# AMIP NEWSLETTER

No. 3 WGNE Atmospheric Model Intercomparison Project October 1992

An information summary and activities description for the Atmospheric Model Intercomparison Project (AMIP) of the Working Group on Numerical Experimentation (WGNE) in support of the World Climate Research Programme. Technical and computational support for AMIP is being provided by the Environmental Sciences Division of the U. S. Department of Energy through the Program for Climate Model Diagnosis and Intercomparison (PCMDI) at the Lawrence Livermore National Laboratory (LLNL) where this Newsletter is edited by Larry Gates. (Address: PCMDI, L-264, LLNL, P.O. Box 808, Livermore, CA 94550, USA)

## AMIP Participation Update

The current status of the 29 atmospheric modelling groups participating in AMIP is given in the table on p.2. As may be noted, there are now 12 groups that have completed the 1979-1988 integration, while another 12 groups have the simulation "in progress". This represents considerable progress since the issuance of the previous *Newsletter* in February 1992, and it now appears that all groups will have completed the AMIP run by the autumn of 1993. In support of AMIP, the U.S. DOE has allocated computer time to the PCMDI that is sufficient for the completion of the simulations that are either in progress or yet to be started at the National Energy Research Supercomputer Center (NERSC) at Livermore.

All groups participating in AMIP are reminded of the need to prepare the AMIP standard output data and a history of state file as soon after completion of the run as possible, and to submit these data to PCMDI for archival storage, for use in the preparation of summaries for the WGNE, and for use in support of the diagnostic subprojects. The required Standard Output remains as described in the AMIP *Newsletter* No. 2 (although the contour intervals listed there are superfluous, since any required displays will be generated by PCMDI in a defined format). Those groups that have not yet started the AMIP simulation (indicated by --- in the table on p.2) should submit an estimated schedule for starting and completing the integration as soon as possible.

## AMIP Diagnostic Subprojects

Ten diagnostic subprojects have so far been approved by the AMIP Panel; these are described in the table on p.3, along with their projected data requirements from the AMIP monthly-averaged Standard Output, the 6-hourly history of prognostic variables and accumulated surface fluxes, and/or other model variables. Clearly the requirements of those subprojects needing data from only the standard output or history will be the easiest to satisfy from the model results that are expected to be available at PCMDI, while other needed data will in most cases require re-entry into the model code; subprojects requiring the latter type of data (which was generally not saved during the integration) may therefore have the participation of only a subset of the AMIP modeling groups.

Several additional diagnostic subprojects are either under review or in preparation, including one on cloud radiative forcing (Jerry Potter, PCMDI), humidity and soil moisture (Alan Robock, U.Md.), one on thermal forcing (Ferd Baer, U.Md.), one on stratospheric phenomena (Carlos Mechoso, UCLA), one on extreme events (drought and severe winters) (Valentin Meleshko, MGO, and Igor Trosnikov, HMC), one on North American hydrology (Pete Robertson, MSFC), and one on land surface processes (Ann Henderson-Sellers, Macquarie U.). As described in the AMIP *Newsletter* No. 2, after approval by the AMIP Panel these subproject proposals will be distributed to the AMIP modeling groups for an expression of their interest in participating and/or approval for their model's data to be used. While proposals for additional diagnostic subprojects are welcome from either the AMIP modeling participants or from the climate diagnostics community, for maximum effectiveness these should be submitted as soon as possible (and coordinated to the extent possible and appropriate with the existing subprojects).

## AMIP Participation Status

| Group | Contact(s) | Model | Computing @LLNL | Computing Elsewhere |
|---|---|---|---|---|
| BMRC | McAvaney | R31 L9 | | completed |
| CCC | Boer | T32 L10 | | completed |
| CNRM | Mahfouf/Cariolle | T42 L30 | | completed |
| COLA | Straus | R40 L18 | in progress | |
| CSIRO | Hunt | R21 L9 | | completed |
| CSU | Randall | 4°x5° L17 | completed | |
| DNM | Galin/Dymnikov | 4°x5° L7 | completed | |
| ECMWF | Ferranti/Burridge | T42 L19 | completed | |
| GFDL | Wetherald | R30 L9 | | in progress |
| GFDL/DERF | Miyakoda | T42 L18 | | completed |
| GISS | Lo/Del Genio | 8°x10° L9 | | in progress |
| GLA | Lau/Fiorino | 4°x5° L17 | in progress | |
| HMC | Trosnikov | T21 L15 | --- | |
| IAP | Wang/Zeng | 4°x5° L2 | in progress | |
| JMA | Sato | T42 L21 | | --- |
| LANL | Kao | R15 L20 | | in progress |
| LMD | Le Treut | 3.6°x5.6° L11 | | completed |
| MGO | Meleshko | T30 L14 | in progress | |
| MPI | Dümenil/Schlese | T42 L19 | completed | |
| MRI | Kitoh/Tokioka | 4°x5° L15 | --- | |
| MSFC | Fitzjarrald | T42 L12 | | --- |
| NCAR | Williamson | T42 L18 | completed | |
| NMC | van den Dool/Kalnay | T40 L18 | | in progress |
| NRL | Rosmond | T42 L18 | | in progress |
| SUNYA | Wang/Liang | R15 L12 | completed | |
| UCLA | Mechoso | 4°x5° L17 | in progress | |
| UGAMP | Blackburn/Slingo | T42 L19 | in progress | |
| UILL | Schlesinger | 4°x5° L7 | --- | |
| UKMO | Rowell | 2.5°x3.75° L20 | | in progress |

In order to support the diagnostic subprojects in the most effective way, the PCMDI is convening a meeting of the present and prospective subproject organizers on 16-17 November 1992 at Livermore. This meeting will review the availability of the AMIP standard output and history data at PCMDI, the consolidation of subproject requests to participating modeling groups for supplemental calculations, possible data exchange procedures, and clarificaiton of PCMDI's role as AMIP facilitator, data source and software provider. It is clear that successful completion of the AMIP diagnostic subprojects will require a significant commitment on the part of both the PCMDI and the participating community over the next year or two.

## AMIP Diagnostic Subprojects

| Number | Organizer(s) | Short Title | AMIP data requirements: Standard Output | 6-hr history | Other (daily) |
|---|---|---|---|---|---|
| 1 | J. Slingo (UGAMP)<br>K. Sperber (PCMDI) | Synoptic to intraseasonal variability | — | u,v (200,850)<br>P, E | OLR |
| 2 | F. Zwiers (CCC) | Interannual variability | — | $\phi$(500), T(850) | — |
| 3 | S. Lambert (CCC) | Cyclone frequency | — | $\phi$, u,v (300)<br>mslp | — |
| 4 | J. Duvel (LMD)<br>F. Cheruy (LMD) | Greenhouse sensitivity, water vapor and CRF | 8 | T, q profiles | LW CRF<br>clearsky OLR<br>cloudiness |
| 5 | D. Randall (CSU)<br>T. Jensen (CSU)<br>P. Gleckler (PCMDI) | Surface fluxes over ocean | 7, 8, 12, 15-20 | — | — |
| 6 | T. Palmer (ECMWF)<br>M. Fennessy (COLA) | Monsoons | 11, 35, 37, 39, 41, 47 | u, v, $\chi$ (200)<br>u, v (850) | — |
| 7 | W. Lau (GLA)<br>M. Fiorino (GLA) | Hydrologic processes | — | P, E | sfc. energy fluxes<br>precip. water<br>runoff, soil moist. |
| 8 | J. Walsh (UILL)<br>H. Cattle (UKMO)<br>C. Mechoso (UCLA)<br>D. Bromwich (Ohio St. U.) | Polar phenomena and sea ice | 1, 2, 5, 7, 8, 10-17, 19 | — | sfc. forcing |
| 9 | B. McAvaney (BMRC)<br>I. Simmonds (U. Melbourne)<br>I. James (UGAMP) | Southern Hemisphere Circulation | 1-6, 7, 11-18, 21, 23, 25, 29, 35, 37 | u, v, T (200, 850)<br>u, v, T profiles | — |
| 10 | S. Tibaldi (U. Bologna) | Blocking | — | $\phi$ (500) | — |

## DRS and PCMDI Graphics Software Soft-

The DRS and PCMDI Graphics systems that are being used for storage and display of the AMIP results are available (with documentation) to all participating modeling and diagnostic groups upon request. The improved version of the PCMDI graphics software that was expected to be available in the spring of 1992 is now expected to be ready for distribution early in 1993.

The new version of PCMDI graphics (Version 2.0) will use the XView window system rather than SunView, and will provide a script language. A script may be produced during an interactive session and may be modified with a text editor. Version 2.0 will provide more user control over the format and placement of graphics and text, and will support grid transformations and computations.

## Next AMIP Meeting

The next meeting of AMIP will be held in cooperation with the FANGIO project during 10-14 May 1993 in Bologna, Italy, under the sponsorship of the U.S. DOE Environmental Sciences Division/ PCMDI, the University of Bologna, and the World Climate Research Programme. The AMIP portion of the joint meeting (on 10-11 May 1993) will focus on results of the AMIP simulations and on preliminary results from the AMIP diagnostic subprojects.

Invitations to this meeting have been sent to all AMIP modeling and diagnostic participants and to all participants in FANGIO, to the WGNE AMIP panel, and to representatives of the U.S. DOE and the WCRP/WGNE Secretariat. Host for the meeting will be Prof. Stefano Tibaldi of the Atmospheric Dynamics Group of Bologna University (ADGB).

## AMIP Contacts

Questions, suggestions and comments on AMIP are welcome, and may be directed to the following:


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