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Sign off Date TBC

SRNWP Interoperability: Adaptor software specification and requirements.

Abstract

The interoperability programme aims to facilitate the exchange of limited area model (LAM) output across Europe. A standard output format (hereafter 'standard format') has been provisionally agreed[1]. Consortia shall develop adaptor software that can convert their LAM data to and from the standard format. This document describes the adaptor software requirement, methods of implementation and a maintenance plan for consortia adaptor software.

Requirement

Consortia are required to develop and provide an adaptor capable of converting model output (encoding) to the agreed standard format and also converting standard format (decoding) data back for use in their models.

Methodology

How software adaptors are implemented will be dependent upon the Consortia's current software capabilities. For example, the required adaptor may be:
- an extension of current software capability; new file format and grid support
- a new piece of software; adding to the Consortia's current utility set.

Approaches (TBC):[2]

Consortia	Current File support	Extension to Current Software	New piece of Software
ALADIN	**FA** *(ALADIN/ARPEGE)* **GRIB1** *(IFS→ALADIN)*	**GRIB2** support *(901 and FULL-POS)* Support of new input grids.	--
COSMO	**GRIB1** **netCDF**	**GRIB2** support *(INT2LM and Fieldextra)* Support of new input grids.	--
HIRLAM	N/A	N/A	N/A
UK Met Office	**FieldsFiles** *(UM)* **GRIB1** *(IFS→ UM)*	--	UM utility.

Adaptor Design (GRIB_API)

The decision has been taken by the SRNWP Interoperability programme to utilise the ECMWF GRIB API. This shall minimise the potential for differences in adaptor behaviour introduced purely as a result of format encoding/decoding between consortia model data and the standard format in GRIB2. This should also make both the standard format and the software adaptors easier to maintain at the consortia, as the underlying GRIB API code is fully supported, maintained and improved at ECMWF.

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[1] The SRNWP Interoperability Standard Output Format, (D1 report.) is available from the SRNWP portal and the Programme manager.
[2] Annex 1 details current capabilities and the implementation strategy for each consortia.

Implementation plan

Adaptors development may be broken down into three themes:
1. GRIB2 encoding
2. Interpolations
3. Surface field interpolation

In accordance with the Interoperability programme deliverable/milestone timeline:

1. It is proposed that Consortia concentrate initially upon the encoding of model data to the standard format.
2. As and when Consortia have an adaptor capable of encoding to the standard format, sample standard data should be made available for use by the other Consortia.
3. Consortia develop their standard format decoders and support for interpolating from different model grids.
4. Investigate whether surface field interpolation is a viable option using a trial and error approach.
5. Document the software adaptors, to a standard agreed within the framework of this project, with instructions on how to use them.

Software maintenance method:

•   It is the responsibility of Consortia to maintain their own adaptor to support the encoding/decoding of their operational model output to/from the standard output.

•   It is the responsibility of consortia to provide minimal adequate documentation describing the model grids and model parameters included in standard format files; announce changes to Systems Expert Team and participating consortia.

•   It is the responsibility of Consortia to maintain their own adaptor to support the decoding of other Consortia standard output for their use.

•   It is proposed that the Systems Expert Team shall coordinate the maintenance of interoperability and the standard format, coordinating the dissemination of details of future model changes and their impact on consortia adaptors.

Annual Adaptor testing:

•   The Systems Expert team shall coordinate an annual testing programme of the Interoperability adaptors ahead of the annual SRNWP meeting; reporting their findings. 'Contingency tables' will be produced on an annual basis from this testing. These tables will show which global→ limited-area model (hereafter LAM) and which LAM→LAM conversions work. A final table will detail the situation with regard to boundary data. Example tables can be seen in Annex ?.