



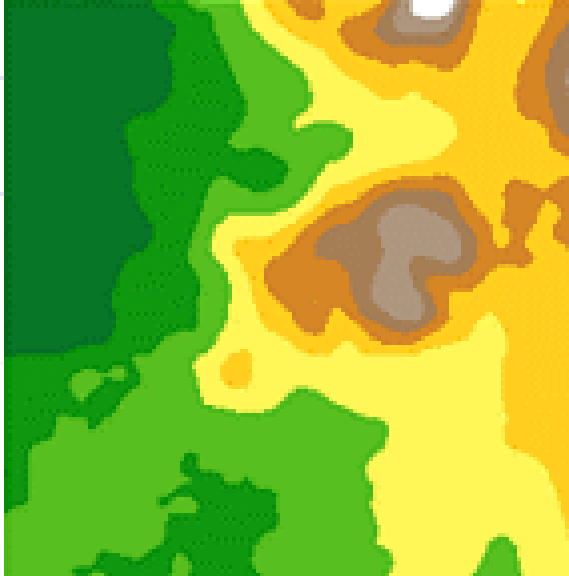
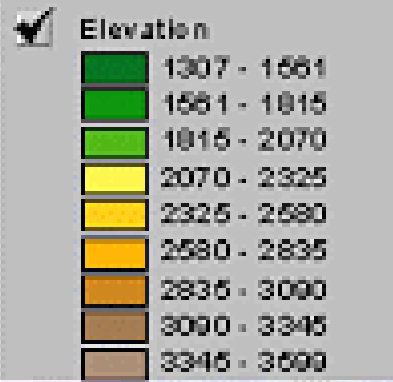
# *Raster Data Model*

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1654	1606	1555	1546	1596
1686	1658	1597	1557	1575
1594	1618	1621	1648	1641
1562	1598	1586	1547	1
1473	1422	1430	1459	1



*A grid defines geographic space as a matrix of identically-sized square cells. Each cell holds a numeric value that measures a geographic attribute (like elevation) for that unit of space.*

Source: <http://www.ce.utexas.edu/prof/maidment/class.html>



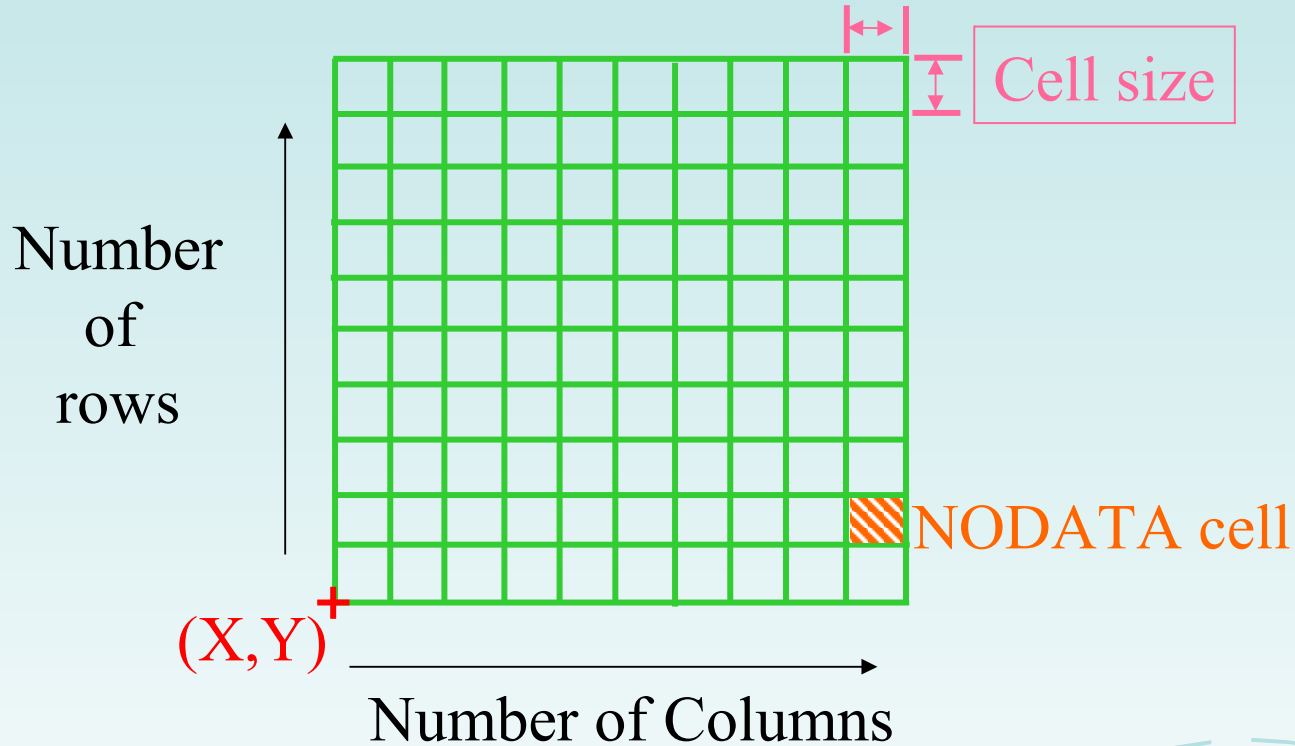
# *Grid data structure*

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- ✚ Grid size is defined by extent, spacing and no data value information
  - ✚ Number of rows, number of column
  - ✚ Cell sizes (X and Y)
  - ✚ Top, left , bottom and right coordinates



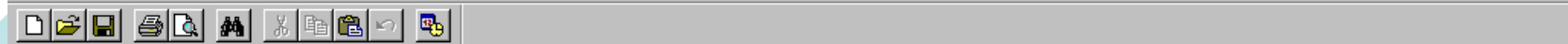
# Definition of a Grid





ascii1995.asc - WordPad

File Edit View Insert Format Help



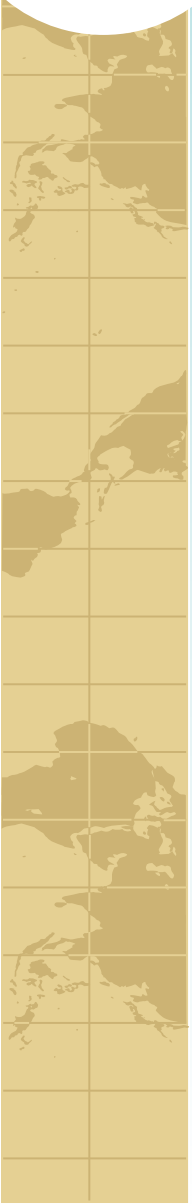
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ncols 335
nrows 159
xllcorner -161925.000000
yllcorner -6372225.000000
cellsize 4762.5
nodata_value -9999.0
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For Help, press F1

Windows taskbar showing Start button, taskbar buttons for 3.Raster Data..., 2.GISdatamo..., Spatial.ppt, 04\_datastora..., 03\_dataforma..., and ascii1995..., along with system tray icons and the time 10:51 AM.

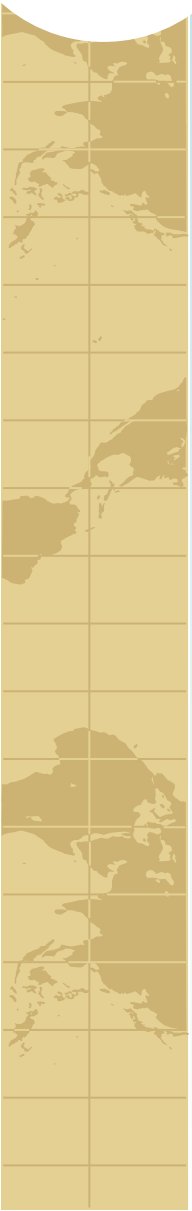


# *Somewhere on earth*





# *Raster grid is placed*





# *Reality >>> Raster value*

- The average EMR is measured within each grid
- Depending on the average intensity of the EMR a numeric value is assigned for each grid





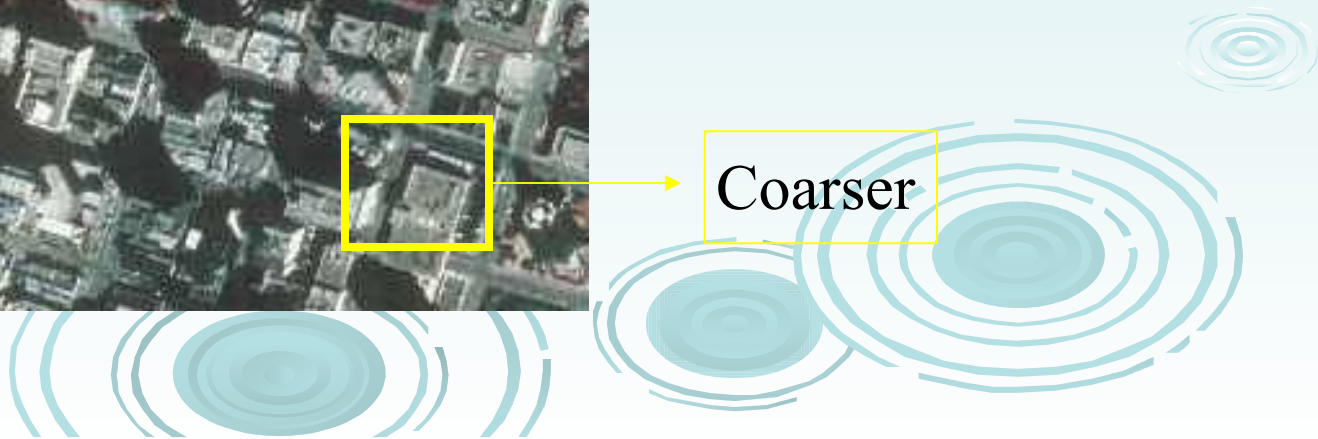


# *Spatial resolution*



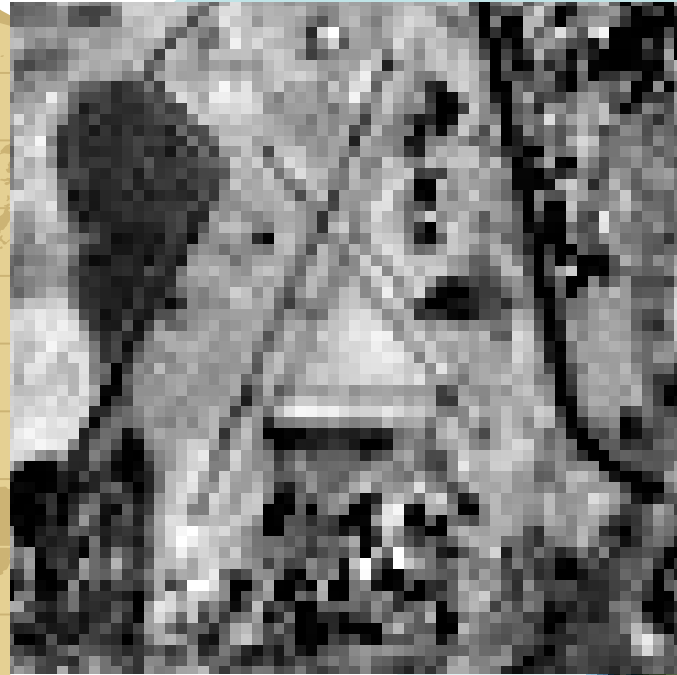
finer

Coarser





# *Spatial Resolution Examples*



**60 meters**



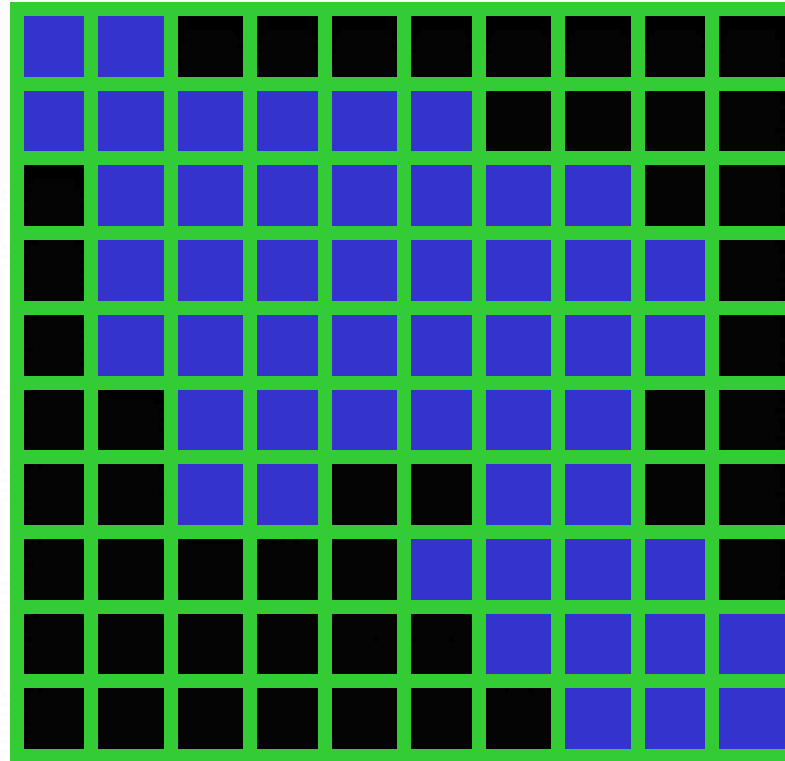
**30 meters**



**15 meters**

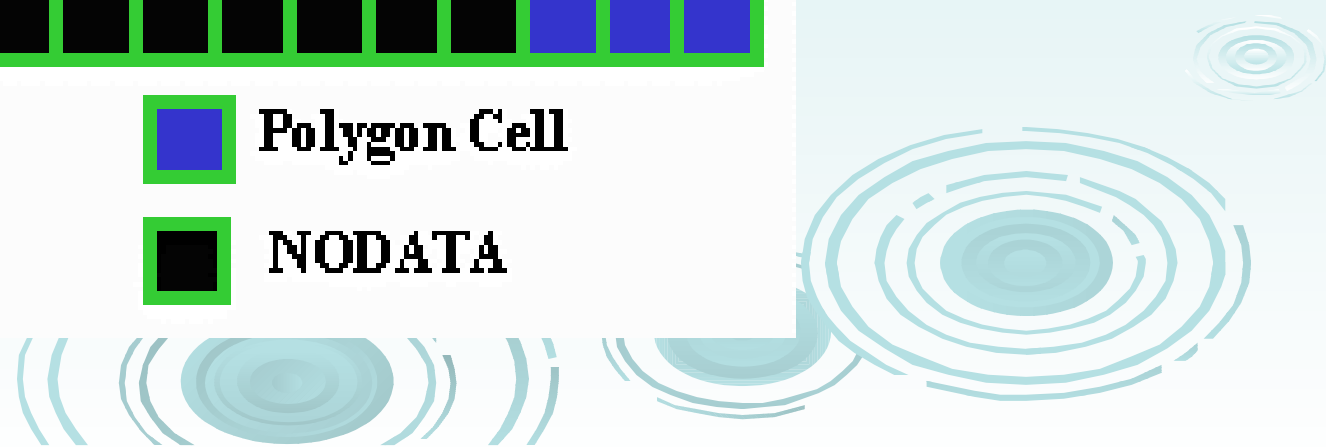
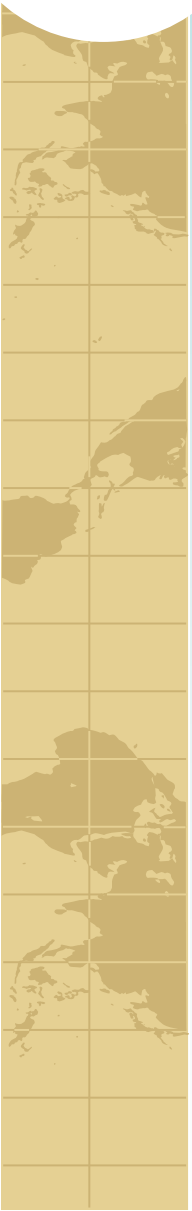


# *NODATA Cells*



 Polygon Cell

 NODATA





# *Raster Data Formats*

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## ✦ TIFF – GeoTIFF

- ✦ Tagged Image File Format

## ✦ GIF

- ✦ Graphic Interchange Format

## ✦ BMP

- ✦ BitMap format

## ✦ JPEG

- ✦ Joint Photographic Experts Group





# *Other Formats*

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- ✦ ArcInfo GRID
- ✦ ERDAS Imagine
- ✦ ASCII
- ✦ Binary format
  - ✦ Band sequential
  - ✦ Band Interleaved by Line
  - ✦ Band Interleaved by Pixel



