

The Quality of Geodata in Vietnam in the IWRM Process - a Challenge

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Introduction

Within the German Vietnamese joint research project "Integrated Water Resources Management Vietnam" a Planning- and Decision-Support-System (DSS) on a regional scale is being developed.

The DSS includes tools and methods for the analysis of water resources, water use and supplemental environmental data by using ArcGIS. The research area is situated in the Dong Nai river basin (Southern Highlands, Vietnam).

Data quality issues

The evaluation of the collected data revealed several difficulties in the generation, edition and through the provision of environmental data by the different vietnamese institutions and authorities.

Various errors occurred in the data sets. One reason being the use of many different software formats (e.g. MapInfo, AutoCad, ArcGis). Other reasons being the use of different data collection standards or missing editing rules.

Objectives

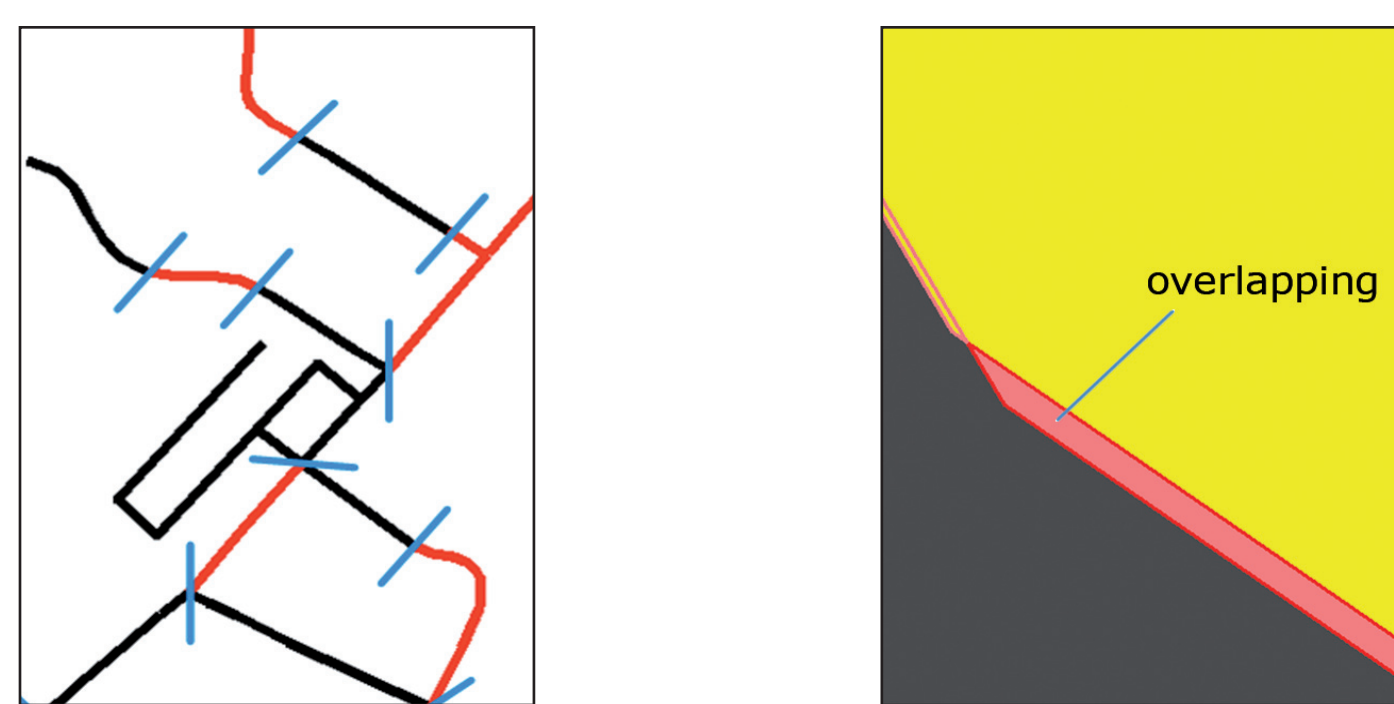
The main aim is to develop a Planning- and Decision-Support-System by building a consistent geodatabase with various geodata sets (river network, lakes, landuse, geology, soil, elevation) on river basin level.

The database will be input for several analysis:

- various evaluations (e.g. intersection of administrative areas with water management units)
- hydrological modelling
- calculation of contamination potentials and risks of specific areas

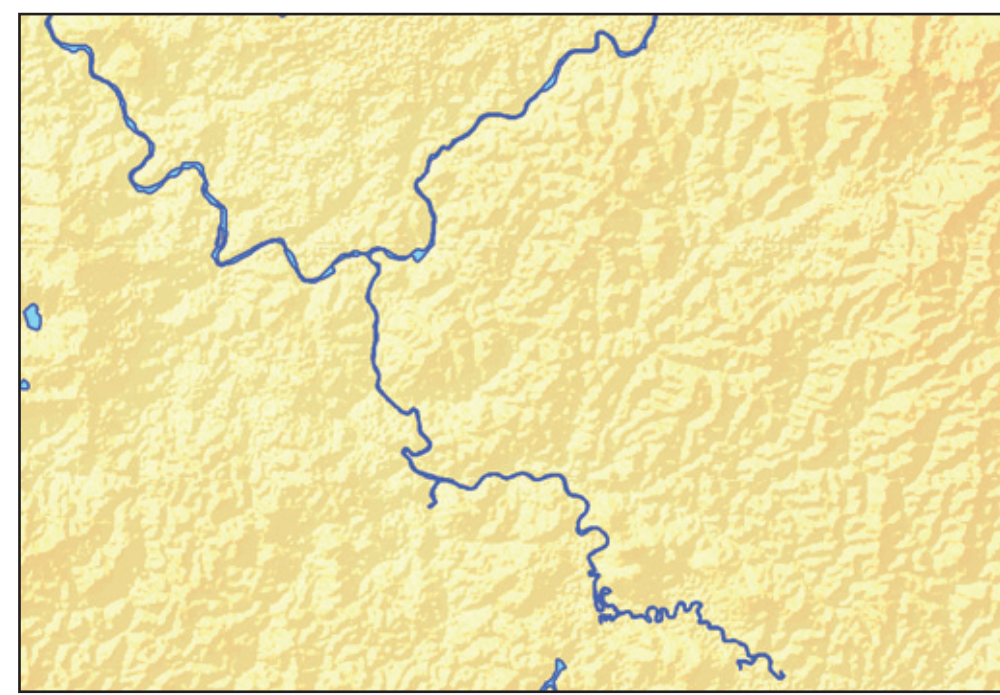
Errors

Topology error



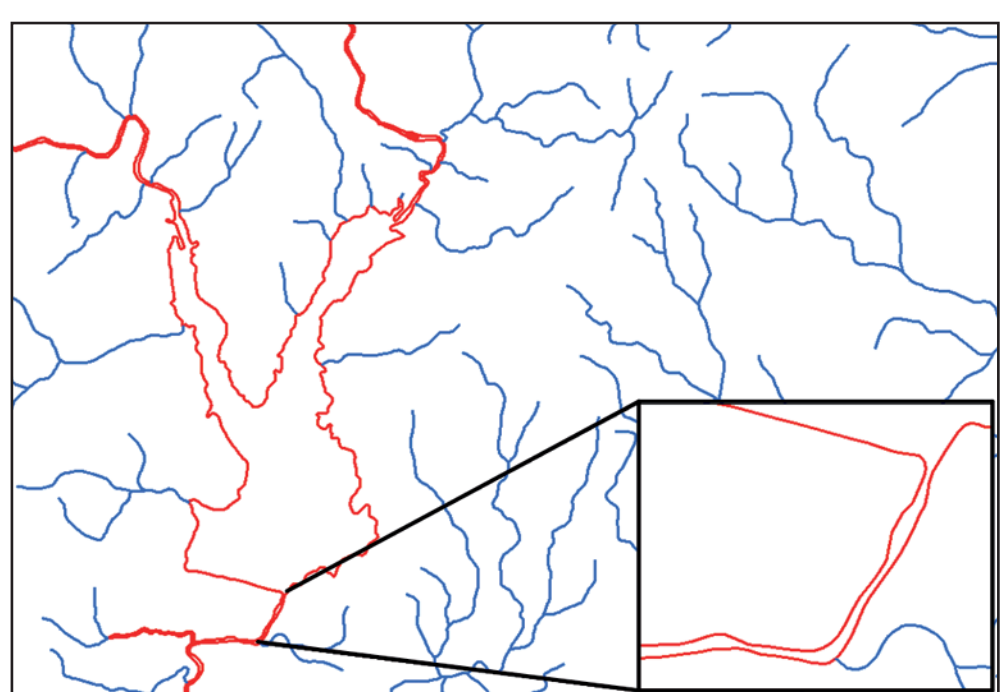
- none solid lines for streets or rivers
- overlapping of polygons

Actuality error



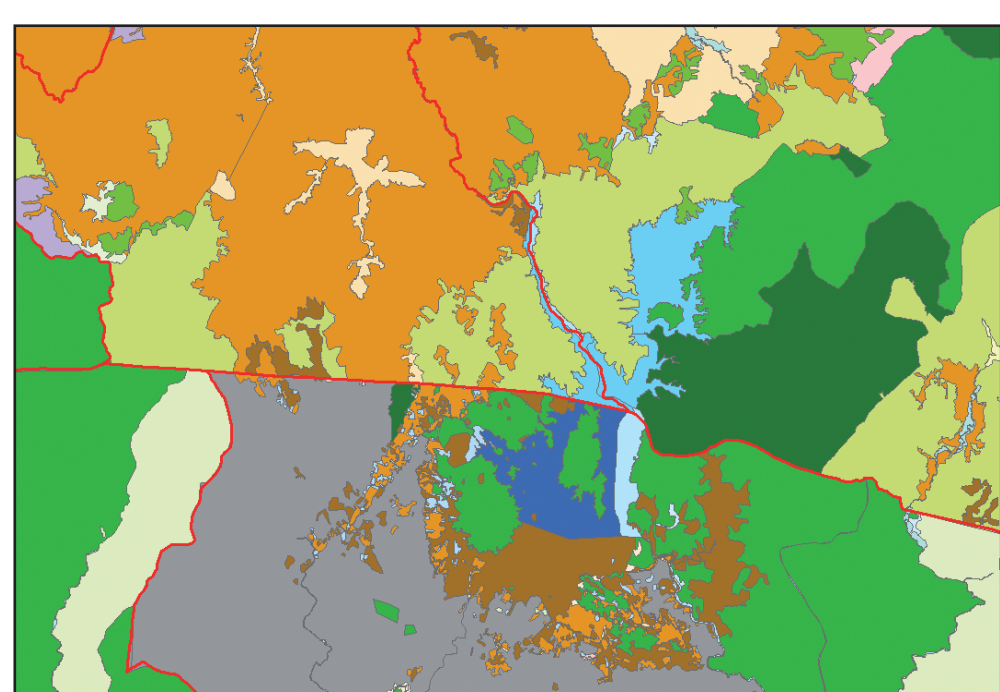
- missing objects (e.g. lake) in data set

Thematic error



- double lines for main rivers
- interruption of river-lines by lakes

Inconsistency error



- inconsistency of landuse classes
- different coordinate systems
- no documentation of metadata

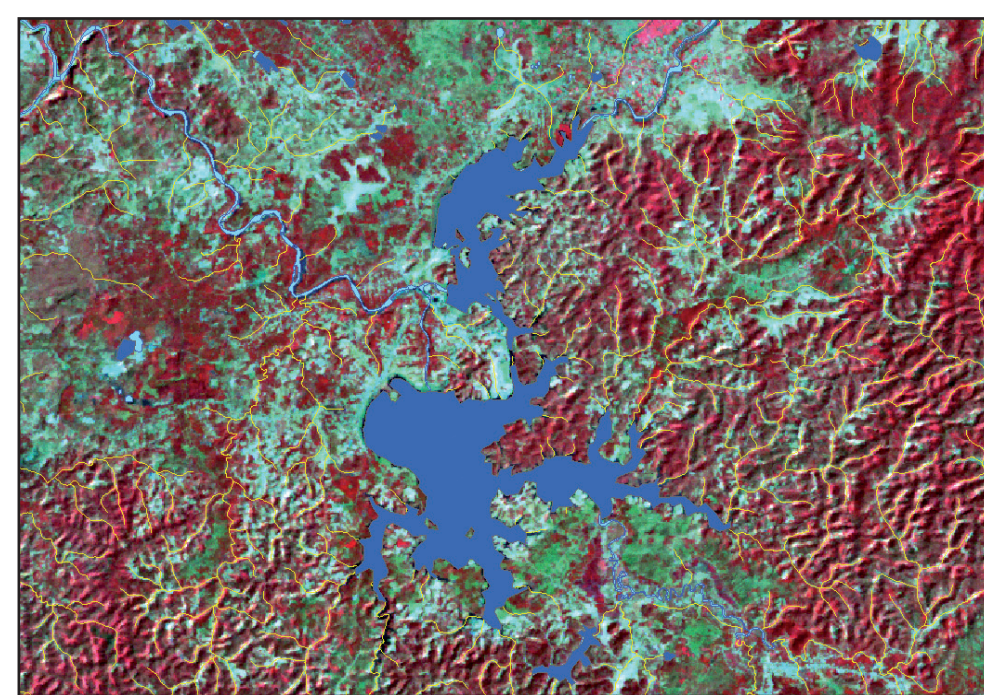
Solutions

Partly automatic solution



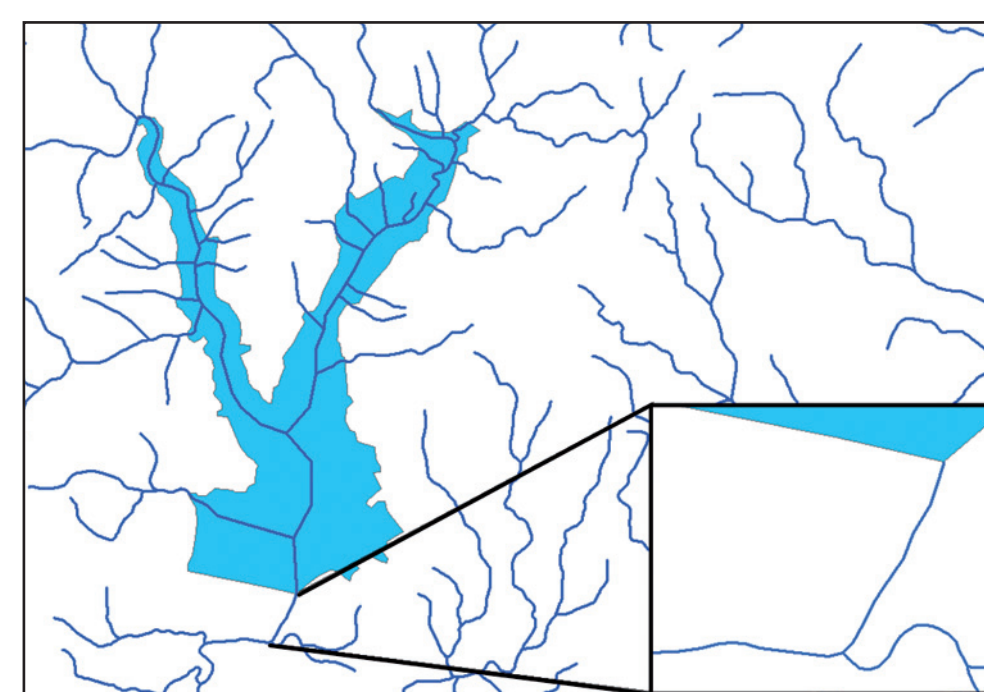
- topology tool in ArcGis
- manual corrections

Manual solution



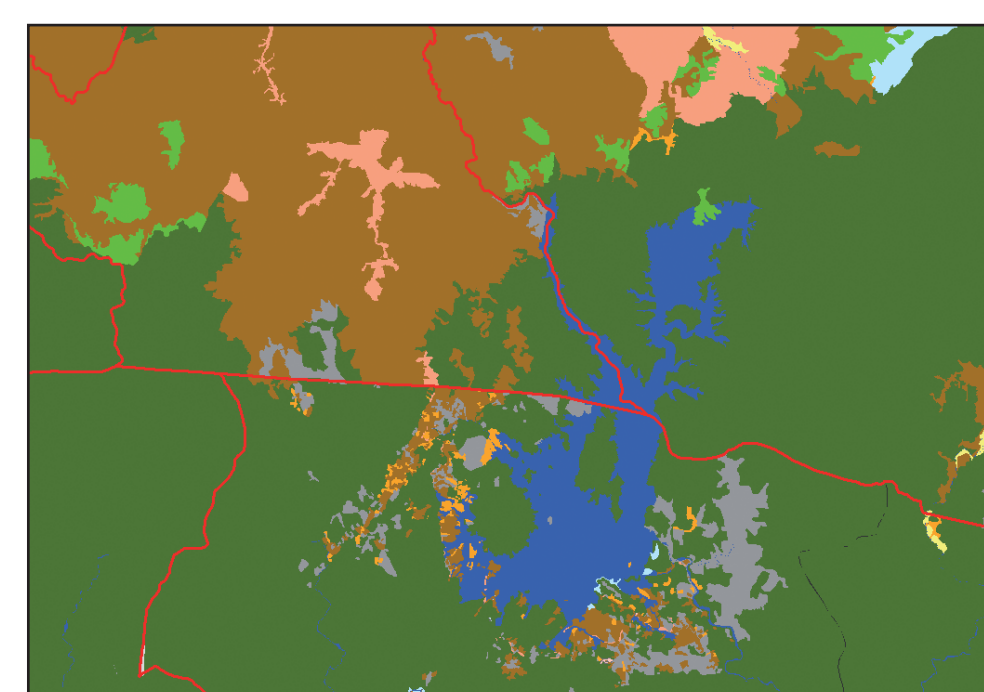
- digitalisation of missing objects by using remote sensing images

Manual solution



- re-digitalisation of rivers: double lines into single solid line
- digitalisation of lakes as polygon

Manual solution

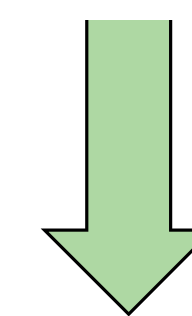


- combination of different landuse data to major classes
- fill in unknown classes by using additional information sources

Best practise...

for specifications of geodata requests

- actuality
- coordinate system
- data format
- metadata
- format and content of attribute tables
- ...

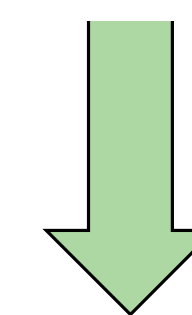


for the definition of specifications for geodata capture includes:

- regulations for digitalisation (making use of specific ArcGIS tools)
- regulations for documentation of attributes (use of shortcuts, content) and metadata

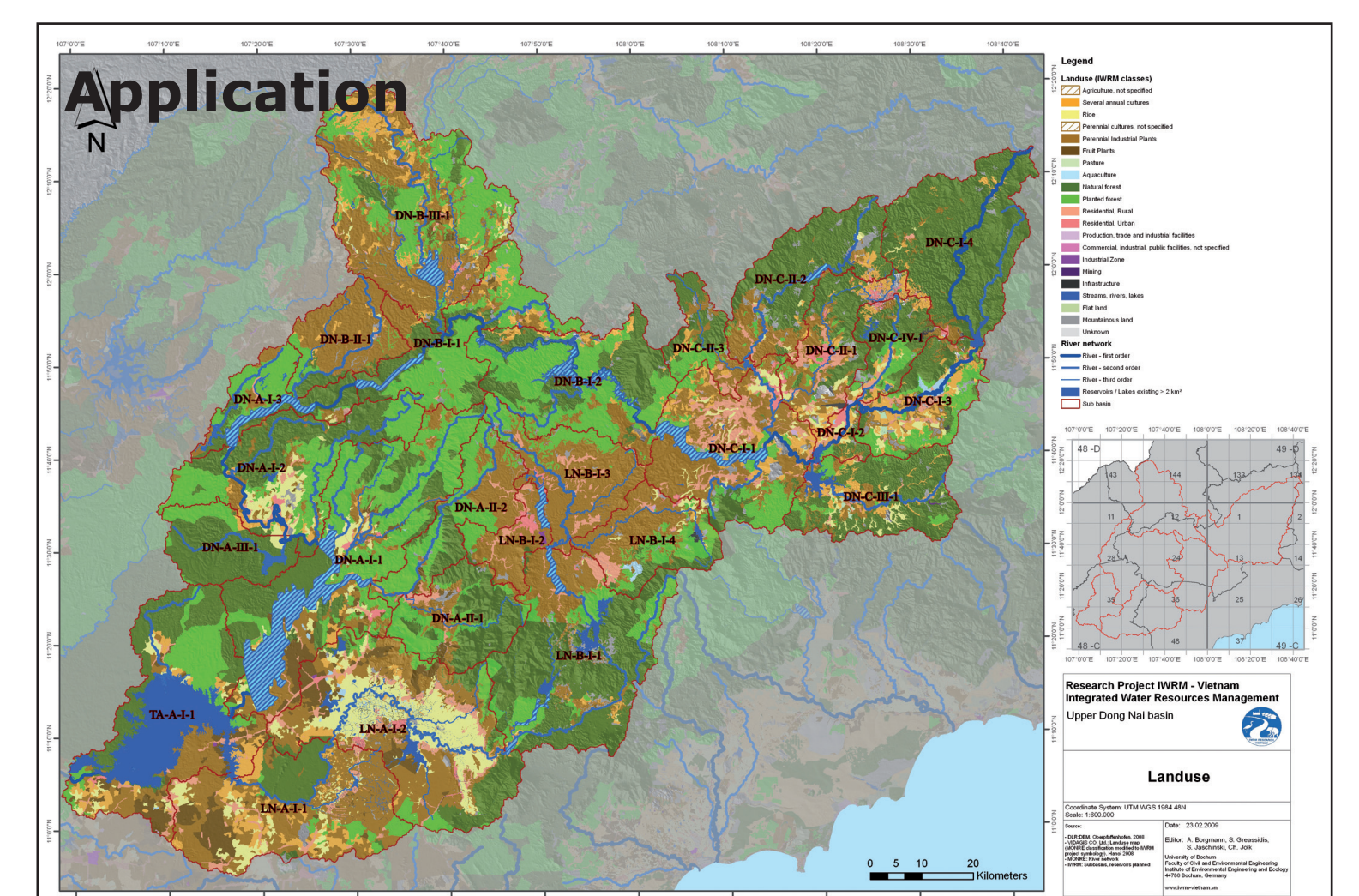
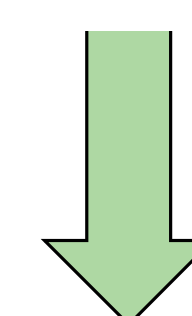
Sources

- Open Geospatial Consortium (<http://www.opengeospatial.org>)
- Geographic information - Data product specifications EN ISO 19131: 2008-09



for quality checks

- using topology tool (ArcGIS)
- checking of empty cells in the attribute tables (ArcGIS)
- visual comparison with remote sensing and other topographic data
- ...



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