

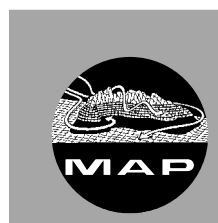
The Mesoscale Alpine Programme

newsletter



MAP

no. 19
september 2004



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Editors

Dr. Georg Mayr
 Institut für Meteorologie und Geophysik
 Universität Innsbruck
 Innrain 52, A-6020 Innsbruck
 Austria

Phone +43-512-507 54 59
 Secretary +43-512-507 54 51
 Fax +43-512-507 29 24
 e-mail georg.mayr@uibk.ac.at

Dr. Andrea Rossa
 MeteoSwiss
 Krähbühlstrasse 58, CH-8044 Zürich
 Switzerland

Phone +41-1-256 95 39
 Secretary +41-1-256 91 11
 Fax +41-1-256 92 78
 e-mail andrea.rossa@meteoswiss.ch

Publisher

MAP newsletter
 c/o MeteoSwiss
 Krähbühlstrasse 58, CH-8044 Zürich
 Switzerland

Programme Office

Secretary

Dr. Andrea Rossa
 MeteoSwiss
 Krähbühlstrasse 58, CH-8044 Zürich
 Switzerland

Phone +41-1-256 95 39
 Secretary +41-1-256 91 11
 Fax +41-1-256 92 78
 e-mail map@meteoswiss.ch

MAP Data Centre

Internet (WWW)

<http://www.map.ethz.ch>

ISSN 1424-4853

The MAP newsletter invites short articles on MAP-related topics. **Contributions** to the MAP newsletter should be sent to the editor Georg Mayr. **Please deliver your text (graphs included) in a camera-ready format** (pdf or ps in A4 format, see templates at the MAP Data Centre), and be sure that figures are suitable for black and white reproduction.

Your contribution must not exceed 2 pages!

Camera-ready format:
 16.0 cm (6.3 inch)

Title
 Author(s)
 Address(es)

Text

25.0 cm (9.8 inch)

➡ **Deadline for contributions to the MAP newsletter No. 20:**

15 July 2005 (to appear in September 2005) ⬅

Editorial – ‘Let us harvest together!’

In the previous issue of this newsletter P. Bougeault said ‘good bye’ to us after nine years of active leadership in MAP. Last January the MAP Steering Committee (MSC) voted for me to take over the MSC chair.

A bit hesitant at first, I am now taking on the task very seriously as a challenge and a chance. MAP has clearly passed its culmination point, but its full value will only be achieved if many of you help together in the final harvesting process. The pace of current research actions may have increased, but just hurrying from one project to the next carries the danger of missing the ultimate goal of assessing what really has been achieved.

At its 7th session in June the MSC recognized the special opportunity which a thorough harvesting process can offer to our entire community. Achievements, for instance, in categories such as “observational techniques”, “numerical simulation” and “physical understanding” become more convincing when carefully inter-linked. Tacit underlying hypotheses as “more computer power → higher resolution → better agreement with observations → enhanced understanding” can now be tested with more than just one case study. Self-critical comparisons between the (sometimes vague) expectations during the planning process with the final achievements will help future negotiations with funding agencies. It was, therefore, decided to undertake a systematic harvesting process and to structure it mainly along the lines of the MAP working groups. Their chairpersons are pulling together small teams who agreed to act as principal collectors. It was also recognized that the achievements of MAP have to be compared with findings from similar field campaigns in other parts of the globe (e.g. IMPROVE).

Since 2002 the annual MAP meeting is integrated into an international conference; this year with the 11th AMS Conference on Mountain Meteorology close to Mt. Washington in New Hampshire. Although the number of presentations with direct reference to MAP dropped from about a half at the ICAM conference in Brig (2003) to one third, it became clear that the con-

duct of the MAP Special Observation Period in 1999 has inspired numerous follow-on campaigns (e.g. ESCOMPTE, VERTIKATOR) and model developments in universities, research laboratories and meteorological services.

During a special evening session more than 40 participants vividly discussed the desirability and various aspects of a co-ordinated harvesting process making reference to a presentation given earlier on that day (cf. <http://ams.confex.com/ams/pdfpapers/77306.pdf>). The MSC and the organisers of next year’s ICAM conference in Zadar have agreed that the results of the MAP harvest will be presented with a series of overview lectures spread over the entire duration of the event.

But the MAP community is not only looking backwards. M. Rotach, head of *Research and Development* of *MeteoSwiss* took on a recommendation made at the MSC session in Brig by starting an initiative to bring MAP from a *research and development project* to a *forecast demonstration project* as envisaged by the World Weather Research Programme of WMO. At a first workshop in Zurich in May some 20 participants from 7 meteorological services and from research institutions developed an ambitious plan under the acronym D-PHASE (Demonstration of Probabilistic Hydrological and Atmospheric Simulation of Flooding Events in the Alps) for a multi-model multi-month operational trial in 2006.

Some personnel information at the end: P. Binder stepped down as co-vice-chair of the MSC and left the committee at the last meeting as his new job as member of the directorial board of *MeteoSwiss* will absorb most of his energy. M. Rotach was unanimously voted to fill this position. In the name of the entire MAP community I extend my sincerest thanks to Peter for the exemplary dedication and energy which he devoted to our common enterprise during a full decade.

I trust that you find useful information in this issue of the MAP newsletter and I am looking forward to seeing many a ripe fruit in the MAP harvest basket next year.

Hans Volkert

Summary of the 6th and 7th MSC Meetings

Andrea Rossa, MeteoSwiss, CH-8044 Zurich

Transition was the outstanding theme of the two MAP Steering Committee (MSC) Meetings held 23-24 January 2004 in Reading, UK, and 25-26 June 2004 in Bartlett, NH, USA. Changes in key personnel as well as finding a way from the Evaluation Phase of MAP into a proactive future were the main issues addressed. While the migration of the MDC from a research to an operational institution is well underway, the data quality work almost finalized, the MSC launched a Working Group that took the planning responsibility for a Forecast Demonstration Project (FDP). Please refer to article "The upcoming MAP Forecast Demonstration Project (FDP)" on page 6 for a detailed description on this major initiative that could mark the fourth phase of MAP. On the other hand, a project was initiated that aims at compiling a synthesis of the main results, the scientific conclusions, brought forth by MAP. The new MSC chairman dedicated part of the Editorial on this MAP harvest process. It is with pleasure that the MSC took note of the high level of activity of the MAP WGs, and a way was sought to commence a reflection on the scientific perspective that would take the MAP community a step toward a future research undertaking. A brief account of these issues is given in the following.

■ Changes

A number of important changes in the leadership of MAP have come into effect. In January, after serving MAP for almost 10 years in key positions as chairman of the former Scientific Steering Committee (SSC) and Science Director during the Special Observing Period (SOP), Philippe Bougeault chaired his last MSC meeting. As his successor the committee unanimously voted Hans Volkert, DLR Oberpfaffenhofen, Germany, into this office. The MSC expressed its confidence that Hans will be able to lead MAP through the harvesting process to a position where the value of MAP will become evident and the new key questions will stand out.

A second key person in the overall course of MAP, Peter Binder, wished to withdraw from his co-vice chairmanship, as he moved to be a member of the directorial board of MeteoSwiss which does not allow him to maintain a strong involvement in MAP. Peter chaired the Coordination and Implementation Group (CIG), a group that proved to be crucial in setting up the SOP, in which he acted as Operations Director. MeteoSwiss expressed its continuing commitment to MAP by proposing Mathias Rotach, chair of the MAP WG PBL and the newly formed WG FDP, as Peter's successor, a proposal fully accepted by the MSC.

As reported in the last newsletter, at its 2003 meeting, the International Governing Panel (IGP) discontinued its service, and Thomas Gutermann, another key person in the MAP history, decided to continue to support MAP in the MSC. As a result of this change the Terms of Reference of the MSC have been amended to confer the IGP's overall responsibility for MAP to this single MAP body.

Finally, Hans Hirter, manager of the MAP Data Centre (MDC) almost since its very beginning, moved to another position with ETH Zurich and is replaced by Claudia Schmengler, a collaborator at the MDC since 1999. The MSC expressed its gratitude to the excellent service provided by Hans over these years.

■ MDC migration

MeteoSwiss filed a tender for the migration of the MDC from ETH to an operational institution, a call the MSC issued in 2003 (see MAP newsletter 18), in which a detailed three-step procedure for the migration is proposed. In summary, the three steps consist in (1) an as-is transfer of the physical MDC system from ETH to MeteoSwiss, (2) an upgrade of the hardware and software components to comply with MeteoSwiss standards, and (3) to integrate the MDC into the currently developed MeteoSwiss Data Warehouse System. Step 3, albeit allowing for low mainte-

nance costs and guaranteeing long-term access, was deemed risky as such a new implementation is likely not to be tested as thoroughly as the present version, and involves a significant amount of work. The MSC accepted steps 1 and 2 but will come back on step 3 later. Should step 3 be realised, a sufficiently long overlap period between step 2 and step 3 would be inevitable. EUMETNET, the funding body of the MDC, followed the MSC recommendation at the April 2004 EUMETNET Council meeting. The necessary technical steps are being prepared and step 1 of the migration procedure is expected to be completed towards the end of this year.

The model, radar and satellite product browser will not be supported in the new MDC at MeteoSwiss because the used software tools have changed a lot, and substantial work would be needed to reconstruct a convenient browser. However, MeteoSwiss made it clear that all images from models, radars, and satellites will still be available on the new MDC and accessible as single files.

■ New Initiatives

The World Weather Research Programme (WWRP), installed by the WMO in 1998, endorsed MAP as its first R&D programme. Ever since then the WWRP has encouraged MAP to include a societal impact component into its strategic goals. As a matter of fact, in Fall 2002, a dedicated workshop on societal impact issues was organized in Bad Tölz (see MAP newsletter 17) but no palpable efforts emerged from there. At the January 2004 MSC Meeting MeteoSwiss proposed to pursue the possibility to perform a Forecast Demonstration Project (FDP), a WWRP instrument to show that benefits of research efforts when translated to operations. The MSC approved this proposal and appointed Mathias Rotach from MeteoSwiss as the chairman of this newly formed WG FDP. A dedicated article can be found "The upcoming MAP Forecast Demonstration Project (FDP)" on page 6.

Another initiative launched in the MSC is the process of harvesting the results and to formulate the scientific conclusions of MAP.

■ 'Cleaning up'

The scientific work within the MAP community has not come to an end yet but is ongoing, as testified by this year's MAP Meeting, jointly held with AMS Mountain Meteorology Conference 21-25 June 2004, in Bartlett, NH, USA, and the high level of activity of the MAP WGs. The MAP data quality effort DAQUAMAP has been brought to an end. A scientific paper (Häberli et al. 2004) appeared in the ICAM/MAP Special Issue of the *Meteorologische Zeitschrift*, while a technical report and a flyer for EUMETNET, the network of European meteorological services that funded this activity, are available. A second scientific paper is in preparation on the radio sounding dry bias correction, performed as DAQUAMAP-II. As the correction can be significant (up to 15% differences in the total column water vapour) and the issue is quite delicate, the corrected data will be made available with a thorough documentation only, i.e. by late summer of this year.

Also, in order to take into account the latest updates of SOP surface data, the MSC has decided to recalculate the entire DAQUAMAP procedure to produce a consolidated quality description for the entire data set. Starting 31 August 2004 the SOP data set has been declared as frozen. Data that will be delivered to the MDC after this deadline will be kept outside the official data set, including the quality description. This extra effort will be funded by MeteoSwiss. Please refer to "MAP Data Centre Status" on page 9 for a short status of the MDC.

■ Next Meeting

This period of transition is marked by several important processes that require the MSC's attention. Thus, a third (!) meeting in 2004 has been scheduled for 22-23 November. The next and presumably last MAP Meeting will be held jointly with the International Conference on Alpine Meteorology (ICAM) 23-27 May 2005 in Zadar, Croatia (see "ICAM/MAP 2005" on page 10).

The upcoming MAP Forecast Demonstration Project (FDP)

Mathias Rotach, MeteoSwiss, Zurich, Switzerland

As the first Research and Development Project of the World Weather Research Program (WWRP), MAP has seen three phases so far: a Development Phase when the plans were made and the project was designed, the Field Phase with the SOP in fall 1999 and the Analysis Phase that is still ongoing and has brought a wealth of interesting results and insight in Alpine meteorology (see Volkert 2004, Bougeault et al, 2001). Still, WWRP has encouraged the leading MAP scientists to consider a fourth or Demonstration Phase, namely the planning and organization of a Forecast Demonstration Project (FDP).

What is an FDP? By definition 'FDPs will [also] form an essential part of the WWRP and are intended to confirm, by objective measures, the enhanced prediction capabilities gained through improved understanding and/or the utilization of enabling technologies'. This is achieved by the following attributes:

- the project addresses forecasts of weather of international applicability, with emphasis on high impact weather;
- the existence of clear evaluation protocols;
- the expectation of success and level of support available;
- the prospect of a clear advance on current local or global operational practice
- forecasts can be provided in real-time and forecast information can be communicated for user utilization and subsequent impact evaluation.

The MAP community was therefore facing the challenge to show (demonstrate) - not only in hindcast mode - concrete advances in operational forecast for high-impact weather in Alpine regions due to the activities during MAP.

Clearly, it is difficult to attribute any advance in operational practice to one - even a large one - single program alone. Even if MAP was an important (if not to say the essential, at times) contribution to mountain meteorology, other activities in other parts of the world may make it difficult to clearly distinguish the very MAP contributions from others in a strict fashion. Still, the MSC has decided to take the challenge and early this year (i.e., in the MSC meeting in Reading, 23/24 January 2004) a Working Group with the goal to 'exploring the possibilities for, and defining the details of a MAP FDP' was set up. Members of this WG were from all the interested parties within the MSC, but it was decided to open it also to new, non-MAP members. Indeed, a first workshop held in Zurich, Switzerland in May 2004 was attended by 'old MAP chaps' as well as people representing institutions which were not involved in MAP at all or only marginally.

■ Towards a MAP FDP

The most relevant, high-impact and best-studied aspect of weather with an international component in the Alps and during MAP was certainly heavy precipitation and associated flooding. The main achievements of MAP in this respect can be summarized as follows:

- The operational use of a high-resolution numerical model (i.e. MC2) for decision making purposes during the SOP (Benoit et al 2002).
- New insight in mechanisms of orographic precipitation (e.g., Medina and Houze 2003).
- The set-up of an Alpine radar composite (e.g., Chong et al. 2000).
- Development of a new terrain-following coordinate for steep orography (Schär et al. 2002).

- Progress in hydrological modelling and associated near-surface exchange processes (Bacchi et al. 2003, Rotach et al. 2004).

Operationally forecasting flood events in the Alps using high-resolution numerical modelling in connection with hydrological modelling has been decided to become the focus of the MAP FDP. For the atmospheric part, the high-resolution models (a few kilometers horizontal resolution) of various Meteorological Services as well as research models are planned to be employed, as well as ensemble systems and a possible 'small scale poor man's ensemble' from the high-resolution deterministic models. The ensemble technique on precipitation events in the Alps is also an aspect that has been investigated during MAP (e.g., Walser et al, 2004). Various coupled and non-coupled hydrological models are foreseen to be used in different catchments. In connection with the modelling efforts, possibilities are being explored to make available some additional data during the very demonstration phase, to some extent thus mirroring the additional value of radar composites during the actual SOP. This might be achieved, for example, through collaborative efforts with EUCOS (EUMETNET Composite Observing System). Last but not least, an intensive exchange with end-users (such as water authorities, civil protection etc.) will have to reveal their true needs and the specific products to be disseminated from all the modelling efforts.

A rather ambitious time setting foresees a (possibly first) demonstration phase for the 'SOP season' (August to November, say) in 2006. As first steps, a formal proposal will soon be made to WWRP; a workshop with potential end-users is planned for November 2004 in northern Italy in order to specify needs and possibilities; financial resources will be determined and (possibly) made available and the modelling strategy will be refined.

For the time being there is no web site yet on the MAP FDP. Therefore, additional information on the activities and communication on possible contributions should be directed to the chairman of the WG (mathias.rotach@meteoswiss.ch) and are always welcome. It should also be repeated here that indeed the WG is open to everyone and not restricted to 'MAP honourables'.

Finally, an acronym for the MAP FDP (being a generic term) has been created, which reflects the challenge of this exciting project, to some extent its risk and also the fact that it refers to the fourth phase of MAP: D-PHASE (for Demonstration of Probabilistic Hydrological and Atmospheric Simulation of flood Events in the Alps. Please feel free to comment on this acronym, its clarity and meaning and also whether or not you judge it to be appropriate.

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MAP Data Centre: A short look back and a big thank you!

Hans Richner, IACETH, Zurich

The foundations for the present MAP Data Centre MDC were laid at the First MAP Workshop, September 12-15, 1994 in Zurich. There, I presented a draft for a complex structure encompassing the different elements of a distributed data bank, including ancillary systems for controlling access procedures. In 1995, Hans Hirter was officially appointed as MAP Data Centre Manager, and the first server was set up at the Institute for Atmospheric Physics (now Institute for Atmospheric and Climate Science) in Zurich. He subsequently refined the structure and eventually realized the MDC in form of an Oracle database system. Politically motivated requirements for different data types called for an architecture that was significantly more complex than originally planned. As data began to stream in, the personnel capacity of the MDC had to be increased. Under the competent leadership of the MDC Manager, Roger Studer, Oliver Maoba, Thomas Kistler, Felix Baum, Esther Häller, Ann Guy, and Claudia Schmengler developed querying tools, checked data formats, installed user accounts, inserted data, compiled documentation, gave assistance to data users, updated software, installed new hardware, etc., etc. In spring 2004, Hans Hirter left the MDC and Claudia Schmengler took over the duties of the MDC Manager. In Summer 2004, the MDC servers - now working in a stable, operational way - will be transferred from ETH to MeteoSwiss. Here they will be incorporated into the MeteoSwiss Data Warehouse, still managed

by Claudia Schmengler and kept available to the MAP community.

The occasion of the hardware and responsibility transfer from ETH to MeteoSwiss is a good occasion for a short pause and look back. In the name of all scientists working for, in, and with MAP, I want to express my sincerest appreciation to the entire MDC staff. In particular, I want to thank Hans Hirter for his dedicated efforts as MDC manager who shaped the MDC more than anybody else. I wish Claudia Schmengler all the best in her new function as MDC manager, and my successor (whose name is not yet known) the same satisfaction with his job as I had! I want to thank all those who helped to make the MDC what it is, namely an extremely valuable source of research data for many years to come. The MDC is not only a database, it is also a communication link and platform for exchanging information. Apart from storing large amounts of data extracted from various archives and collected in a field experiment, the MDC actively supported the realization of the MAP field experiment. The MDC set new standards for providing communication support and research data to a large scientific community dealing with one common topic, namely Alpine Meteorology. I thank the data producers, the numerous people who computed and reformatted data, everybody who directly or indirectly worked for or at the MDC, and - last but not least - ETH in Zurich for providing the hardware and EUMETNET for financing the man power for running the MDC.

MAP Data Centre Status

Claudia Schmengler, IACETH, Zurich

■ Personal Note

First of all I want to address a personal note to Hans Hirter: I want to thank him for the good working atmosphere in the last 4 years, and that he gave me the possibility and the support to learn so much about databases and programming.

Thank you, Hans!

My name is Claudia Schmengler, since 1 April I am in charge for the MAP database. I started to work at the MDC in September 2000 as an assistant for minor maintenance work. During the past 4 years I have had the chance to learn a lot and to develop a profound knowledge about databases, networks and finally a bit of meteorology. I hope I'll be able to continue the good work Hans Hirter has done the last years.

■ New Features

A new search-tool for the archive was added <http://www.map.ethz.ch/archivsearch.php>. The content of the archive was entered in a database table. The new PHP tool gives the possibility to search the content for special subjects or media.

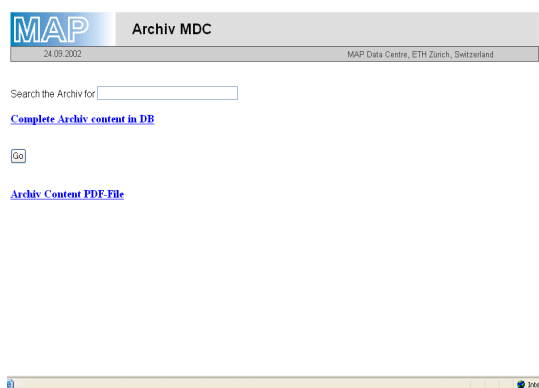


Figure 1. Archivsearch Interface

For the humidity-corrected radiosonde data, a new interface was implemented, and new parameter fields for corrected humidity were added.

■ MAP Data Centre access statistic

The Internet traffic at the MDC was stable over the last two years. The winter months have been high peak traffic periods. For example, during the last 12 months most pages (115 536) were requested in December 2003 (Figure 2.) Over the last year there were on average 8232 successful requests per day. Altogether the MDC had 941490 requests for pages and the average of transferred data per day has been 298 MB.



Busiest month: Dec 2003 (115,536 requests for pages).

Figure 2. Monthly Web traffic at MDC in 2003/2004

A look at the domain report list, (the Top Ten domains are shown in Figure 3) shows again requests from all over the world.

requests	%bytes	domain
2112996:	38.73%:	.ch (Switzerland)
948798:	22.62%:	.com (Commercial)
697972:	14.29%:	.net (Network)
133556:	2.92%:	.it (Italy)
72539:	1.66%:	.fr (France)
50340:	1.53%:	.de (Germany)
45133:	1.50%:	.at (Austria)
62047:	1.19%:	.edu (USA Educational)
3559:	0.76%:	.org (Non-Profit Making Organisations)
25190:	0.64%:	.uk (United Kingdom)

Figure 3. Top Ten domains

■ Future of the MDC

The preparations for the move to the MeteoSwiss are completed at the MDC. All unused programmes were removed, the directory tree is reorganised and the documentation needs only minor changes. Also, the planned new features, such as the discussion fora for the working groups, and the platform for discussing the final publication have to be added to the documenta-

tion as soon as they are successfully implemented. (This work could also be done after the move to MeteoSwiss) The technical details of the machine were communicated to MeteoSwiss. The IT-Support there should be able to incorporate the server into the MeteoSwiss Data Warehouse, from the ETH side the server is ready to move.

ICAM/MAP 2005

Zadar, Croatia, 23 – 27 May 2005

The 28th International Conference on Alpine Meteorology (ICAM) and the Annual Scientific Meeting of the Mesoscale Alpine Programme (MAP) 2005 will take place in Zadar, Croatia, from Monday 23 May 2005 to Friday 27 May 2005.

The northern Dalmatian city of Zadar is the place where the mountains meet the sea. The Zadar region abounds in beautiful landscapes; it is situated between the Velebit (the longest Croatian mountain in the Dinaric Alps range) and the Adriatic Sea. The region is surrounded by Paklenica, Northern Velebit, Kornati, Plitvice and Krka national parks, all of them on the UNESCO World Heritage list.

The conference will be hosted by the Meteorological and Hydrological Service of Croatia, Andrija Mohorovicic Geophysical Institute (Faculty of Science, University of Zagreb) and Croatian Meteorological Society.

The ICAM has established a long tradition of providing an interdisciplinary forum for discussing the influence of mountains on the atmosphere on a wide range of spatial and temporal scales. We are very happy to have the final MAP Conference as an integral part of ICAM2005! The conference is an excellent opportunity for a general discussion for the MAP harvesting, scientific as well as operational.

The International Scientific Programme Committee, composed of 7 representatives of the ICAM member countries, plus 3 MAP representatives (one from the Europe and two from the US), invite you to submit a short abstract for an oral or poster presentation. Papers on all research topics related to the influence of mountains on the atmosphere on a wide range of spatial and temporal scales will be welcome, including papers on:

- findings of the MAP
- flow across and around high topography
- orographic clouds and precipitation, convective and hydrological mechanisms
- snow and ice in mountainous terrain
- mountain climates, extreme weather events and weather forecasting
- impacts of climate and extreme events on ecological and socio-economic systems

They may cover theoretical, observational or numerical modelling aspects and MAP activities in a broad sense. Papers that foster interactions between research and operational communities are particularly encouraged.

Short abstracts (max. one page) can be submitted online under <http://meteo.hr/ICAM2005> (will be operational in November) or via email to icam2005@cirrus.dhz.hr. The current time table is as follows:

- the second circular will be sent out by the end of September 2004, with more detailed information on the programme, hotel reservation, travel information, etc.
- deadline for submission of short abstracts is **14 January 2005**;
- deadline for extended abstracts of max. four pages is **2 April 2005**.

Further information about the conference logistics and registration will be posted on the Web under <http://meteo.hr/ICAM2005>. The site will be continuously updated.

The local organizing committee is looking forward to seeing you in Zadar for the ICAM/MAP2005!

Ongoing Activities and Future Events

■ Activities within MAP

date	event
Oct 28-29, 2004	8th FORM Meeting, Bad Ragaz, Switzerland (http://www.map.ethz.ch/map-doc/form/form.html)
May 23-27, 2005	MAP Meeting 2005 and 28th International Conference on Alpine Meteorology (ICAM) (http://meteo.hr/ICAM2005)

■ Future events related to MAP

date	event
Oct 18-21, 2004	CLIVAR Workshop on Ensembles Methods: From Weather Forecasting to Climate Change, Met. Office, Exeter, UK (http://www.clivar.org/organization/wgsip/ens_wshp/index.htm)
Oct 25-29, 2004	11th Workshop on High-Performance Computing in Meteorology, ECMWF, Reading, UK (http://www.ecmwf.int/newsevents/meetings/workshops/high_performance_computing-11th)
Nov 8-11, 2004	ECMWF/ELDAS Workshop: Land Surface Assimilation, ECMWF, Reading, UK
Nov 9-12, 2004	3rd ECSS (European Conference on Severe Storms), Leon, Spain (http://www3.unileon.es/congresos/ecss2004/ENG_contenido.htm)
Nov 15-17, 2004	Joint SRNWP/Met Office/HIRLAM Workshop on Variational Assimilation, Met. Office, Exeter, UK (http://www.metoffice.gov.uk/research/nwp/external/srnwp/workshop_nov2004/index.html)
Nov 29-30, 2004	Atelier de Modélisation de l'Atmosphère 2004 (In French), Meteo France, Toulouse, France (http://www.cnrm.meteo.fr/ama2004)
Dec 6-10, 2004	First THORPEX International Science Symposium, Montreal, Canada (http://www.wmo.int/thorpex)
Jan 9-13, 2005	AMS: 85th Annual Meeting, San Diego, CA, USA (http://www.ametsoc.org/meet/annualmtgs_future.html#2005)
April 2005	The THORPEX International Conference on Decision Making and Decision Support in the Era of Probabilistic Weather Forecasting, Paris, France (http://www.wmo.int/thorpex/decision%20making%201%20announcement%20paris.html)
Apr 18-22, 2005	4th WMO Symposium on Data Assimilation, Prague, Czech Republic (http://www.chmi.cz/dasympos/index.html)
Jun 27-Jul 1, 2005	21st AMS Conference on Weather Analysis and Forecasting/17th AMS Conference on Numerical Weather Prediction, Washington D.C., USA
Sep 11-13, 2005	Computing in Atmospheric Sciences Workshop, Annecy, France (http://www.scd.ucar.edu/dir/CAS2K5)
Oct 4-7, 2005	26th EWGLAM and 11th SRNWP Meeting, met.no, Oslo, Norway
Oct 31-Nov 2, 2005	6th SRNWP Workshop on Nonhydrostatic Modelling Special topic: Convection resolving models, Bad Orb, Germany