

The Analysis of the Basic Trends in Satellite Altimeters Development: “Disruptive” or Evolutional Technologies?

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Abstract. The basic trends of satellite altimetry since 1992 are discussed in this article. The characteristics of the basic satellite altimeters TOPEX/POSEIDON, SIRAL-2, SRAL, POSEIDON-4, and KaRIn are represented.

The perspective directions of satellite altimeters evolution are discussed based on the conducted analysis of their pivotal characteristics. It was shown that the technology of the aperture synthesis used in contemporary satellite altimeters lead to the along-track spatial resolution improvements (up to 250–300 m). However, these improvements could not be considered as “disruptive” and could be related to “evolutional”.

The fundamental changes in satellite altimetry will occur along with a new radar interferometer technology implementation only. This promising technology will allow one to receive the swath measurements of a sea surface height just like traditional remote sensing data provided conventional altimeters make measurements in the subsatellite points only. The KaRIn (SWOT) altimeter will utilize this new technology with launch plans for the satellite in 2021.

The launch of the SWOT satellite will provide some new unprecedented capabilities for the research of the submesoscale structures and processes in ocean and change the basics approaches to satellite altimetry data processing.

Keywords: satellite altimeters, system analysis, “disruptive” technologies