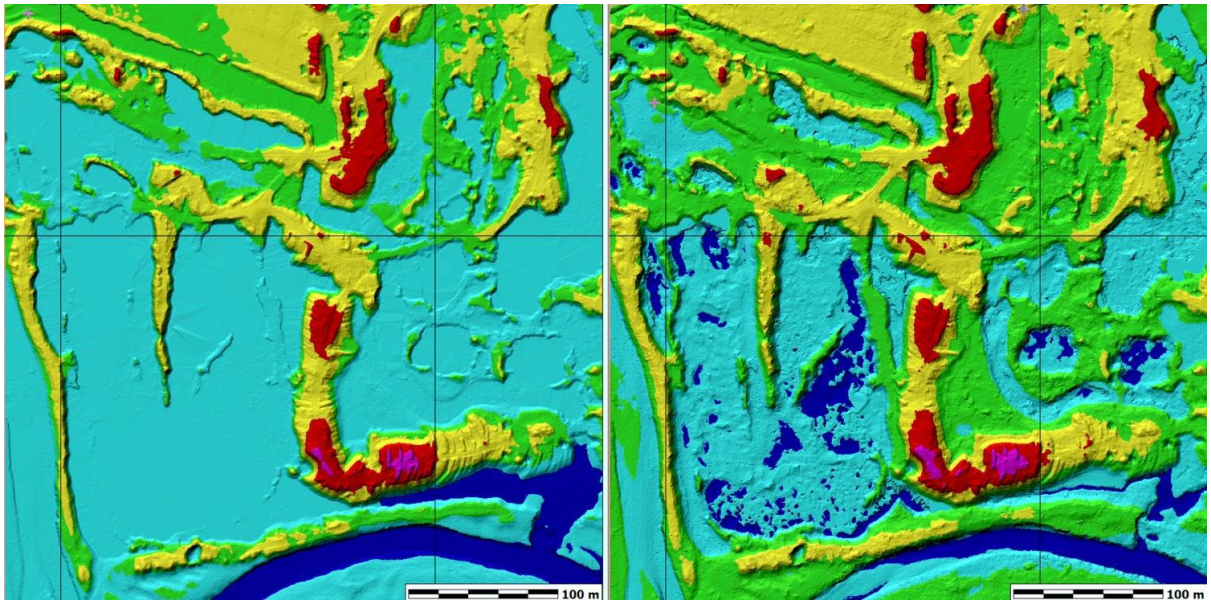

Fig.11 On the left is shown DEM by 1550nm LMS-Q680i, and in right - DEM from a scanner
532 nm VQ-820-G

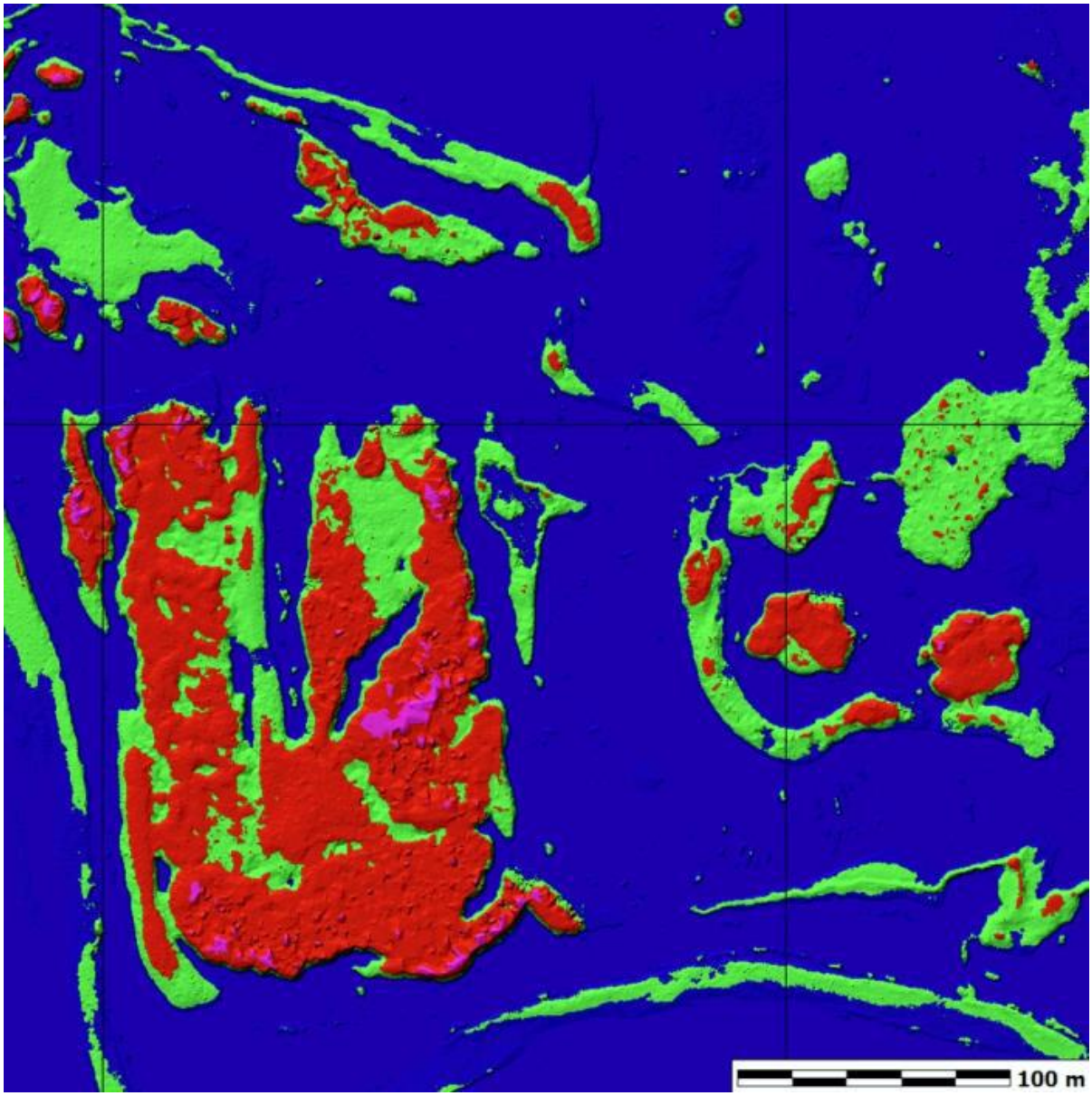

Fig.12 Absolute height difference between DEM from scanner 1550 nm LMS-Q680i and DEM from scanner 532 nm VQ-820-G - "protruding" parts visualized in practice

the volume of the water table and the structure of the underwater surface

The so created two DEM models are subjected to an elevation analysis. In parallel with this were made GPS measurements of about 50 distinctive surface and underwater sub-sites for the purpose of carrying out a comparative analysis with the classic technology. The spatial

differences in the measurements of the above water portions between the two scans are within +/- 1-3 cm, which in practice represents the accuracy of measurement of laser rangefinder devices. The differences in relation to GPS measurements surface and underwater parts are in the range of + 5-8 cm, that attaches to the different geoids bases for the measurements – by scanning is used the European geoid EGM08, while GPS measurements used this by

Bulgarian coordinate system 2005.
The largest depth measured by scanning in the particular object and confirmed by the GPS measurement is 3.15 m. The Fig. 13 and Fig. 14 are shown two high-altitude profiles, made on the basis of the two different DEMs:

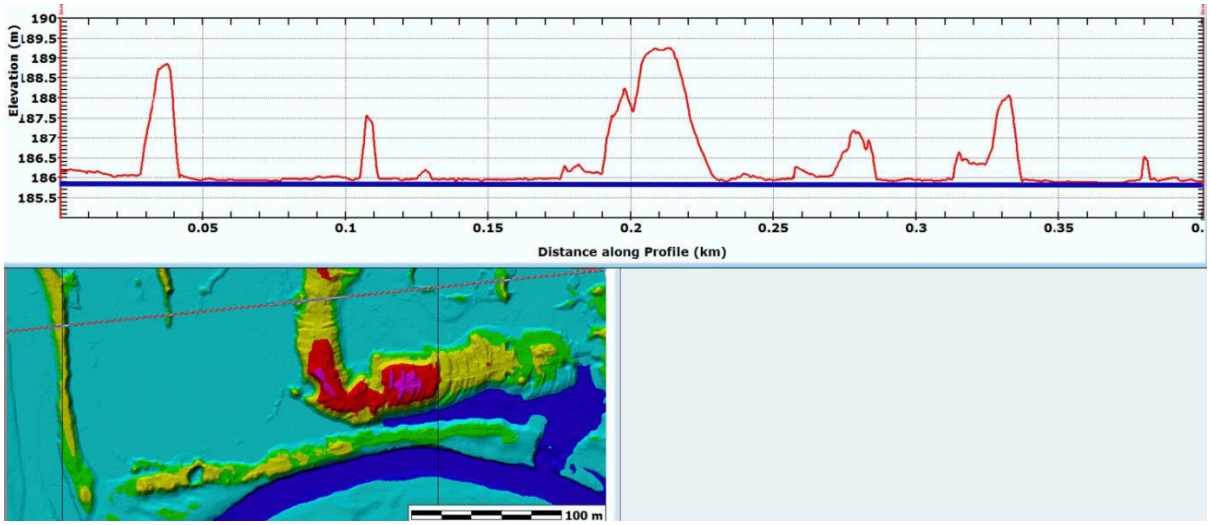

Fig. 13 Cross-section of DEM from scanner 1550 nm LMS-Q680i

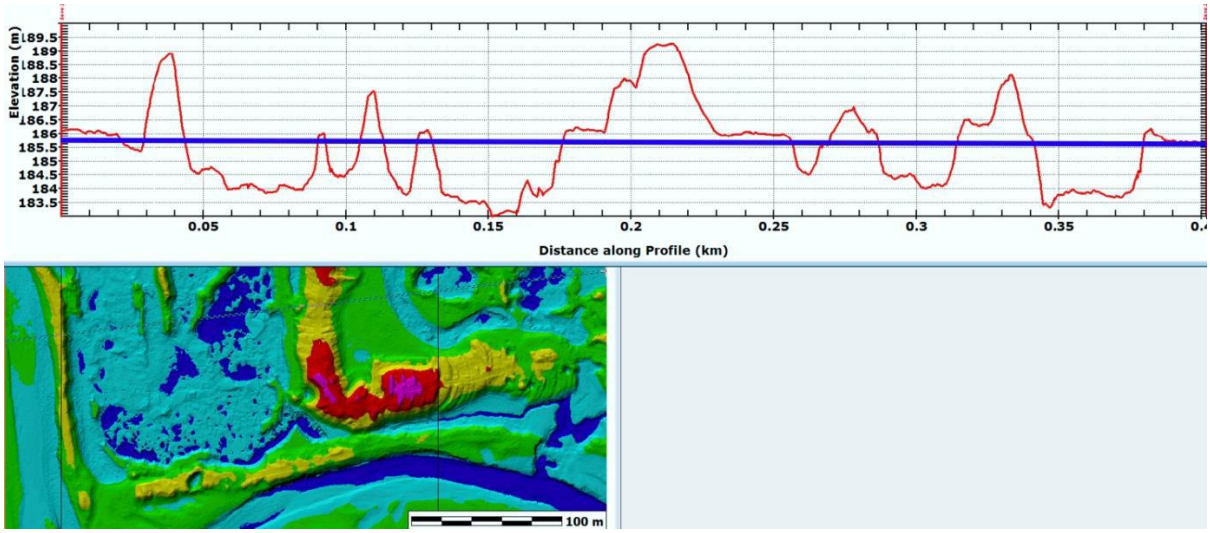

Fig. 14 Cross-section of DEM from scanner 532 nm VQ-820-G

Clearly stands out the water level height of about 186 m at the first profile and what the ground is below that level from the second profile.
The Bulgarian rivers are small in depth (shallow) and the Topo-Hydrographic (bathymetric) Airborne Laser Scanners, such as 532 nm VQ-820-G can be successfully used for the complete mapping of the river beds and bottoms in order to accurately calculate the dynamics of water in the prevention of floods and so on.

CONCLUSIONS

Deployment of airborne laser (LiDAR) bathymetry for the overall and detailed 3D surveying and exploration of watercourses and other shallow-water sites and facilities certainly enables to save time, labor and economic-technical means and provides a unique opportunity to be consigned to history traditional to date methods and tools for measuring the water basin - Fig. 15.

Fig. 15 To avoid this already dangerous work

The role and importance of that discussed innovative technology for airborne laser (LiDAR) bathymetry is expressed in several aspects, namely:

- Economic
- Scientific and Research
- Political
- Humane

This technology on the one hand greatly improves the quality and efficiency of learning of complexity and dynamics of hydraulic, geo-morphological and environmental processes by rivers, lakes and dams, on the other hand helps to revise and reform motivation and business decisions related to the facilities and management of water resources to optimize

and refine measures in terms of prevention and protection of the population from floods and gives practically unlimited possibilities for reliable monitoring required by the EU, in accordance with Framework Directive (WFD).

Can make confident recommendations for the use of technology that discussed in the practice. It is to achieve close cooperation and partnership between research bodies, businesses
and social-managment field for the full and multilateral use of the big potential of these laser sensor instruments. It is important to optimize methods to transform data information systems and improvement of the mere use of water resources and provide reliable protection of the population in case of accidents and disasters. Of great importance for the whole society - both of scientific research and the socio-economic level is the implementation and optimal relationship between customers and contractors - making applications for study Water systems recovery of information about customer needs.
Scientific and economic benefits of that discussed application of technology are significant, both at national and at European and international level. Successful implementation of the airborne laser bathymetry concerns the resolution of such colossal problems like energy and the work of national and international hydroelectric companies, monitoring rivers and reservoirs, specialized hydro studies, consultations and other engineering services.
In this respect, dense spatial data supplied by airborne laser (LiDAR) bathymetry will undoubtedly contribute greatly to better study the eco-hydro-morphological processes, as are innovative methods and tools, combined with appropriate software and service packages. Deservedly can be seen as an important prerequisite for cost effective and sustainable implementation of the WFD. They contributed significantly to the recovery of damaged ecosystems,
and waning and limit future potential adverse impacts associated with climate change and water in Europe.

OUTLOOK

Today, people often seem to forget that the Earth is a living organism with its immutable crises and whims. Nature has an arsenal of disasters including floods. We can not eliminate them completely, but we can study them, modeling, analyze, predict, to minimize the damage caused by them. Research and practical achievements in this area are higher IQ test and humanity of all mankind in the struggle to tame the wrath of nature for the benefit of all mankind. The challenges are before us, the fate of Earth is in our hands and we have no choice - we must act properly and in time for the sake of our children, because it is our responsibility - to beat and humanity to survive ... Even today we have to start we are late ... Let us not forget that the Earth is our common mother - she bore us and feed us. Let us not be ungrateful her children. We modern people have to realize it in time and that the spaceship "Earth" no VIP, nor third class passengers, we are crew all accountable and responsible to take care of our only planet and its population. We ought not to destroy, but to multiply its natural resources. And until it was hopelessly late to tap the wisdom of the ages and to deal with the challenges of our time each of us gives his own, albeit very modest contribution to the preservation of the harmony of nature to continue the Earth to rotate , lit by the life-giving sunlight, and donate air, water and food for our children and their descendants ....

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BIOGRAPHICAL NOTES

Nelly Zdravchev graduated "Geodesy, Photogrammetry and Cartography" as leader of graduates in VIAS - now UACG. Also graduated with honors and in "Methodology of teaching technical subjects" at the Medical University. Specialized and Applied Mathematics at the Technical University - TU. Longtime professor and assistant professor in the Department "Photogrammetry and Cartography". Doctor of Photogrammetry and Remote Sensing (GMF) and has authored more than 25 scientific papers and scientific reports, exported mainly to international conferences. Lectures. exercises and teaching practices GMF,
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Peter Todorov – TU Sofia, CEO "Innovation Optic Electron Systems - IOES" since1990, implementation and system maintenance of classical, analytical and digital photogrammetric

systems of Carl Zeiss, Intergraph, Z/I till 2001, laser (LiDAR) scanning systems RIEGL 2008, author of more than 30 application-scientific reports, interests in the field of remote sensing instruments for Earth exploration

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Survey of river beds and belonging territories
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