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Wavemill Product Assessment - Defining potential products from a novel spaceborne interferometric SAR

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The Wavemill is a new radar instrument concept that offers the possibility of generating two-dimensional wide swath, high resolution, high precision maps of surface current vectors and ocean topography. Based on a single spacecraft, it avoids the difficulties of synchronisation and baseline estimation associated with other interferometric SAR systems based on two or more satellites.

WaPA, the Wavemill Product Assessment project, is supported by ESA under the General Studies Programme (GSP) to define the scientific capabilities and limitations of a spaceborne Wavemill instrument.

The Wavemill concept has developed steadily since its first inception in 2005. A number of Wavemill studies in recent years have gradually put together facts and figures to support the case for Wavemill as a possible spaceborne mission. The WaPA project builds on past studies to address some key aspects relating to the expected performances and limitations of a spaceborne Wavemill instrument. This study is a critical step on the path towards establishing Wavemill as a convincing candidate instrument for a future ocean current mission.

In this paper we present the technical concept of the Wavemill instrument, provide an overview of current capability in terms of measuring surface currents from spaceborne SAR, present results from an airborne proof-of-concept campaign and then discuss some early findings from the project in terms of the potential products and their expected performance.