DYNAMICS OF THE ANAPA BAY-BAR SUBMERGE SLOPE

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The Anapa bay-bar is an accumulative sand body approximately 47 km long, located in the North-West part of the Russian coast of the Black Sea. The Anapa bay-bar is a narrow spit (its width ranges from 80 m in the northern part to 1.5 km in the south) which isolates a system of lagoons from the Black Sea.
The series of expeditions were spent from 2010 to 2016 to determine the position of underwater bars to Anapa bay-bar. The expeditions were included: soundings, survey and description of the coastal zone.

Soundings measurements were conducted on profiles through 1 km by Humminbird sonar.
Changing of the bottom profile at different times for the sounding line P44
Changing of the bottom profile at different times for the sounding line P41
Changing of the bottom profile at different times for the sounding line P36
Changing of the bottom profile at different times for the sounding line P31
Changing of the bottom profile at different times for the sounding line P26
Changing of the bottom profile at different times for the sounding line P15
Changing of the bottom profile at different times for the sounding line P08
Changing of the bottom profile at different times for the sounding line P06
Changing of the bottom profile at different times for the sounding line P04
Changing of the bottom profile at different times for the sounding line P01
Changing of the bottom profile at 2015 for the different sounding lines
The capes formed opposite the first broken underwater bar

The contour of the first underwater bar has an influence on the shoreline contour. A specific cape was formed opposite this bar. The shoreline contour is changing, when the waves are approaching to the shore with the narrow angle and the capes are migrating along the shoreline. The orientation of the underwater bars is changing, when the west storms are dominate. The first underwater bar is disintegrated to few small bars. However, the position of the underwater bars is restored after several southern storms.
CONCLUSIONS

Laboratory of lithodynamic and geology of the Southern Branch of the P.P. Shirshov Institute of Oceanology RAS since 2010 surveys bottom topography within Anapa Bay-Bar.

Along Anapa Bay-Bar the presence of two longshore underwater bars is clearly observed.

The first underwater bar is narrower than another one. His width is up to 40 m and it is located at the depth of 1.5-2.0 m. The second underwater bar is wider (up to 150 m) and it is located at the depth of 3.5-4.0 m.

The both bars have the height, approximately, of 1.0-2.5 m.

Both bars are well expressed in the central part of Anapa bay-bar.
The underwater bars are in dynamic equilibrium, and year-on-year change their position does not significantly.

During calm weather of the summer period the submerged slope becomes less steep as compared with the profile generated during winter storms.

It seems necessary to link the main changes in the morphology and morphometry of the underwater bars with different storms and sediments grain size to make accurate predictions of the bottom relief reformation.

It is also necessary to make some series sounds of the submerge slope before and after the different storms.
Thank you for your attention!