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Marine geological data as a basis for sustainable growth, an example from the Gulf of Bothnia, Finland

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Finland has one of the longest coastlines in Europe. In fact, there is an old saying that Finland is an island as about 80 % of Finnish foreign trade takes place by sea. In addition to the marine traffic, the use of marine resources (e.g. aquaculture, construction) has been increasing during the past decades. The Gulf of Bothnia located west of Finland forms the northernmost part of the Baltic Sea. In addition to being an important shipping route, the gulf provides essential resources, for example in terms of fish farming and wind power as well as geological resources. The gulf is a shallow-marine area with brackish water that freezes yearly. It is also an area of rapid isostatic land uplift with a maximum uplift rate of about 0.9 cm/year.

If unmanaged, increasing human interests combined with the projected impacts of climate change pose a possible threat to the sustainable use of marine resources, especially in sensitive marine areas like the Gulf of Bothnia. The Academy of Finland has funded the SmartSea project (2015 – 2020), which aims to combat these issues with the key idea that sustainable growth can only be attained by planning the use of sea areas wisely. The project will assess how the Gulf of Bothnia will change in the next decades and strives to find out how the natural resources at the seabed can be used sustainably. An essential part of the work is identifying practical and administrative obstacles to 'blue growth'. In order to fulfill these tasks there is an urgent need for accurate marine data including seafloor geological information.

The Finnish Inventory Programme for the Underwater Marine Environment, VELMU, has collected spatial data on both abiotic (geological, physical and chemical) and biotic characteristics of the marine environment for 12 years. The map portal (<http://paikkatieto.ymparisto.fi/velmu>) with all available VELMU data released in 2016 is an important source for marine data. Here we will examine the need for marine geological data, what kind of marine geological data is available in digital format (e.g. in VELMU –portal) from the Gulf of Bothnia and how the marine geological data should be further developed to support the sustainable use of marine resources.



