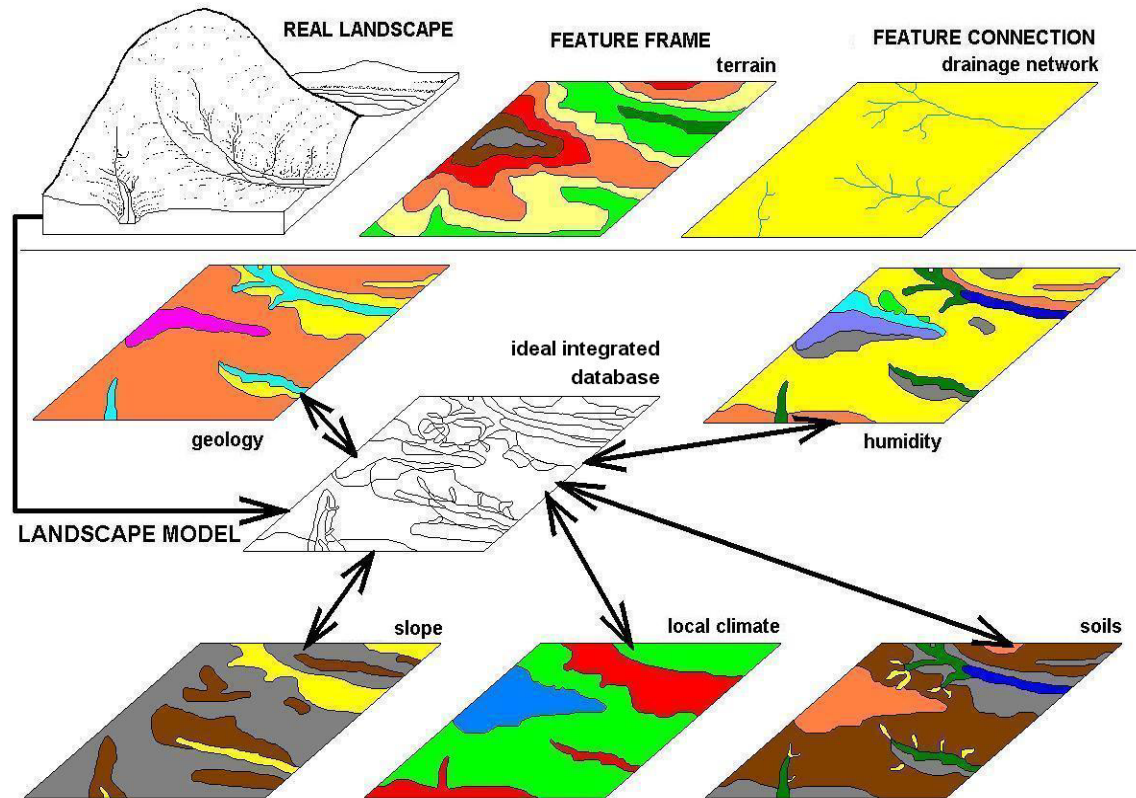
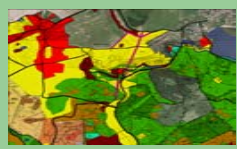


From geodata acquisition to geoprocessing

The nature of geodata

1. The geodata source is the landscape.
2. Visual and other landscape features are transformed into geodata.
3. The geodata acquisition is represented by mapping procedures.
4. Mapping procedures are realized by mapping techniques and technologies.

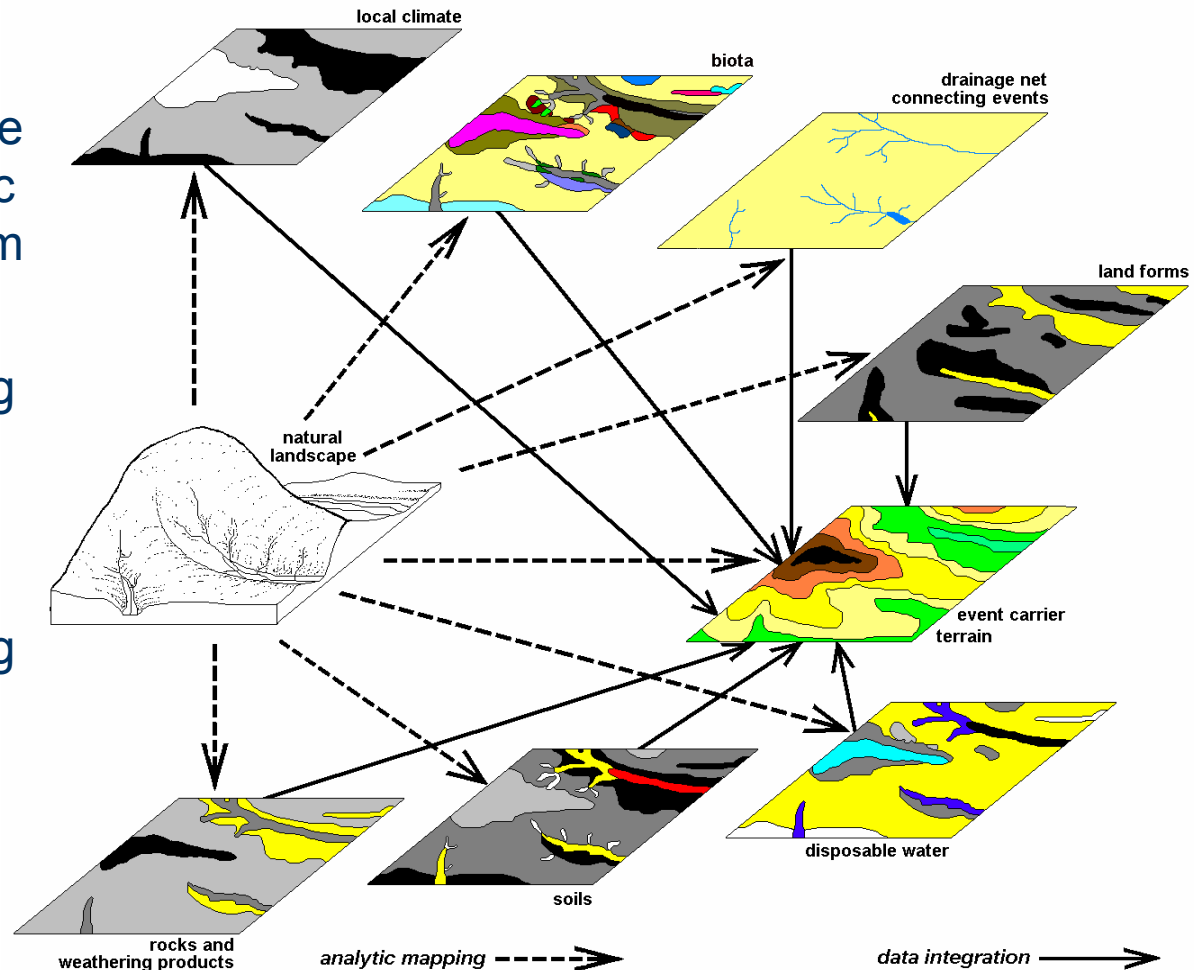


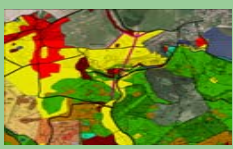


From geodata acquisition to geoprocessing

The nature of geodata

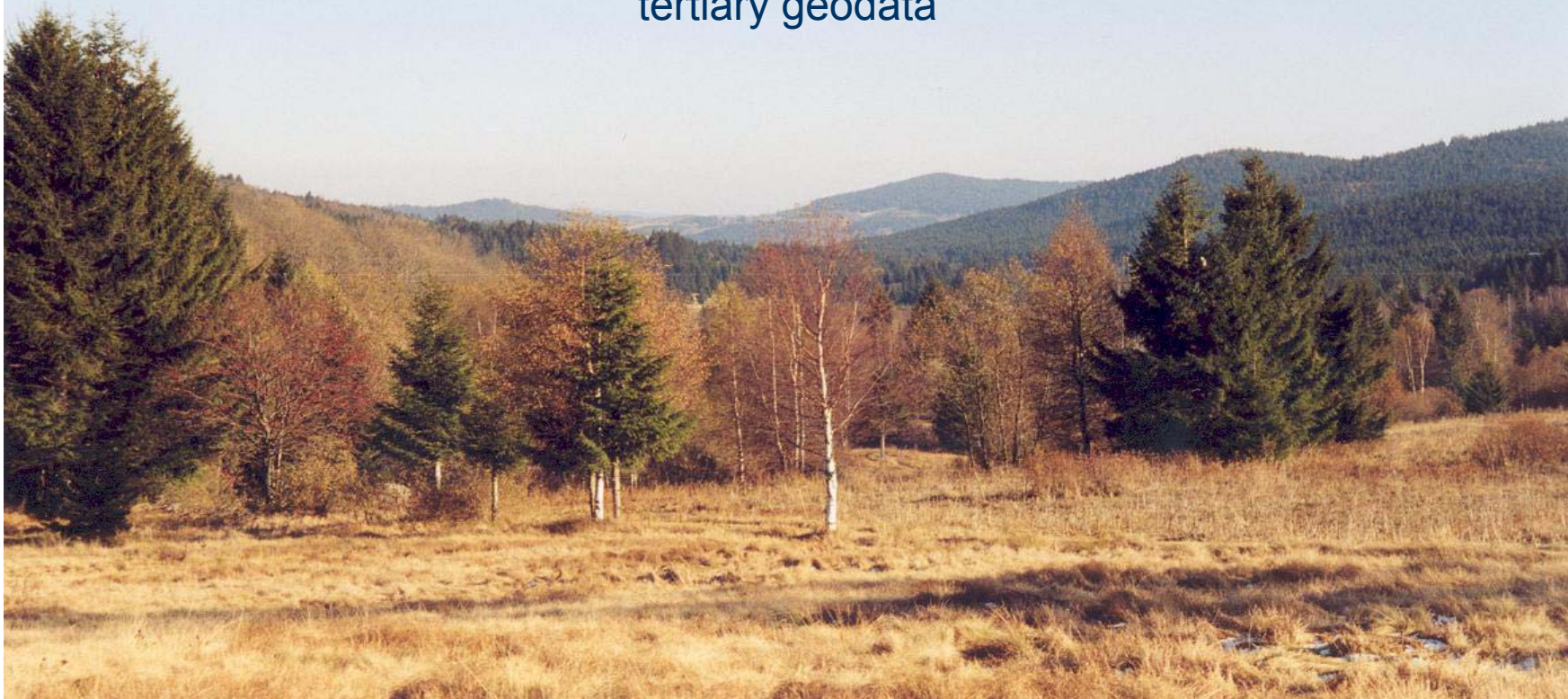
1. Thematic mapping is the umbrella title for specific geodata acquisition from certain territory.
2. Every thematic mapping is being carried out separately from the others.
3. Every thematic mapping is being carried out by specialists.
4. Analytic geodata are typical products of thematic mapping.

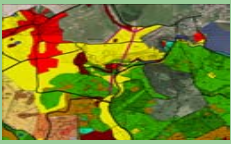




From geodata acquisition to geoprocessing

Thematic mapping technologies: 1) field mapping – primary geodata, 2) laboratory archived geodata processing – secondary geodata, 3) remotely sensed geodata – primary geodata, 4) overlay, internet etc. derived data – tertiary geodata





From geodata acquisition to geoprocessing

Advantages and disadvantages of acquired geodata from the viewpoint of its application in GIS:

- 1) field mapping – primary geodata, self responsibility for data quality, wide range of knowledge necessary, long time of field work, traditional and present technology suitable (GPS, PDA, iPEG etc.),...
- 2) laboratory archived geodata processing – secondary geodata, varying reliability, different geometric and quality features, preprocessing necessary,...
- 3) remotely sensed geodata – primary geodata, introductory investment, complex processing, expensive technology, coverage, synchronous, homogenous quality,...
- 4) overlay etc. derived data – tertiary geodata, different scales, formats, geometry, sources, accessibility, expenses, varying quality and reliability, complex collection and processing,...



Thematic (analytic) Geodata Integration

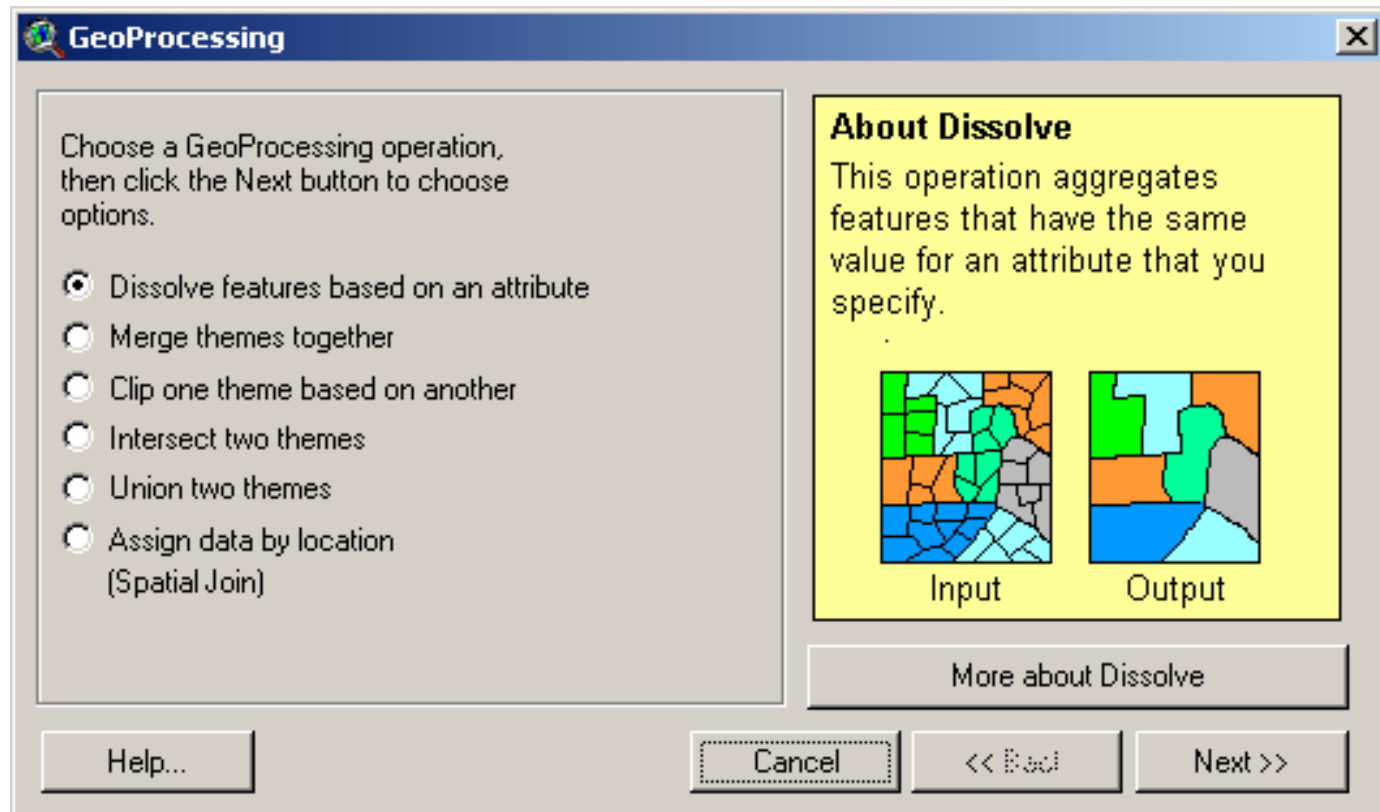
Rules:

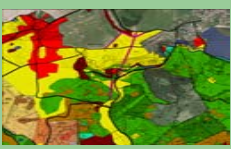
1. Keep relationships natural for factors described by geodata set.
2. Keep resolution representing the working scale (resolution).
3. Apply landscape ecological (or physical-geographical) knowledge.
4. Testify factor combinations derived by GIS procedures.
5. Consequent two-by-two layers integration preferred to total all-layer integration.



GIS software geodata integration offer

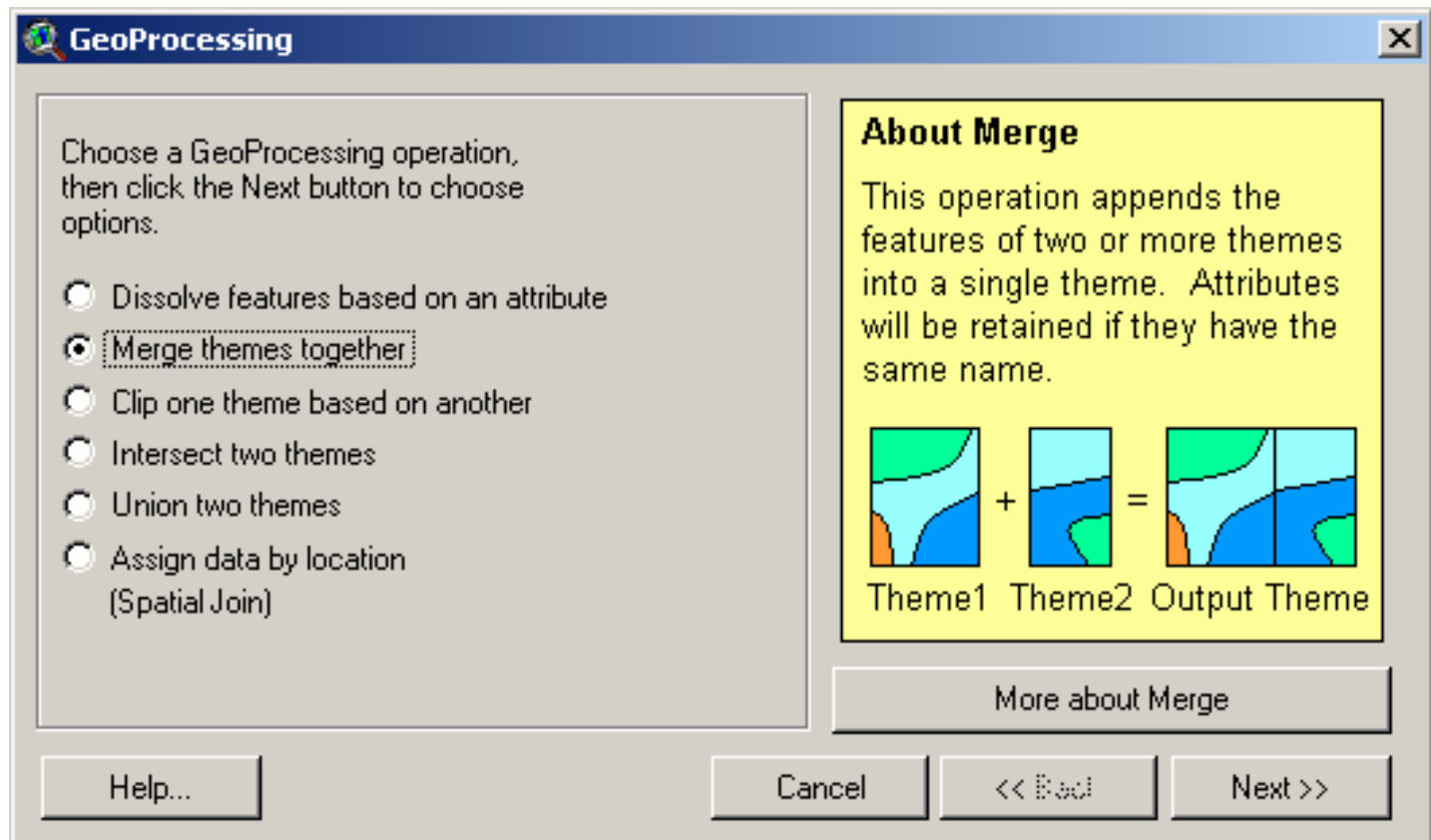
ArcView v.3.1 data integration examples





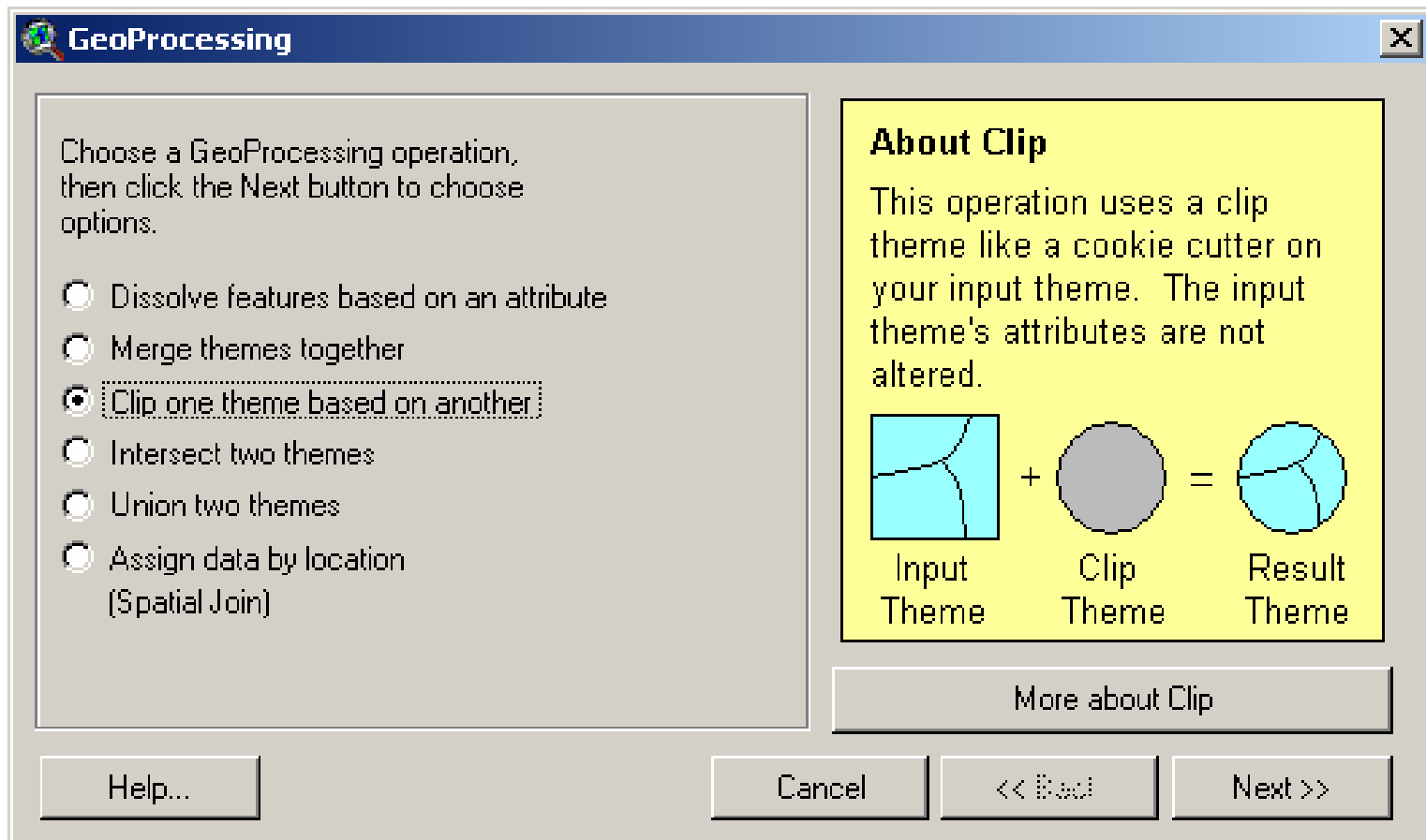
GIS software geodata integration offer

ArcView v.3.1 data integration examples



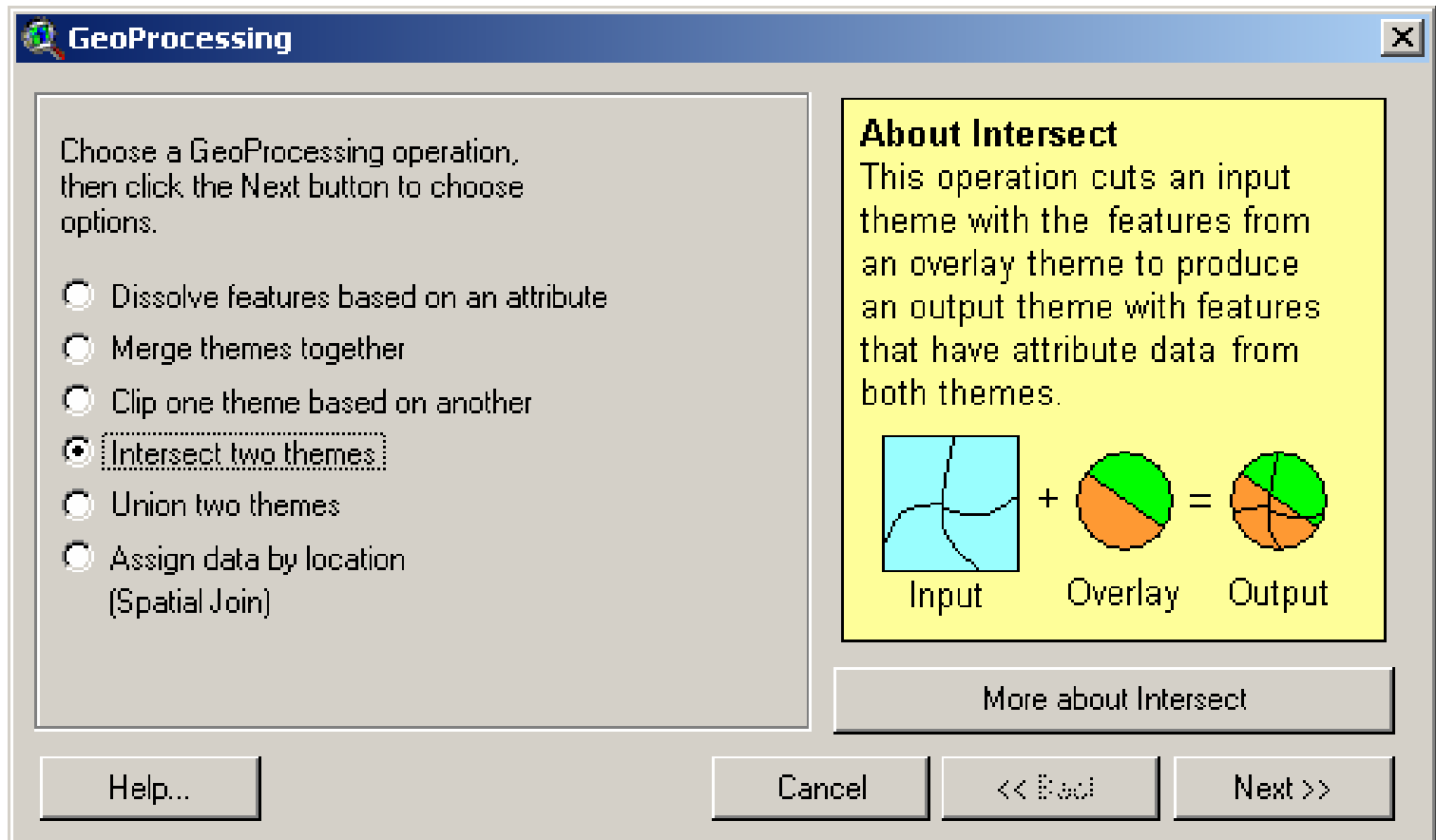
GIS software geodata integration offer

ArcView v.3.1 data integration examples



GIS software geodata integration offer

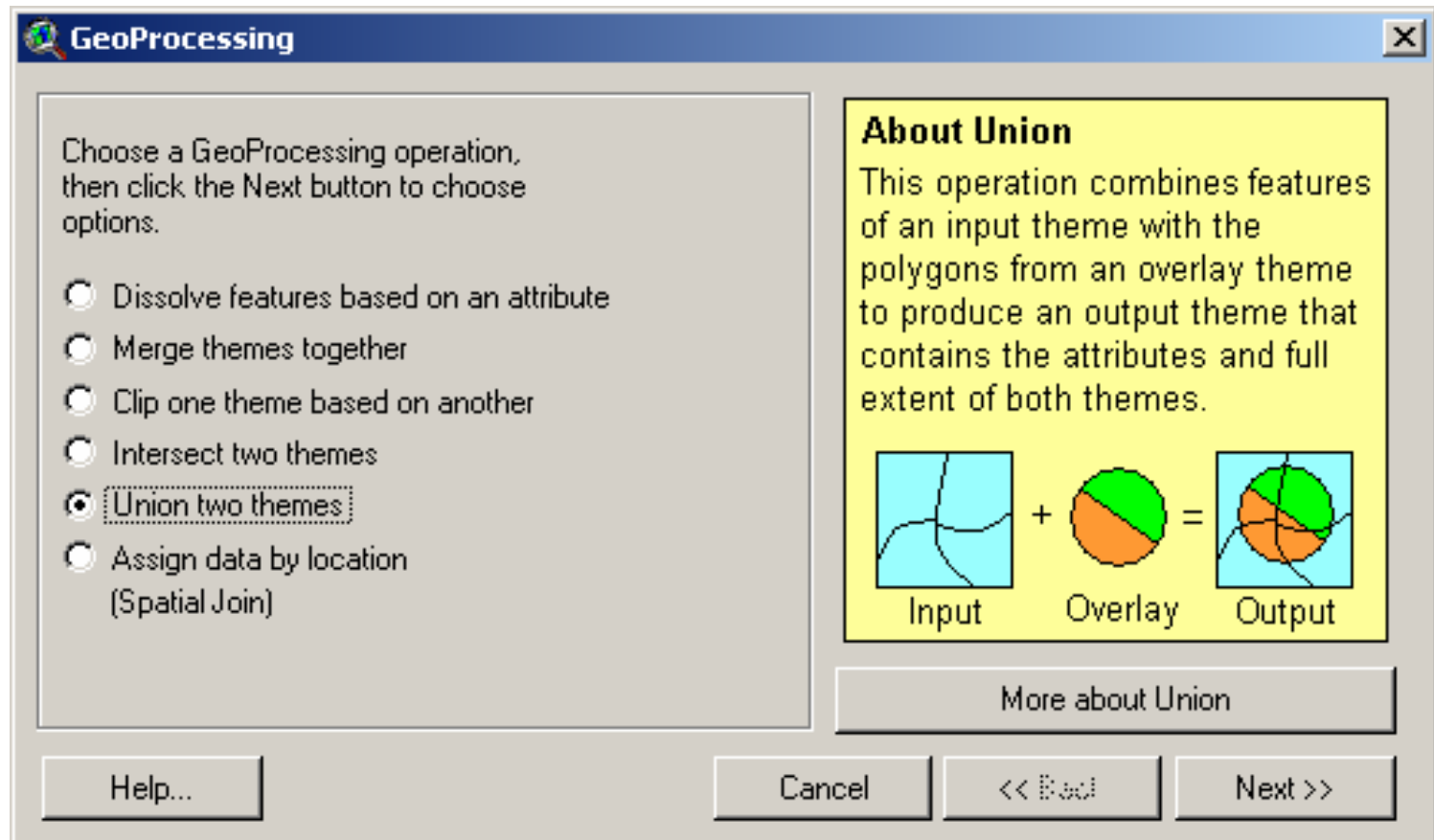
ArcView v.3.1 data integration examples





GIS software geodata integration offer

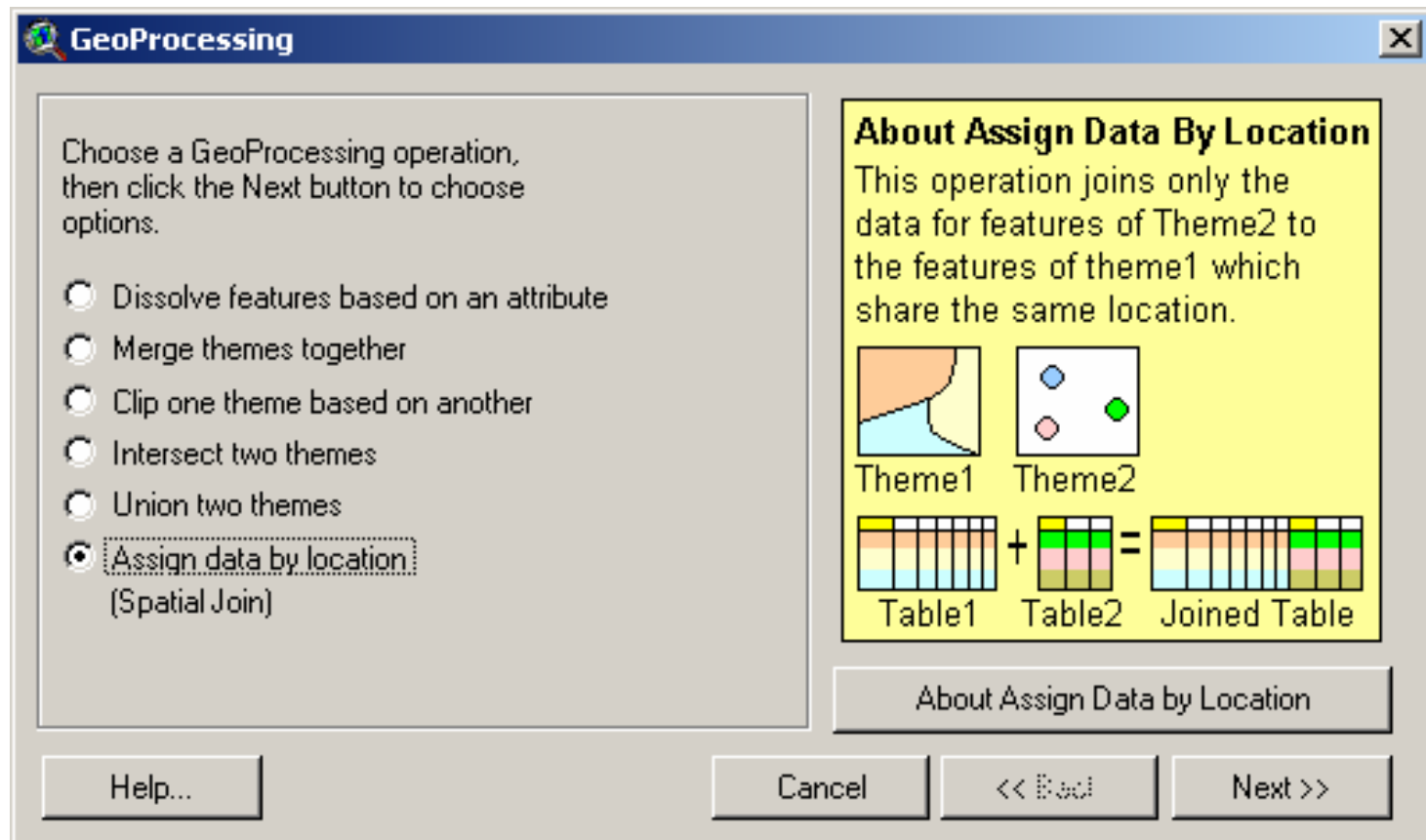
ArcView v.3.1 data integration examples

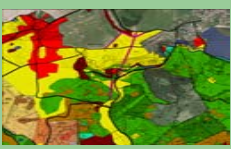




GIS software geodata integration offer

ArcView v.3.1 data integration examples

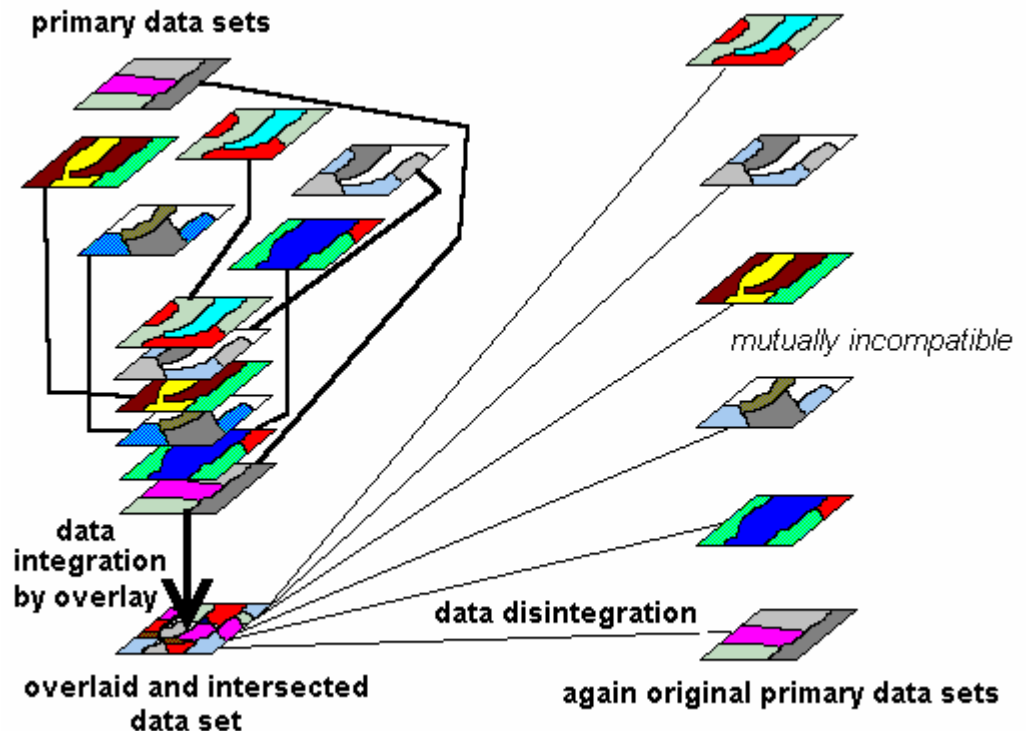




Thematic (analytic) Geodata Integration

Intersection of overlaid geodata sets

Traditional approach

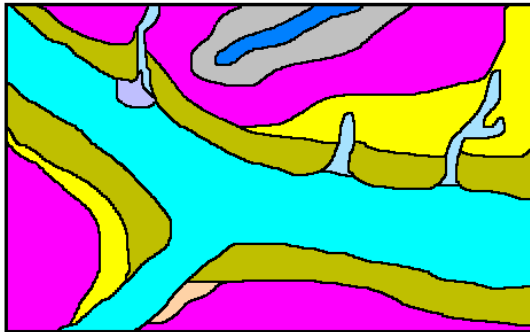




Thematic (analytic) Geodata Integration

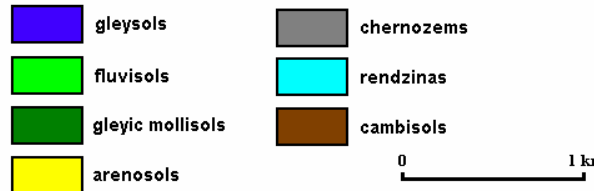
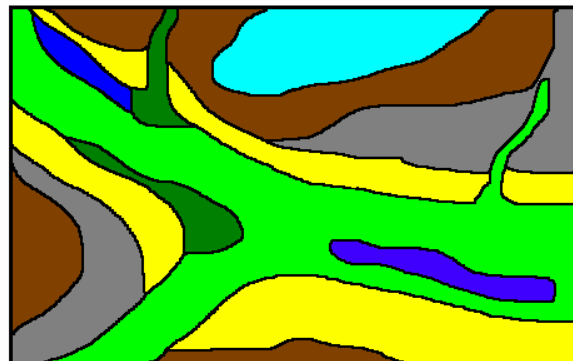
Examples of typical geodata sets

GEOLOGY

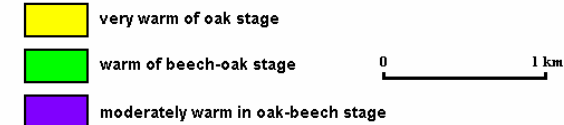
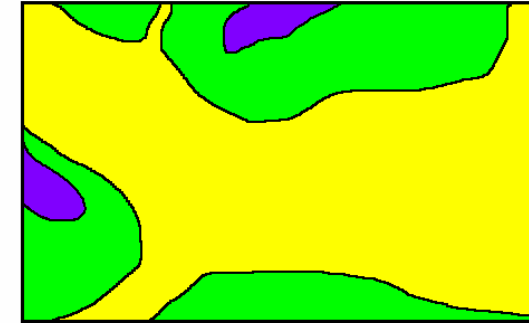


All these data sets are integrated from following viewpoints: format, scale, resolution, coordinate system, map projection

SOILS



BIOCLIMATE



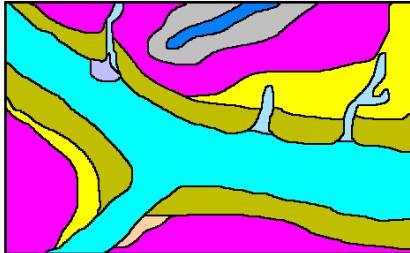
All these data sets represent products of mutually independent thematic mapping.



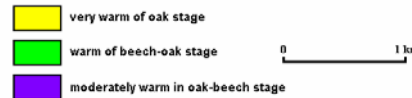
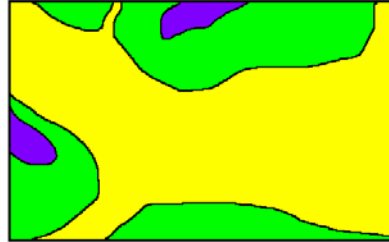
Thematic (analytic) Geodata Integration

Example of overlay of three data layers with consequent intersection.

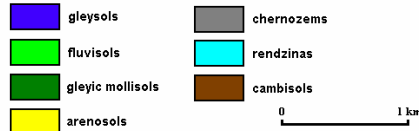
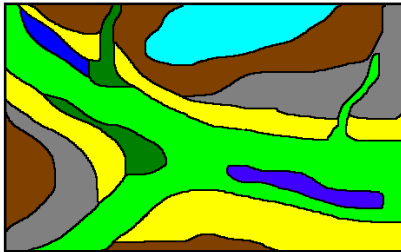
GEOLOGY



BIOCLIMATE



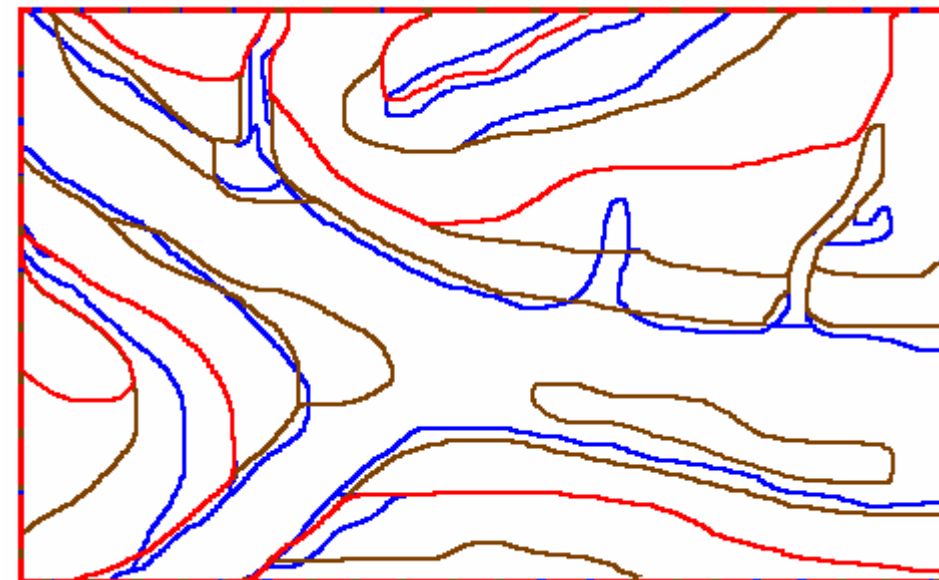
SOILS



GEOLOGY

SOILS

BIOCLIMATE



intersected polygons of three (overlaid) layers



Thematic (analytic) Geodata Integration

Example of three-data-layer intersection attribute table

ArcView GIS Version 3.1

File Edit Table Field Window Help

0 of 32 selected

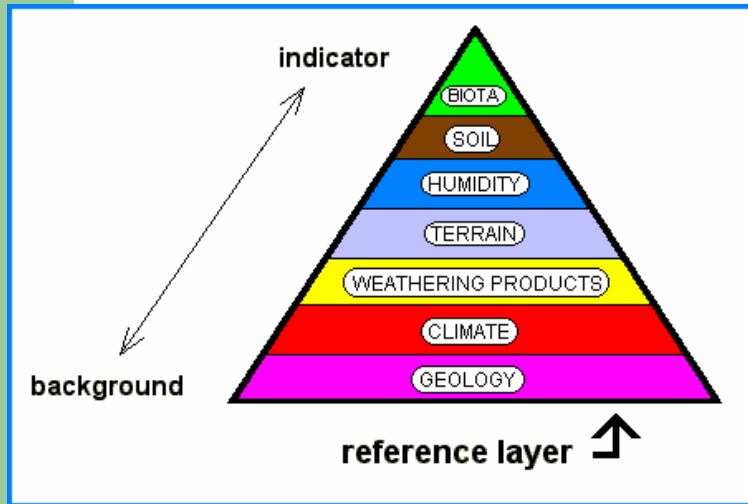
Attributes of G_s_cl.shp

Shape	Id	Geol	Bioclimate	Soils
Polygon	1	slope deposits	warm	arenosols
Polygon	2	terrace gravels	very warm	arenosols
Polygon	3	terrace gravels	very warm	arenosols
Polygon	4	loams	very warm	gleyic mollisols
Polygon	5	loess	very warm	chernozems
Polygon	6	terrace gravels	very warm	arenosols
Polygon	7	granites	moderately warm	cambizems
Polygon	8	terrace gravels	very warm	arenosols
Polygon	9	limestones	warm	rendzinas
Polygon	10	granites	warm	cambizems
Polygon	11	loess	very warm	chernozems
Polygon	0			
Polygon	0			
Polygon	0			

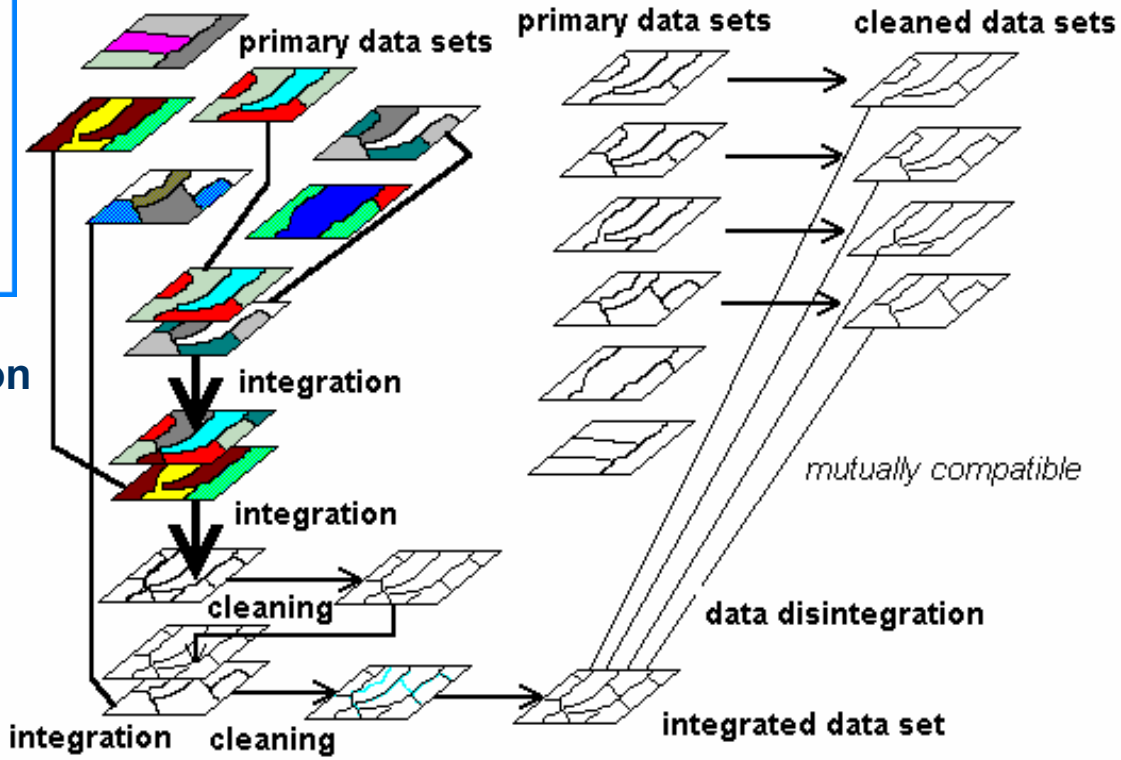
Task: Testify the correctness of derived feature combinations in the polygon description.



Thematic (analytic) Geodata Integration

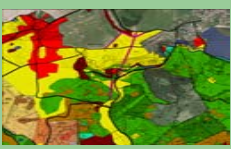


Landscape ecological approach



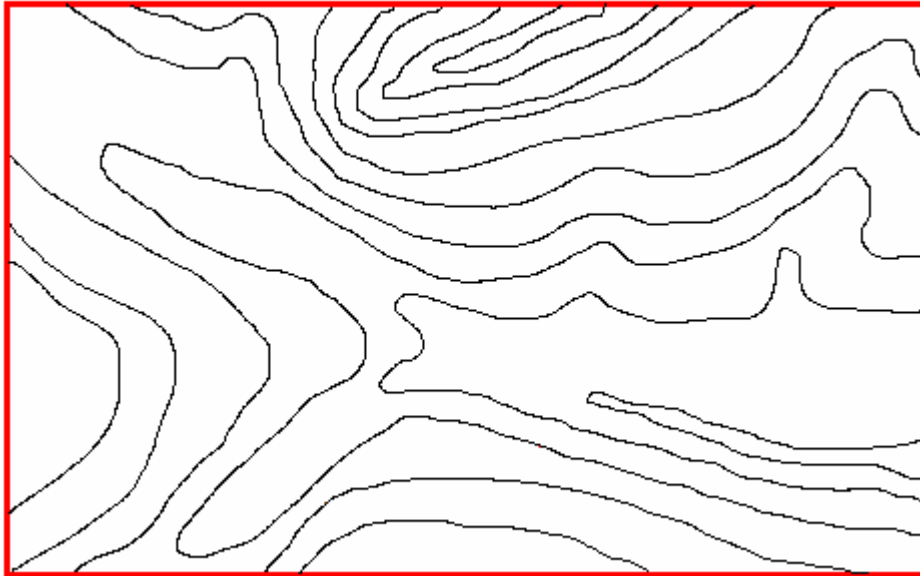
Controlled two-by-two integration using geodata intersection.

1. Reference layer selected.
2. Synergetic layer overlaid and cleaned.
3. (In)dependent layer overlaid and cleaned.



Thematic (analytic) Geodata Integration

ELEVATION

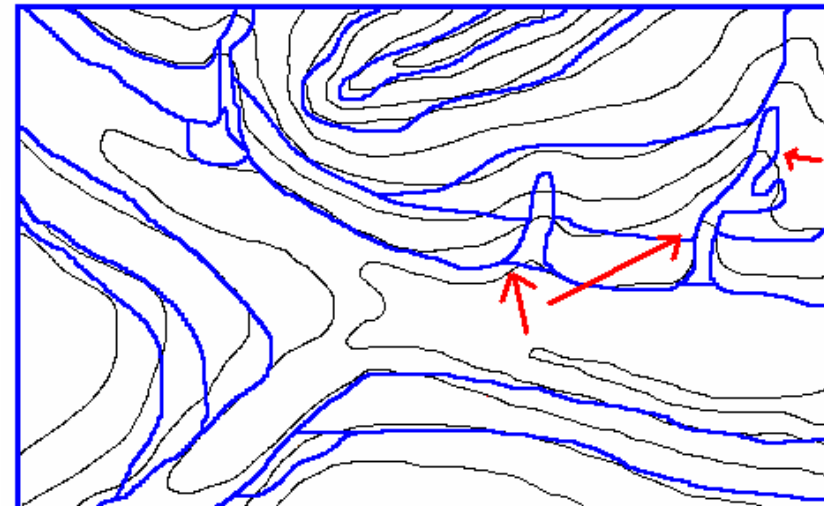


Terrain is the obligatory reference layer.

Geology is the best thematic reference layer because of its conservatism.

ELEVATION

GEOLOGY

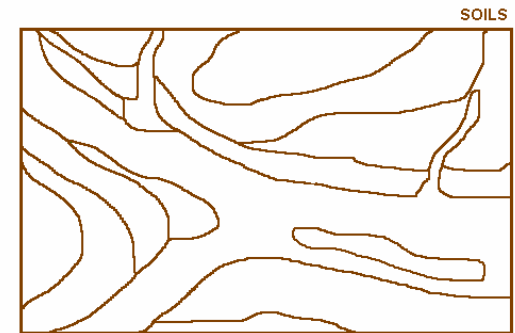
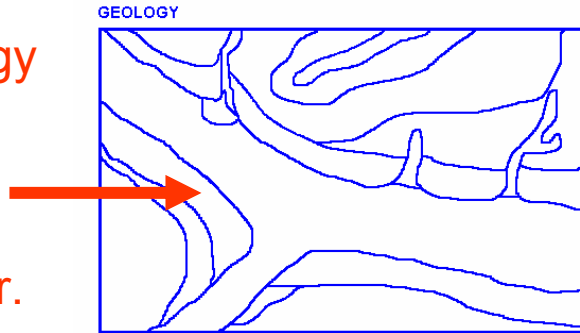


Geology polygon outlines have to be first carefully adopted to terrain represented by contourlines or DTM.

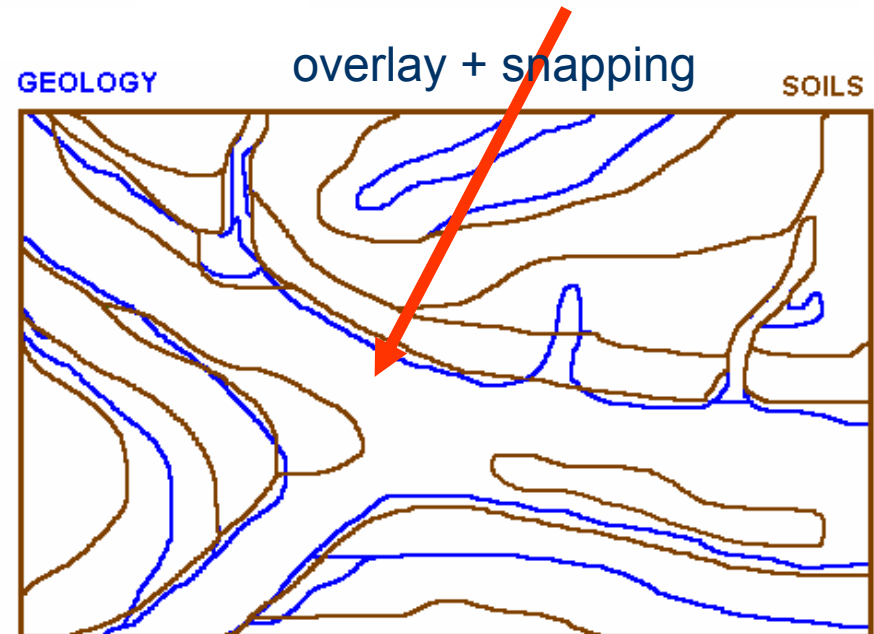
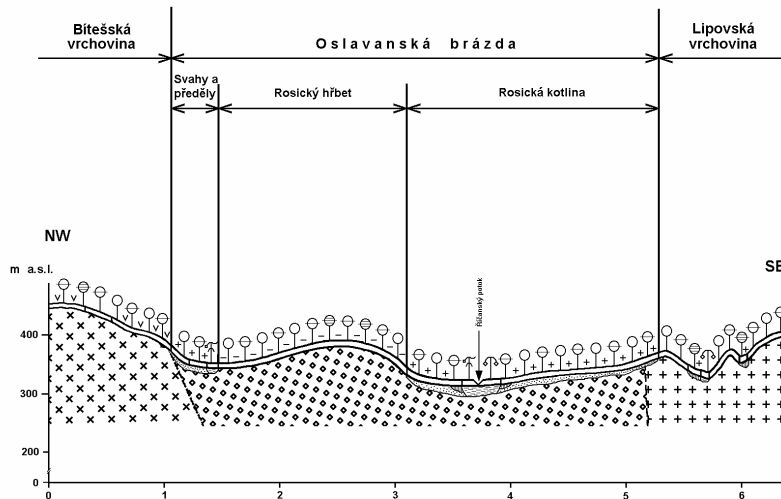


Thematic (analytic) Geodata Integration

Cleaned geology according to terrain as the first thematic reference layer.



Integration guide: real relationships between geology and soils in landscape.





Thematic (analytic) Geodata Integration

GEOLOGY

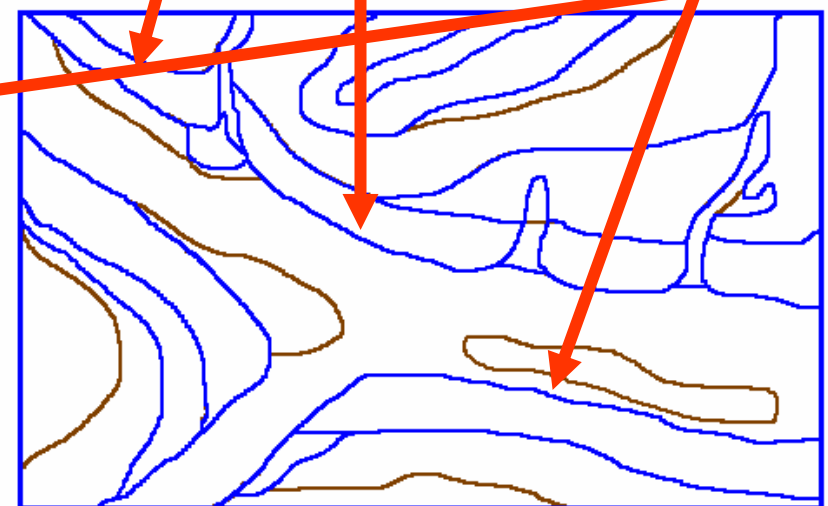
SOILS



Overlaid polygon outlines snapping to avoid number of remnant polygons. Overlaid layer polygon outlines have to be snapped to approximately parallel reference layer polygon outlines.

GEOLOGY

SOILS



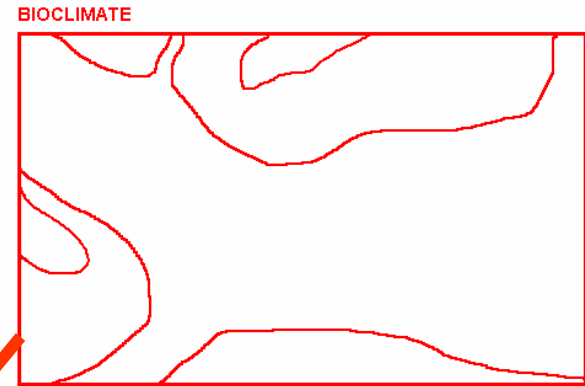
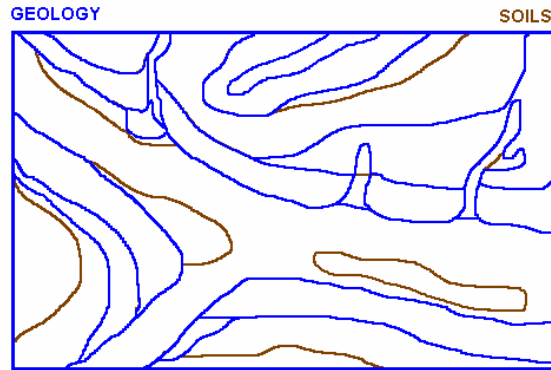
After the snapping the overlaid layer to the reference layer, the intersection of layer can be carried out.



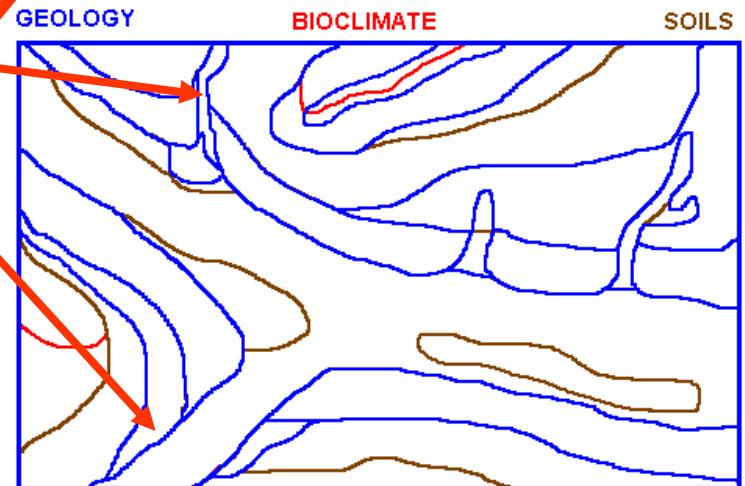
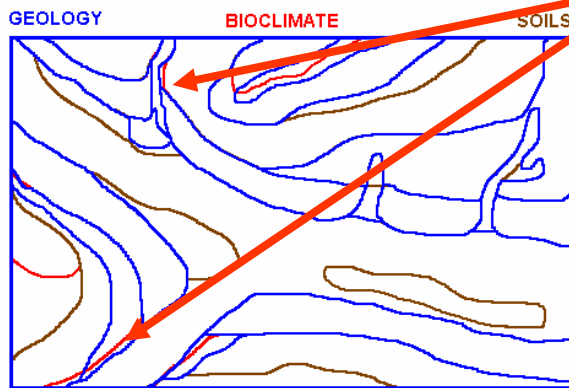
Thematic (analytic) Geodata Integration

Integrated geology and soil layers

Another analytic layer to be intersected



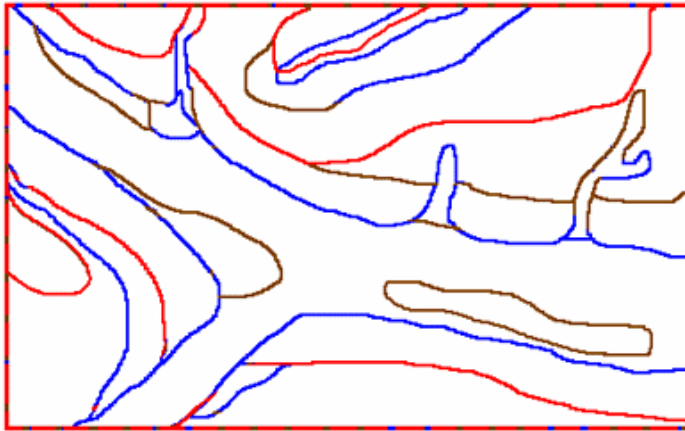
Additional overlaid layer first to be snapped





Thematic (analytic) Geodata Integration

GEOLOGY BIOCLIMATE SOILS



Geoprocessing completed: overlaid, snapped and intersected data layers are represented in the attribute table by real feature combinations only.

Efficient application of GIS technology and geographical knowledge for the compilation of better data sets for various utilising.

ArcView GIS Version 3.1

File Edit Table Field Window Help

0 of 32 selected

Attributes of G_s_cl.shp

Shape	Id	Geol	Bioclimate	Soils
Polygon	1	slope deposits	warm	cambizems
Polygon	2	terrace gravels	very warm	arenosols
Polygon	3	terrace gravels	very warm	arenosols
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Polygon	0			
Polygon	0			