SPECIAL PROJECT PROGRESS REPORT

All the following mandatory information needs to be provided. The length should *reflect the complexity and duration* of the project.

Reporting year …2025……..……

Project Title: Arctic Weather Satellite All-sky Radiance DA Implementation (AWARI)
……..……

Computer Project Account: **spnogued**……..……

Principal Investigator(s): Máté Mile (matem@met.no), Per Dahlgren (perd@met.no), Roohollah Azad (razad@met.no), Harald Schyberg (haralds@met.no) and Roger Randriamampianina (rogerr@met.no)……..……

Affiliation: Norwegian Meteorological Institute…….

Name of ECMWF scientist(s) collaborating to the project (if applicable) ……..…
…

Start date of the project: May 1, 2025 ……..……

Expected end date: April 30, 2028 ……..……

Computer resources allocated/used for the current year and the previous one

(if applicable)
Please answer for all project resources

		Previous year		Current year	
		Allocated	Used	Allocated	Used
High Performance Computing Facility	(units)			30,000,000	276
Data storage capacity	(Gbytes)			70,000	0

Summary of project objectives (10 lines max)

The Arctic Weather Satellite (AWS) is carrying a 19-channel cross-track microwave radiometer. A rotating mirror collects temperature and humidity data from the atmosphere as well as information on surface properties, even in thick clouds, storms, and rain. AWS was launched in August 2024 and was declared operational last week, 4th of June.

There are 3 objectives for this project: 1) Follow-up on the initial developments of the Nordic ESA project to extend the operational assimilation of the AWS in the regional AROME-Arctic NWP system. 2) Explore innovative approaches for microwave “all-sky” & toward “all-surface” data assimilation, especially using the new set of channels available on AWS (i.e. around 325 GHz). 3) Contribute to the preparation for the assimilation of the potential EUMETSAT Polar System (EPS) Sterna constellation satellite.

Summary of problems encountered (10 lines max)

No results have been produced yet because the project only started two months ago. No specific problem was encountered so far.

Summary of plans for the continuation of the project (10 lines max)

This project is just starting and the work will be organized in 3 steps: 1) Operational implementation of AWS in clear-sky while investigating toward the assimilation of AWS in all-sky conditions with a special attention given to this innovative and unique set of channels located around 325 GHz. 2) In a second step, we plan to implement the new findings and test them into our NWP AROME-Arctic forecast system. The model will be run over two periods (winter and summer) in several test configurations. 3) Finally, we will evaluate the benefits of assimilating AWS data into the AROME-Arctic forecast system. The reference will be compared to an experiment with AWS 1) in clear-sky, 2) all-sky, 3) all-sky and all-surfaces. The overall forecast scores against independent observations will be computed for each test configuration, together with a Polar Low case study.
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List of publications/reports from the project with complete references

N/A……

Summary of results

If submitted **during the first project year**, please summarise the results achieved during the period from the project start to June of the current year. A few paragraphs might be sufficient. If submitted **during the second project year**, this summary should be more detailed and cover the period from the project start. The length, at most 8 pages, should reflect the complexity of the project. Alternatively, it could be replaced by a short summary plus an existing scientific report on the project attached to this document. If submitted **during the third project year**, please summarise the results achieved during the period from July of the previous year to June of the current year. A few paragraphs might be sufficient.

No results have been produced yet because the project only started two months ago. However, during the kick-off meeting the data flow, algorithmic choices (3D-Var, 4D-Var, EnVar) and the readiness of the common cycles (cy49) were discussed. A preliminary configuration for the on-the-fly monitoring of the AWS data is presently being built in the operational suite of AROME-Arctic. More discussions are ongoing to optimize the implementation and the tests of the all-sky route in cycle 49.