1.0	1.3	2153.1	- 567.2	684314.7	4399001.4
3	- 1.2	- 0.5	.6	1452.8	- 476.5	567841.4	3457682.8
4	1.1	0.5	1.3	1034.0	- 109.2	677573.8	4352626.4
5	- 2.7	14.0	14.2	1048.6	- 144.9	679132.6	4351080.7
overall rms error: 4.46							

가

DONE	PRINT FILE	Double click on point to be included/excluded
------	------------	---

RMS 'error' "row" "col"  
 1  
 - 0.9 , 0 (rows)  
 target RMS 'target'  
 target RMS  
 RMS  
 (meter) . RMS 가  
 'imge' 'east' 'north'  
 , target 'target'  
 'east' 'north'  
 ( )  
 RMS  
 i.points

**(QUIT)**

i.points

QUIT

```

,   가
   가   RMS
.
.
RMS   1   (   , pixel)
가
.
i.points   'none'(
,   head- up digitizer)
   가 digitcap
.
,   가
.

```

#### GRASS Tutorial: Image Processing

```

g.mapsets
i.group
i.rectify
i.target

```

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# i.target

i.target - GRASS  
target  
(GRASS Image Processing Program)

i.target

i.target i.rectify  
(target) GRASS  
. i.rectify

. i.target  
i.target i.points i.rectify  
target

가 target

Please select the target LOCATION and MAPSET for group

CURRENT LOCATION: location\_\_\_\_\_  
CURRENT MAPSET: demo\_\_\_\_\_

TARGET LOCATION:\_\_\_\_\_  
TARGET MAPSET:\_\_\_\_\_

(Enter list for a list of location names or mapsets within a location)

AFTER COMPLETING ALL ANSWERS, HIT <ESC> TO CONTINUE  
(OR <Ctrl- C> TO CANCEL)

GRASS

GRASS Tutorial: Image Processing

i.group  
i.points  
i.rectify

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# i.rectify

---

**i.rectify** - i.points

(GRASS Image Processing Program)

i.rectify

i.rectify i.points

(rectification)

i.rectify x,y

, i.points

target GRASS

Please select the file(s) to rectify by naming an output file

spot.1 in demo	.....
spot.2 in demo	.....
spot.3 in demo	.....
spotclass in demo	spotrectify..
spotreject in demo	.....

(Enter list by any name to get a list of existing rast files)

AFTER COMPLETING ALL ANSWERS, HIT **TO CONTINUE**  
(OR **TO CANCEL**)

가

Please select one of the following options

1. Use the current region in the target location  
target
2. Determine the smallest region which covers the image

i.rectify

, target  
, 1 , target

i.rectify

(nearest neighbor resampling)

i.rectify

(linear affine transformation)

:

$$x' = ax + by + c$$

$$y' = Ax + Bt + C$$

a,b,c,A,B,C

(scaling), (translation), (rotation)

(rubber - sheeting) 2 DEM

(ortho- rectification) (1)

, (2)

DEM 가

[i.ortho.photo](#)

, 2

3

[i.rectify2](#)

i.rectify

E- mail

target

GRASS Tutorial: Image Processing

[i.group](#)

[i.points](#)

[i.rectify2 i.target](#)

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