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Methods and Results of Urban Geological Research in Budapest City and in Hungary

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Urban geology can be considered as the field of Applied Geology that deals with major population centres and it analyses the interaction between the constructed environment with engineering activity and the geological settings and natural processes. Studies cover a wide field, and a series of maps has been produced showing, for example geological formations, surface and groundwater conditions, environmental vulnerability, potential hazards, construction suitability, and the raw material occurrences outside of the urban zones.

The regional engineering geological mapping of Budapest was undertaken in the 1970s. The 1:10 000 scale geological maps and accompanying detailed reports provided the basis geo-database of the capital, after the urban area growth and change those tracking show anomalies in time and location. The urban geology project of Budapest (Hungary) started in 2001 and since that time 13 of the capital's districts have been mapped by the Geological and Geophysical Institute of Hungary (before 2012 by its predecessor, the Geological Institute of Hungary). From 2013 the maps and their geological data were translated into GIS format (in the Hungarian EOVS system) with the basic aim to create a geo-database for urban areas and to keep it up-to-date.

The method of investigation was founded on international and national standards and regulations accepted in the years from 1970 to the 1990s. And nowadays the mapping has reached its original aims, representing geological digital data of the Hungarian capital and all 19 counties nationwide.

The results of the work are the followings:

In the capital:

- Engineering Geological Map Series of Budapest 1:10 000; 28 atlas

- Engineering Geological Map Series of Budapest 1:20 000; 9 atlas

- Engineering Geological Map Series of Budapest 1:40 000; printed edition

- Budapest Urban Geology GIS Database (Hungarian EOVS systems)

- The districts of Budapest Urban Geology Map Series 1:10 000 / 1:20 000 / 1:25 000

- Budapest Agglomeration Regional Development Map Series 1:100 000

- The engineering geological assessment of the mapped potential geological hazards at the Danube Bend, 1:20 000

In the counties:

- In parallel, there has been national mapping at 1:100 000 scale, where the depth of ground water level, the surface expression, the engineering geological conditions and the raw material occurrences were summarised and presented alongside surface movement hazards.

