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## USE OF EARTH REMOTE SENSING METHODS TO MONITOR THE CONDITION OF BATHING SITES

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The Ministry of Health in cooperation with other related bodies compiles, on an annual basis, the *List of outdoor bathing sites on surface waters where the bathing service is offered by the operator, and other surface waters used for bathing*. It is compiled based on the long-term monitoring, performed, exclusively as *in-situ* measurements, by the regional hygiene stations. With respect to the fact that this way of monitoring is not only time-consuming but also financially demanding, the need for minimizing these expenses naturally arises.

The currently running project *Use of remote sensing methods for monitoring the status and quality of bathing waters in the Czech Republic* offers possibilities of distant monitoring of some of these indicators necessary for such assessment. The objective is to find and describe the relationships between data obtained in terrain and remote sensing data, by means of up-to-date statistical techniques combined with the use of suitable GIS tools. The project outcomes may then provide the regional hygiene stations with a tool beneficial not only from the perspective of conducting the routine assessment of the parameters but also from the perspective of identification of new bathing sites. In addition, thanks to its time-series character, the produced material can serve as a basis for the assessment of the bathing season.

In the present paper, the procedure leading to the fulfillment of the desired goals is mainly presented. Two stages of field analysis were carried out in 14 selected model sites, followed by laboratory works. In the meantime, optimal ways of processing the satellite data with a huge spatial resolution (Sentinel-2) were sought. After basic multispectral image processing, 105 spectral indices were tested, while the initial assumption was confirmed regarding the strong correlation between some of the indices and the values of measured parameters. For the prediction of these values using the satellite data, two machine-learning techniques were employed, namely *Random Forests* and *Partial Least Squares regression*.