

Wireless Sensor Networks and Remote Sensing in Coastal Zone Monitoring

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The coastal zone is a very important area for human beings since several economic activities are concentrated on it, and for biodiversity due to the wide range and variability of ecosystems. The underwater area is a challenge to be monitored, given the limited usability of remote sensing and the reduced bandwidth of telecommunication technologies. Meanwhile, the considerable variability and high rate of anthropisation turned the inland region into a complex environment. The scarce monitoring of these regions supposes a lack of data that is sorely necessary for adequate management.

In this keynote, we analyse the suitability, results, and main limitations of different technologies for coastal zone monitoring. Starting with the sensors and wireless sensor nodes, we discuss the requirements for both sensing elements and nodes as well as transmission features and adjustments. First, we will see different application cases in which physical sensors are created for underwater monitoring. Then, several application cases of wireless sensor nodes based on different communication technologies will be shown. To conclude with the sensors and wireless sensor networks, their main limitation based on the current solution for coastal and underwater monitoring will be outlined. On the other hand, the use of remote sensing will be presented. The most relevant existing image sources for remote sensing are introduced. Next, some generalities of remote sensing and geographic information systems are described. Then, we will analyse some application cases of remote sensing in the coastal area. The existing limitations for its use in coastal areas are outlined to close with remote sensing.