



## **Comparison of maps of Goetz & Probst (1804) and J. Lipszky (1804-10) of Hungary – a step forward in projection accuracy**

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Two maps of Hungary, from almost the same year in the early 19<sup>th</sup> century, are compared, with respect to the map content, projection and geodetic accuracy. The map of Goetz, Johann M. Probst and Johann K. Probst (1804; henceforth referred to as GPP map) is printed in one sheet, its scale is approx. 1:1.5 million. There is no information about its geodetic basis. The map of János Lipszky was surveyed between 1804 and 1810, its scale is slightly larger than 1:500,000, contains 12 sheets and it was partly based on the astronomic measurements of Johann Matthias Korabinszky. According to our analysis, both maps have equidistant conic projection but with different projection center: the latitude of the standard parallel is cca. 55 degrees in GPP map and it is exactly 40 degrees at Lipszky. The latitude-longitude grid has some position errors from the above defined projection in GPP but only at a few meridians in the eastern half of the map while it is exact at Lipszky. The shift of the map content compared to the parallels and meridians are almost zero around the observatories (Vienna, Pozsony/Bratislava, Nagyszombat/Trnava, Buda [Budapest] and Karlsburg/Gyulafehérvár/Alba Iulia) in GPP map, so it is assumed that their position were used for the map making. The content shift remains quite low in the north-western quarter of the map. In case of the Lipszky map, this error is lower and occurs mainly in Transylvania and the Croatian coast. As the GPP map represents the standard quality of the overview maps of Hungary of the second half of 18<sup>th</sup> century, the astro-geodetic basis and accurate projection handling of Lipszky provided a next level in quantitative cartography of the region.