

CEIE 410/510: GIS in Engineering, Fall 2009

Mohan Venigalla

RASTER 2



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Raster 2

Raster

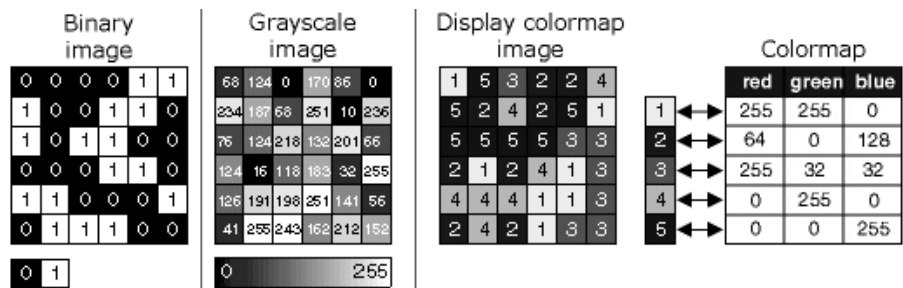


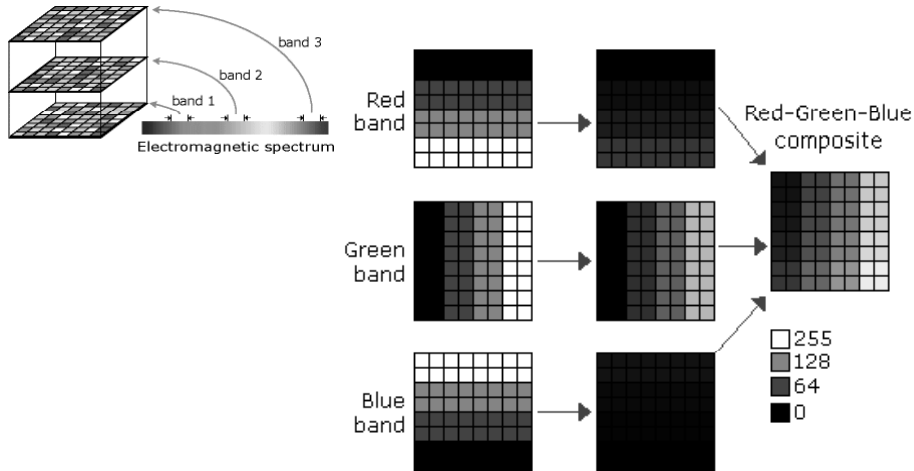
Figure Courtesy: ESRI.com, ArcGIS Desktop 9.3



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Raster

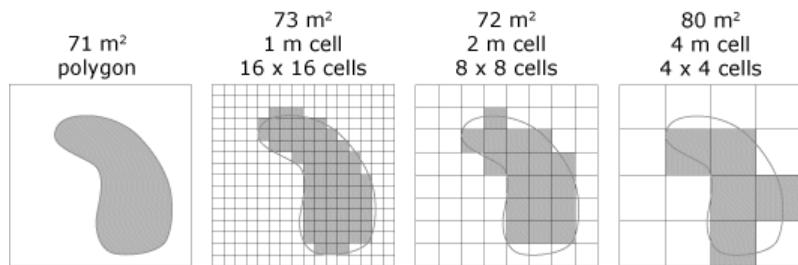
Purpose of Bands



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Raster

Cell Size



- Smaller cell size
- Higher resolution
- Higher feature spatial accuracy
- Slower display
- Slower processing
- Larger file size

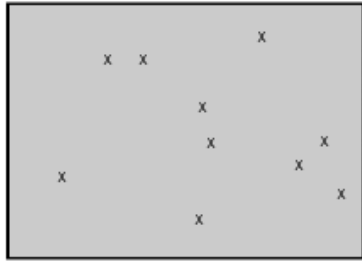
- Larger cell size
- Lower resolution
- Lower feature spatial accuracy
- Faster display
- Faster processing
- Smaller file size



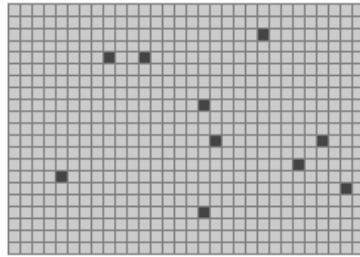
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Raster 2

Points



Point features



Raster point features



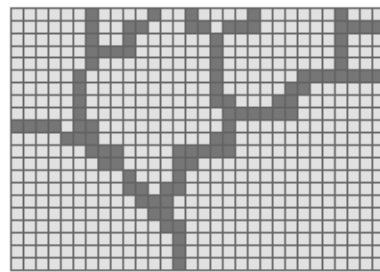
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Raster 2

Lines



Line features



Raster line features



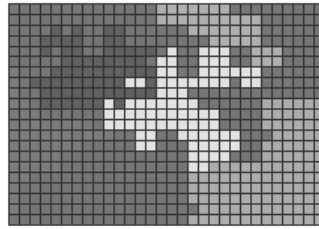
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Raster 2

Raster - Polygons

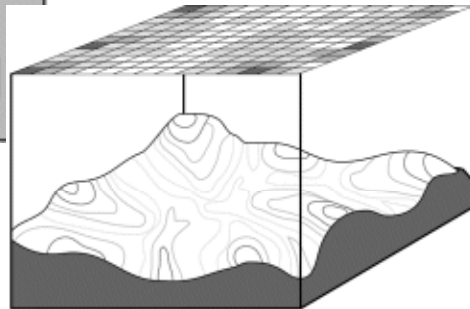


Polygon features








Raster polygon features

Discrete vs. Continuous



Zones and Regions

2	1	4	4	4	1
2	2	1	5	5	1
2	2	1	5	5	1
1	2	4	1	2	1
3	3	3	1	2	1
1	1	3	4	4	4

-  Zone with value 1
-  Zone with value 2
-  Zone with value 3
-  Zone with value 4
-  Zone with value 5








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Raster Dataset

	4	4	3	3	3
4	4	4	4	1	1
4	3	3	1	1	1
4	3	3	1	1	1
4	3	3	2	2	1
4	4	2	2	2	

-      NoData

OID	VALUE	COUNT	TYPE	AREA	CODE
0	1	9	Forest land	8100	FL010
1	2	5	Wetland	4500	WL001
2	3	9	Crop land	8100	CL301
3	4	11	Urban	9900	UL040



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Raster 2

Raster Attribute Tables

County_1990						Catalog
OBJECTID	Shape	Raster	Name	Shape_Length	Shape_Area	
1	1	1	Soil.tif	51.09	28.65	
2	2	2	Land.tif	51.14	28.66	
3	3	3	Slope.tif	51.12	28.65	

Slope.tif.vat.dbf				Raster Attribute Tables	
OID	VALUE	COUNT	Class		
0	1	522	1 degree		
1	2	556	2 degrees		
...		

Land.tif.vat.dbf				Raster Attribute Tables	
OID	VALUE	COUNT	Class		
0	1	804	Water		
1	2	951	Forest		
...		

Soil.tif.vat.dbf						Raster Attribute Tables	
OID	VALUE	COUNT	Class	Suitability	Erosion		
0	1	253	Silt	Excellent	4		
1	2	196	Clay	Good	2		
...		



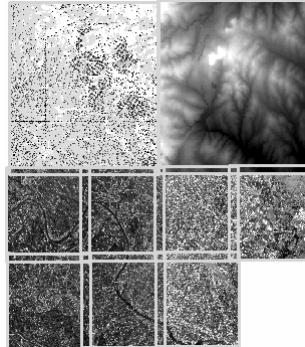
Raster Dataset

- One or more bands
- Each band is an array of pixels
- Each pixel has a value



Raster Catalog

- A collection of raster datasets defined in a table format (in single layer)
- Can be very large with 1000s of images
- Adjacent tiles



Raster Analysis

1	1	2	2	2	+	3	3	1	2	2	=	4	4	3	4	4
3	1	3	4	4		2	3	1	1	1		5	4	4	5	5
3	3	2	4	4		2	4	3	3	1		5	7	5	7	5
3	2	2	1	4		2	2	3	4	4		5	4	5	5	8
3	2	2	1	1		1	2	1	1	4		4	4	3	2	5

InRaster1 + InRaster2 = OutRaster

Water Based Analysis



Surface Analysis

- Aspects
- Contours
- Cut/Fill
- Hillside
- Slope
- Viewshed