

Geographic information systems

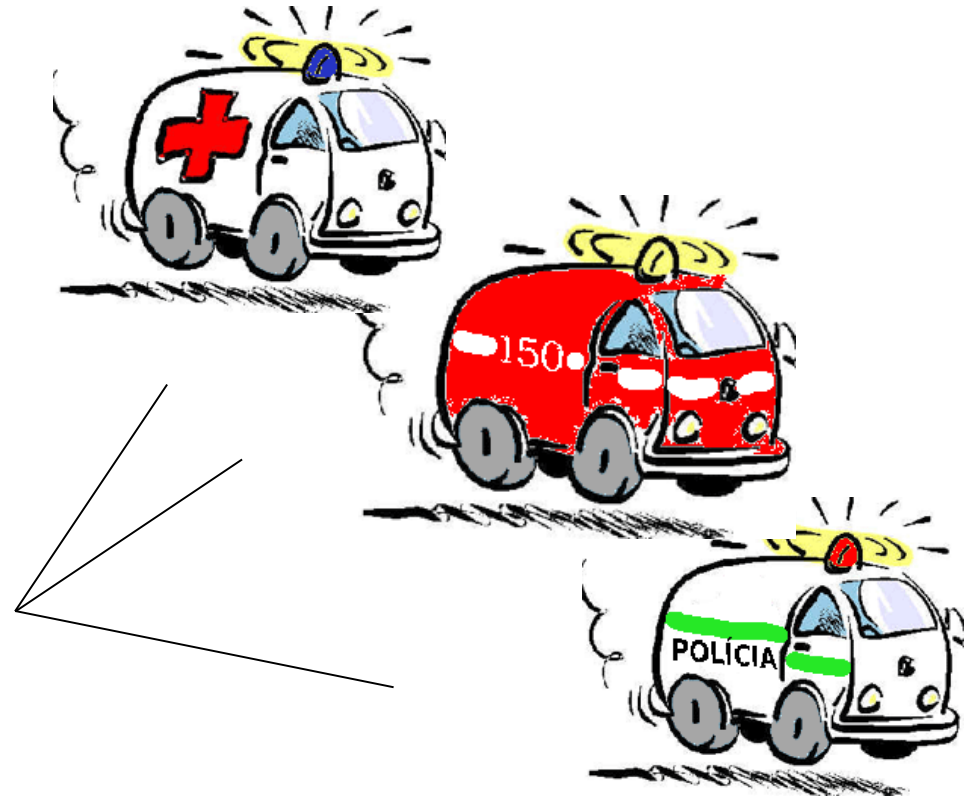
Basic terms, concept of GIS (Lesson 1)

Contents

- what is GIS? / usage of GIS
- introduction to QGIS
- map navigation
- working with layers
- homework no.1 – your first map

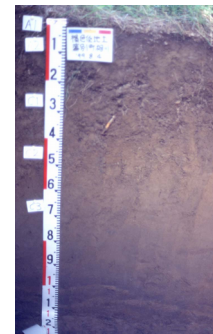
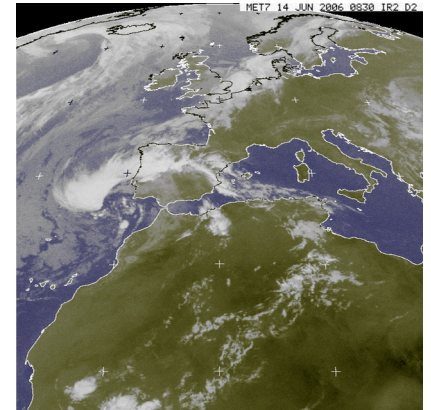
Introduction

- usage of GIS
 - **rescue systems**



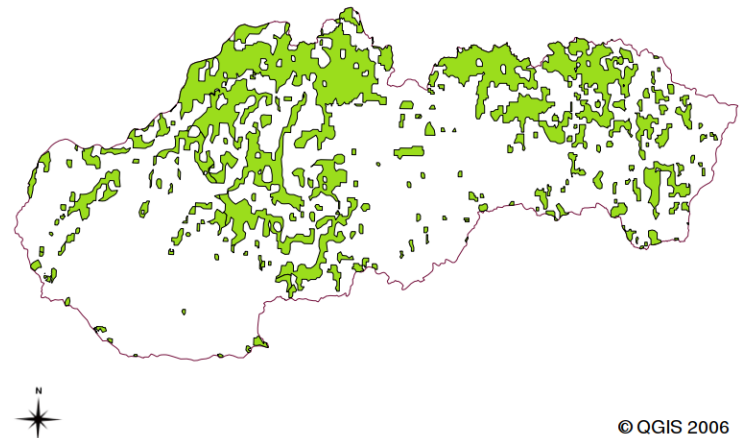
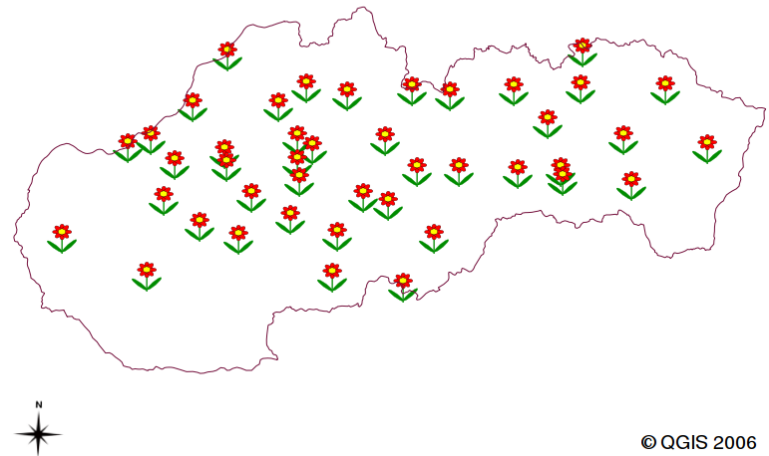
Introduction

- usage of GIS
 - rescue systems
 - **environmental monitoring**



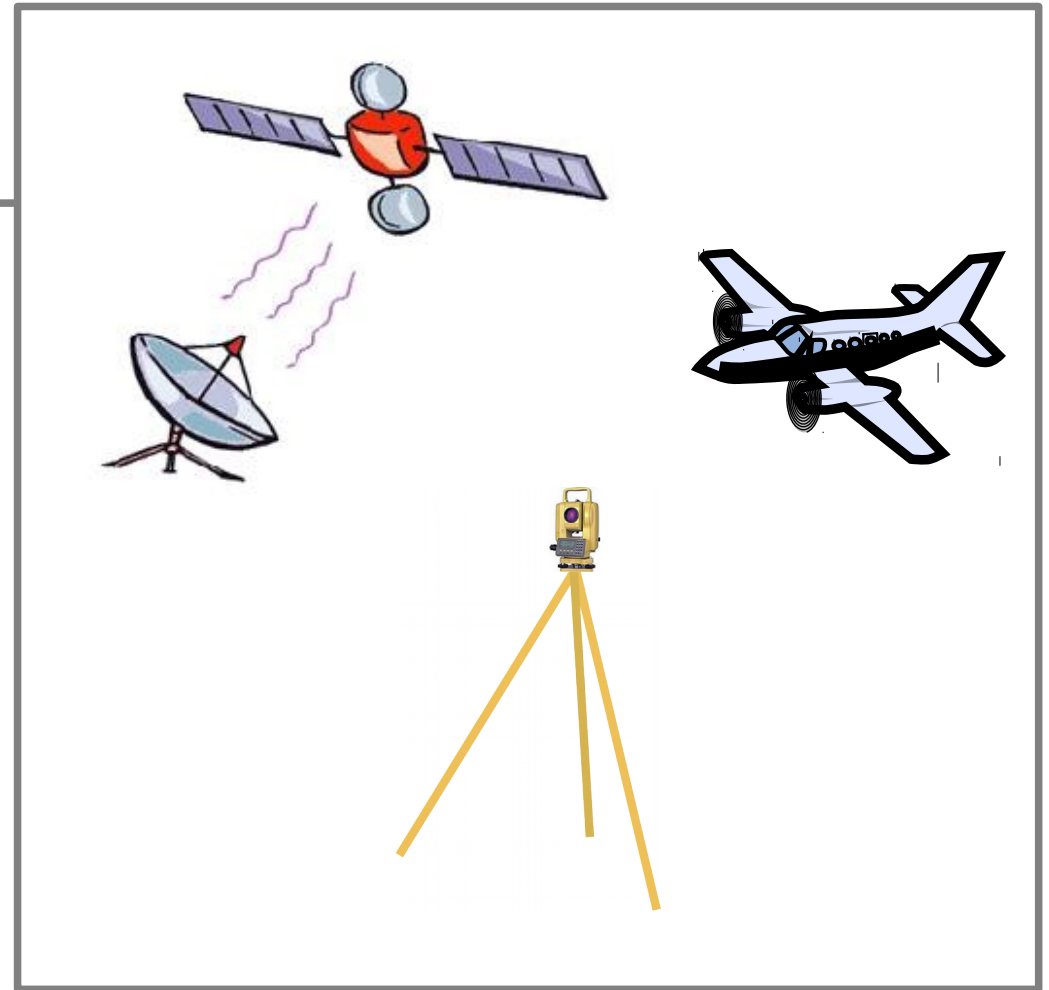
Introduction

- usage of GIS
 - rescue systems
 - environmental monitoring
 - **natural science research**
 - monitoring the movement of animals
 - spread of disease (viruses) ...



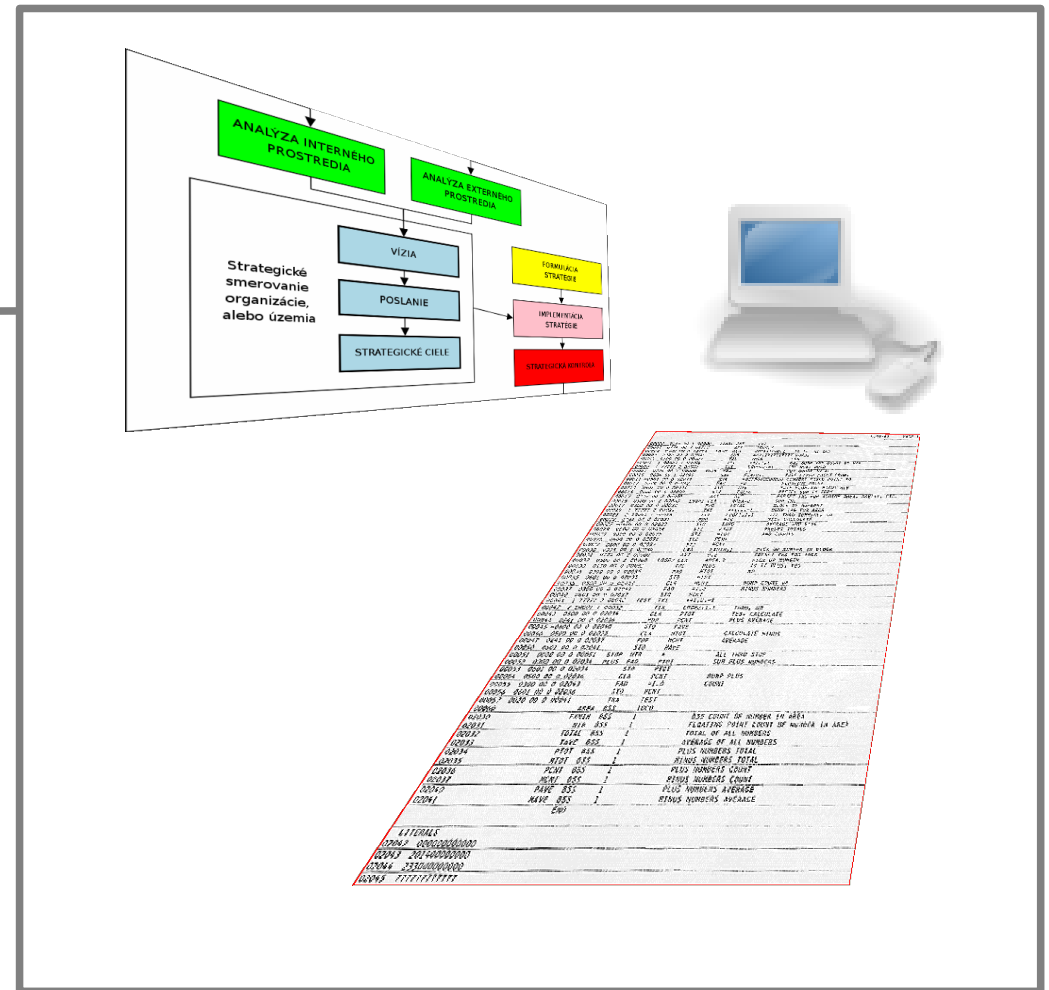
Geographic information systems

- GIS tasks:
 - **collection**,
 - processing,
 - analysis,
 - visualization,
- of geographical (geo-localized) information



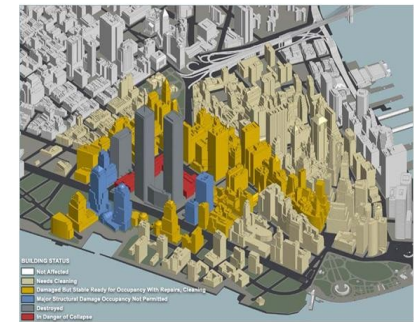
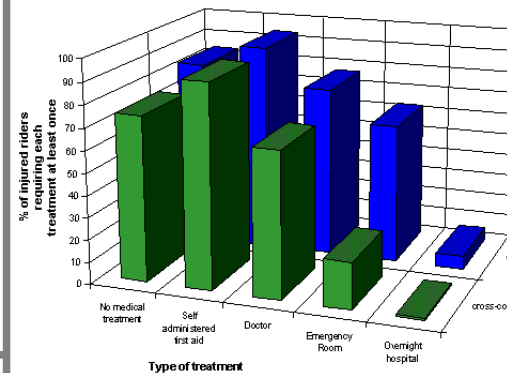
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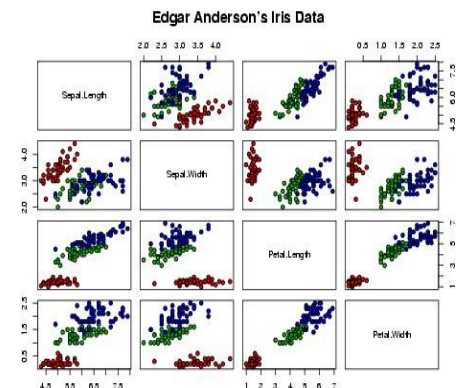
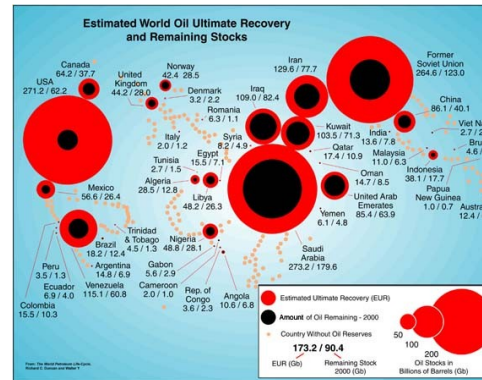


Geographic information systems

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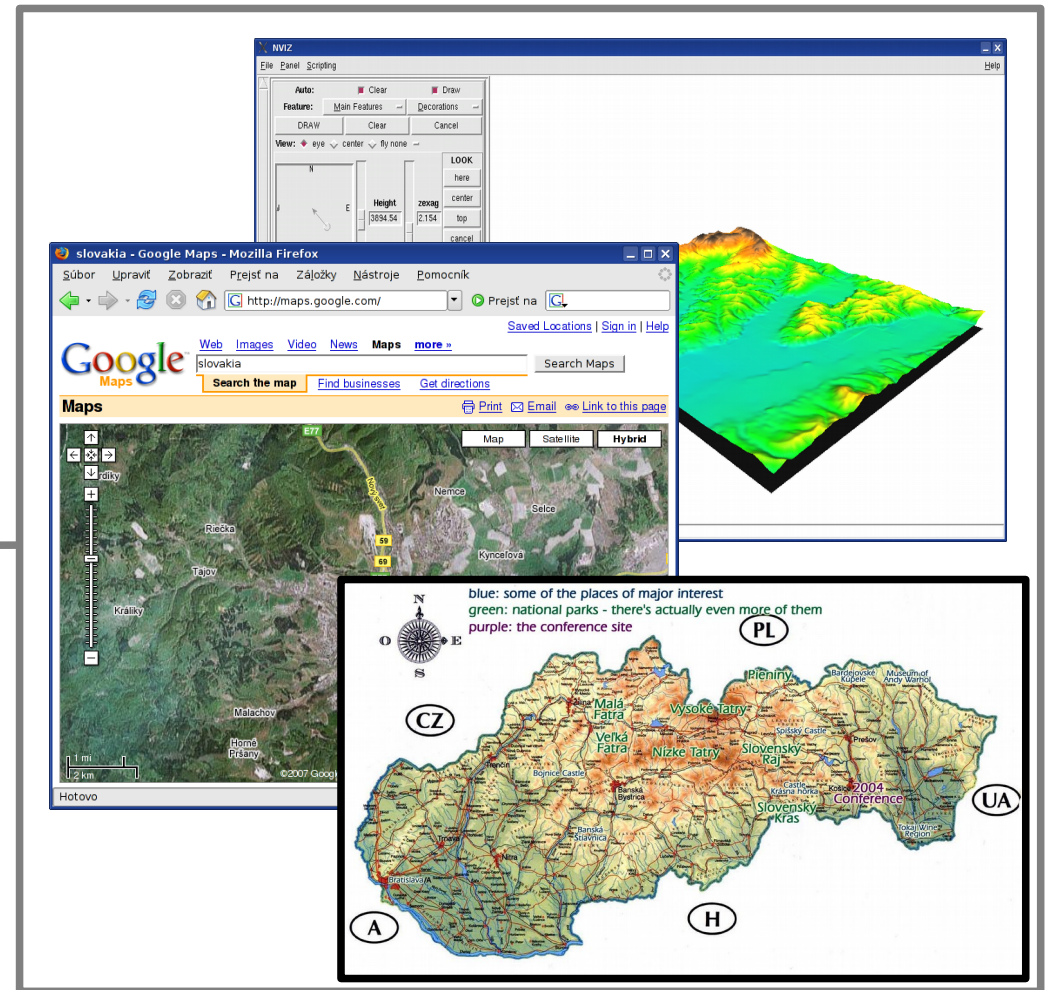


Thematic Map: A Cartogram of Building Damage in Lower Manhattan, 9/11/01



Geographic information systems

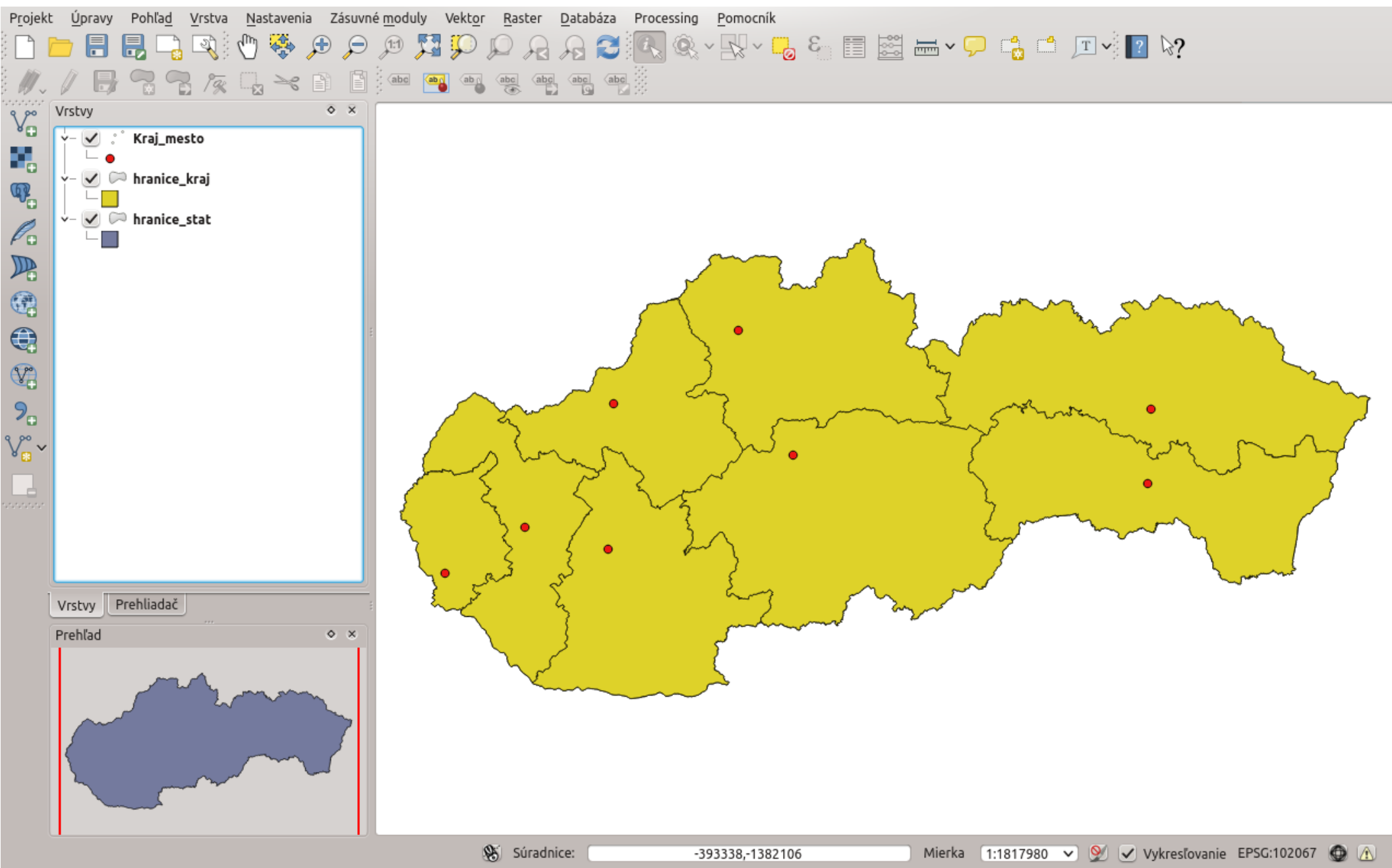
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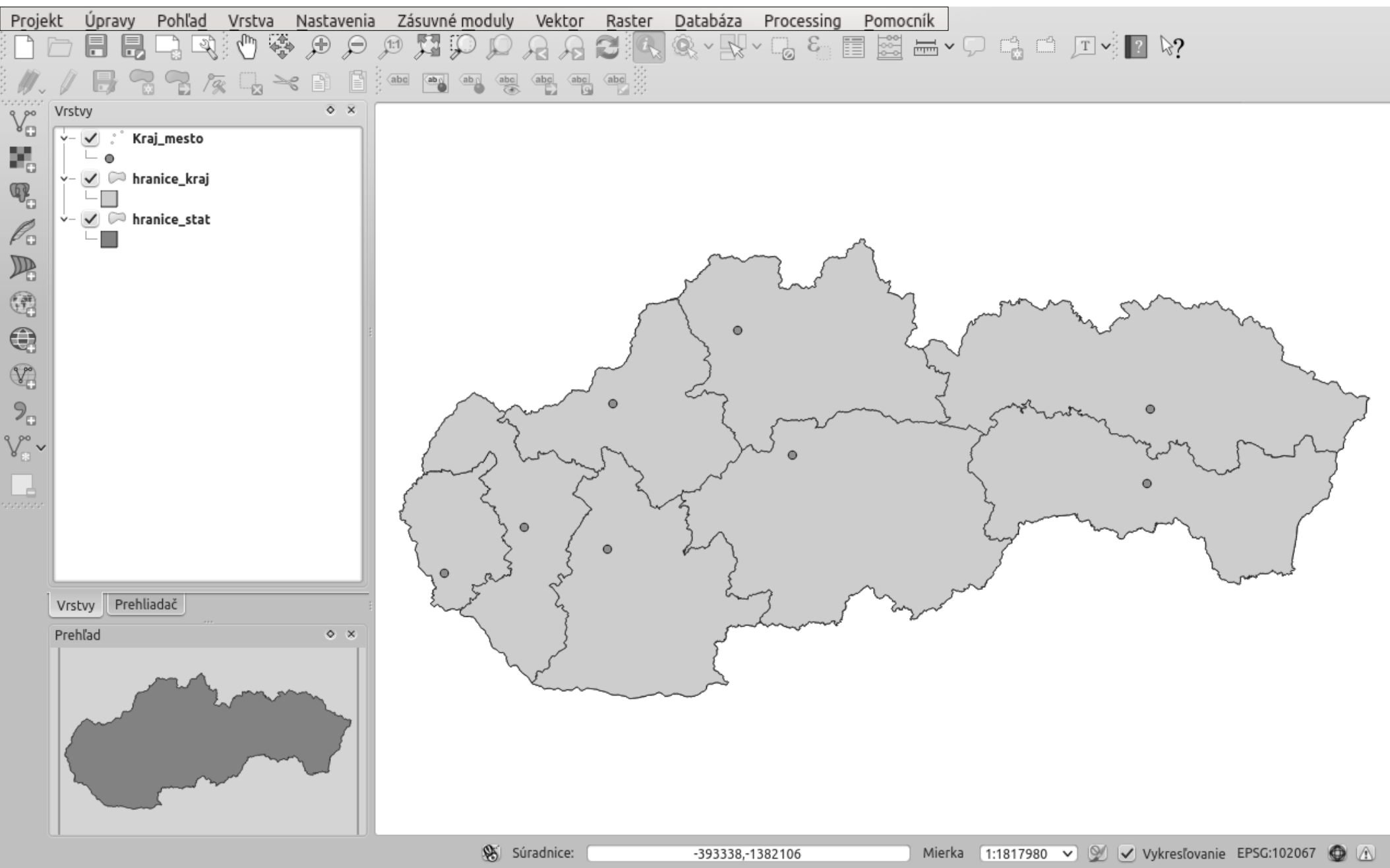


- free and open source GIS
- developed since 2002
- works with most raster or vector data formats, PostgreSQL database, WMS, WFS...
- locales in various languages available
- website: <http://www.qgis.org>

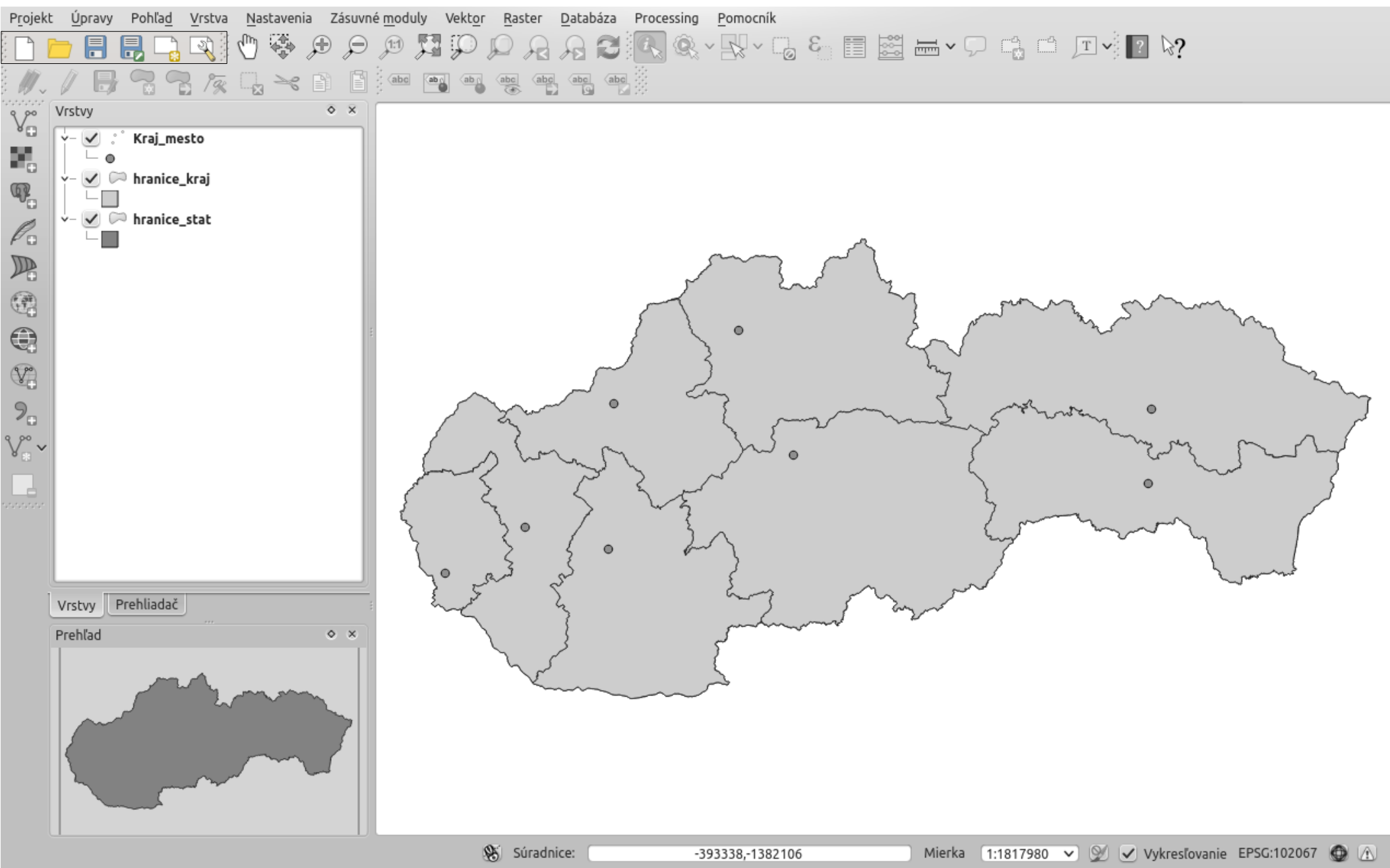
Introduction to QGIS



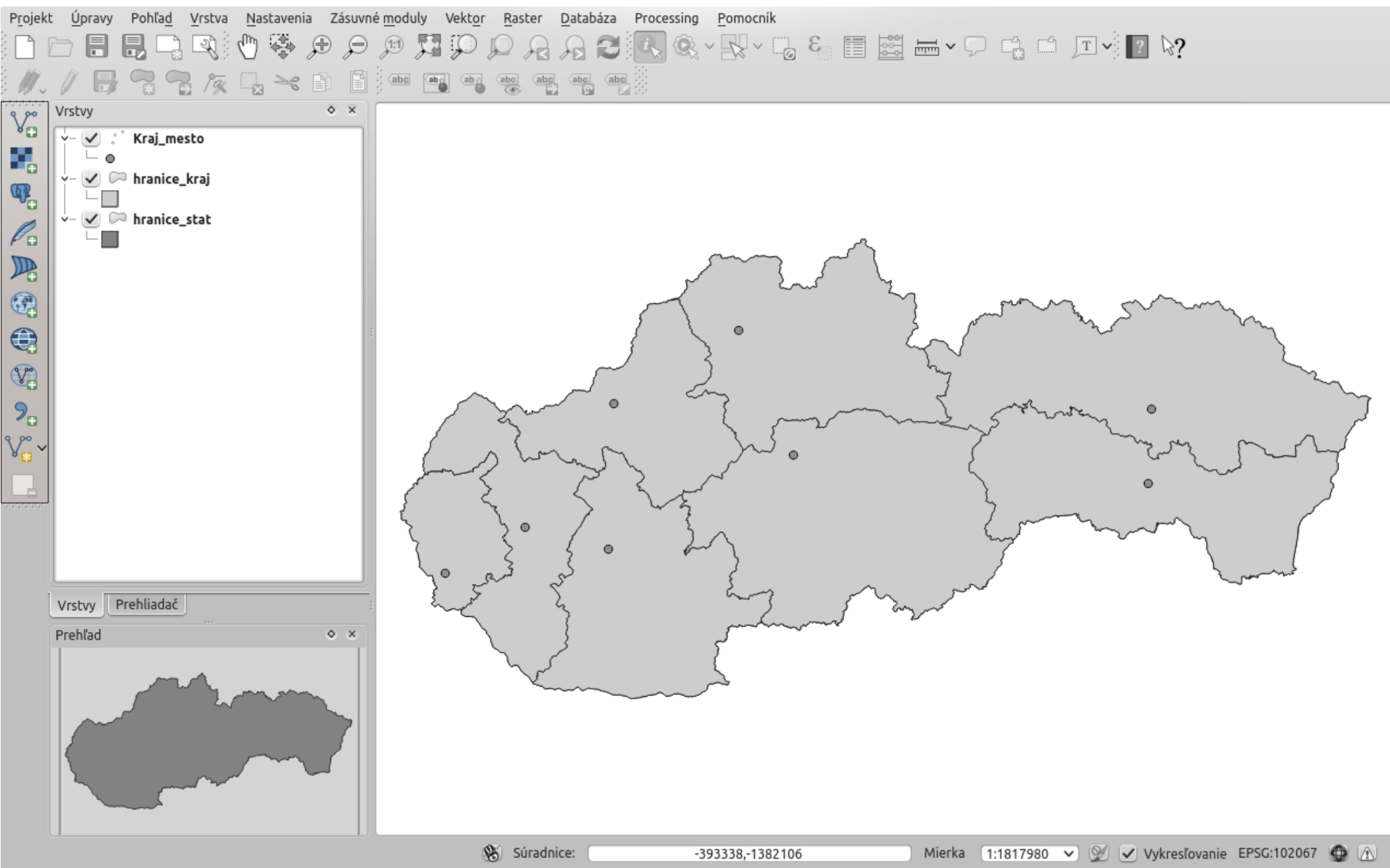
Main menu



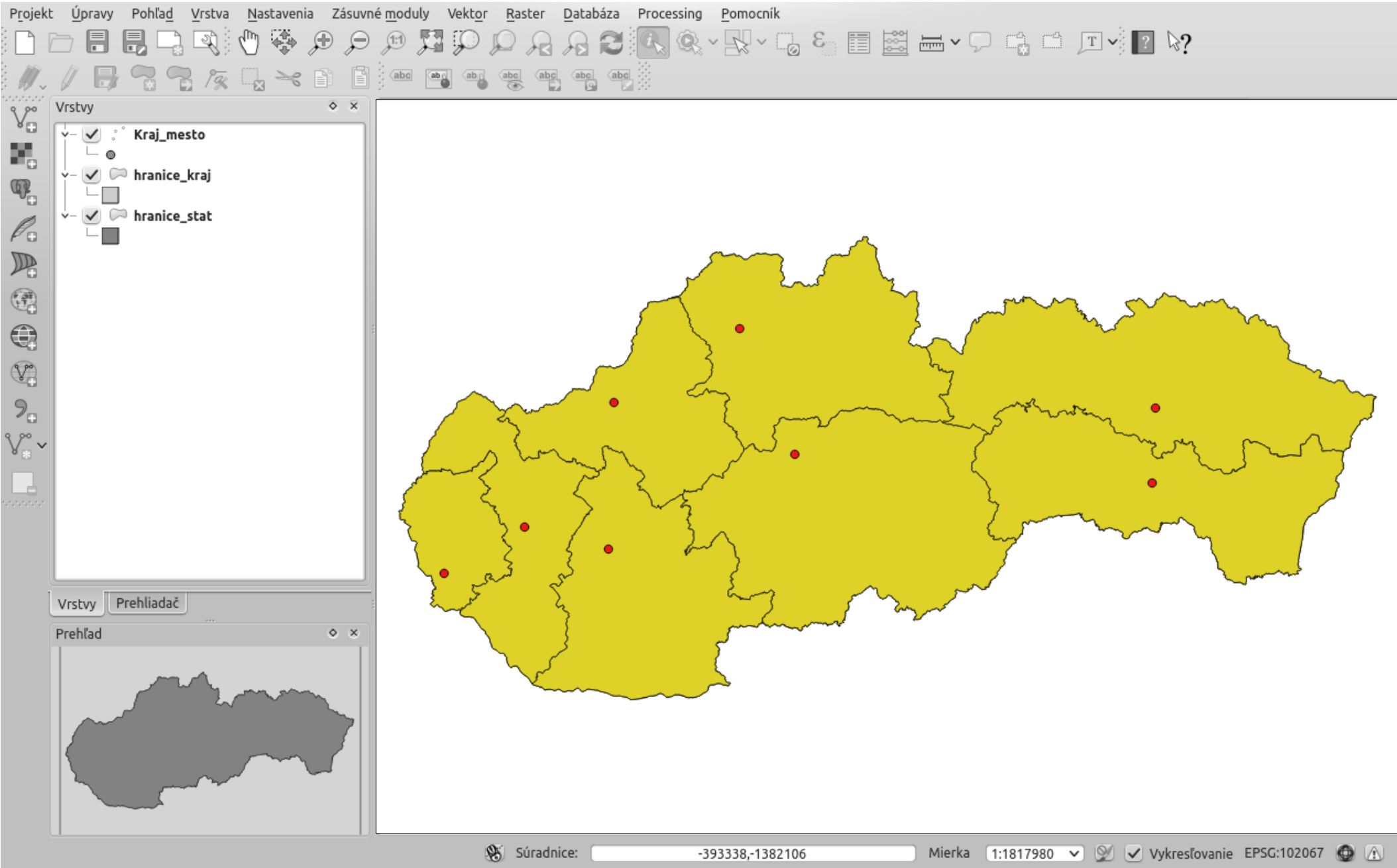
Panels / Toolbars



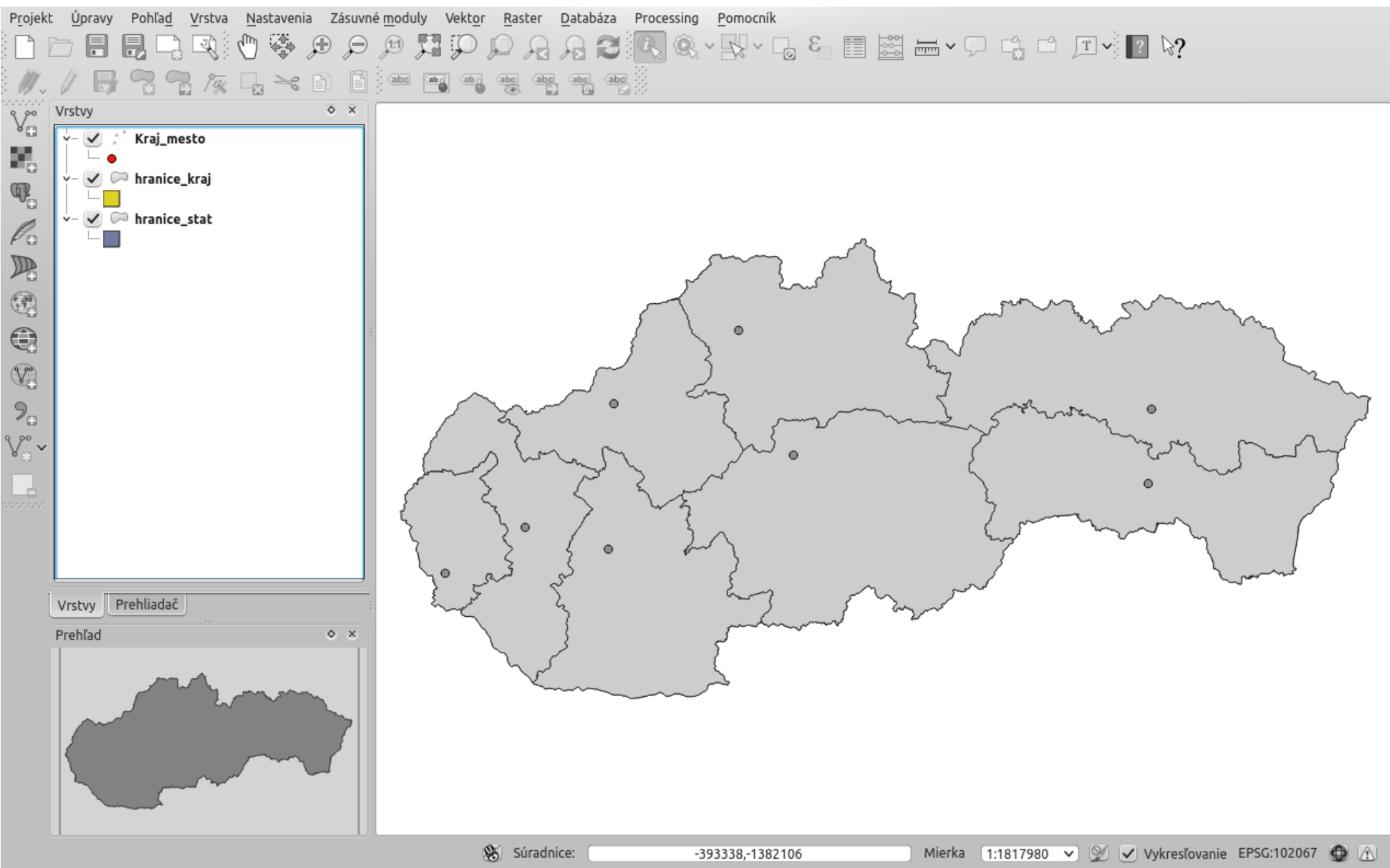
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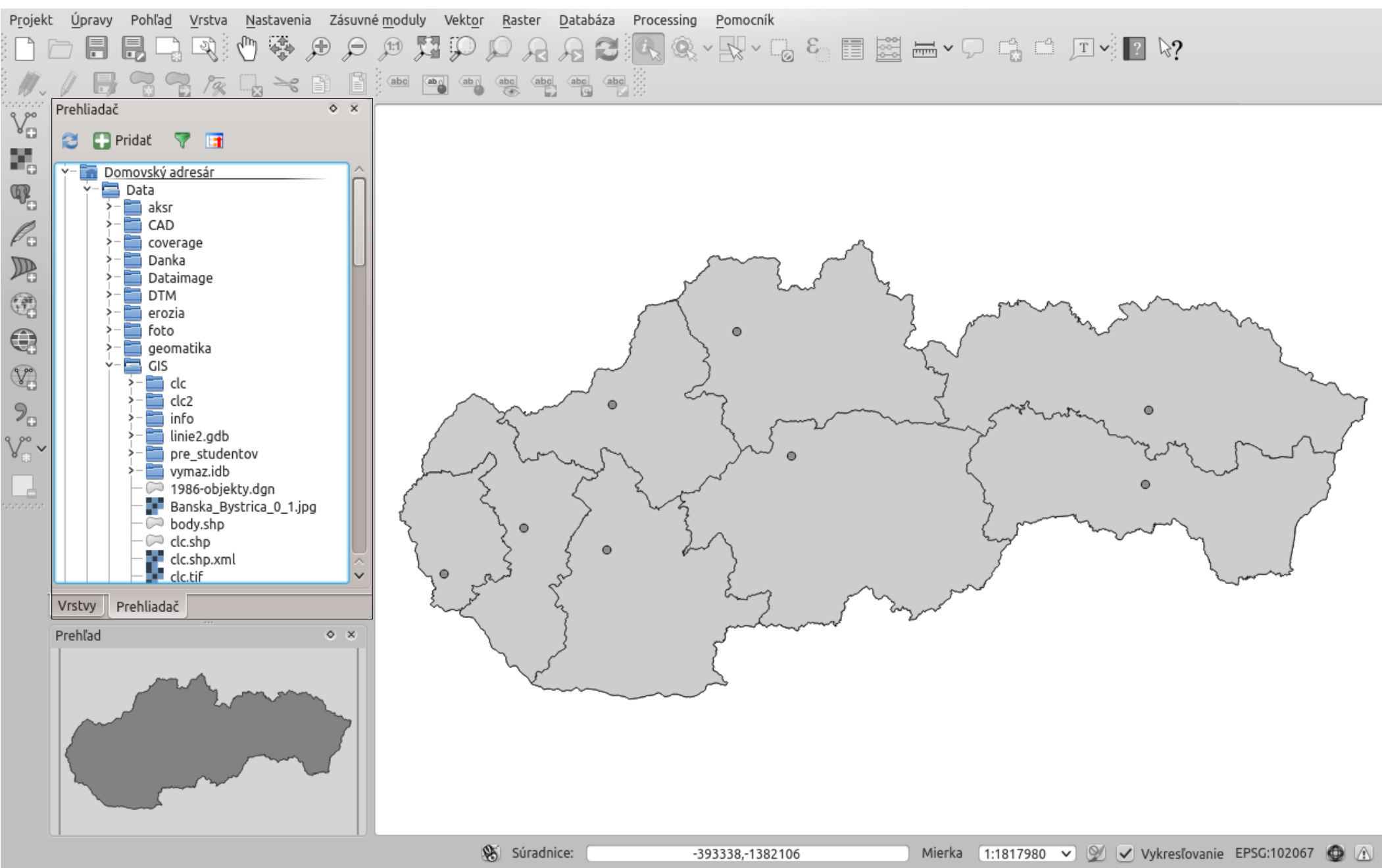
Map canvas



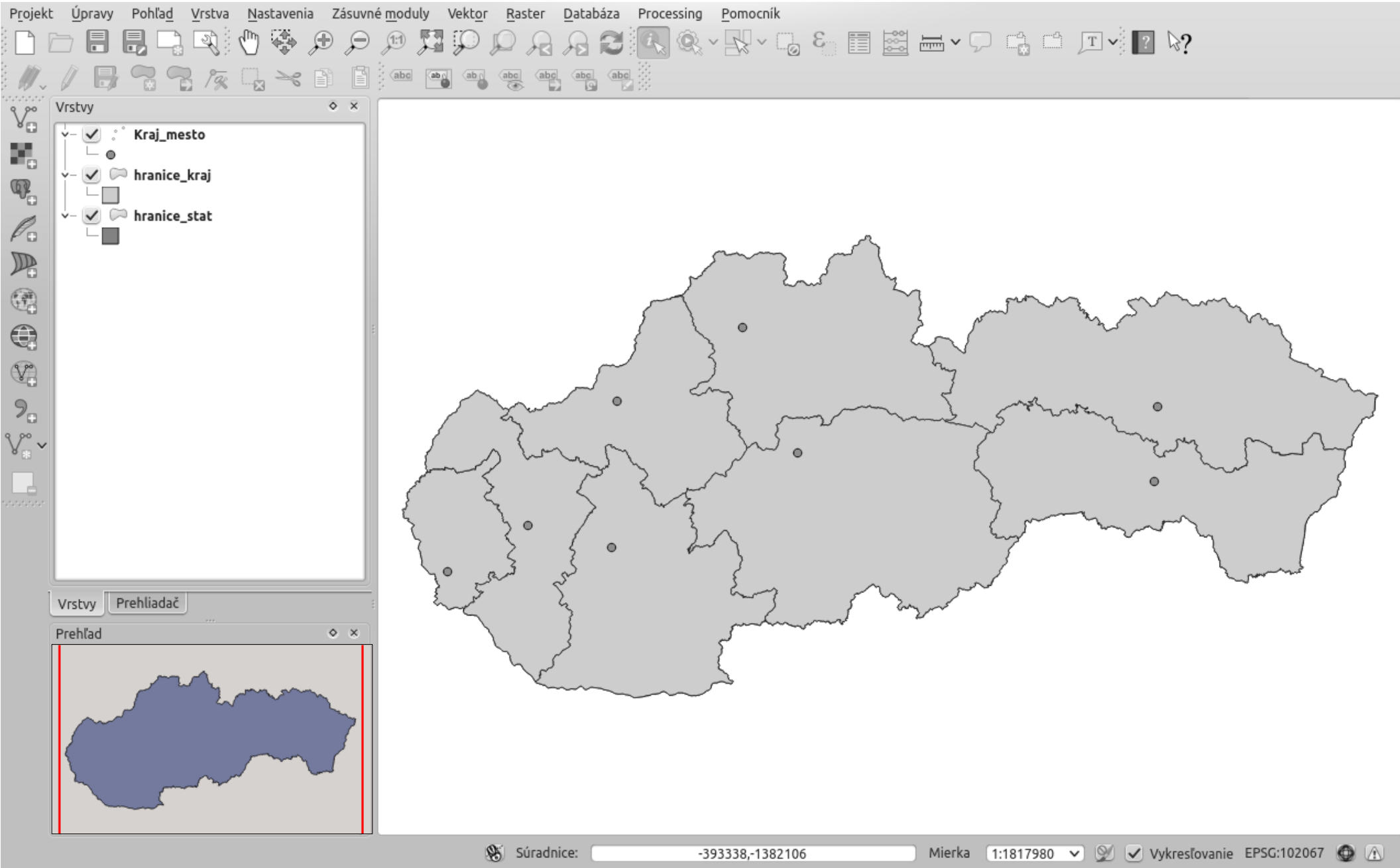
Layers panel



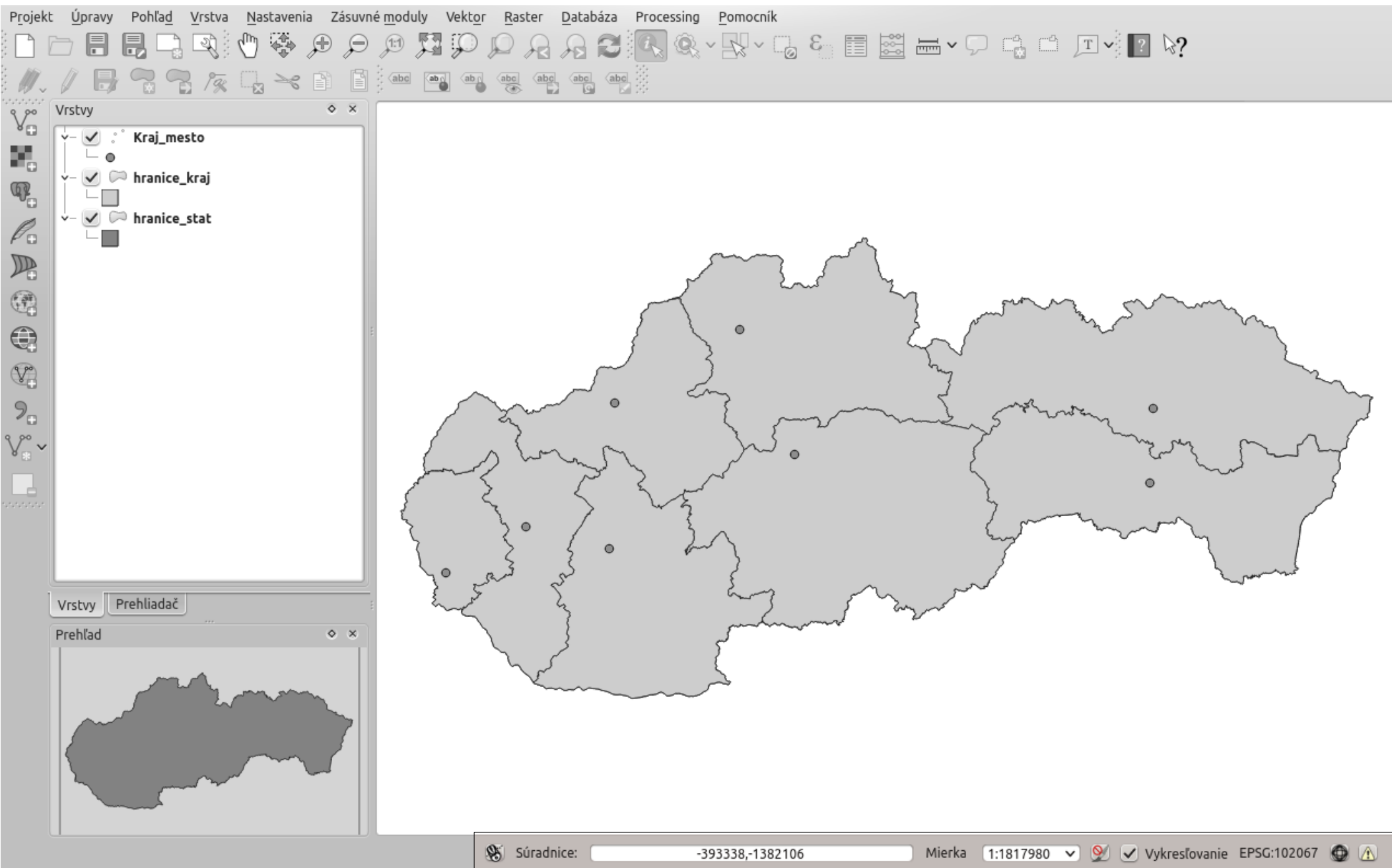
Browser panel



Overview



Status bar



Dialog box



Všeobecné

Štýl
Popisky
Polia
Zobrazenie
Akcie
Pripojenia
Diagramy
Meta údaje

Všeobecné

▼ Informácie o vrstve

Názov vrstvy hranice_stat zobrazená ako hranice_stat

Zdroj vrstvy /home/hanele/Documents/Vyuka/GIS/data/Cv01/hranice_stat.shp

Kódovanie zdroja dát System ▼

▼ Súradnicový systém

USER:100000 - * Generated CRS (+proj=krovak +lat_0=49.5 +lon_0=24.8333333333333 +alpha=0 +k=0.9999 + Uviest...

Vytvoriť priestorový index Aktualizovať rozsahy

▼ ☐ Viditeľnosť v závislosti od mierky

Maximum (uzatvorený interval) 1:0 Minimum (otvorený interval) 1:100000000

Aktuálna Aktuálna

▼ Podskupina objektov

Tvorba dopytov

Obnoviť predvolený štýl Uložiť ako predvolený Načítať štýl ... Uložiť štýl ▼

Pomocník OK Použiť Storno

Items



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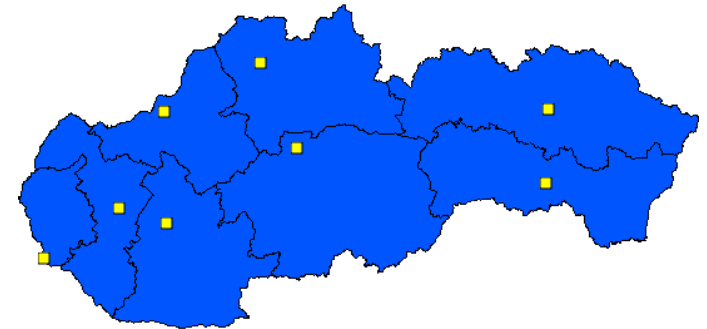
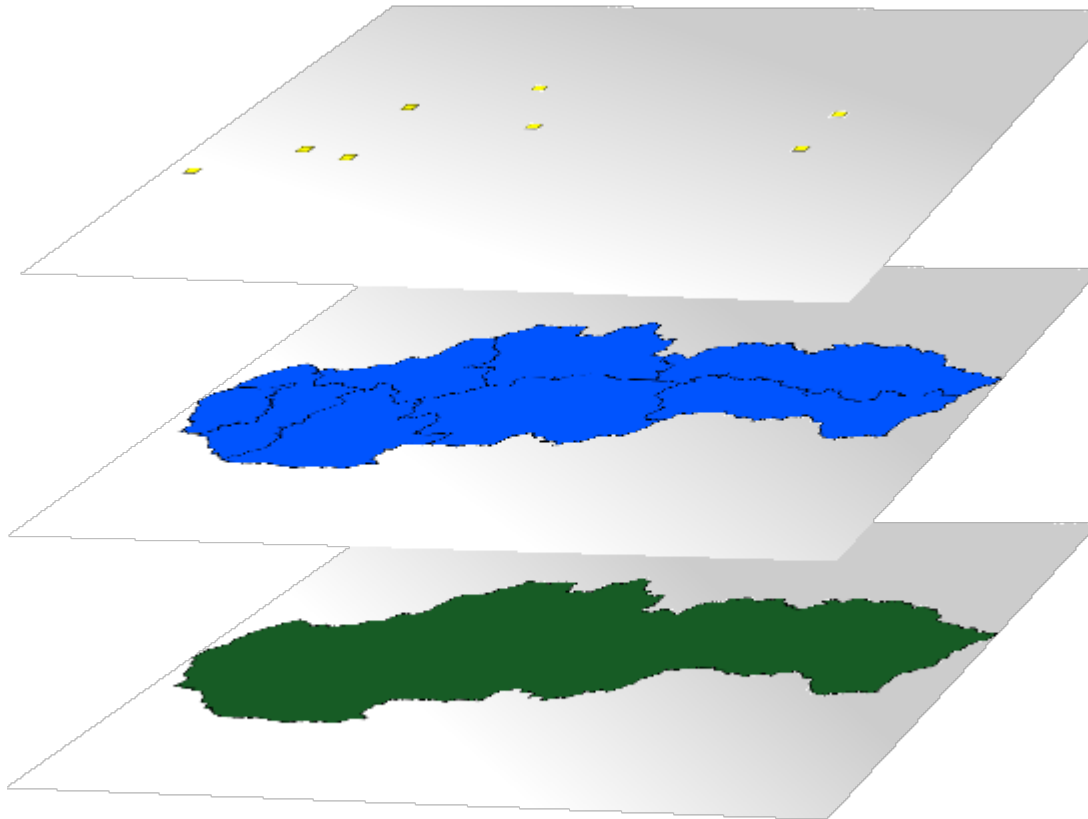
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Concept of layers



Adding layers



- adding layers to project:
 - via menu:
Layers → Add vector layer
Layers → Add raster layer
 - via icons: The image shows two icons from the QGIS interface. The top icon is a blue line with three nodes and a green plus sign, representing the 'Add Vector Layer' icon. The bottom icon is a blue and white checkerboard pattern with a green plus sign, representing the 'Add Raster Layer' icon.
 - via **Browser**:
 - double click
 - drag and drop
 - Add Selected Layers icon







Working with layers



- changing layers order:
 - drag and drop in Layers panel
- changing layer style:
 - double click - **Properties** dialog box:
 - fill color
 - fill style (solid, no brush, hatch, dots ...)
 - outline color
 - outline style (solid line, dash line, dot line ...)
 - outline width

Map navigation



- zoom in 
- zoom out 
- pan 
- zoom full 
- zoom to layer 
- zoom to selection 
- zoom in/out by scroll (mouse wheel)

Overview



- overview map navigation:
Settings → Panels → Overview Panel
- layer → **Show in Overview**
- changing view by drag and drop of red rectangle in overview panel

Map decorations



View → Decorations

- grid
- north arrow
- scale bar
- copyright label




Plugins → Manage and Install Plugins

- functionality extension
- additional functions:
 - creating layer from XY coordinates table,
 - GPS tools,
 - georeferencing,
 - ...

Project



- which is stored in the project? 
 - layers styling
 - layers order
 - project settings (map units, layer names, coordinate system ...)
- which is **not** stored in the project?
 - layers data
- guidance:
 - **to transfer the project, we have to copy not only the project itself, but also the layers data (shapefiles, etc.)**

Saving the map



- save the map as an image (PNG, JPG):
Project → Save as Image...
- image of the map we can paste to text documents, publish on the website or modify in graphic editors

Homework no.1



- download vector layers from:
<http://gis.fns.uniba.sk/vyuka/Gis/u1/d1.zip>
- create the map from layers:
 - change the layers order properly,
 - style the layers,
 - add map decorations (scale bar, north arrow)
 - put your name in copyright label
 - save the map as an image
- send the image to stankova@fns.uniba.sk
- deadline: until the next lesson

The End

Thank you for attention!