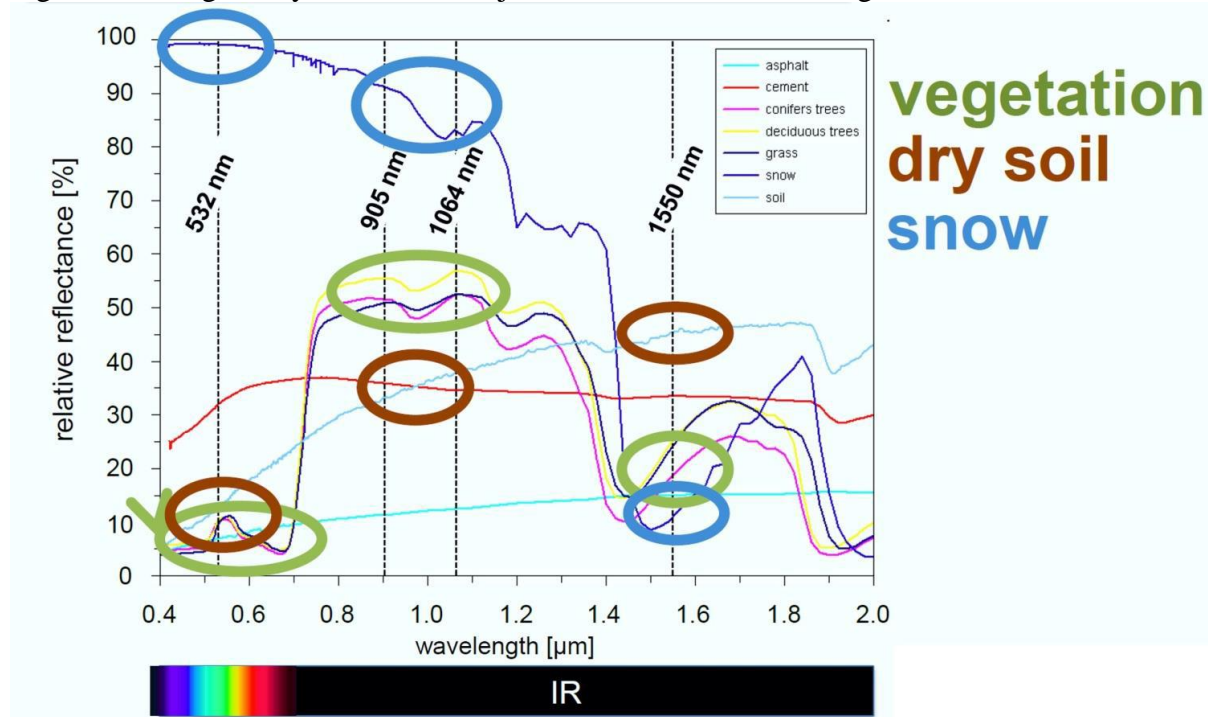
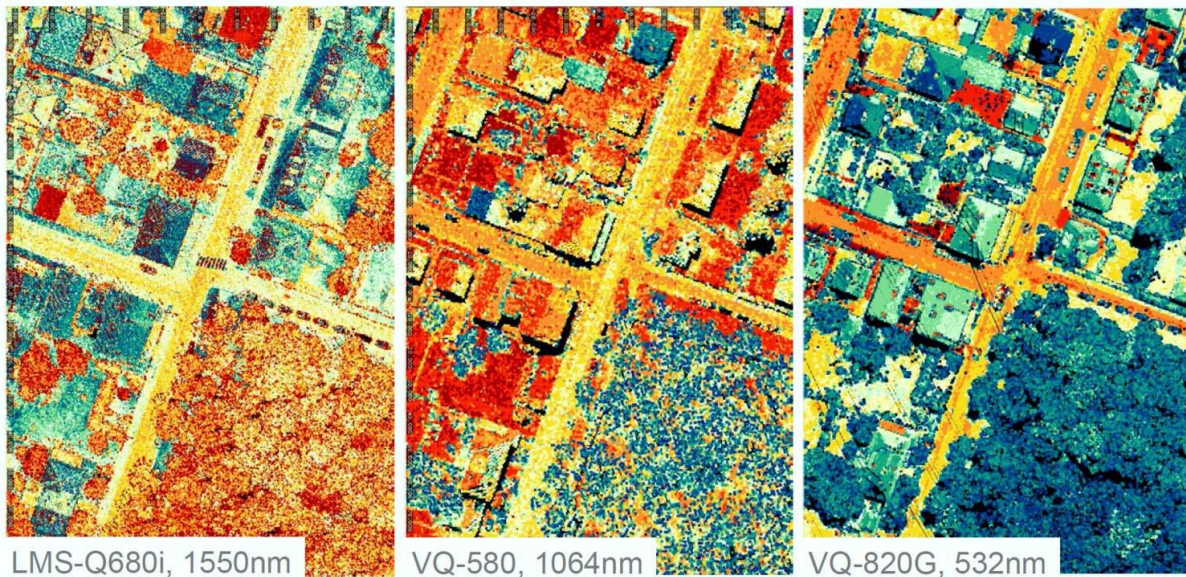


Fig.6 Reflecting ability of different objects relative to the wavelength



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



The world looks different...

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

Airborne Laser (LiDAR) Bathymetry for Precision Capture and Survey of River Beds and Belonging Territories (7742)

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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 Secchi. On FIG. 4 you can see the main technical parameters of the scanner VQ-820-G.

Riegl VQ-820-G

Wavelength λ	532 nm
Ranging accuracy	25 mm
Min/max depth	0-15 m (1 Secchi)
Pulse duration	~ 1 ns \equiv 30 cm
Pulse repetition rate	500 kHz (net: 200)
Footprint @ 500 m	50 cm
Pt dens. @ 500 m	10-50 pts/m ²
Full waveform	Online/post proc.
Scan mechanism	Rotating prism
Scan pattern	Elliptic arcs
NOHD/ENOHD	100 m / 500 m
Weight	28 kg

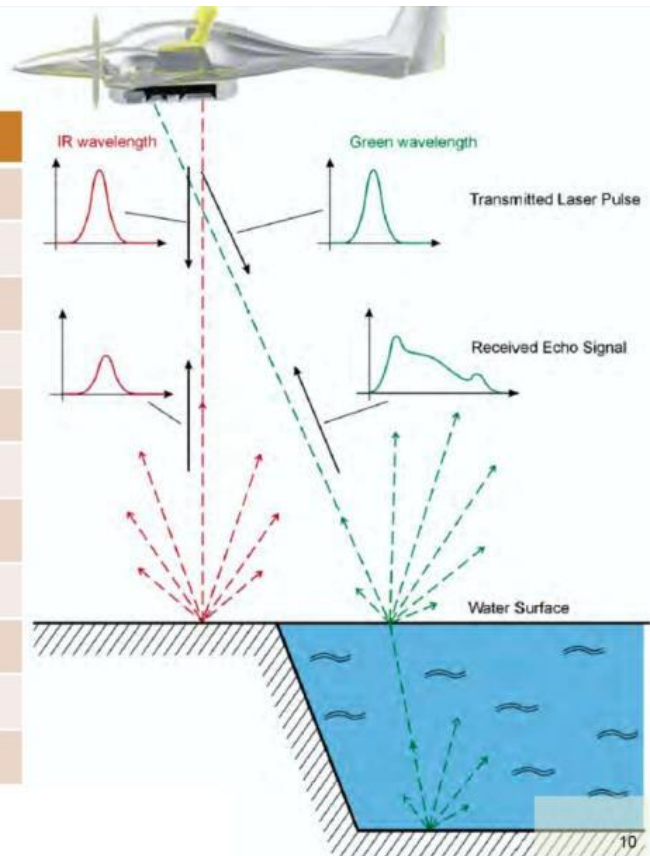


Fig. 8 Technical specifications of RIEGL VQ-820-G Topo-Hydrographic Airborne Laser Scanner with a scheme of the reflecting signal from underwater ground object

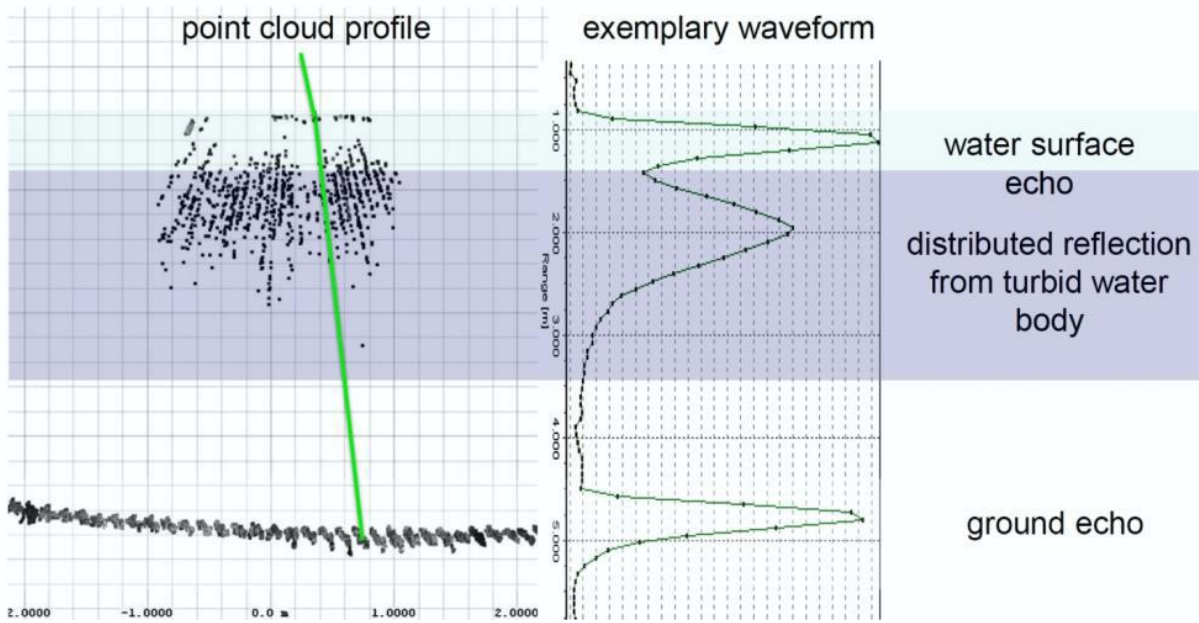


Fig. 9 Waveform derived from reflected water surface, turbulent water particles and underwater final (ground) object

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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 m². From the two point DSM models are derived two DTM models, they latter are interpolated further with step 0.2 m.

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