The tested methodology allows to define the quality of the coastal water intended for bathing through the direct analysis of the suitable variation of reflectance values in the WSI and in the MIR bands based on the consideration of data water thresholds and their link to the <br>SWIM: Safe Water Innovative Monitoring

1. Introduction

2. Case study

3. Input Data

4. Methodology

5. Results

6. Safe and clean swimming suggestion

7. Discussion and conclusion

The empirical methodology allows to define the quality of the coastal water intended for bathing through the direct analysis of the variations of suitable reflectance values in the WSI and in the MIR bands based on the consideration of data thresholds which translate into water quality values. Overall, the obtained results are an important step ahead in respect to the available literature on bathing advice services which are mainly based on ground data or on satellite derived data of suspended solids or turbidity values that are mainly related to open waters.

Sentinel-2 and Landsat 7/8 reflectance spectra comparison

The pixel data obtained from the Sentinel-2 mission, part of a network of meteorological stations spread throughout the Mediterranean, were collected from the images between 2016 and 2018. The data are derived from the optical satellite MetOP, which is specifically designed for water monitoring. The spectral bands of the Sentinel-2 mission are used to characterize water quality, and the reflectance values are calculated based on the ratio of the signal received by the sensor to the signal emitted by the water. The reflectance values are then used to derive water quality parameters such as chlorophyll concentration, suspended matter concentration, and other water quality indices. The Sentinel-2 mission provides high-resolution images of coastal areas, which can be useful for monitoring water quality and coastal processes. The Sentinel-2 mission has 13 spectral bands, including the blue, green, red, near-infrared (NIR), shortwave-infrared (SWIR), and thermal infrared bands. The Landsat 7/8 mission provides images with higher spatial resolution and longer observation frequency than the Sentinel-2 mission. The Landsat 7/8 mission has 11 spectral bands, including the blue, green, red, NIR, and SWIR bands. The reflectance spectra of the Sentinel-2 and Landsat 7/8 missions are compared in Figure 1 to determine the spectral similarities and differences between the two missions. The comparison shows that the Sentinel-2 mission provides higher spatial resolution and longer observation frequency than the Landsat 7/8 mission, which can be useful for monitoring water quality and coastal processes.