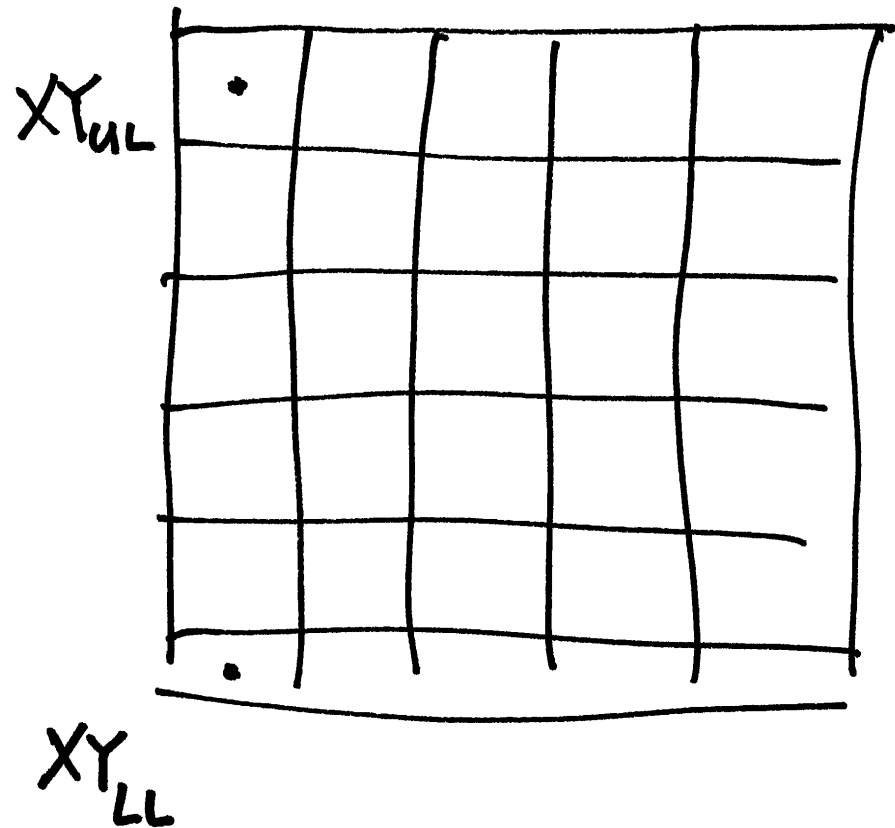


flow chart for Rectified Image

18-1

1. projection model G2I
2. specify extent, location, orientation
3. specify sampling interval
GSD ground sample distance
 dx, dy usually $dx = dy$
4. make an empty target (output) image file with correct # of rows + columns



1000 meters extent

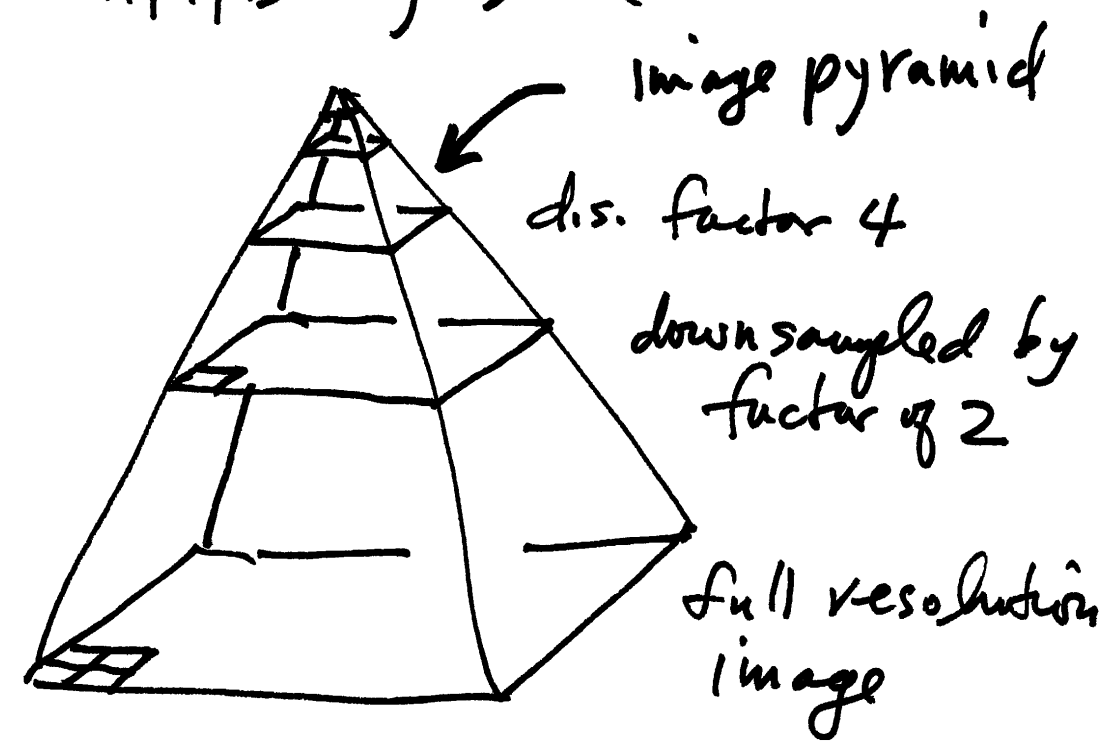
@ 0.5m GSD

⇒ 2000 pixels

#pixels × GSD = extent

- 5. proceed systematically through the target (output) image
6. @ each pixel of target image, project into source (input) image

- 7. interpolate (resample) intensities R, G, B by some interp method NN, BL, BC
- 8. store interpolated RGB into the target (output) image
- 9. next point



```
iimg1 = imread('photo1.jpg');  
iimg2 = imread('photo2.jpg');  
⋮
```

```
for i = 1: number_of_rows
```

```
    for j = 1: number_of_columns
```

$$X = X_{UL} + (j-1) \times GSD$$

$$Y = Y_{UL} - (i-1) \times GSD$$

Z = fixed or interpolate Z from DEM
(simple) (orthorectification)

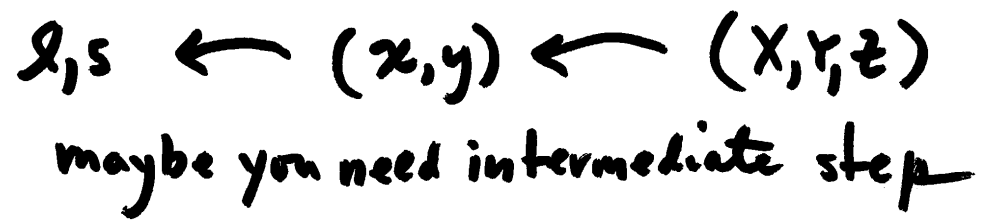
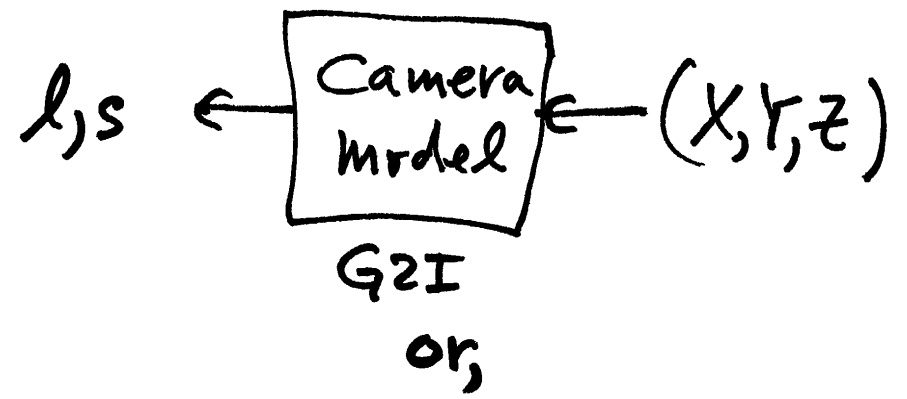
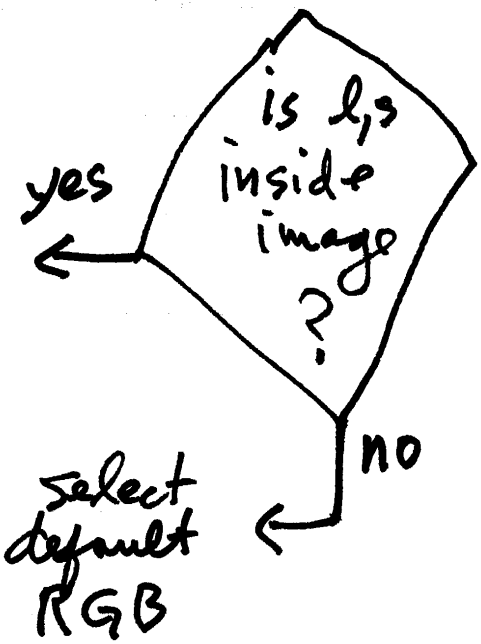
18-4

Matlab-template
for rectification

$$l' = \frac{l}{2^p}$$

$$s' = \frac{s}{2^p}$$

p: pyr. lev.



with l', s' interpolate R, G, B NN, BL, BC

- $oimg(i,j,1) = R$
- $oimg(i,j,2) = G$
- $oimg(i,j,3) = B$

} store results of
interp. in
output image at
row i, col j

end
end

↑
range 0 → 255

imwrite (oimg, 'rect-photo.jpg')

18-6

==

import rectified image into ArcGIS

overlay vectors roads
rivers

bldg. footprints

imagery + vectors should align