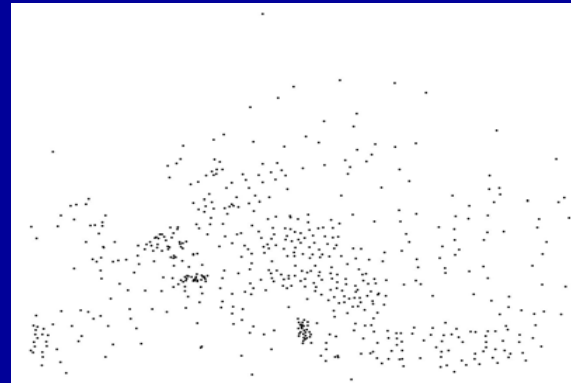


Two GIS data categories – “Vector” and “raster”

VECTOR

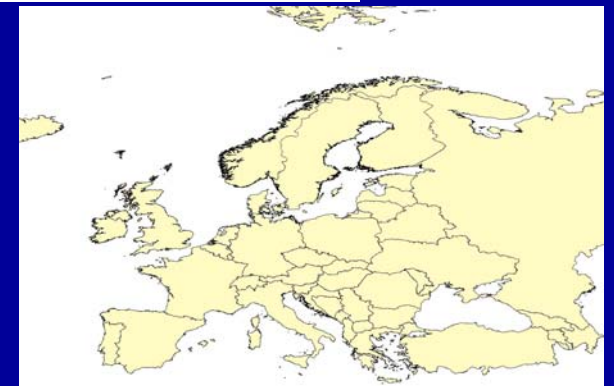
Points - cities
no length, no area,
single x,y coordinate



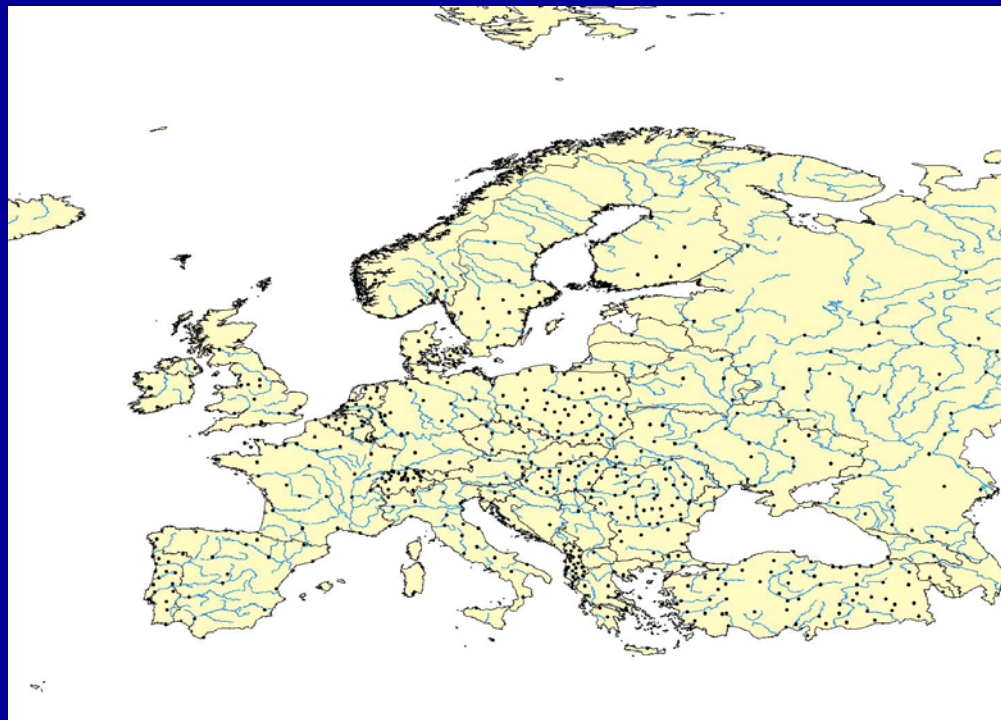
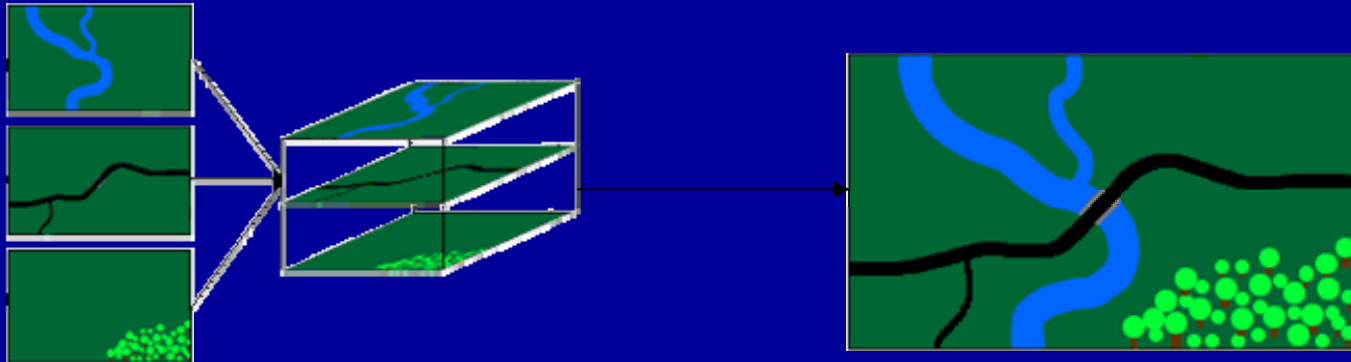
Lines - rivers
set of connected coordinates
length
no area



Areas – country boundaries
set of connected lines
area



Each set of “features” called a “layer”, which can be combined





Each layer has a series of similar components

Map information

Coordinates, lengths, areas

Specified by ID numbers or order within file

“Attribute” database

Table with 1 row per ‘feature’

Each column with variable value (alphanumeric)

Also with column of ID numbers, or in fixed row order

	A	B	C	D	E	F	G	H	I
1	IDNO	CITY_NAME	ADMIN_NAME	CNTRY_NAME	STATUS	POP_RANK	POP_CLASS	PORT_ID	
2	1	Drammen	Buskerud	Norway	Provincial capital	6	50,000 to 100,000	23780	
3	2	Dundee	Scotland	United Kingdom	Other	5	100,000 to 250,000	32170	
4	3	Hunterston	Scotland	United Kingdom	Other	7	Less than 50,000	33515	
5	4	Ronne	Bornholm	Denmark	Provincial capital	7	Less than 50,000	29110	
6	5	Teesport	England	United Kingdom	Other	7	Less than 50,000	31720	
7	6	Gdynia	Gdansk	Poland	Other	5	100,000 to 250,000	28740	
8	7	Schwerin	Mecklenburg-Vorpommern	Germany	Provincial capital	5	100,000 to 250,000	0	
9	8	Bremerhaven	Bremen	Germany	Other	5	100,000 to 250,000	30810	
10	9	Europoort	Zuid-Holland	Netherlands	Other	7	Less than 50,000	31085	
11	10	Dunkerque	Nord-Pas-de-Calais	France	Other	5	100,000 to 250,000	35730	
12	11	Southampton	England	United Kingdom	Other	5	100,000 to 250,000	35580	
13	12	Fawley	England	United Kingdom	Other	7	Less than 50,000	35590	
14	13	Cherbourg	Basse-Normandie	France	Other	7	Less than 50,000	35950	
15	14	Kosice	Vychodoslovensky	Slovakia	Provincial capital	5	100,000 to 250,000	0	
16	15	Brest	Bretagne	France	Other	5	100,000 to 250,000	36460	
17	16	Rijeka Luka	Croatia	Croatia	Other	5	100,000 to 250,000	41010	
18	17	Dibre	Dibre	Albania	Provincial capital	7	Less than 50,000	0	
19	18	Cosmetici	Thyaki	Greece	Provincial capital	7	Less than 50,000	0	

Data can be mapped by matching to attribute (e.g. place name), but only if attribute is linked to map information – i.e. is “Georeferenced”

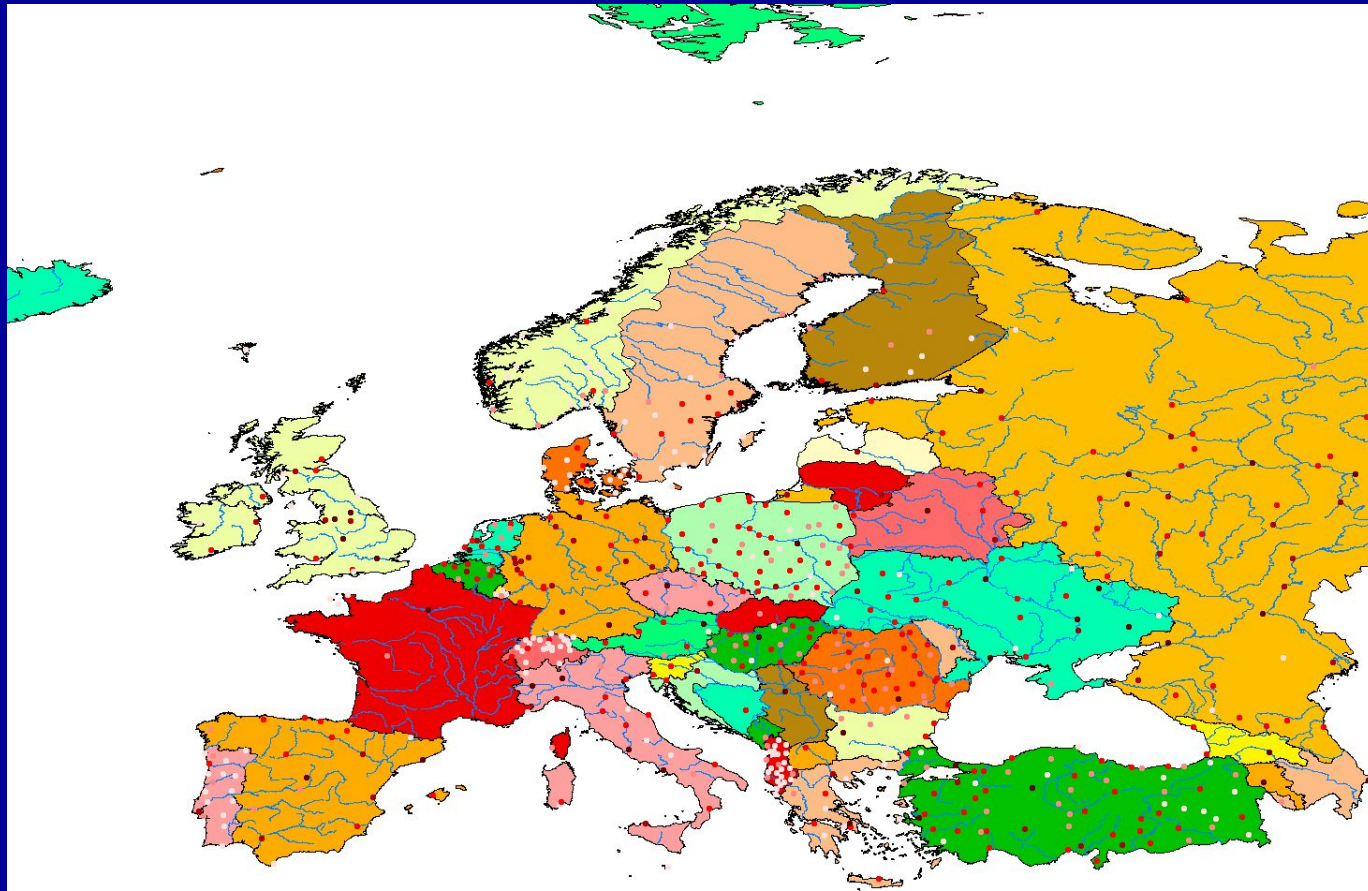




Introduction to GIS and Spatial Data Vector GIS Display



Display characteristics set by information in Table –
e.g. value or range of values displayed by specific pattern or colour



NB River table here has no attribute columns, so all one colour



Introduction to GIS and Spatial Data

Raster



Image – similar to .jpg or bmp bitmaps of photographs

rectangular area made up of 'pixels' (picture elements)
with known geographic limits defined by

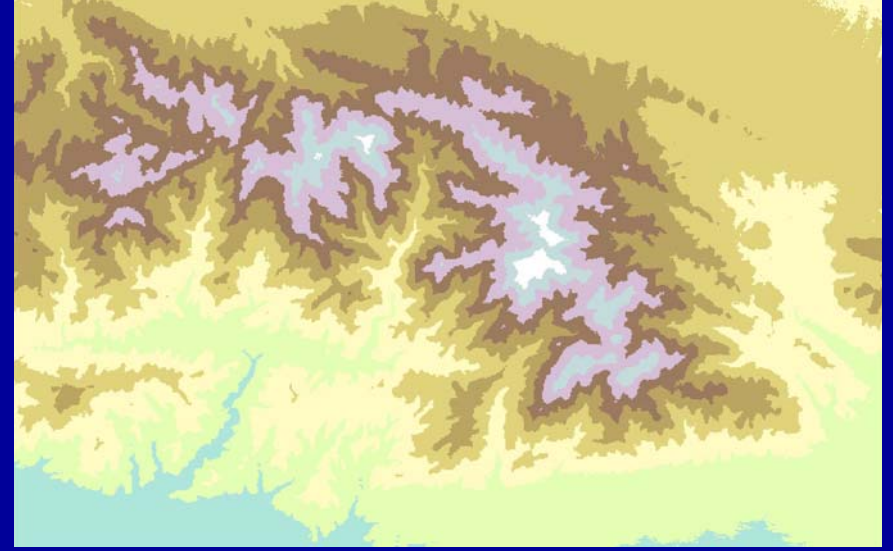
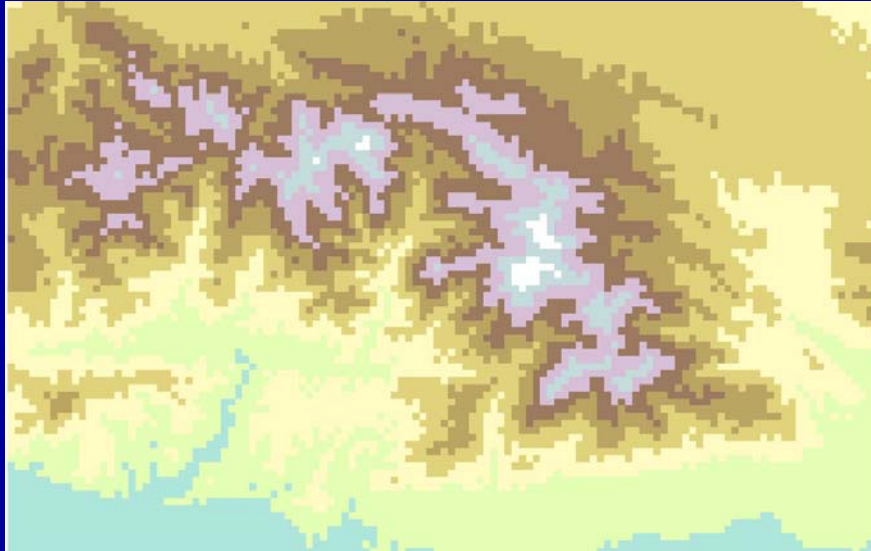
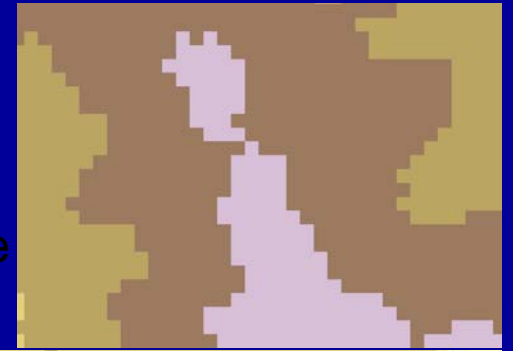
- Coordinates of Min x, max x, min y, max y

- Pixel size or number of rows and columns

- Each pixel therefore has fixed defined location

- Each pixel single value: one raster one variable

- No overlay display unless transparent



Larger pixels, lower "resolution", less detail, (smaller file size)





Introduction to GIS and Spatial Data

Vector and Raster Comparison



VECTOR

ADVANTAGES:

- Compact data structure
(for homogenous areas).
- Can overlay displays easily
- Can easily manipulate data table
- Can have many variables linked to one geographic file
- Better suited for map output

DISADVANTAGES:

- More complex data structure.
- Overlay calculations simple if polygons match.
- High spatial variability less efficiently stored.
- Cannot store image data.

RASTER

- A simple data structure.
- Overlay operations are straight forward.
- High spatial variability is efficiently represented
- Only raster can store image data (e.g. photos).

- Data structure is not compact (though can be modified).
- Single variable only.
- Multiple overlays not possible
- Map output can appear 'blocky'.