



Community Agreement

on the joint utilisation and further development of the regional climate model CLM

- 2nd version. Agreed on during the Annual Community Meeting in Langen in 2006 -
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1 Preamble

After more than 10 years of development regional climate models have reached a level which allows the recording of regional climate patterns with continuous, high-resolution long-term simulations in great detail and to simulate their possible changes under the influence of global and regional interference with the climatic system. But the operation of these models, the analysis of their results, as well as the continuous improvement of their efficiency and its quantitative examination are connected with considerable and continuously increasing costs. Thus the efficient use and further development of a regional climate model increasingly requires coordinated, joint actions of a, if possible, large group of scientists. In order to concentrate common interests and to support rapid scientific progress, it is recommended to use a central regional model, which will be referred to here as the “community model”.

The scientists and/or scientific institutions signing this agreement declare that they are willing to jointly use and develop the available climate version of the weather forecast model LM of the Deutscher Wetterdienst (DWD) as a regional, non-hydrostatic climate model. In addition to the general improvement of the cooperation in solving urgent questions of regional climate research, the members of this community especially see the opportunity:

- to make more rapid progress in increasing the performance of the model used by coordinated model development,
- to guarantee a higher efficiency in utilisation and development through the division of work,
- to maximise scientific and technical experience and results by regularly exchanging information,
- for optimised conduct of joint simulations which conserve resources,
- for a more complete analysis of the extensive simulation results considering various aspects,
- to make a substantial contribution to international cooperation in the field of regional climate modelling.

The signatories are obliged to implement and keep the rules and agreements specified in here. They agree that maintaining the scientific community and the desired coordinated intensification of regional climate research can only be guaranteed by voluntary and joint implementation of the regulations stated herein.

2 Purpose of the Community Agreement

The aim of the agreement signed is the joint development, utilisation and maintenance of the regional climate model CLM as a community model of university institutes and major research centres of climate research. In addition to coordinated further development of the model, the joint conduct and analysis of simulations and the exchange of experience and results in the field of climate modelling, external users (e.g. from the field of climate impact research) are also to be supported in the utilisation and interpretation of model results.

The following points are to regulate the handling of the model and the cooperation of the community members. All members (*see Paragraph 8*) of the community recognise the regulations stated herein as obligatory.

3 Utilisation of the Community Model (Rights and Obligations)

The community model CLM as well as the existing routines for pre- and post-processing are made available for every member for the time of his/her membership in the community. The commercial utilisation of the model within the framework of this agreement is explicitly forbidden and is subject to a special contractual arrangement between the DWD, the coordinating office (*Paragraph 9*) and the member. Furthermore, passing the model on to third parties is excluded if they have not yet become members of the community.

The community member is allowed to

- conduct his/her own simulations using the model and publish their results (*Paragraph 7*),
- pass on the results obtained to third parties,
- change the model code for test purposes, the required adaptations and extensions and the general improvement of the model quality.

The community member has to:

- explain to the community the intended work with the model for the purpose of better coordination of their activities (*Paragraph 8*),
- make the achieved results available to the community (*Paragraph 5*),
- return the model modifications to the community (*Paragraph 4*),
- stick to guidelines for code structure and documentation (*Paragraph 9, Appendix C*) when returning altered model versions,
- take measures for quality assurance (*Paragraph 6*), which guarantee the reproducibility of the results achieved.

The community member should:

- inform the community of problems and progress during the work in timely manner,
- participate in joint user meetings,
- inform the community about presentations and publications which contain results achieved by using the model,
- stick to the recommendations made by the DFG for securing good scientific practice (*Appendix B*).

A joint utilisation of simulation results and an intensive exchange of experience during model development are explicitly desired and are supported by the coordinating office (*Paragraph 9*).

4 Model Development

A major aim of the community is to systematically further develop the regional climate model CLM through continuously improving individual model components and by extending additional process modules. Improvements and extensions of the CLM by individual members or work teams should always be carried out in coordination with the activities of the other community members (*see Appendix A*) in order to avoid unnecessary double work and to use already existing experience in a better way.

After the completion of work or single work steps, community members will be informed about the results of the model extension, and the altered programme code will be made available to all members. After discussing the model evaluation (*Paragraph 6*) the community is to jointly decide if and how alterations will be incorporated within the new standard version. In doing so, alterations and extensions of the model code are to be integrated in such a way that previous versions can be used at any time.

The developer has to make sure that the modifications made by him/her will be understood by other community members. In particular, the modifications are to be documented in such a way that they can be included in the existing model documentation without causing any problems. In addition, when interfering with the model code the specified programming standards (*Appendix C*) are to be kept and compatibility with the LM's programme structure is to be guaranteed.

The coordinating office (*Paragraph 9*) regulates documentation and code conventions in agreement with the DWD. The administration of the model versions is also organised by the coordinating office with the support from the Group Models and data (M&D) of the MPIfM in Hamburg.

5 Availability of Results

After the completion of one's own work the results of model development and the simulation results achieved using the model are to be made available for the community as quickly as possible via the central coordinating office (*Paragraph 9*), unless it is explicitly forbidden by stipulations from third parties (e.g. the project grantor). This includes the programme code, the driving data needed for the simulation and the results of the relevant simulations. In doing so, the data formats, code and programme structures as well as the documentation conventions specified by the coordinating office are to be kept.

When working with the results the general guidelines of scientific work (e.g. indication of author, co-authors) are to be kept as is, for example, specified in the suggestions made by the DFG to secure good scientific practice (*Appendix B*).

It is explicitly appreciated when simulation results are already made available to community members even if one's own work has not been yet completed, or when several members reach an agreement concerning the conduct and analysis of joint climate simulations in advance.

In any case the protection of the individual idea is guaranteed by the community members as a scientific principle. Passing on simulation results to colleagues or institutions outside the community (external users) is subject to the explicit agreement by the author.

All relevant in- and output files as well as programme codes used for the simulation are to be archived to enable quality assurance (*Paragraph 6*), reproducibility and further utilisation by the author. The description of data and information of their availability (metadata) are to be administered by the coordinating office.

6 Quality Control and Quality Assurance

If a community member extends or alters individual model components, s/he has to check the quality of the modifications made by thorough evaluation of the processes concerned to himself/herself (process-oriented evaluation). When the altered version has been passed on to the coordinating office, it will be subjected to a further standard evaluation (climate evaluation) (*Paragraph 9*). On the basis of standardised long-term simulations of selected climate periods it investigates the quality of the altered model regarding the representation of specific climate parameters and compares the results with those of previous model versions in such a way that changes and progress become evident quantitatively.

The procedure for the standard evaluation as well as suitable criteria for the assessment of the model quality, will be elaborated by the coordinating office and suggested to the community for discussion and confirmation. During model development, procedure and criteria are to be adapted if suitable.

The results of the evaluations (process and climate-related evaluation) will be made available for the community members, presented in a user meeting and jointly assessed. In the case of positive assessment, the incorporation of the model extensions in a subsequent version of the CLM and their general release within the framework of this community agreement are to be jointly decided on.

Identified errors in the code or in the results are to be passed on immediately to all members via the coordinating office. If required, the code versions used are to be corrected immediately and uniformly with all users. It will be evaluated later within the framework of the standard evaluation of the subsequent version.

Altered or new process modules are always to be integrated optionally in the existing standard version. The extensions and alterations made are to be documented in such a way that they can be understood or reproduced by the other users. The model documentation is to be complemented by the respective executing community member correspondingly. The stipulations for code and documentation standards (*Appendix C*) are made by the coordinating office in agreement with the DWD. The history of the model development is to be documented and archived by the coordinating office in a suitable manner so that accessing older versions and reconstructing alterations made are possible at any time.

In order to guarantee the community's high quality demands to their scientific way of working, the results of relevant and especially published simulations are always to be documented in such a way that their reproduction is possible at any time. In addition to archiving the driving data used and the numerical simulation results achieved, this also includes the securing of the model configuration (programme codes and the accompanying control variables). The respective data and codes are to be archived by the creator of the model results and kept beyond the end of his/her own scientific work in accordance with the suggestions made by the DFG for securing good scientific practice (*Appendix B*).

7 Publications

The right to publish scientific results achieved by using the CLM belongs to the respective user of the model without limitation. Individual results can be presented at conferences at any time. When doing so, the use of the CLM as the “community model of the German climate research” is to be indicated. Basic publications or links to the model configuration and evaluation are to be cited, if required. When presenting joint results the participating partners are to be informed.

In addition, the coordinating office should be informed about lectures, conference presentations, and publications which are directly connected with the use of the community model. The list of publications generated serves for the exchange of information within the community and, if needed, can be used for the documentation of the community’s efficiency.

8 Membership

Every person who wishes to use the model for his/her own research purposes and accepts the guidelines stated herein without restrictions can become a community member of the users of the joint model CLM. Membership is effected by means of an informal application (*see sample in Appendix D*) to the coordinating office. This application must contain:

- a declaration of consent to obey the community agreement,
- a short description of the intended work for which the model is to be used.

Membership is documented by listing the member (name and institution) and a short description of the objectives in Appendix A of this agreement.

Every member has the right to nominate further users of the CLM. Such users will be a community member for a year provided that the guidelines of the community are obeyed by them and the nominating member.

The membership in the community ends when s/he leaves the institution.

The coordinating office is to inform the community immediately about the changes in membership and the objectives of the members.

9 Organisational Structure

For the coordination of the activities of community members, the support of the exchange of information, and the maintenance of code and documentation, a special coordinating office has been established at the BTU Cottbus. The work of the coordinating office is supported by services of the group Models and Data (M&D) of the MPIfM in Hamburg. The development and unification of the model code are carried out in agreement with the DWD’s “Research and Development” division. Information on the model’s state of development and its use is provided in regular user meetings. Here the new model versions and future development strategies between members are also jointly coordinated. The central exchange of information is organised via the community’s homepage and the CLM user mailing list which all members belong to.

The tasks of the coordinating office especially include the:

- joining and unifying of new model components (code maintenance),
- support during the extensions of model documentation (documentation maintenance),
- guidelines for documentation and code conventions for members,
- configuration and conduct of long-term evaluation of new model versions;

- assistance and counselling regarding the use of the model (model support),
- coordination with the further development of the LM at the DWD,
- provision of model code and results in cooperation with M&D,
- version maintenance (documentation of version development, passing on updates),
- extension of routines for pre- and post-processing in cooperation with M&D,
- support of exchange of information between community members,
- organisation of user meetings,
- maintenance of community homepage.

Central simulation results are archived and the model code and the routines for pre- and postprocessing are provided using the data servers of the Group M&D at the DKRZ in Hamburg. M&D supports the conduct of evaluation simulations, the archiving of the respective simulation results in their data base systems and the provision and preparation of the required drive data for applications of the community model.

By means of close cooperation between the coordinating office and the DWD the versions of the operational forecast model LM and the regional model CLM are to be kept as compatible as possible. This involves the DWD's willingness to provide new or modified model components of the LM for the climate version on the one hand, and to integrate components of the CLM development into the code package of the LM. Details concerning this will be regulated in special arrangements and agreements.

Appendix A List of community members and their area of work

The people and institutions listed below have agreed to obey the community agreements explained here and have thus declared their membership within the CLM community. With the topic specified they will contribute to the further development and utilisation of the CLM.

Appendix B Securing good scientific practice

The community members commit themselves to keep a high scientific-ethical standard when communicating with each other and while handling their scientific results. The recommendations of the DFG commission "Self-control in Science" for securing good scientific practice serve as the basis for their scientific work provided they can be applied to the tasks involved in the daily work and the structures concerning this community. If detailed implementation of these recommendations, which is obligatory for the staff at the institutions involved, does not exist, the DFG's general guidelines, as outlined in "Suggestions for the securing of good scientific practice" of January 1998, can be used as an orientation. The DFG's recommendations are a subject of this agreement and can be read on the CLM homepage (<http://clm.gkss.de>, [Section: Community](#)).

Appendix C Documentation and Programming standards

Altered or additional model components have to be documented according to the guidelines of LM documentation (access via <http://clm.gkss.de>, [Section: Documentation](#)). The aim is to integrate the CLM contributions into the overall documentation of the LM system without any problems. The corresponding document guidelines will be provided by the DWD.

The "[European standards for writing and documenting exchangeable FORTRAN 90 code](#)" form the basis for programming the model extensions in the CLM, unless explicit guidelines by the DWD or the coordinating office supplement or replace them (access via <http://clm.gkss.de>, [Section: Documentation](#)). In addition, the design of the model code should be oriented on the guidelines of the LM code as far as style is concerned (e.g. way of commenting, variables declaration, name convention, formatting).

Appendix D. Application for admission in the CLM community

The person/people mentioned below declare their willingness by signature to accept and implement the guidelines of the “Community agreement on the joint utilisation and further development of the regional climate model CLM” without restrictions and to use the CLM exclusively for scientific investigations within the framework of the research topic stated here.

Name:

Contact _____ (e-mail):

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Institution:

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Address:

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Working _____ topic:

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Short description:

Wishes for cooperation/Fields in which cooperation is desired:

___ Place, Date

Signature