GIS-based transport modelling for point and diffuse polution sources
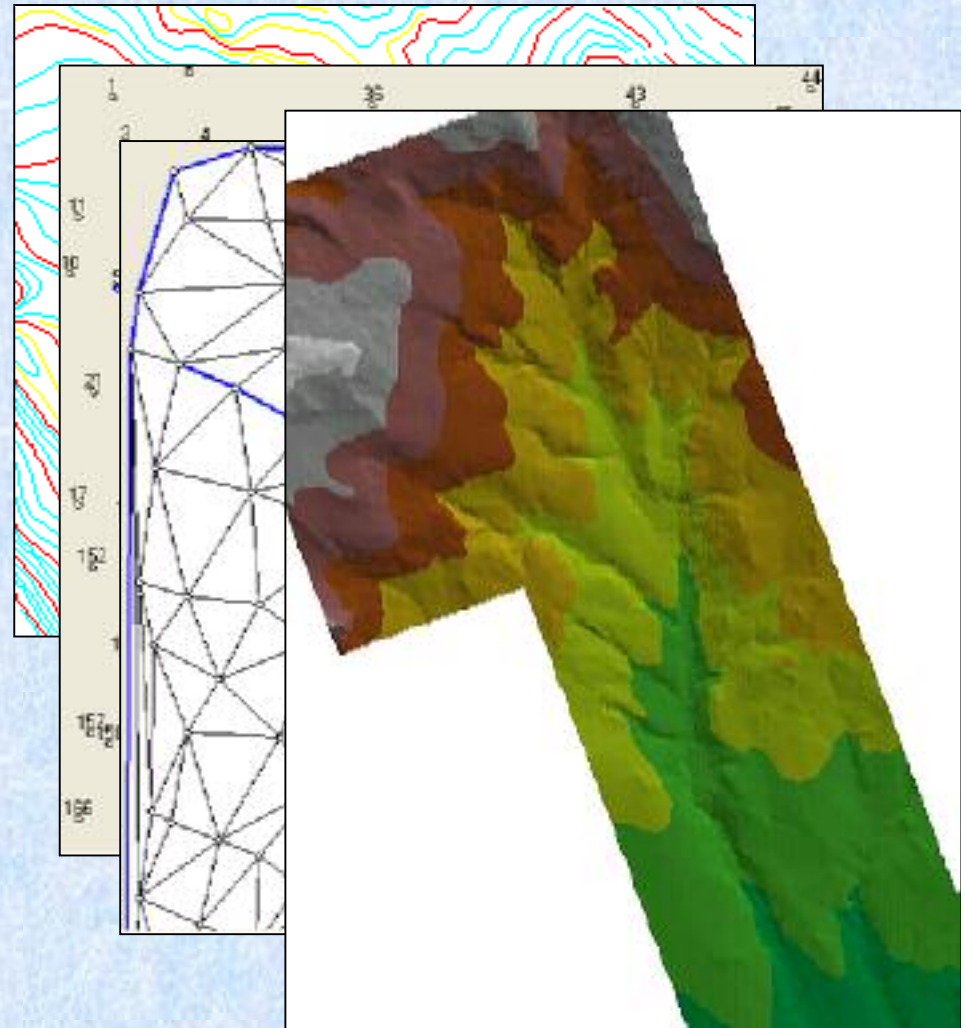
Dr. Zoltán Siki

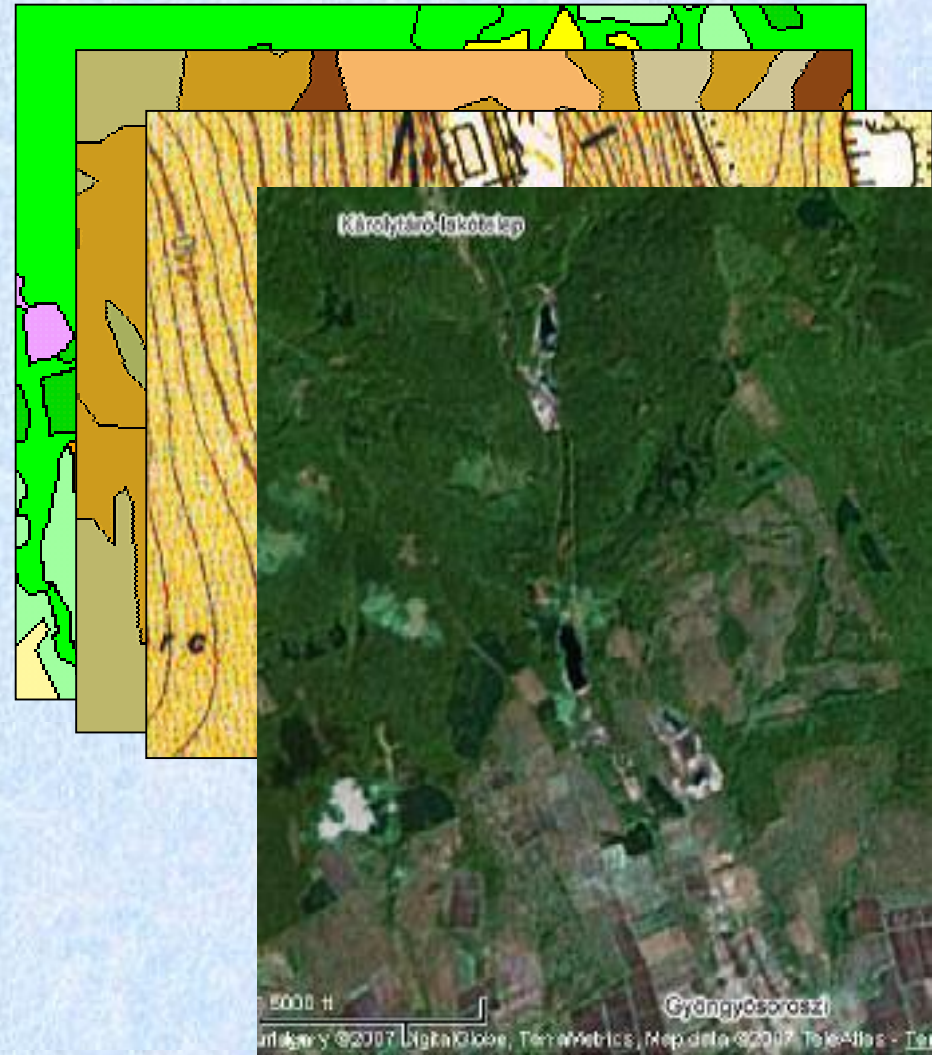DigiKom Ltd.

www.digikom.hu

Map basis

- Digital Terrain Model
  - from contours
  - from scattered points
- Triangulation Irregular Network (TIN)
- Regular GRID
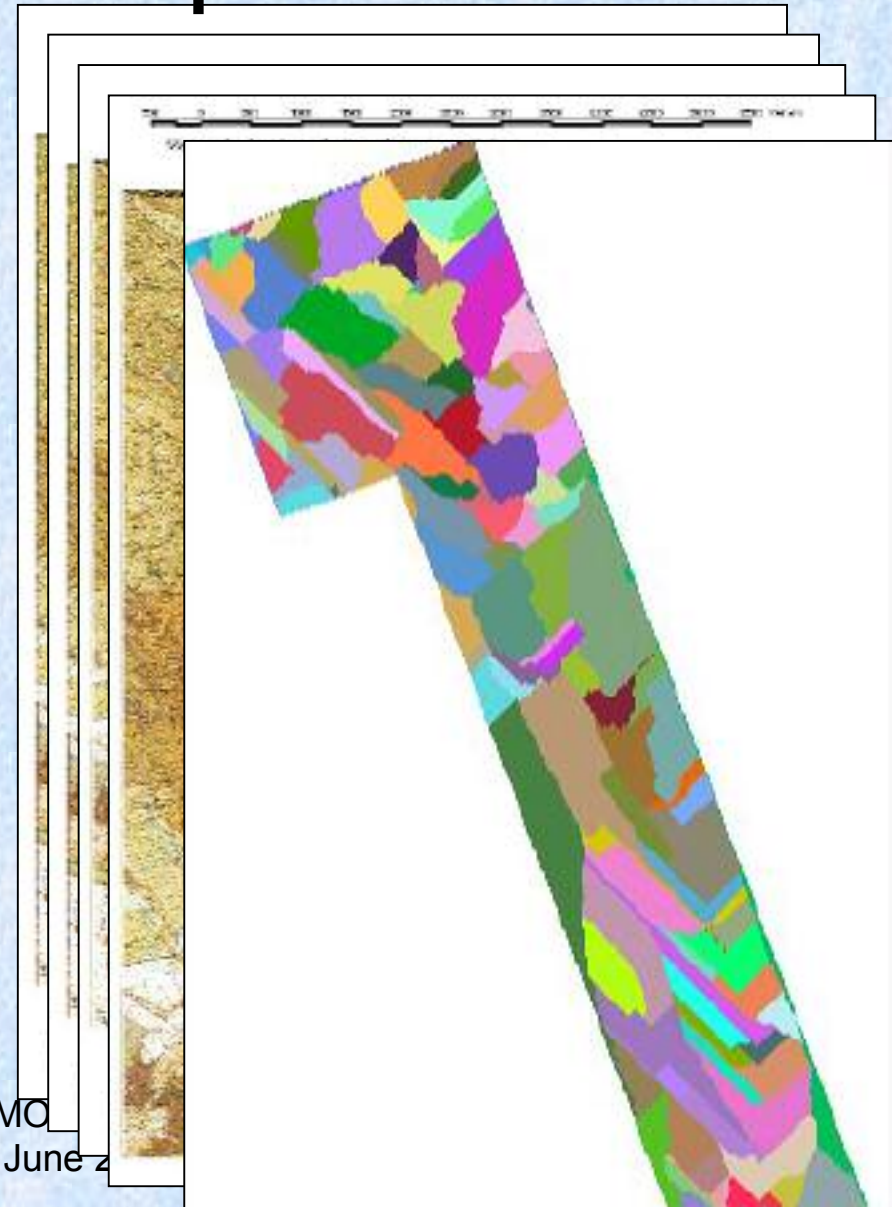 - Interpolation
    - IDW
    - Kriging
    - Spline

Map basis continued

- Land cover (CORINE)
- Soil map
- Scanned maps
- Orthophotos
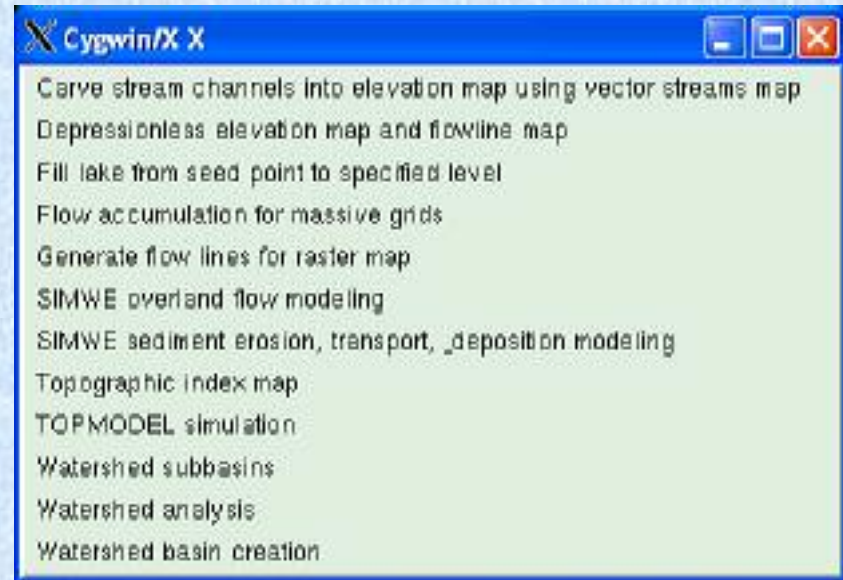- Rainfall data
- Sample data
- Climate change data?
- …

International MOKKA conference
15th June 2007

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Derived map data

- Slope angles
- Aspect
- Flow directions
- Watershed

International MO
15th June z

Modeling

- Hydrologic model
  - TOPMODEL r.topmodel
  - SIMWE r.sim.water
- Erosion
  - RUSLE
  - SIMWE r.sim.sediment

X Cygwin/X X

Carve stream channels into elevation map using vector streams map
Depressionless elevation map and flowline map
Fill lake from seed point to specified level
Flow accumulation for massive grids
Generate flow lines for raster map
SIMWE overland flow modeling
SIMWE sediment erosion, transport, _deposition modeling
Topographic index map
TOPMODEL simulation
Watershed subbasins
Watershed analysis
Watershed basin creation

GRASS GIS
www.grass.itc.it

Model results

- Toka valley (Gyöngyösoroszi)
- ArcView/ArcGIS and GRASS GIS 5.4 – 6.2

1) very low erosion (0 to 1 t/ha)
2) low erosion (1 to 10 t/ha)
3) moderate erosion (10 to 30 t/ha)
4) high erosion (30 to 80 t/ha)
5) very high erosion (>80 t/ha)
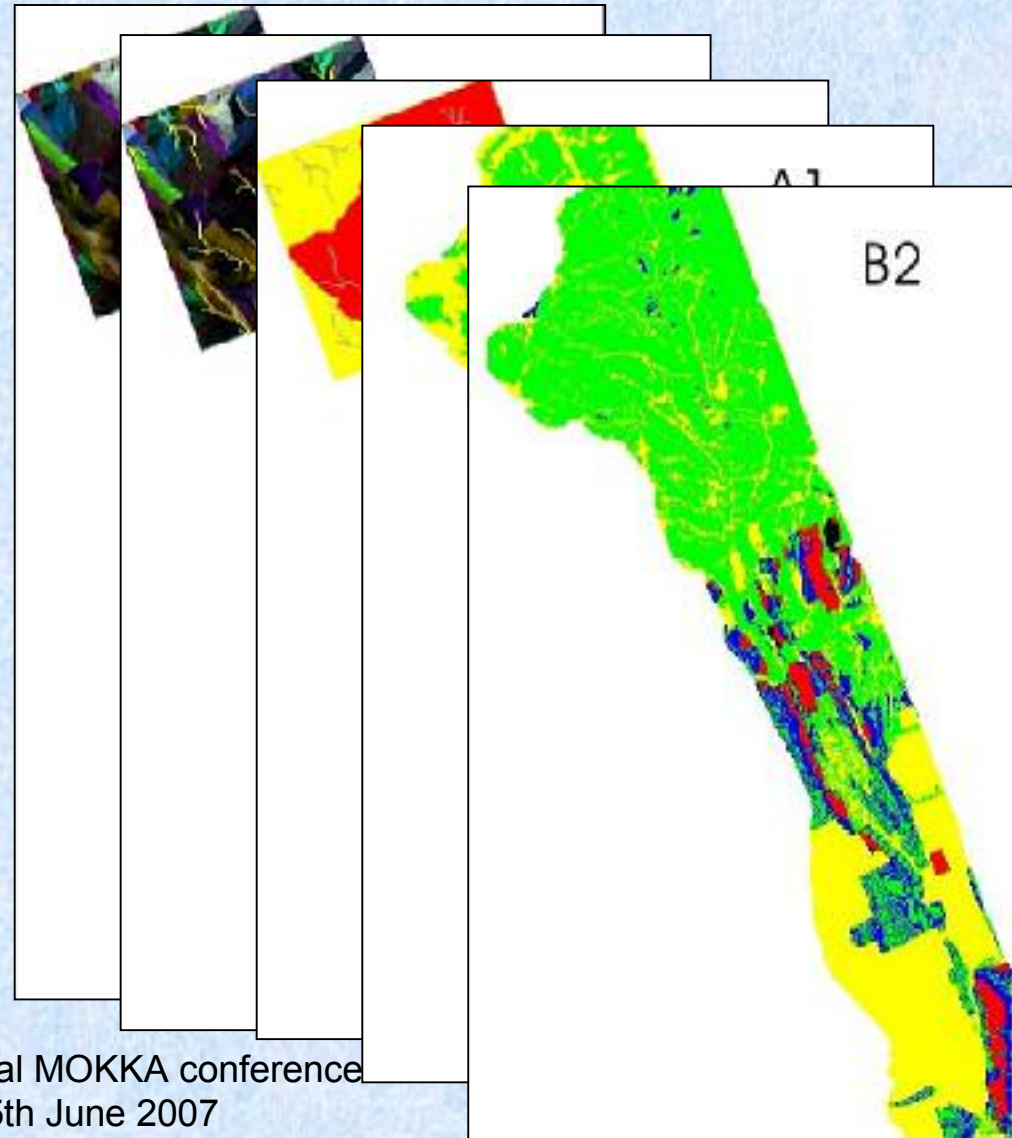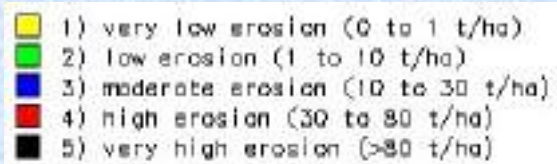
Thanks for your attention!