Seminar on Accreditation

of Meteorologists in Europe

11 July 2000, Cambridge, U.K.

104 Oxford Road,
Reading,
Berks, RG1 7LL, UK.
http://www.royal-met-soc.org.uk

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SUMMARY REPORT

INTRODUCTION

During the Sesquicentennial Conference of the Royal Meteorological Society (RMS) held at St John's College, Cambridge from 10 to 14 July 2000, the European Meteorological Society (EMS) held its Annual General Meeting on the afternoon of Tuesday, 11 July 2000.

At the suggestion of the RMS, the opportunity was taken to hold an Informal Seminar on the various accreditation schemes current in Europe and to discuss some of the problems that arise when considering a future EMS-wide scheme for meteorological qualifications and accreditation.

This Summary Report briefly describes the outcome of the Seminar

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1. LIST OF THOSE ATTENDING

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2. Welcome by Chairman (Dr. David N. Axford)

It is my pleasure to welcome you here, in my old College, to this informal seminar on the various accreditation schemes for meteorologists in Europe arranged by the Royal Meteorological Society (RMS). Ideas on this subject are still in a state of evolution, so we have arranged a number of presentations concerning the relevant activities current in Europe from France, Germany, Netherlands and the UK to start us off. We will also be interested to hear from anyone here about relevant experiences in their own country.

For a start, I will provide a brief overview of the RMS Accreditation Scheme for the qualification of Chartered Meteorologist.

The RMS Accreditation Scheme for the qualification of Chartered Meteorologist (CMet) in the UK

by David Axford, Royal Meteorological Society

The subject of setting up a professional accreditation scheme was debated within the RMS Council for several years during the late 1980s, and finally came to fruition and was given Council approval as a qualification for professional purposes, (subject to the Charter and Bye-Laws of the Society), in the early 1990s. In 1991 Dr. James Milford was tasked with obtaining national approval for the scheme, and the first Chartered Meteorologists were soon approved. By 1995 around 50 Chartered Meteorologists had been accredited, and that figure has remained fairly static since then, with 4 or 5 applications per year of whom 2 or 3 have been approved, roughly balanced by those deciding not to continue.

The aim of accreditation is to provide a professional qualification in meteorology at a level similar to that of Chartered Engineer, which will assure clients and employers that individuals have reached a specified level of knowledge and experience. Holders of the qualification are bound by a Code of Conduct, and successful candidates are issued with a Certificate by the RMS Council which authorises them to use the designation "Chartered Meteorologist (CMet)".

The requirement for accreditation is seen in areas of work where meteorologists, and those working in closely related sciences such as hydrology and physical oceanography, are providing services for those who may not be specialists in these subjects. Communication skills are, thus, explicitly required in addition to standards of technical expertise and current best practice, proven experience over about 5 years and probity.

The qualifications required for chartered status are based on scientific background, knowledge of meteorological science and current practice, experience and judgement, combined with the ability to communicate the science clearly in English to lay clients, and probity as defined in the Code of Conduct. The level of meteorological knowledge required is around that provided by a specialist university course at first degree level, or by professional training and extensive practical experience as an alternative. A minimum of 5 years recent work at an appropriate professional level is expected to satisfy the experience and judgement criteria, although account can be taken for the work involved in obtaining a higher degree such as a Masters or Doctorate. Evidence for the ability to communicate clearly is sought from published work or a special paper, and through a short interview within which the candidate may be asked to make a brief oral presentation.

A Code of Conduct, to which Chartered Meteorologists are expected to abide, has been approved by RMS Council. Of course such a code does not take the place of any religious code of ethics an individual may subscribe to, it is an addition for professional purposes which is intended to provide clients with some degree of re-assurance.

Since this is only intended to be a short summary, and time is limited, I will not go on to detail the procedures and structures in place to make the scheme work. Suffice it to note that there is an Accreditation Board, (I am the present Chairman), which is responsible for managing the scheme and recommending acceptance or rejection of candidates to Council. It arranges interviews and examines courses claimed to satisfy the various criteria of the scheme.

There are eight members of the Accreditation Board appointed by the RMS Council. Not more than four of the members are selected from any one employing organisation. The aim is to provide a wide balance of specialist knowledge on the Board so that interview panels can be selected to best advantage. When necessary the Board can co-opt outside expertise onto its panels. (Note that full details are now available on http://www.royal-met-soc.org.uk/cmet)

That is a sufficient description of the UK Chartered Meteorologist qualification from me. Peter Ryder will now describe a new venture within the RMS and under the aegis of the Accreditation Board - the setting up of a National Vocational Qualification (NVQ) system in the UK for weather forecasters and presenters and for weather observers.

3. The Development of Competence Based Standards and Qualifications for Forecasters & Observers in the UK

by Peter Ryder, Royal Meteorological Society

All the slides of this presentation and some of the background material can be found at: http://www.emetsoc.org/accreditation/presentation_ryder.html

In 1997 the UK Met Office invited and funded the RMS to conduct a feasibility study into the advantages and disadvantages of introducing vocational qualifications for forecasters. The consultants, Moloney & Gealy, carried out the work in 1998. They concluded that a qualification would impose useful standards on the industry, give professional status to practitioners and be liked by customers. But, to deliver these outcomes, the qualification should be competence-based, operated by the RMS and be based on nationally recognised standards and design criteria.

Subsequently the Met Office, Royal Navy and the private sector in the UK agreed to fund a project jointly to develop National/Scottish Vocational Qualifications (N/SVQ) for forecasters and observers. The RMS became the Lead Body for the industry, managed the project and approved the national occupational standards. It appointed me as the project leader, Moloney & Gealy as the consultants and an organisation called the Science, Technology and Mathematics Council (ST+MC) as the national training organisation. The ST+MC is recognised by the government as a suitable body to endorse the standards and provide funding, on its behalf, for their development.

Government funding was obtained to carry out a mapping study of the met sector to identify the functions carried out by its organisations, in particular by forecasters and observers, and its current and projected size. The results of that study are held on the web site, but point to an expected take up of the qualifications of about 1300 within three years. Based on this work, further funding was obtained to develop and design the national standards expected of

experienced forecasters and observers, and qualifications based upon them. In effect, the qualification design specifies those standards that are mandatory and those that are optional or additional.

The standards were developed in workshops and pilot trials involving a wide range of practising forecasters and observers, under the guidance of the consultants. They will be endorsed by the RMS, representing all the interests of the meteorological sector, and approved finally by a government body set up for the purpose. At this stage, the standards will be in the public domain. The website contains an example of a forecaster standard.

The RMS have appointed an Awarding Body, known as Vocational Qualifications in Science, Engineering and Technology (VQSET) with experience in the field, to implement the awards and maintain quality assurance. Centres approved for this purpose by VQSET carry out the assessment of candidates. The Met Office College, Royal Navy School of Meteorology and Oceanography and Oceanroutes (UK) Ltd plan to become assessment centres. The interplay between the various organisations identified above are shown in diagrammatic form in the 'Who does what' slide on the website.

The standards and qualification have cost about £80 000 to develop, exclusive of the time of the participants involved in the various working parties and the steering group.

It is planned to launch the awards in the UK from April 2001; promotional material is being prepared and assessors are being trained with that goal in mind. We are on track to achieve it.

Because the results of the development are in the public domain, they are available for adoption or adaptation by other European countries. Such a step could only encourage mobility and expand employment opportunities in the sector. It could also provide a benchmark for customers of meteorological services and raise a barrier to low quality services.

Further information is available on http://www.royal-met-soc.org.uk/vqmet

4. A short history of meteorological accreditation

by Jon Wieringa, C.C.M. Wageningen University, Netherlands

Certification, or accreditation, signifies that a person is qualified for independent work in a profession. A diploma or an academic degree shows that the bearer has been schooled and has absorbed certain knowledge, that he has been a good pupil. But in all professional fields, medical or technical or economical, when you have practised by yourself in the field and have shown that independently you can handle that knowledge well, then you can be certified as an experienced master. All certification procedures therefore require several years of independent professional activity after education has been rounded off, and no credible certificate can be awarded as the end product of any course.

There are two types of certificate, specialist and generalist. The first type shows proficiency in some part of the professional field. A general example is the university doctorate, signifying capacity for independent research, and some particular examples are the title of surgeon in medicine or of barrister in law. The second type of certificate is for consultants, who can only advise well if sufficiently acquainted with a larger professional working area than their own specialism. For instance, in meteorology, no really good advisory work can be expected from consultants who are entirely

ignorant of forecasting procedures and possibilities, or of instrumentation developments, or of micrometeorological processes. Reliable consulting certifications are therefore those which are awarded by a wide-ranging professional body, not dependent on any single institute or organization.
In meteorology, certification was set up in the United States after World War Two. There were two reasons for its emergence. Firstly, meteorology was expanding well beyond the activity of forecasting, and became increasingly relevant to matters of air pollution, weather modification, agriculture and environmental energy. The U.S. Weather Bureau had insufficient capacity to deal with the resulting questions from all parts of society - next to its weather expertise it could not afford to become adequately expert in agriculture, engineering or law. Secondly, after World War Two, about five thousand military meteorologists were dismissed, and a number of these began to practise meteorological consulting privately: in 1949 there were half a dozen small weather firms, active in local broadcasting or in industrial meteorology. Their access to weather telex data depended largely on advice from the American Meteorological Society (AMS) about their professional status.

In order to resolve competition conflicts, the U.S. Department of Commerce appointed a customers' committee to make a review of civil weather matters (see Bates, 1976). The 1953 George Report essentially cancelled existing monopolies of the U.S. Weather Bureau relative to private meteorology, in particular by liberating access to data gathered at taxpayers' expense. As a follow-up, the AMS, which represents the entire body of professionals - not only the Weather Bureau, but also universities and research institutes - developed, in 1957, procedures for both the certification of consultants (CCM) and for granting an AMS Seal of Approval to media presenters. The first outside meteorologist to be granted an AMS Certified Consulting Meteorologist certification was Loren Crow, in 1959, and I am proud that he was member of the committee which judged my own oral CCM examination.

You may ask now - why did I want to obtain an American certification ? At this point I should introduce myself. With a degree in applied physics I entered the Dutch National Weather Service in 1965, got some training in forecasting, and then worked for two dozen years in the NWS research department on wind climate and boundary-layer structure. The research department had many advisory tasks in agriculture, aeronautics, engineering and so on, and until about 1980 such advisory work was generally a public service. Then, the demand for such advice began to exceed the NWS capacity to give it, more so since government support of all kinds of public service decreased. As a result, commercial meteorology began to emerge in Europe in the eighties, just as it had done in the United States in the fifties.

Making a European Wind Atlas for the European Community wind energy estimates was an eye-opener in two ways. Firstly, because the Brussels EC administration began by giving that wind climate job to some engineering firm, which did not bother to ask professional wind climate advice and then made such a mess of it that Brussels had to transfer the job to a multinational expert group. In general, there were, at that time, many self-styled wind experts in Europe, advising authorities and private wind turbine projects, and often botching jobs by knowing little about wind. The fact that many of these "advisers" worked at universities or in environmental institutes was not always a guarantee that they were reliable in meteorology.

The second eye-opener was that the weather services were so fettered by government rules, that they could not organize the Wind Atlas project sensibly. For example, the NWS representative of one country was changed three times during the project because of mandatory official regulations - which minimized his contribution. So the atlas project was run by a more independent research institute, which had the leeway to employ people and means for the project efficiently.

This experience convinced me of the need for independent practitioners of industrial meteorology,

also because they can afford to become familiar with the users of, e.g., wind energy. Moreover it prompted me to look for possible ways to qualify professional meteorologists, and U.S. certification was an obvious example. In order to get first-hand knowledge about that program, I applied for accreditation as AMS Certified Consulting Meteorologist in 1985, and this is what I found.

The purposes of AMS certification for consulting meteorology are :
(a) to assure availability of mature, competent and ethical counsel in the many fields of meteorology;
(b) to provide incentive for continued professional growth after completion of academic training;
(c) to enhance prestige, authority and success of consulting meteorology; and
(d) to discourage unqualified practitioners.

The examination procedures are described at length in each year's August issue of the Bulletin of the AMS. Candidates for Certified Consulting Meteorologist accreditation have to demonstrate the following:

- KNOWLEDGE, meaning both education and understanding. The minimum level of education is approximately a bachelor's degree. However, since degrees are incomplete measures of knowledge and of the other certification Attributes, the lack of a degree does not necessarily exclude, and a Ph.D. does not necessarily include. The candidate has to demonstrate understanding and competence in applying scientifically a broad spectrum of meteorological knowledge. Specialists are not excluded, but may have difficulty with the broad-based examination.

- EXPERIENCE, based on at least 5 years of work at the professional level. A Ph.D. counts for 2 years of experience, and the nature of the experience counts.

- CHARACTER, in particular conformance to the Code of Conduct in Article 12 of the AMS Constitution. This qualification requires written testimony of at least three professional referees, one of whom is a CCM, and also a good record of professional work and a trustworthy performance during an oral examination.

In the Seal of Approval program for presenters of weather programs on radio and television, the evaluation of applicants is simpler. The candidates must show a sufficient record of meteorological education, and they have to submit for evaluation three recent video- or audio-tapes of their broadcasts. These are then judged on informational and explanatory value and on communication skills.

The U.S. certification programs are flourishing. Forty years ago, the pioneers of industrial meteorology had to generate a market, to convince the public that meteorology could give them more advantage than just a 12-hour forecast. At that time, most people still had the idea that the weather information delivered by the NWS free of any charges was fully tailored to their own requirements.

Now, U.S. meteorological consultants deal with: agriculture, air pollution, aviation, alternative energy sources, climatology (e.g., extremes), construction and engineering, environmental impact statements, field studies and site-specific analysis, forensic study and legal testimony, forecasting, gas transport, hydrometeorology, industrial applications, marine climate, regulatory permits, routing of ships and aircraft, satellite data analysis, tropical climate, weather modification and waste management. Task divisions between the Weather Bureau, as basic information provider, and independent consultants, as information applicators, have become accepted. In 1999, over 400 CCM's and some 850 media Seal holders were listed by the AMS as "active", and the growth rate is fifteen certificates per year.

It is obvious that the maintenance of such a program by a professional society requires much work. This is feasible for the AMS with over 10 000 members, but in Europe in 1985 only the RMS and the German DMG seemed large enough societies to have the capacity for such a task. In correspondence, the Councils of both Societies stated in 1986, that they had so far taken no action on this matter because its benefits had not been evident, but that they would reconsider. Soon afterwards, a DMG

committee led by Lutz Hasse began preparations, and in 1989 an "Anerkennungsverfahren für beratende Meteorologen" was started. For its content and its development I refer to today's presentation by Werner Wehry. Also in 1989, a RMS working group, coordinated by James Milford, began to develop accreditation for British meteorologists; their scheme started in 1991, and its results are described today by David Axford.

It is clear that in Europe as a whole insights are growing that recognition of capable independent meteorologists by certification is also useful for the national weather services. As stated by DMG: "essentially, competition is not with the weather service but rather with geographers and engineers, who can do standard calculations but would not understand their pitfalls for lack of background knowledge".

In 1991, the Dutch meteorological society NVBM was founded because of the increasing need to maintain professional standards against political bluntness and the claims of self-styled meteorological "experts". From the start, certification was considered important for the society, but NVBM was too small to organize that by itself. So, fourteen foreign meteorological societies then known to NVBM were asked their opinion on the possibility of an international certification agreement.

From most countries (e.g., Australia, Austria, Denmark, Japan and Spain) the society's reply was, that they had no certification schemes themselves but were quite interested. The Swedish society explicitly stated, that they had no capacity to organize accreditation themselves. The Hungarian society, medium-sized, had had, since 1971, the right to allocate professional meteorological certification, based on a general government procedure for expertise. They had certified their consultants by a relatively simple approval procedure, requiring a Masters degree and experience in some specialized field, and they were interested in further European cooperation.

The following stage began in Oxford in 1993, where a first meeting was organized of sixteen of the national societies which since 1999 have cooperated as Members of the European Meteorological Society. They decided to coordinate action on existing and possible certification, and results of a subsequent enquiry were summarized in 1995 by Marc Gillet at a conference in Toulouse. lt appeared that, as well as in the countries mentioned above (Germany, Hungary and Great Britain), some preparatory work was also going on in the Czech Republic, France, Italy and Romania. A comparison of codes of conduct of some accreditation schemes was made by Cornford (1997). Recently, France has started an accreditation scheme for media presenters, which will be described today by René Morin.

In Europe, certification appears to advance in large countries, but for smaller countries the situation is not clear. NVBM made an agreement with RMS, how Dutch meteorologists can partake in RMS accreditation, but consequences of that step still have to be worked out. The European Meteorological Society must now consider how certification programs developed in some countries of Europe can be matched so that they are mutually acceptable across most national borders. That is the job for us at present: we still have a way to go, and we should go together.

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5. The SMF College of Weather Report Presenters in France

by Réne Morin, SMF

In 1993, within SMF, there were discussions concerning a possible accreditation scheme. We first worked out a code of conduct applicable to all SMF Members. This code was initially prepared by a Commission of Professional Meteorologists, then discussed and amended by SMF Members, sent to Météo-France for comments and submitted for approval to Council and General Assembly on 28 November, 1995. In August 1997, Stan Cornford prepared a paper for the EMSs (European Meteorological Societies) Meeting held during ECAM 97, in Lindau (Germany), September 1997, on the codes of conduct in Europe. Among others, he made a detailed analysis of differences between the French and British codes. The Stan Cornford paper was published in the EMS Newsletter No. 3, dated December 1997, of the European Meteorological Societies. I will come back on this very interesting paper later on.

Objectives

For a number of reasons, SMF decided not to organize a certification program for Professional Meteorologists. But we focused on accreditation of the TV Weather Report Presenters. There, I believe, SMF has engaged in a pioneer work. Such a move was based on the evidence that the profession of Weather Report Presenters is now well defined and plays a major role in delivering meteorological information to the public. Even more than that, in the public mind, they represent the image of meteorology.

In establishing the College, SMF had the following objectives:

- to build up and develop a corporation of Weather Report Presenters,
- to insure they are honest in their professional activities,
- to provide them an opportunity to join together to become an internationally recognized organization , which would assist and support them,
- to collect and analyse any information or event influencing their profession.

The positive contribution of the College is twofold:

- Such a professional group will allow the Weather Report Presenters to meet, discuss together and speak on behalf of their profession.
- But also, within SMF, it will bring together Weather Report Presenters, Professional Meteorologists, users, students and amateurs, allowing all of them to exchange ideas, opinions and knowledge freely .

College Members

At first, five Weather Report Presenters, SMF Members, renowned for the quality of their forecasts, were selected by the SMF Council to become Founder Members. They were:

- François Fandeux Fond Bleu Communication, former Weather Report Presenter on TFI TVChannel,
- Evelyne Dhéliat, TFI TV Channel,
- Florence Klein, France 3 TV Channel
- Alain Gillot-Pétré,
- Sophie Davant, France 2 TV Channel.

New Members are selected by a jury composed of two College Members and two Professional Meteorologists. Any candidate shall be a professional Weather Report Presenter, with an effective experience of one full year minimum, without interruption.

The selection is based on video recordings of TV forecasts. Criteria taken into account are:
- quality, content and credibility of the meteorological information,
- capacity to communicate information.

The selected candidate becomes a College Member and is required to apply for SMF membership. A non-selected candidate may apply again after six months.

College Council

The College Council is composed of the five Founder Members. Council elects a Secretary for two years, eligible for a further term. The Secretary is the permanent contact with the SMF Board. He is an observer to the SMF Council, where his opinion is requested when necessary. He informs College Members of the actions and decisions of the SMF Council. lf one of the Founder Members resigns, his successor is elected by College Members by a two-thirds majority.

Present History

On 13 January 1999, the College was officially presented at a Press Conference in the Paris Press Club. The Secretary is Frangois Fandeux.
The first jury session was held in Tunis (Tunisia), 2-4 October 1999. The jury was composed of two College Members (Evelyne Dhéliat, TFI TV Channel; François Fandeux, College Secretary) and two professional Meteorologists (Georges Dhonneur, SMF; Christian Blondin, Météo-France). Ten new members have been selected. They are:
- Patrick de Bellefeuille (Meteomedia, Québec - Canada)
- Jocelyne Blouin (Radio-Canada, Québec - Canada)
- Marlam Diallo (Télévision Nationale du Burkina, Burkina-Faso)
- Abdouf Aziz Diop (Radio Télévision Sénégal, Senegal)
- Philippe Jeanneret (Télévision Suisse Romande, Switzerland)
- Gilles Malet (RFO Télé Réunion, France)
- Hema Malini Paupiah (MBC, Mauritius)
- Marie-Pierre Mouligneau (RTBF, Belgium)
- Luc Trullemans (RTL-TVI, Belgium)
- Dominique Schilbli (TSR, Switzerland)

It is to be noted that, so far, all Members are French speaking. But the College has in mind to open to British speaking candidates. All members meet at least once per year, during the International Festival of Meteorology, founded and organized by François Fandeux in Issy-les-Moulineaux (France) every year. In 1999, it was held in Montreal (Canada) and in 2000 it was partly held in Geneva (Switzerland). It brings together Weather Report Presenters from all over the world for a competition, for a series of professional Conferences and a Round Table. The Festival is not a College action, but is a nice opportunity for Members to meet.

A European Code of Conduct

The article by Stan Cornford mentioned above was entitled *Towards a European Code of Conduct in meteorology*. In my view, this was a prophetic wording. This paper, that I requested Stan to provide, is a very interesting analysis and may well be the first necessary step towards a European scheme of accreditation. As EMS president, I would be very satisfied by a European accreditation scheme. As SMF Secretary General, I foresee no problems.

6. Accreditation of meteorologists and of meteorological companies in Germany

by Werner Wehry and Arne Spekat
Institute für Meteorologie, Freie Universität Berlin

Since 1989, the German Meteorological Society (DMG) has used a scheme for accreditation of meteorologists which is approved by DMG Council and the Assembly of members. A Committee, consisting of three appropriately qualified scientists, is appointed by the Council to deal with applications and the tri-annual re-evaluations. Currently, individual weather forecasters are not eligible for licensing because, up to now, a decision about a set of regulations concerning this group has not been made. However, DMG has approved 17 chartered meteorologists. Nearly all are working in the field of climate or environmental meteorology.

Even though there is no DMG regulation concerning individual meteorologists working as forecasters, in 1999 DMG founded a Quality Circle open to meteorological companies active in weather forecasting. During the first half of the year 2000, three applications were made. In one case, membership of this Quality Circle was granted, the other two are being processed. DMG assumes that more companies will apply.

What follows is a brief excerpt from the regulations concerning "Chartered Meteorologists" and the "Quality Circle" of DMG:

Main rules concerning "Anerkannter Beratender Meteorologe = Chartered Meteorologist":

THE CHARTERED METEOROLOGIST

- is obliged to base his work on accepted scientific principles and to use scientifically accepted methods;
- is obliged to refrain from carrying out activities which are generally or predominantly considered to be detrimental or unacceptable to the public benefit;
- is obliged to inform his customer prior to his task about its probable success to the best of his knowledge and conscience;
- is obliged to give no unjustified and/or exaggerated expertise.

Quality Circle "Wetterberatung = Weather prediction and information" of DMG for Companies

Minimum requirements

- Use of relevant tools:

The necessary tools to obtain information for the various customers must be available: Results of weather prediction models, radar composites, satellite images, observational data etc.

- Adequate equipment with qualified personnel:

DMG expects that qualified personnel will be on duty holding a Diploma (= University level) and having several years of practical experience in weather prediction (at least three years). "Adequate" means that at least one such experienced meteorologist will have to be working per shift as the responsible person in charge.

- Regular formation (Continuing professional development (CPD)) and participation in professional lectures:

The formation may not consist only of working on routine shifts. Participation in lectures is taken to include both the giving and attendance at lectures. DMG thinks that formation is important and will become active in this field.

- Willingness to employ volunteers and trainees. Newcomers should be able to gain experience and to test their suitability for this field of work.
- The company has to be a corporate member of DMG.

7. Summary of significant points made during the short discussion after each presentation.

- Defining the terms of reference properly is particularly important in a multi-national context.
- It is very important to draw from as many sources as possible when tackling the problems linked with accreditation. Some accreditation schemes give the impression of being designed by a committee, drawing only from the wisdom of the individuals involved. A mapping study by a professional market analysis company, such as that initiated by the RMS, was recognised as the correct way forward.
- Several Weather Services and companies run assessment or training centres.
- Societies below a certain size will find it difficult to develop their own individual accreditation scheme, but adopting and adapting the experience of RMS and/or AMS could be a useful compromise.
- In some countries, the professional market in meteorology is rather small and/or monopolized by one provider. For them, an accreditation scheme is probably not practicable at the moment.
- Potential resistance from trades unions could occur, and should not be underestimated.
- Only a few National Weather Services are aware of the importance of training meteorologists as media presenters. These measures face additional resistance among meteorologists themselves, who often are slightly shy, are afraid of losing credibility, or are discouraged by the lack of time to present weather information in the media appropriately.
- The meeting was informed that in Ireland a public survey with respect to the acceptance of weather presentation had been conducted recently. One of the results was that the Irish public rejected "modern" TV presenters.

8. PANEL Discussion - Chaired by Stan Cornford, Royal Meteorological Society

The second part of the Workshop consisted of a panel discussion. Questions were collected from the participants during the break, and what follows are the summarized notes from the answers to these questions and the ensuing discussions:

Q.1 Is there a curriculum for training in the U.K.? If yes, how many training units are there? Are they for practising meteorology, exclusively?

- Meteorologists obtain their training through various routes. There are, of course, UK University Meteorology courses with set curricula, and there are Training Colleges, such as the Met. Office College at Shinfield Park, which have a range of courses.

- To obtain accreditation at either CMet level or at NVQ/SNVQ level, the knowledge and experience of the candidate is tested but not the path on which the candidate acquired that knowledge and expertise.
- For the UK NVQ/SNVQ scheme there is a mandatory number of core training units. The number and type of optional and additional units is still being developed.

Remarks:

- Expert consultants are expected to know the limits of their expertise and restrict their activities to their chosen fields. They are also expected to have a broader view of meteorology as a whole and to be able to direct customers as to expertise outside the consultants' chosen fields.
- The development of a suitable curriculum for forecasters can seem rather difficult - developing such a curriculum for environmental experts seems slightly easier.
- The question remains whether there should be mandatory qualifying courses in all countries and, if so, where and by whom such courses should be held. It was noted that such courses are not currently mandatory for weather presenters in the UK.
- In the UK, the Chartered Meteorologist Accreditation Scheme recognises some 36 fields of specialization.
- As a good practical example, the AMS Certification procedure includes questions about general meteorology, regardless of the specialization.
- In many countries, the material for the promotion of qualification courses and for the lectures themselves does not yet exist. It will require a considerable financial effort to put it in place.

Q.2 Should qualification be a factor in the salary?

- In most countries, salary is not yet tied explicitly to qualifications or accreditation. The consequences of developing a systematic scheme have still to be revealed. On a slightly different topic, current practice does not make a forecaster's salary *dependent* on the outcome of any form of quality control. One of the points to note about the RMS CMet Scheme is its insistence upon Continuing Professional Development (CPD).

Q.3 How costly is it to become a certified/accredited meteorologist?

- In the UK, the procedure costs £100. The cost for the assessment is subsidised by the Royal Meteorological Society and could amount to over £1000 if true market conditions were applied. A renewal procedure asking for evidence of CPD every four years is in operation.
- In Germany, the simple procedure for individuals is, in principle, free of charge. However, if a visit to a company or to a candidate is necessary, or if candidates are to be invited to a meeting of the accreditation board, the candidate bears the travel costs. In addition, an annual fee for inclusion in a business directory is currently being discussed. To maintain the registration, Confirmation is required every three years.
- In the US, the fee for becoming a Certified Meteorologist is now $250. (It began at $150). Once certified, the meteorologist has to prove that she/he is active in AMS and maintains appropriate standards of knowledge, experience and character.

Q.4 What is the position of a Meteorological Society in the accreditation procedure?

- Meteorological Societies are dependent on the activities of professionals without whom the Societies would not exist as academic and/or professional institutions.
- A Meteorological Society may be considered to be neutral: it can act as an objective, credible sponsor for accreditation and qualification schemes.
- As a result, a Meteorological Society can achieve a position from which it can control the quality of the profession.
- As a side effect, the Meteorological Society itself becomes more professional. This can have consequences on the balance of the Society between being a ***Learned Society,*** a ***Professional Society/Institution*** and an ***Amateur Society.***

Q.5 What are the consequences of accreditation?

- The customer and employer still decide where the line between affordability of employees and their qualifications should be drawn. It is to be expected that, in due course, customers will become more aware of the need for qualifications, CPD and a Code of Conduct.
- It was noted that in a free market there is no way to completely suppress all charlatans and incompetent practitioners.

Q.6 What is the position of EMS in accreditation activities?

- EMS has identified two major difficulties:

  (i) lack of a common language across Europe;

  (ii) the wealth and diversity of regional problems and differences.

  The EMS Council will discuss and propose means to overcome them for approval by its General Assembly.
- In France, there is great willingness to adopt an accreditation scheme which is backed by the EMS.
- In Germany, the experience is that establishing a Code of Conduct will not prove very difficult. It is, however, more difficult to convince forecasters to join an accreditation scheme, one of the reasons being that there are no standards for formation (qualification). Recommendations that result from a pan-European initiative would be highly welcome.

General and concluding remarks

- In the UK, government funding is available for standards comparison.
- The European Committee on Science and Technology (COST) has ruled out including an accreditation aspect in a Meteorological COST action. Therefore EMS itself is expected to carry the torch, together with experienced partners.
- Devising a set of recommendations is the most promising direction to take.
- All participating parties should consider if and how the military should be incorporated. (It may be noted that in the UK the Royal Navy has been a keen supporter of the NVQ/SNVQ and CMet initiatives).
- This seminar will be the start of a long-lasting, but rather fruitful debate.