

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 1 January -30 June 2021

Project Title: An enhanced use of passive microwave radiances in the scandinavian HARMONIE-AROME km-scale limited-area data assimilation

Computer Project Account: spselind

Principal Investigator(s): Magnus Lindskog

Affiliation: Swedish Meteorological and Hydrological Institute

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

Start date of the project: 1 January 2021

Expected end date: 31 December 2023

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)	-	-	15000000.	2984955.5
Data storage capacity	(Gbytes)	-	-		

Summary of project objectives (10 lines max)

The work during the first half year has been devoted to harmonising and enhancing the microwave observation usage in the Swedish/Finish/Norwegian/Estonian MetCoOp system and, the Norwegian AROME-Arctic and the Danish/Icelandic NWP system. Therefore there has been work on introduction of ATMS-2 data in MetCoOp and AROME-Arctic systems and on introduction of NWHS-2 data in Danish/Icelandic NWP system. MetCoOp is starting the monitoring of ATMS in a pre-operational system very soon and this is largely possible thanks to the successful monitoring and assimilation of test data in the special project. The work by us pointing at the importance of an enhanced used of microwave data for Nordic limited-area NWP was recently accepted to be published a scientific paper (<http://www.iapjournals.ac.cn/fileDQKXJZ/journal/article/dqkxjz/newcreate/AAS-2020-0326.pdf>). In addition there has been work on investigating best practices for variational bias correction procedure for satellite data in limited-area data assimilation (<http://www.iapjournals.ac.cn/fileDQKXJZ/journal/article/dqkxjz/newcreate/AAS-2020-0326.pdf>). Also the impact in snow and ice on results has been explored (https://cdn.eventsforce.net/files/ef-xnn67yq56yly/website/21/2._r._randriamampianina.pdf).

Summary of problems encountered (10 lines max)

No serious problems encountered.

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

During the coming year more tests with revised bias correction procedure will be carried out and also pre-operational parallel runs with mwhs-2,atms, mahs and amsu-a instruments assimilated. There are as well near future plans towards tuning of observation error variances and to investigate cross-channel correlations. On longer term we will work on enhance the use of low peaking channels and prepare for introduction of Arctic weather satellite data.

List of publications/reports from the project with complete references

http://www.umr-cnrm.fr/accord/IMG/pdf/accord_asw_2021_eresmaa_v3b.pdf

https://cdn.eventsforce.net/files/ef-xnn67yq56yly/website/21/2._r._randriamampianina.pdf

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.

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