KOSTASystem, a coastal videometry technology: development and applications

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This contribution describes the KOSTASystem technology. This line of work started in 2007 and is implemented in 20 operational stations distributed along the 100 km of the Basque Coast (Spain). The monitored areas include urban beaches, ports protection structures as well as natural coastal stretches. The aim of this technology is to generate basic information for coastal management applications, covering different time scales. The main hardware-related breakthrough is the development of stand-alone photovoltaic stations. In terms of software, several image processing tools have been developed for the calibration and restoration of the images for the extraction of the information used in the different applications.

In the long term and climate change context, the main results have been obtained in beach morphology monitoring. In addition, in short term, the network operates during extreme wave emergency situations by monitoring wave overtopping and flooding. It is also used for daily beach management during the summer season, improving the beach safety by means of a rip current detection, predicting wave induced currents, and providing information about beach users density. For this last application, KOSTASystem has shown its benefit in the COVID19 context to coastal managers and beach users and helped in ensuring and implementing the social distancing recommendations. Finally, this good practice in the implementation of videometry opens up perspectives for European collaboration, harmonisation, and integration in the coastal observing network.