New approaches and technologies used to investigate estuarine environment of Loukkos river: the AUV (Autonomous Underwater Vehicle)

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A study of the water-sediment interface of Loukkos river seabed was conducted in October 2009 and October 2010. This study has two objectives: 1) archaeological, looking for evidence of port of the ancient site of Lixus, 2) to better understands the sedimentary systems of the estuary and adjacent coastline in terms of process registration and sedimentary environments.

Geophysical data were collected thanks to two devices: an echo sounder/shallow subbottom sonar Knudsen Engineering Model 320M and an AUV (Autonomous Underwater Vehicle) Ocean Server Iver2. These data will be coupled with sediment samples, as well, with drill core data produced in 2004.

The use of the AUV provides high quality images 0of the seabed because it eliminates the instability in image registration that is often induced when using a tow rope, in the case of side scan sonar. It allows the survey support boat to be used for other activities that can be conducted in parallel with the AUV operations.

The particular AUV surveying technique used in river Loukkos has provided information on water depths of the river, which varies between 0.5 and 18 meters at high tide. It also provided the ability to remotely, identify areas of bedforms (dunes) with a wavelength of 5 meters. The data acquired for the two missions of the AUV showed changes in the seabed that varied the bottom depending on the whether the tide was in flood or ebb.