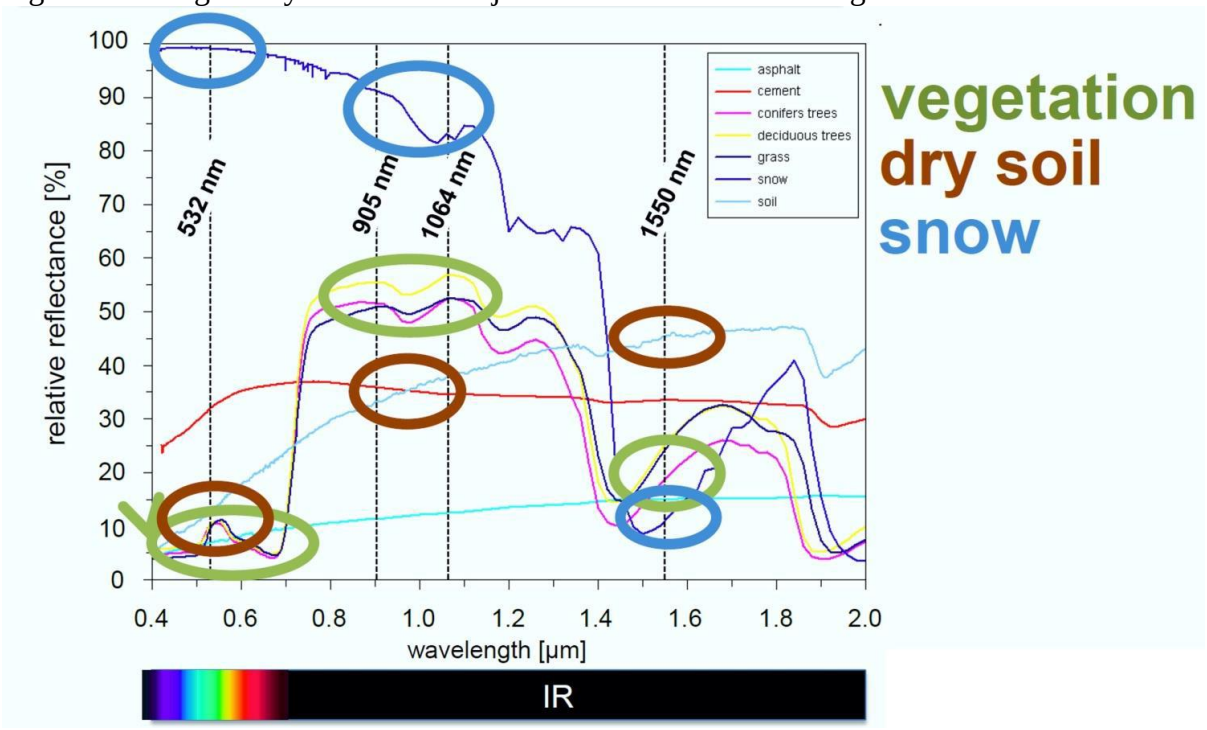
Fig.6 Reflecting ability of different objects relative to the wavelength



Here is one urban area scanned with three different laser scanners with three wavelengths of the laser pulse, namely 1550, 1064 and 532 nm.

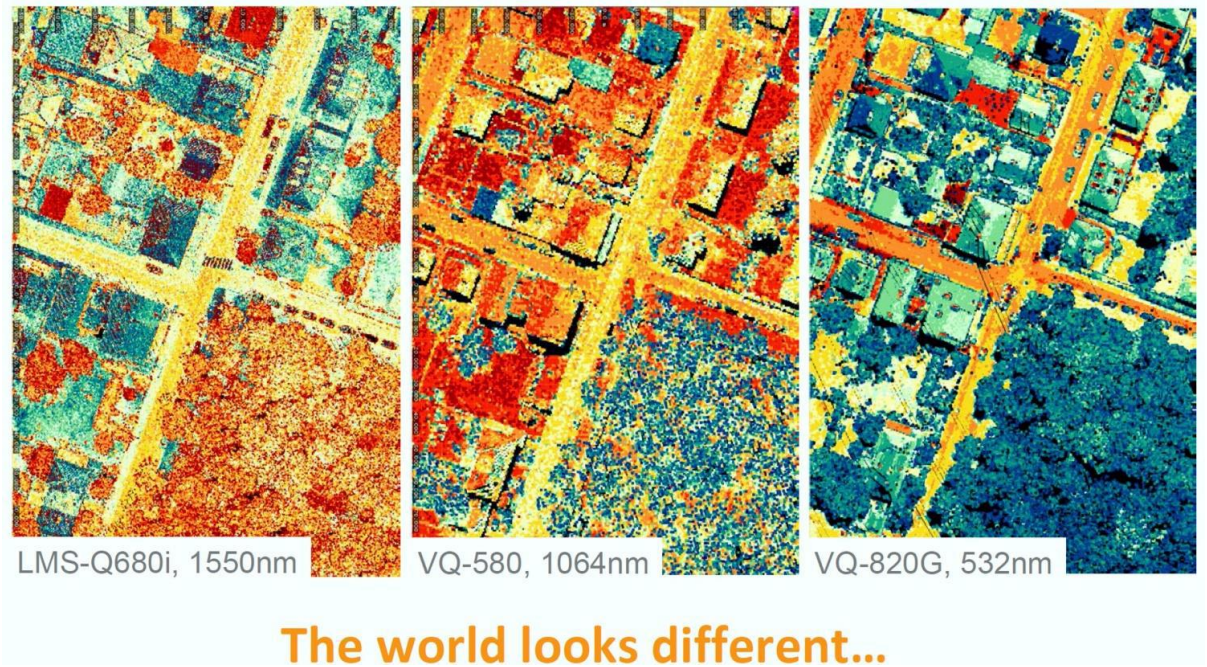


Fig.7 Views of one location scanned with three different wavelengths – indeed the world is presented in a different way

Laser pulses with a wavelength of 532 nm pass through water obstacles and are able after returning to provide spatial information about the objects located below the water surface. The
extent of penetration of the laser pulses in the aquatic environment depends on the transparency of the water column, the latter is determined by the disk of Sechhi. On FIG. 4 you can see the main technical parameters of the scanner VQ-820-G.

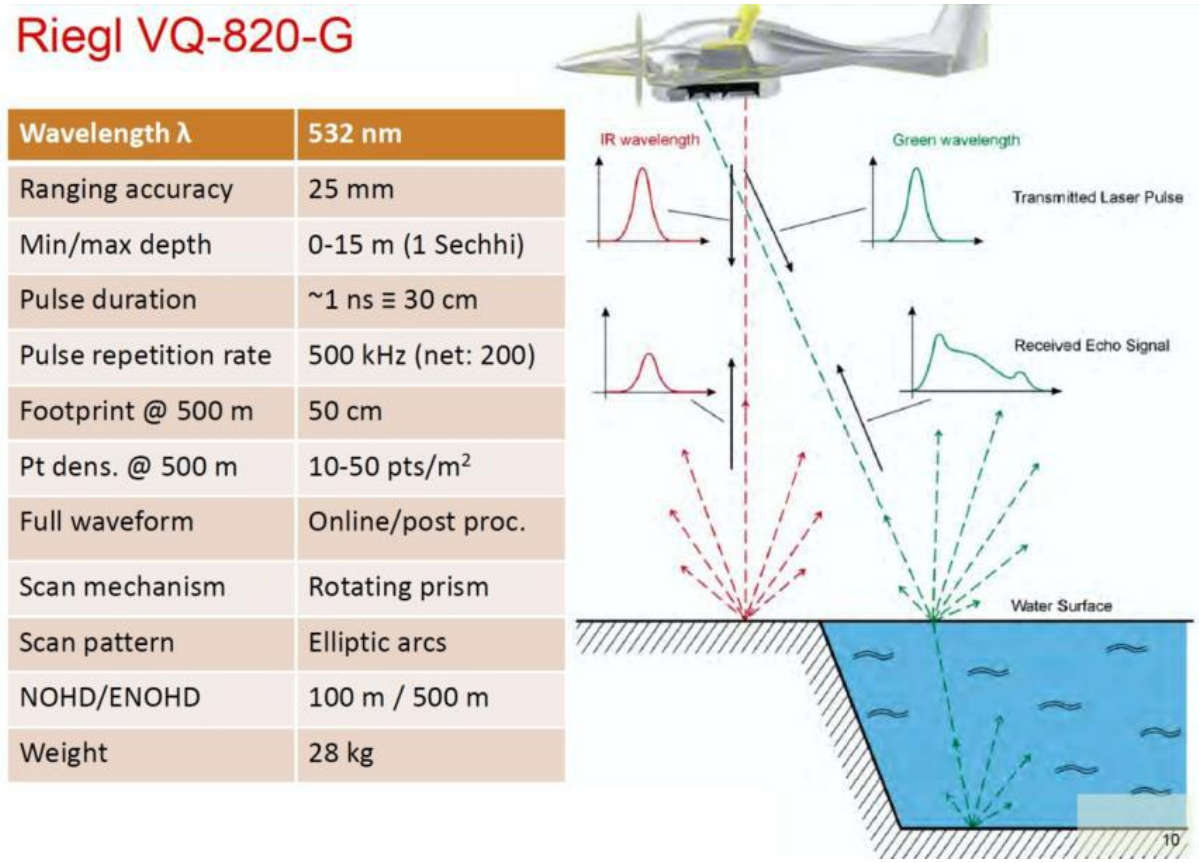


Fig. 8 Technical specifications of RIEGL VQ-820-G Topo-Hydrographic Airborne Laser Scanner with a scheme of the reflecting signal from underwater ground object

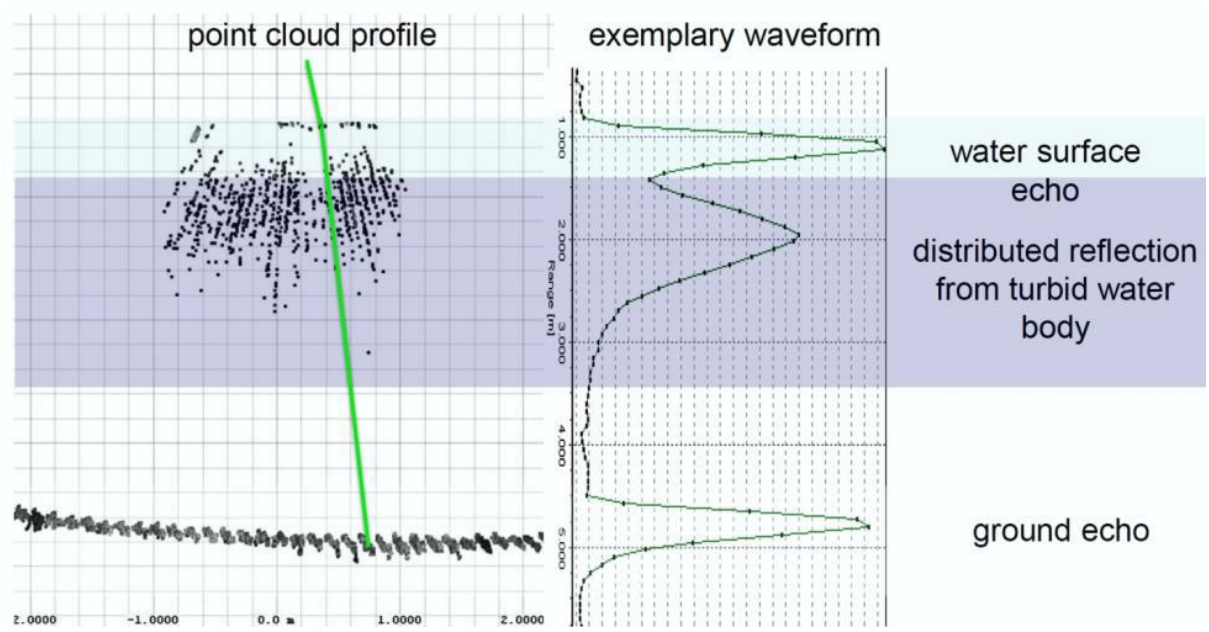


Fig. 9 Waveform derived from reflected water surface, turbulent water particles and underwater final (ground) object

The object, which lies at the heart of the practical research is small section from Ogosta river, situated immediately before inflow in "Ogosta" dam - fig.10.

Fig.10 Orthophoto of the scanned territory

The object was scanned with two scanner instruments – with 1550nm LMS-Q680i and with 532 nm VQ-820-G, with the same DSM density, namely from 9 points of m^2. From the two point DSM models are derived two DTM models, they latter are interpolated further with step 0.2 m.