



Sentinel-1 and Sentinel-2 imaging for reference water extraction and monitoring

Constantin Sandu (1), Magdalena Stefanova Vassileva (2), Piero Boccardo (1), and Franca Disabato (2)

(1) Politecnico di Torino, DIST, Torino, Italy (constantin.sandu@siti.polito.it), (2) ITHACA Information Technology for Humanitarian Assistance, Cooperation and Action, Torino, Italy

Monitoring the evolution of surface water extent may be crucial to prevent and promptly manage flood and drought events. This research proposes an operational semi-automatic methodology for surface water extraction at a synoptic scale, based on free satellite data and implemented with free and open source software.

The proposed methodology takes advantage of the availability of free and frequent microwave and multi-spectral information acquired by the recently operational Sentinel-1 and Sentinel-2 ESA's missions. By integrating the two data sources the method aims to overtake some of the innate biases that can affect the single-source surface water extraction: geometric and radiometric radar effects, e.g. shadows and speckle, and optical lack of information due to cloud cover.

Two case studies were chosen: one in North Africa and one in Europe. In order to validate the proposed methodology, "ground truth" water bodies were derived by visual interpretation and manually extracted.