New paper on a machine learning based methodology to retrieve Arctic sea ice thickness from SMOS measurements

Exciting News!

We are thrilled to announce the publication of a new paper titled "**A Machine Learning Approach on SMOS Thin Sea Ice Thickness Retrieval**" in the **IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing** (10.1109/JSTARS.2024.3406921). This research is part of the ARCTIC-MON project and an industrial PhD collaboration with isardSAT.

Monthly average of the predicted sea ice thickness, compared to the ESA's official product.

In this study, we developed a novel approach to enhance existing SMOS thin sea ice thickness products. To address the scarcity of in situ data in the Arctic, we created a training dataset through a **model-based** simulation. This dataset was then used to train two **machine learning** algorithms—random forest and gradient boosting—resulting in a **hybrid** approach.

Processing of the variables used as inputs to predict the sea ice thickness.

Our methodology shows strong agreement when compared with ESA's official product. Furthermore, validation with in situ data from moorings in the Beaufort Gyre indicates **better** correlation and **reduced** error, highlighting the **potential** of this methodology to improve current products.

While there is still room for improvement, which we are actively working on, we plan to make this product **operational** and publicly **available**. Stay tuned to **BEC** for more updates!