Pre-Neogene basement unconformity map of the Croatian part of the Pannonian Basin <sup>1</sup>University of Zagreb, Faculty of Mining, Geology and Petroleum Engineering, Pierottijeva 6, 10,000 Zagreb, Croatia <sup>2</sup>INA Plc. Av. Većeslava Holjevca 10, 10,000 Zagreb ³Mikulići 78a, 10,000 Zagreb, Croatia Marko Cvetković¹, Bojan Matoš¹, David Rukavina¹, Iva Kolenković Močilac¹, Bruno Saftić¹, Tomislav Baketarić², Marija Baketarić³, Ivor Vuić⁴, Andrej Stopar⁵, Anja Jarić⁶, Tomislav Paškov⁻ <sup>4</sup>Babonićeva 50, 10,000 Zagreb, Croatia <sup>5</sup>Pješćana Uvala 7/33, 52,100 Pula, Croatia © Journal of Maps 2019 <sup>6</sup>Croatian Natural History Museum, Demetrova 1, 10,000 Zagreb, Croatia Projection: GSC WGS 1984 (UTM 33N) <sup>7</sup>V. Lisinskog 1, 22,211 Vodice, Croatia 560,000 600,000 640,000 680,000 720,000 POLAND The structural map of the Pre-Neogene unconformity shows the main structural features of the unconformity that separates the Neogene infill from older Palaeozoic and Mesozoic rocks in the Croatian part of Pannonian basin. It nearly represents the thickness map of the Neogene and UKRAINE Quaternary basin fill. Rock formations just below the unconformity are often heavily weathered and consequently of favourable petrophysical properties, which makes them interesting from the aspect of geoenergy potential. The pre-Neogene surface was constructed using publicly available subsurface maps of different scale and different level of detail. These maps were processed to enable their harmonization, compilation and construction of a structured surface with near-vertical fault planes. Supplemental maps showing surface heat flow, averaged geothermal gradient distribution, the temperature distribution in the subsurface and the potential source rock maturity near the mapped horizon have been constructed by means of basin modelling. These maps are the first attempts to illustrate the importance of the mapped interval for regional planning of future geoenergy related research with possible direct implications to spatial planning. Elevation depth (m) ROMANIA CROATIA Mt. Ivanščica BOSNIAAND DEM source on general position map: European Environmental Agency (GTOPO30) Pre-Neogene basement outcrop Mt. Moslavačka Mt. Papuk Mt. Krndija Mt. Psunj Mt. Zrinska gora Surface heat flow values **Geothermal gradient** Temperature on the pre-Neogene Potential source rock maturity near basement surface pre-Neogene basement surface Late oil Main oil

680,000

720,000

640,000

760,000

800,000

840,000

600,000