

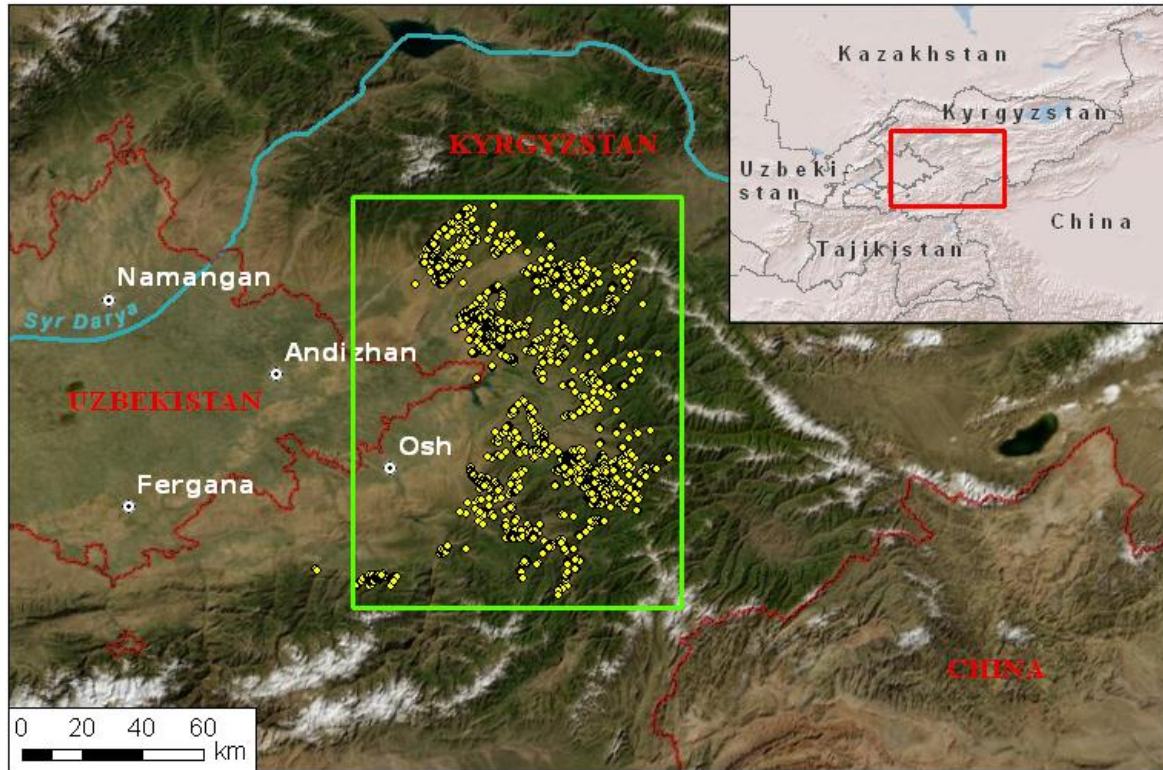
# QGIS Tool for Landslide Hazard Assessment

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# Study Area – Southern Kyrgyzstan



Yellow points represent landslides after Yerokhin (1999)

- Ongoing active mountain building in Central Asia
- Frequent occurrence of extreme natural processes
- Landslides one of the major hazards in Kyrgyzstan
- Highest concentration at eastern rim of Fergana basin
- Study area: 100x100km<sup>2</sup>



# Landslide Situation in Southern Kyrgyzstan



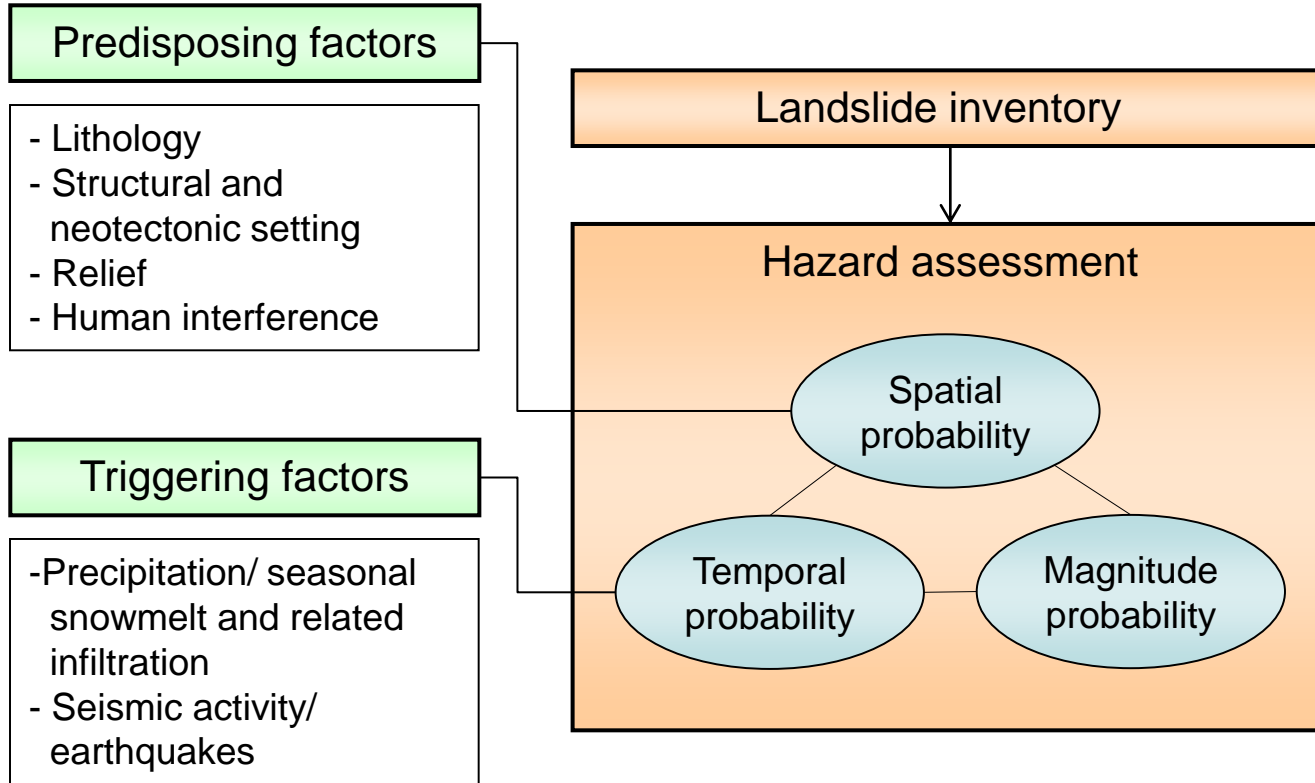
Rapid displacement of quaternary loess within 15 minutes period in March 1994 (50 victims)



Displacement of clay-rich tertiary sediments during period of several days in June 1998

- Regular monitoring by Ministry of Emergency Situations until 1991
- Drastic decrease in financing after 1991 + high process intensity in 1994 (97 casualties)
- Currently: unsystematic investigations by the Ministry + occasional systematic investigations by other organizations
- Intensive year can be expected in near future

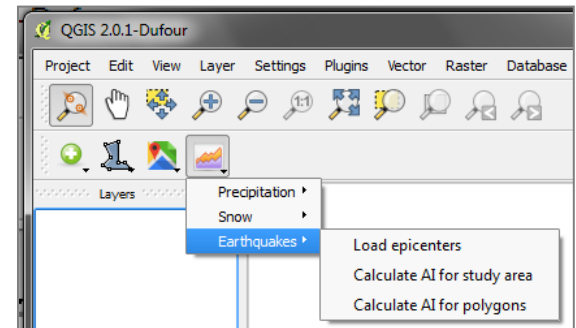
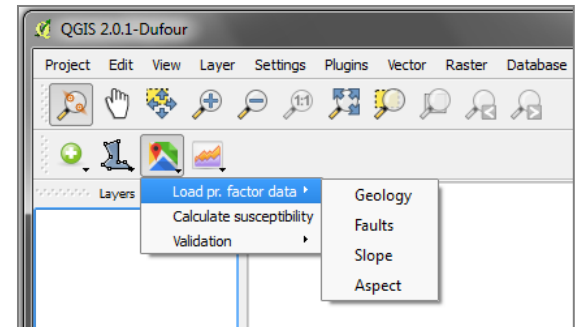
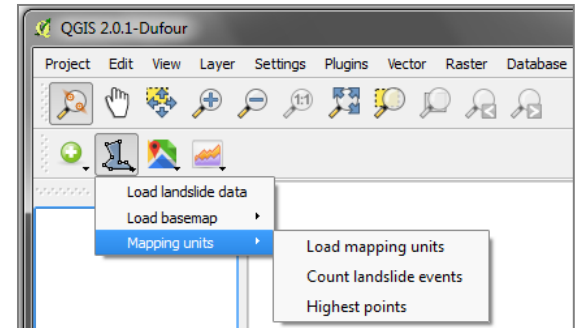
# Landslide Hazard Assessment



*after Guzzetti et al. 2005*

# QGIS Plugin Overview

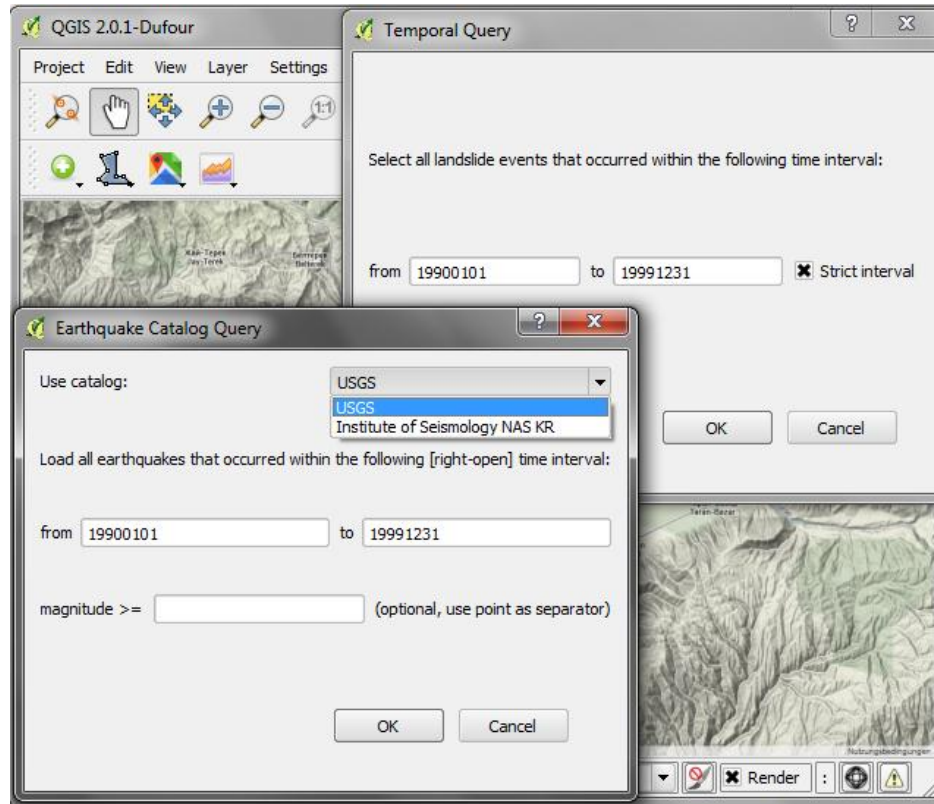
- QGIS plugin offering customized data queries and spatial analysis tools
- Open-source software in order to reduce costs and meet requirements of multiple end users
- Possibility of data updates in a single location
- Incorporation of data on landslide predisposing and triggering factors



QGIS plugin dropdown menus ▶

# Data Queries

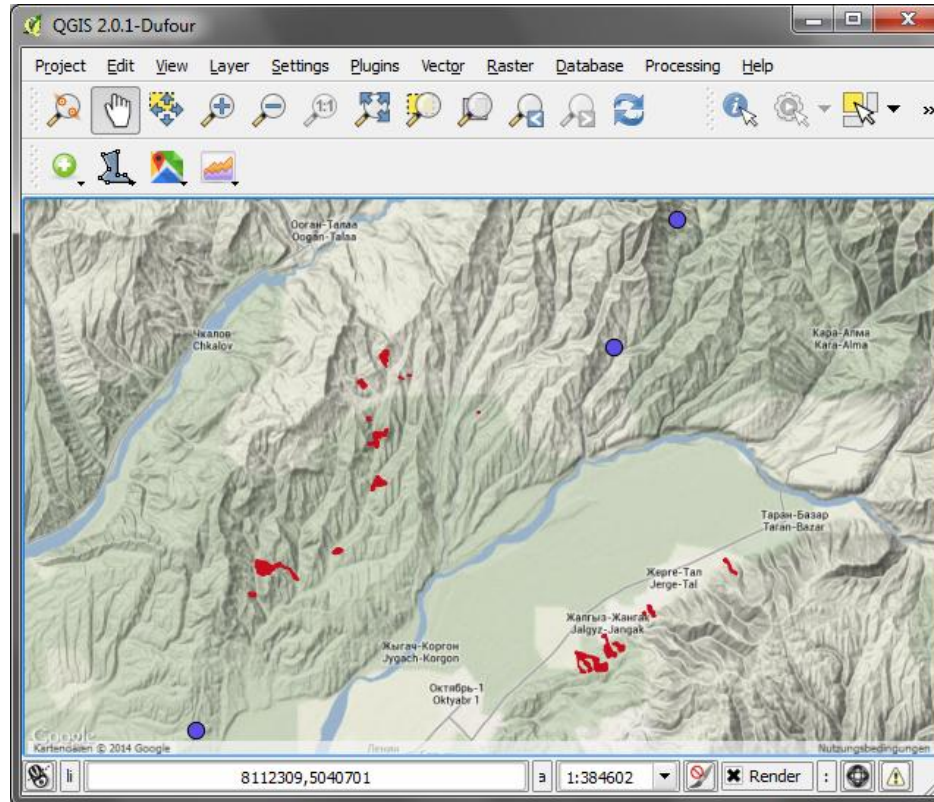
- Typical workflow: selecting landslide / factor data for a certain time period and assigning them to mapping units for further analysis



Menus for querying  
landslide and  
earthquake data

# Data Queries

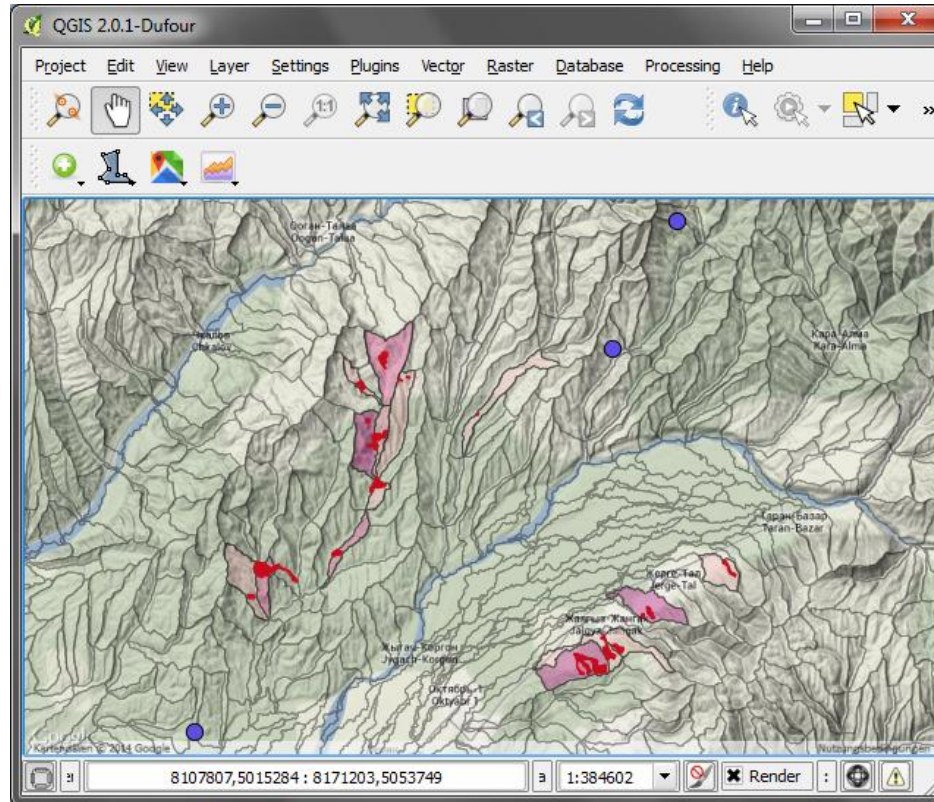
- Typical workflow: selecting landslide / factor data for a certain time period and assigning them to mapping units for further analysis



Slope failures (red) and earthquakes (blue) that occurred in 1990 - 1999

# Data Queries

- Typical workflow: selecting landslide / factor data for a certain time period and assigning them to mapping units for further analysis

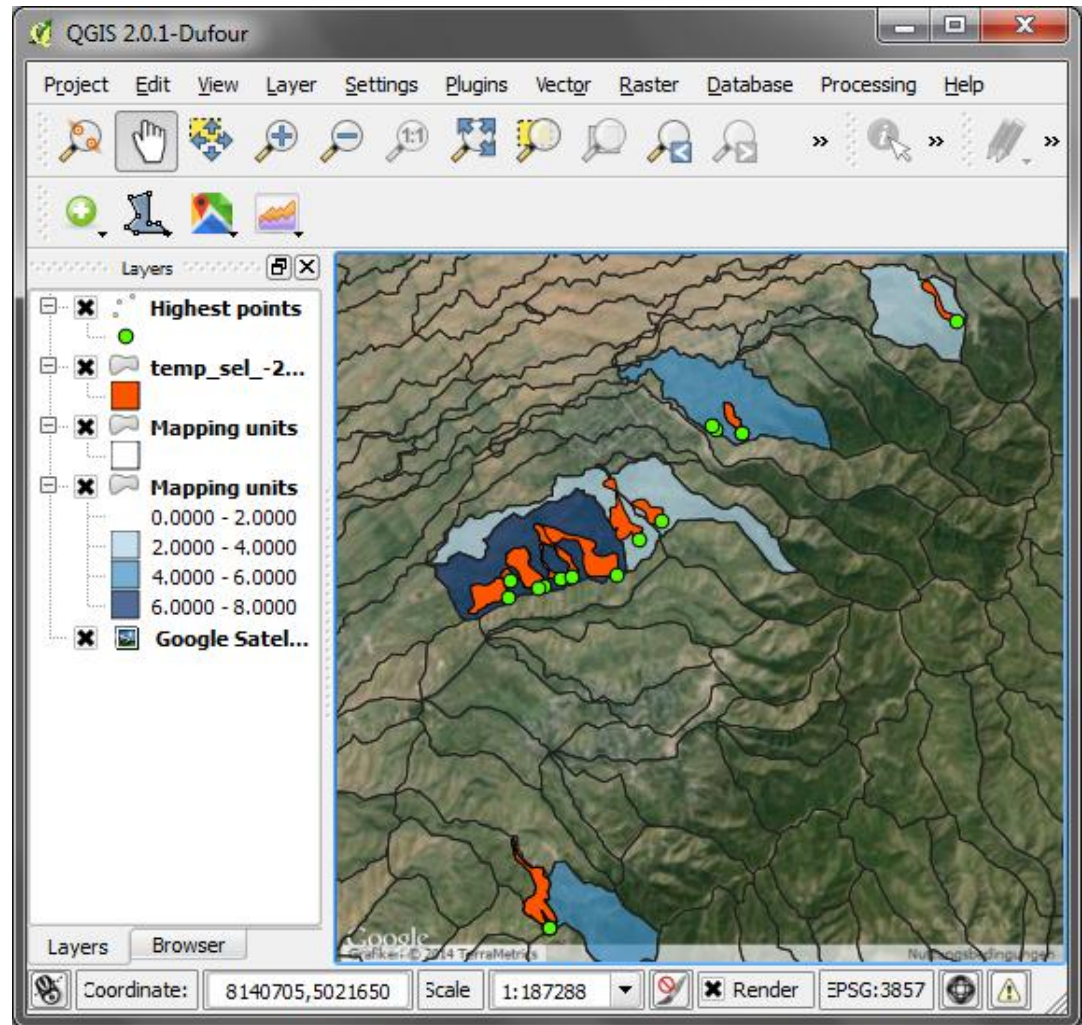


Landslides have been assigned to mapping units; the number of landslides has been calculated for each mapping unit



# Tools for Spatial Analysis

Points belonging to landslide main scarps and mapping units showing the number of landslides in them ▶



# Tools for Spatial Analysis

Calculation of earthquake influence using empirical formulas for Arias intensity

