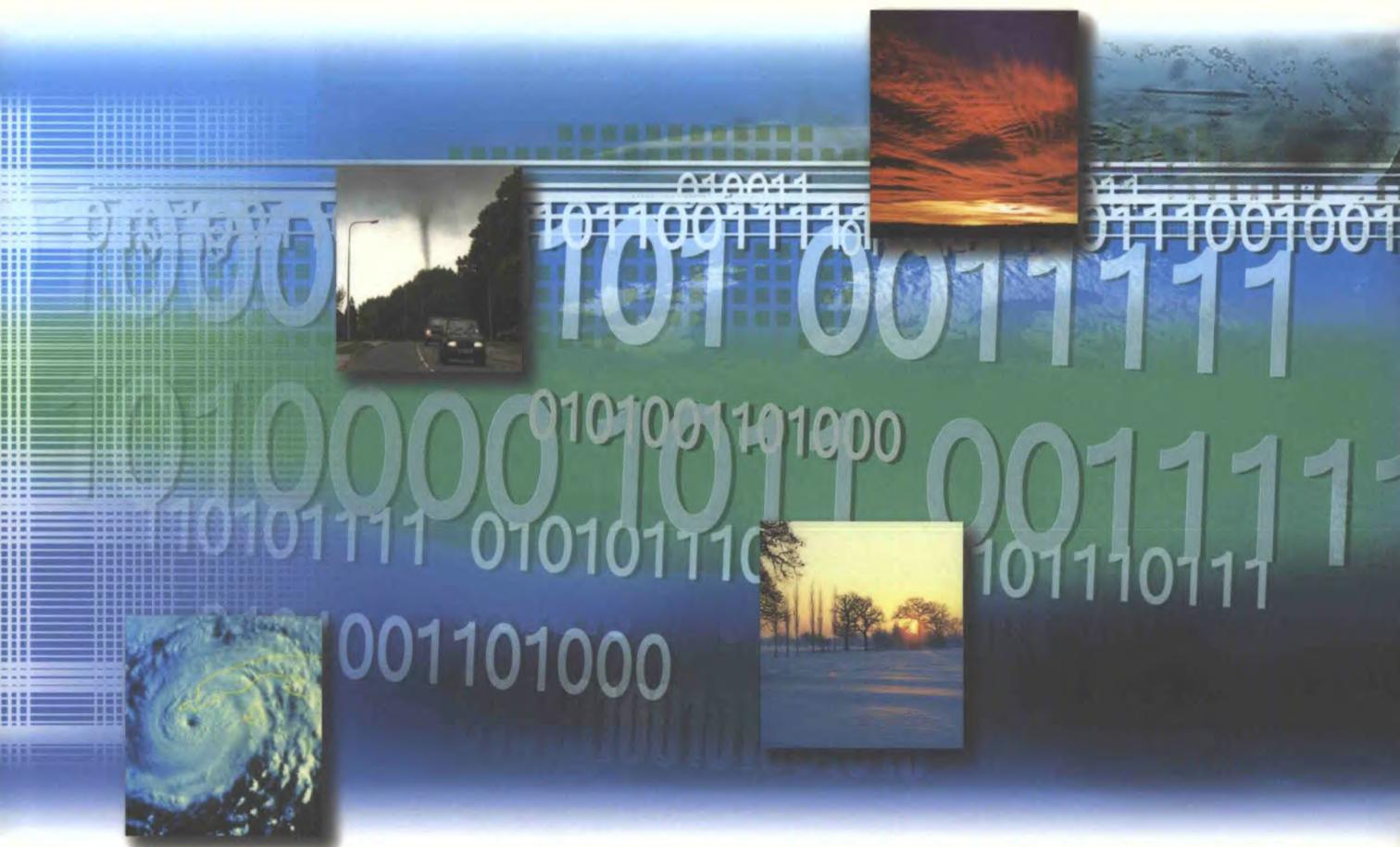




The Met.Office

Annual Report and Accounts

1997/98



Excelling *in weather services*

Annual Report and Accounts 1997/98



The Met. Office

An Executive Agency of the Ministry of Defence

*Presented to Parliament in pursuance of section 4(6) of the
Government Trading Funds Act 1973.*

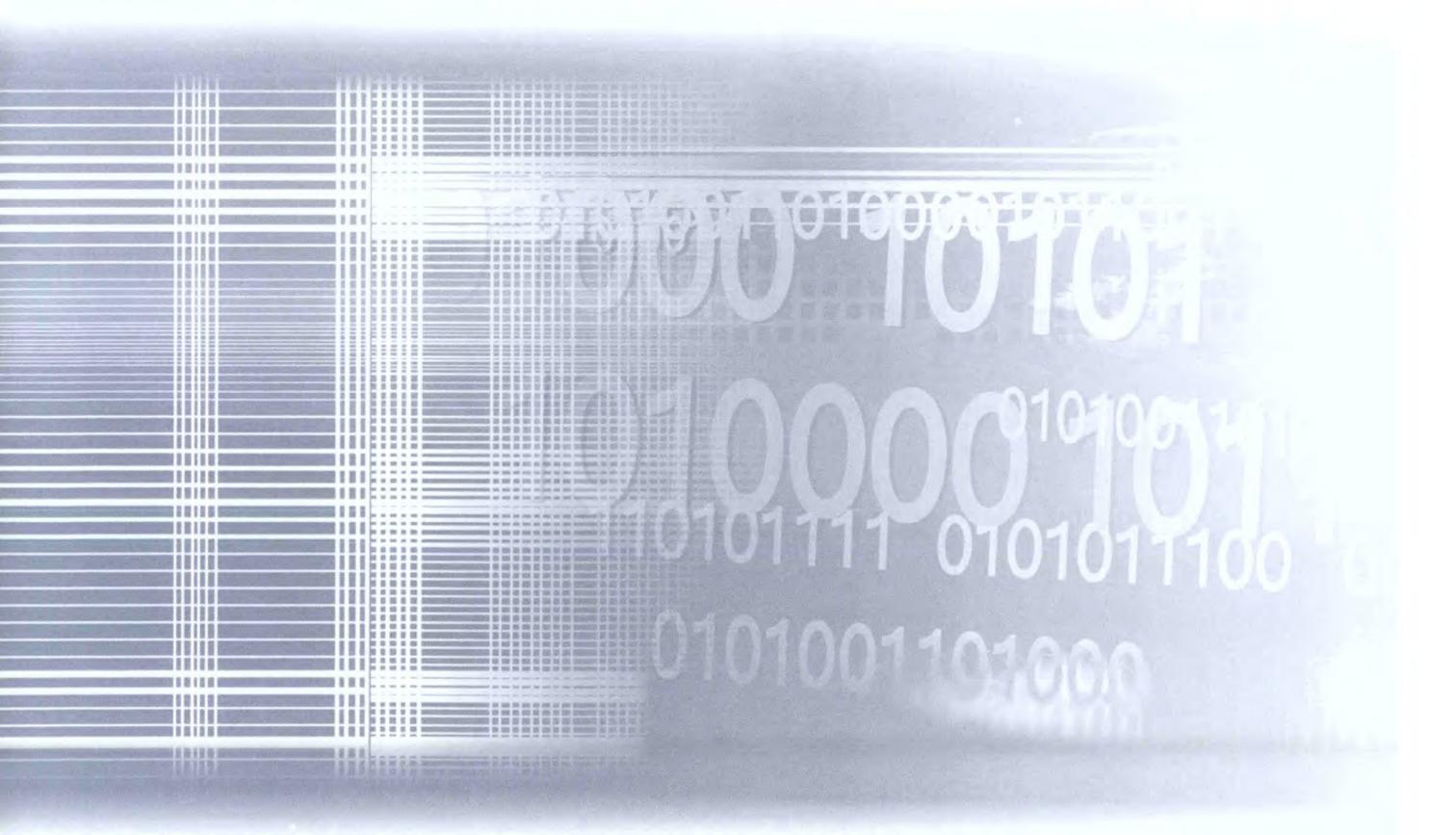
Ordered by the House of Commons to be printed on 14 July 1998.

Our purpose

To be an effective, modern and efficient national meteorological service for the UK.

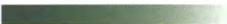
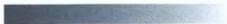
Our aims

- To provide our customers, now and in the future, with the range of services they require, in a timely and effective manner, and at a price they can afford.
- To make The Met. Office a source of pride to our staff, our owners, and the public.



Annual Report and Accounts 1997/98

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Introduction

About this Report

This Report provides our owners in the Ministry of Defence (MoD), Parliament, our customers, and our staff, with a review of our performance against our key targets and our main activities in 1997/98. While we have not written it specifically for members of the public, we hope that it will also be of interest to them.

This year's Annual Report and Accounts is in six main sections. The *Chief Executive's review* and *Key performance indicators and targets* deal with key aspects of our performance; *Progress with our Core programme* describes the latest developments in our basic observing, computing, telecommunications and forecasting systems. *Improving and developing our services* reports on some of the major changes in our

services while *Human resources* and *Financial strategy and progress* deal with management, staff and financial issues. The Accounts section (pp. 33 to 56) reports on the results for the year ended 31 March 1998.

Readers might like to know that a complementary publication to this Report, called the *Scientific and Technical Review 1997/98*, deals in much greater depth with our scientific and technical programmes, and the progress we have made during the year. It is aimed at scientists in other UK commercial and research organisations, in national meteorological services throughout the world and in the academic community. (See inside of back cover for details of how to obtain a copy.)



St. Mawgan

About The Met. Office

The Met. Office was formed in 1854 as a small department within the Board of Trade to provide meteorological and sea-current information to mariners. Early this century, The Met. Office started responding to new demands for weather services, most importantly in the field of aviation. This led to The Met. Office being taken under the auspices of the Air Ministry in 1920, later moving into the MoD.

The Met. Office became an MoD Executive Agency in April 1990, and started operating as a trading fund on 1 April 1996.

The Met. Office employs around 2,200 people, over 70% of them scientists. Some 900 staff are spread across more than 80 locations around the UK, observing the weather and providing forecast services to our customers. The remainder work in our main offices at Bracknell, Berkshire, in a wide range of activities including forecasting, research, the development of IT and observational systems, and central support functions such as finance and human resources. We also have a small number of research facilities elsewhere in the UK.



Met. Office management

The Met. Office Board

The Met. Office Board is responsible for the day-to-day running of the Agency's operations and for ensuring that customers' requirements are met.

At the end of June 1997, Professor Julian Hunt left the position of Chief Executive to be replaced in August by Peter Ewins, previously the MoD Chief Scientist. Martyn Bittleston, Secretary, left The Met. Office in December 1997; Ann Tourle replaced him on the Board as Company Secretary later that month.

Following an extended period of absence, Simon Cross was replaced as Business Director, on an acting basis, by Roger Hunt.

In February 1998, Peter Ewins introduced changes to the management structure. The Management Board was renamed The Met. Office Board and is responsible for strategic issues. A new Executive Committee, set up under his Chairmanship, deals with day-to-day operational issues, thus making a clear distinction between these two roles.

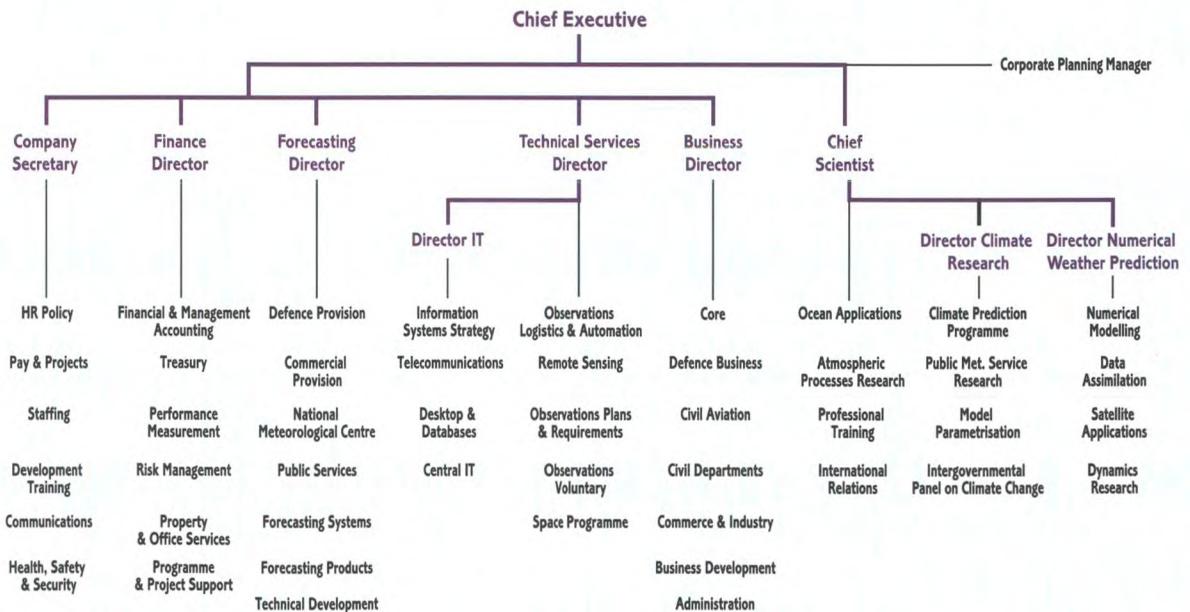
The Executive Committee comprises the Board members plus David Carson, Director Climate Research, and Mike Cullen, Director Numerical Weather Prediction.

Corporate Governance

In accordance with the Code of Best Practice published by the Cadbury Committee on Financial Aspects of

Board members as at 31 March 1998 are:

Peter Ewins	Chief Executive	Colin Flood	Forecasting Director
Paul Mason	Chief Scientist	David Roberts	Finance Director
Jim Caughey	Technical Director	Ann Tourle	Company Secretary
Roger Hunt	Acting Business Director		



Corporate Governance, The Met. Office is currently establishing an audit committee to ensure we have the appropriate financial risk management procedures in place, and a remuneration committee under the auspices of the Defence Meteorological Board to consider executive and incentivised remuneration matters in relation to The Met. Office.

The Defence Meteorological Board

The Secretary of State for Defence, as owner of the Agency, is advised by the Defence Meteorological Board. The Board comprises members with relevant scientific and commercial experience, and normally meets four times a year. Members of the Defence Meteorological Board at 31 March 1998 were:

Mr RT Jackling CB CBE,
Second Permanent Under Secretary, MoD
Prof Sir D Davies CBE,
Chief Scientific Adviser, MoD
Mr JM Legge CMG, Deputy Under Secretary
(Civilian Management), MoD
Maj Gen GA Ewer CBE, Assistant Chief
Defence Staff (Logistics), MoD
Prof BEF Fender CMG, Chief Executive, Higher
Education Funding Council for England
Mr CM Brendish, Chairman, Admiral plc
Mr PD Ewins, Chief Executive, The Met. Office

The Meteorological Committee

The Met. Office Chief Executive is advised by the Meteorological Committee on broad aspects of Office policy. The committee, meeting twice a year, also reviews aspects of The Met. Office's programmes and activities with particular emphasis on meeting customer needs.

Members are appointed by the Secretary of State for Defence for a period of four years. Members of the Meteorological Committee at 31 March 1998 were:

Baroness Platt of Writtle CBE DL
Mr D Filkin Mr DA Davis
Prof RL Bell CB Prof BJ Hoskins CBE
Mr JNM May Ms A Gammidge
Mr CM Stuart CBE

Ex Officio

Mr PD Ewins Cdre RMV Willis RN
Dr DA Bennetts Mr G Paulson
Mr JM Legge CMG Mr A Calder

Chief Executive's review

This is my first Annual Report and Accounts since my appointment as Chief Executive in August last year and I am delighted to report that, judged by the most demanding standards, 1997/98 has been a successful year for The Met. Office. We have met all but one of our key performance targets; we substantially exceeded the financial targets, and missed the global numerical weather prediction (NWP) target – a measure of our underlying improving accuracy – by only the narrowest of margins. At the same time, we have maintained a strong and diverse product range and have successfully created new markets for our services. But, most importantly, we have continued to provide our customers, in both the public and private sector, with increased value through a combination of improved service quality and greater efficiency.

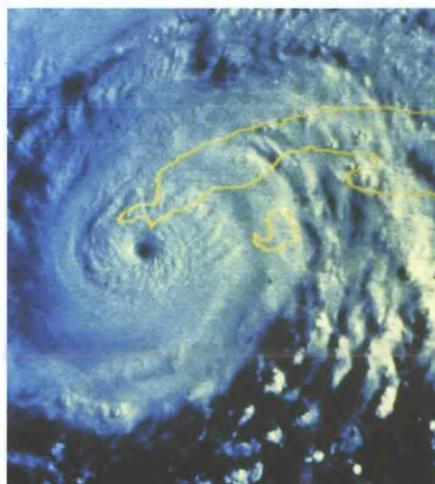
Success built on science and people

The Met. Office continues to rank among the very best for the provision of weather services. Indeed, we are a benchmark for national meteorological

services throughout Europe and the rest of the world. Through our Hadley Centre we have also gained an enviable international reputation for our work on climate change and climate prediction. But this position is neither easily won nor easily maintained – we have achieved it only through a strong science and technology base, supported by a healthy research and development programme, and the ability and dedication of our people. I am, therefore, pleased to take this opportunity to acknowledge the contribution made by all our staff to the success of The Met. Office, and to thank our Core customers in particular for the support they have continued to give to our Core programme.

An international player

As the UK's national meteorological service, The Met. Office has continued to represent the UK's international interests in meteorology, both in Europe and worldwide, through the World Meteorological Organization, a United Nations agency. With our long-established track record and our reputation for





forward thinking, we have been able to influence the development of meteorology, especially in Europe, and to help ensure the wider availability of data and products. We have, for example, been instrumental in developing European and global observing systems. And, through our climate research programme funded principally by the Department of the Environment, Transport and the Regions, we helped the UK government to play a leading role in the Third Conference of the Parties to the UN Framework Convention on Climate Change in Kyoto last December.

Capitalising on freedoms and flexibilities

The Met. Office became an Executive Agency in 1990 and has operated as a trading fund for two years. Under our parent department, the MoD, we have considerable freedom and flexibility to operate in a way that is best for The Met. Office and best for our stakeholders – our owners, our customers, our staff and, by no means least, the public. To take full advantage of these freedoms I have introduced a

number of changes, both to our management structure and to the way we are organised. I have strengthened the role and responsibility of Directors, both individually and corporately, and increased substantially the extent and level of authority delegated to senior and middle managers. Responsibility for resources, service delivery and, where appropriate, revenue and profit now lies firmly where the decisions are best made. To ensure that managers are properly equipped for their new roles, we have held a successful series of development workshops.

Among the principal organisational changes are a clearer separation between business management and service delivery, the creation of a new Technical Services Division that brings together all our technical support capabilities, including our substantial IT infrastructure, and a greater focus on human resources, particularly on development and training.



Improving our Performance

As part of our commitment to continuous improvement, we have embarked on a new programme called *Improving our Performance*. This multi-pronged programme includes: a substantial simplification of our still rather bureaucratic processes and procedures, leading ultimately to ISO 9000 accreditation; the implementation of our commitment to *Investors in People*; the introduction of a new management information system covering both financial and non-financial information; improvements to our internal communications; and further improvements in programme and project management. Over the next three years, this programme will lead not only to greater efficiency but also to greater job satisfaction among our staff and to better value for money for our customers.

Investing for the future

Natural caution about the financial viability of The Met. Office in the run-up to trading fund led to an inevitable decline in investment – in people, in infrastructure,

and in future products and services. However, we have demonstrated over the past two years that we can more than survive, and my aim now is to increase our investment in key areas where the business case is sound.

We have already made a good start with our observational network, the cornerstone of our weather forecasting services, and we have put plans firmly in place to update our IT infrastructure. We are also working to ensure that we are year 2000 compliant well before the start of the next millennium. The end of last year saw the commissioning of our new Cray T3E supercomputer which is now contributing directly to improvements in our NWP performance. And, of course, we are making a substantial investment in our human resources through selective recruitment and through *Investors in People*.

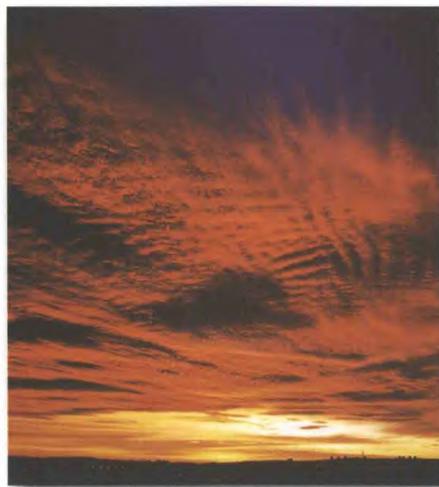
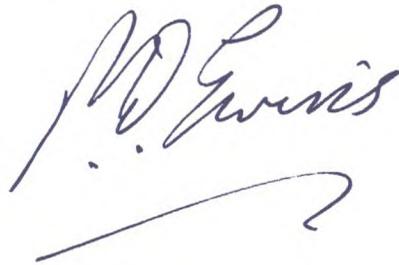


Services to commerce and industry

Finally, I should mention the internal review of our commercial services which, although not yet complete, has confirmed the importance and value of these services, both to The Met. Office and to our customers. There is no doubt that they enable The Met. Office to maintain and develop a broader and deeper range of capabilities than would otherwise be possible, to the benefit of all our customers. Commercial services also make a significant and increasing financial contribution to the Core programme, keeping down costs to our Core customers. Moreover, they provide real added value to commerce and industry, and many of them – for example our forecasting services to the major utilities and local authorities – are in the public interest.

Looking forward

The Met. Office has been in the business of providing meteorological services for over 140 years. We deliver a world-class, value-added service to a wide range of loyal customers; we have an able and committed workforce, continually improving their knowledge and skills; and we have laid plans that will take us successfully into the next millennium. 1997/98 has been a good year for The Met. Office and I look forward to our continued success as we build for the future.



Key performance indicators and targets

The Met. Office has six key performance targets; these are agreed annually between the Secretary of State for Defence and the Chief Executive. The main purpose of the targets is to provide the MoD (as owner of the Agency), Parliament, the public and our customers with a measure of how well we have carried out our key activities. They also serve to focus managers and their staff on the important aspects of the business.

Providing meteorological services is a complicated business. While our services are based on high levels of science and technology, they also require skilful human interpretation and communication of complex weather situations. Apart from enabling us to assess how well we perform, the performance targets are also designed to encourage and stimulate continuous improvement. They cover accuracy, the level of service we provide, efficiency and financial performance. In some cases, however, monitoring our performance is far from straightforward. This may be due to a lack of verifying observations, or constraints in the way forecasts are expressed, and how settled or unsettled the weather is. In setting targets, we take all these factors into account and also seek the views of

customers – and where appropriate, their agreement – before targets are set. In this way, we can satisfy ourselves as well as others that the targets are both realistic and challenging.

Accuracy

We can express how well we carry out our key activities by assessing the accuracy of our numerical weather prediction (NWP) models. We run these models several times a day, every day, on a global scale, and on a more local scale for the UK. The target values for these indices are set annually over three-year periods; this reduces the effect of the natural variance of the atmosphere's behaviour and smoothes the variability due to changes in the model.

Global NWP index

This index measures the overall forecasting skill of our global NWP model compared with persistence (a forecast of 'no change' in the weather) for up to five days ahead worldwide. It takes account of the location, intensity, development and movement of weather patterns at the earth's surface, as well as forecasts of winds at heights important for aircraft

Summary of results for 1997/98

Key performance indicators	Index baseline	Target 1997/98	Result
Global NWP index	100.0 on 31 March 1995	108.0	107.9 – narrowly missed
UK NWP index	100.0 on 31 March 1997	Not applicable	Not applicable
Service Quality Index	100.0 for 1996/97	103.2	108.2 – achieved
Efficiency index	100.0 on 31 March 1997	104.0	109.9 – achieved
Return on capital employed	–	At least 7% per annum	17.6% – achieved
Commercial activities' contribution	–	£3.0 million	£6.3 million – achieved

and forecasting operations. The target was missed by the narrowest of margins. This was due partly to the later-than-planned transfer of the operational forecast model to the new T3E supercomputer which was itself delivered behind schedule. This was followed by problems with errors that developed in the southern hemisphere model pressure field. These errors were attributed to the loss of satellite wind data, previously supplied from North America, and an occasional model instability which has since been corrected.

UK NWP index

This index measures the overall forecasting skill of the UK NWP model compared with persistence for up to 24 hours ahead at specific sites in the UK. It takes account of wind, temperature and precipitation.

Our target for 1997/98 included the establishment of a baseline for future monitoring; this was achieved. However, the first three-year period for this target does not end until 31 March 2000.

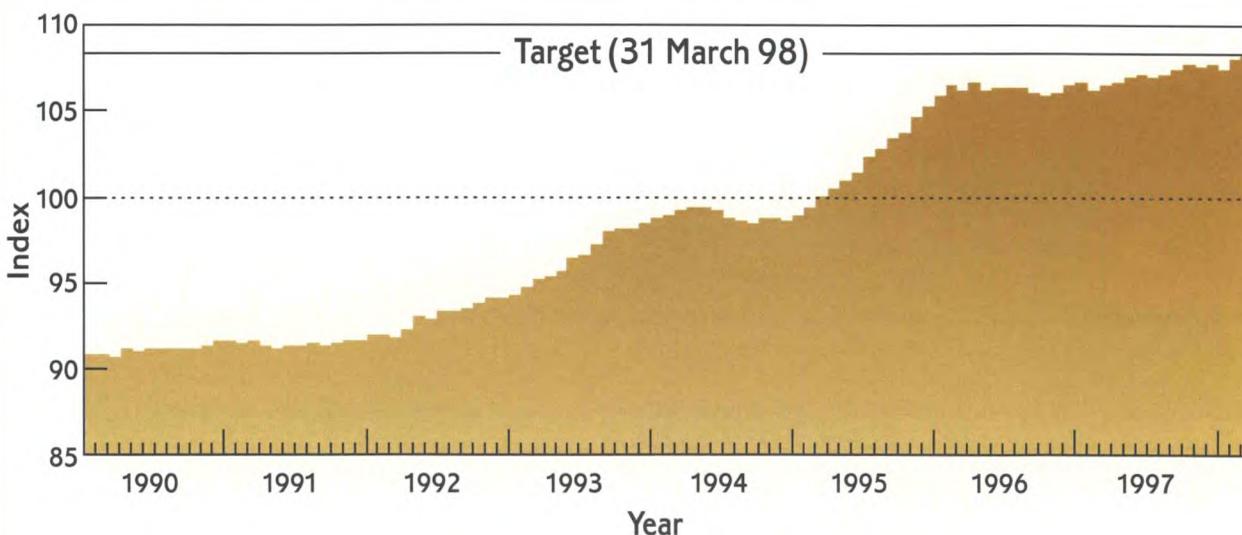
Service quality

Service Quality Index

This index covers representative services and products across defence, civil aviation, public and business users and the target level, agreed each year, is based on specific customer requirements. The areas covered are forecasts and weather warnings for airfields, gale warnings for shipping, BBC Radio 4 forecasts at 1755 hours (now 1757 hours), prediction of icy roads for gritting operations, and storm tide warnings.

Performance was above target due to the score for the Radio 4 broadcast reaching its highest monthly value for at least two years, and good performance in forecasts for defence airfields, gale warnings for shipping and storm tide warnings.

Global NWP Index – a measure of continuous improvement



Efficiency

Efficiency index

We devised a new efficiency index for 1997/98. It measures the change in outputs in relation to costs for two major areas of our activities – Core services, represented by the accuracy of the North Atlantic and Europe NWP model output, and service delivery to defence customers. The index is adjusted for inflation.

The summary of results shows that we achieved higher than expected cost savings during 1997/98. Some of these savings were earlier than planned and will continue in subsequent years. Although future additional savings will consequently be lower, we are on track to meet our three-year target of an efficiency level of 112.0 by March 2000.

Financial

Return on capital employed (ROCE)

The ROCE measures the rate of return on average net assets – calculated on the current cost value of the assets – before certain agreed items are taken into account. (See also *Profit and Loss Account*, p. 36.)

As well as a yearly target to achieve a ROCE of at least 7%, we also have a target to achieve an overall ROCE of at least 11.6% averaged over 1997/98 and 1998/99.

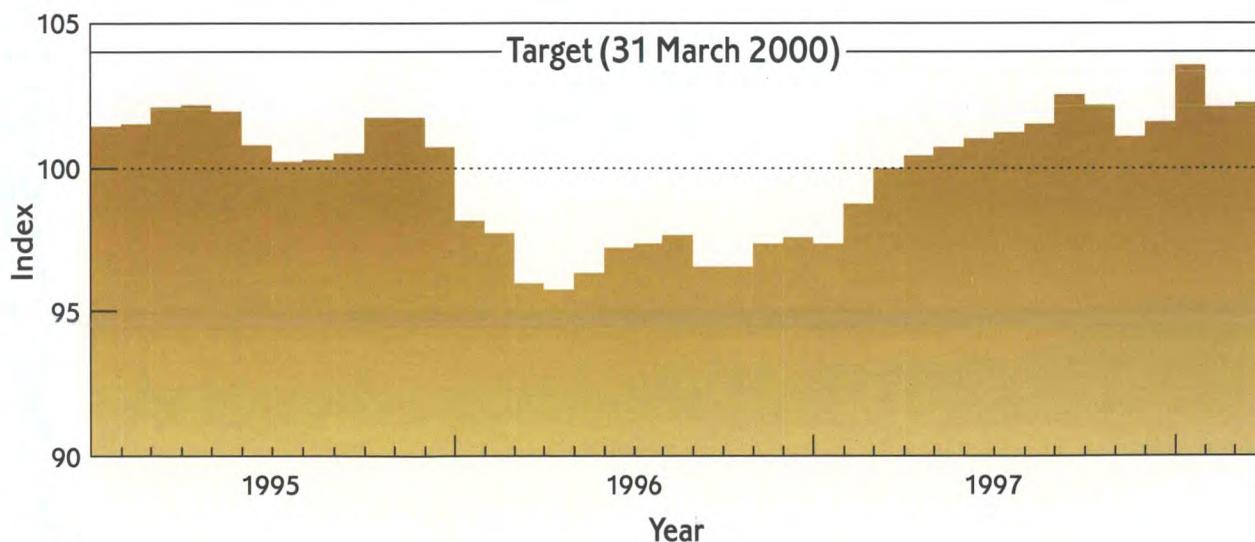
Commercial activities contribution

This indicator measures the financial contribution to Core and central services from commercial activities, excluding services to the Civil Aviation Authority and the climate research contract with the Department of the Environment, Transport and the Regions (DETR).

We exceeded this target because sales were substantially over budget and expenditure was less than planned.

The Comptroller and Auditor General has examined the statement of performance against key targets reported above and he is satisfied that the performance achieved is fairly stated.

UK NWP Partial Index



Targets for 1998/99

Our targets are agreed with our owners and customers to ensure they remain both motivating and challenging. However, while the targets encourage continuous improvement, care is obviously needed to ensure consistency and balance between target levels and our customers' requirements, the price they are prepared to pay and the investment needed to achieve them. It follows that it would not be realistic to set targets that are automatically an increase on the previous year's expected or actual outcome. This approach also recognises that with several of our key performance

targets, there is natural variability outside our control and which extends over periods of more than a year. It is necessary therefore to consider longer-term trends when setting target levels and assessing performance.

In 1998/99, we will not be measuring commercial contribution on the same basis as during 1997/98; the 1998/99 target is therefore not comparable with that for 1997/98.

Summary of targets for 1998/99

Key performance indicators	Index baseline	Target 1998/99
Global NWP index	100.0 on 31 March 1995	111.1
UK NWP index	100.0 on 31 March 1997	An increase of at least two index points (on 1997/98 performance)
Service Quality Index	100.0 for 1996/97	104.8 (as agreed with customers)
Efficiency index	100.0 on 31 March 1997	108.0
Return on capital employed	–	At least 7% for 1998/99, and at least 11.6% averaged over 1997/98 and 1998/99
Commercial activities' financial return	–	£1.1 million (new basis)

Progress with our Core programme

The Core activities of The Met. Office underpin everything we do. They include the gathering and exchange of observational data (both space and terrestrial) on a global basis, the operation of sophisticated NWP models, and the exploitation of model output by experienced staff in our National Meteorological Centre (NMC). We also support these day-to-day operational activities with a research and development programme – also part of Core – aimed at improving accuracy, efficiency and value to our customers.

The new European polar satellites

The supply of meteorological data from polar-orbiting satellites is now assured for the next 20 years. The UK, alongside 16 partner nations in Europe, has agreed to commit funding to the EUMETSAT Polar System (EPS) programme, which will operate a series of three satellites in polar orbit for 15 years from 2003. These satellites will follow on from the American satellite systems in current use and will be part of a closely co-ordinated programme with the USA.

Jim Caughey, Technical Director



Paul Mason, Chief Scientist



European observing network

The Met. Office took a prominent role in the preparation of a proposal to develop a European Composite Observing System (EUCOS). Ultimately EUCOS will provide the best combination of observations for European-scale forecasting and numerical weather prediction. A key element is the development of a European system that will provide automated observations from aircraft. The resulting savings can then be used to improve the amount of data where there are few observations at present, for example over the Atlantic Ocean.

Protection of the Global Observing System

The quality of our NWP forecasts is heavily dependent on observations from around the world, in particular the global upper-air observing network. In 1997, this network was under a dual threat: from the cessation of the Omega navigation system used by many upper-air systems for measuring wind; and from potential reallocation of the radio frequencies commonly used for gathering meteorological observations. Our staff have been active in supporting the network. We have

Artist's impression of the new EUMETSAT Polar System satellite



replaced our own upper-air systems in Gibraltar, St. Helena and the Falkland Islands with equipment using the Global Positioning System (GPS) satellite navigation system. We also provided funds to replace systems at seven African stations, under the Voluntary Co-operation Programme of the World Meteorological Organization (WMO), and we have lobbied, with some success, the relevant international groups to defend meteorological radio frequencies.

Mobile automatic weather station

We have developed a mobile automatic weather station to provide surface observations at short notice when new data are needed urgently. We can transport the entire system with most connections in place and bring it into use on site very quickly. The station provides a full range of weather data and a communications link into our data-gathering network.

New supercomputer becomes operational

During the year, we brought our new supercomputer, a massively parallel Cray T3E, into operational use though, for various reasons, this was later than planned. The T3E has at least five times the power of its

The Cray T3E came into operational use on 28 January 1998



predecessor and is one of the most powerful computers in the world. We use it to run our NWP models, which are the basis of our forecasting capability.

Improved computer forecasting

The increased power of the T3E computer has allowed us to develop and introduce new schedules and configurations for our operational models that better meet our customers' needs. We can now provide short-range forecast guidance for the UK by running our global model earlier than was previously possible.

In January 1998, we started running the global model on a finer scale. Over the northern hemisphere, this has improved forecasts of large-scale patterns, and hence the prediction of major changes to the weather, by about 5%. It also provides greater detail to forecasts of severe weather events, such as tropical storms.

After a programme of experiments, we increased the area of coverage of our finest-scale model. This improves the detail of fog and precipitation forecasts, gives better forecasts of severe weather moving up from France and allows us to improve the advice given to our offshore customers operating in the North Sea.

Mobile Semi-Automatic Met. Observing System being installed at Coleshill (near Birmingham Airport)

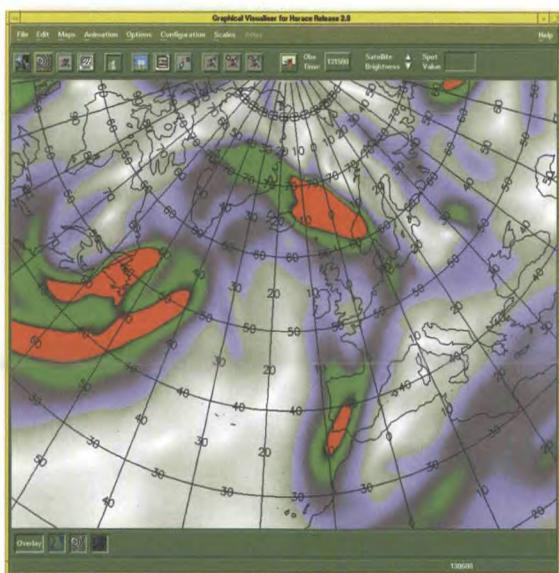


Horace – working with the forecasts

Horace, our world-leading visualisation, production and dissemination system, now plays a vital role for our forecasters in the NMC Bracknell (formerly the Central Forecasting Office), and at HQ Strike Command, RAF High Wycombe, and for the Royal Navy's forecasters at Northwood. It helps users to understand what the atmosphere is doing and to create graphical products that better describe the forecast.

The most important new feature of Horace introduced this year is the complex software that allows forecasters to make changes to our NWP forecast data in three dimensions and in a meteorologically consistent way. This has never been achieved before anywhere in the world – a real 'first' for The Met. Office.

Forecasters can now add graphics to the model forecasts to show features like weather fronts, and can also add labels, symbols and logos. They can produce finished graphical products ready for faxing direct to customers. This has freed experienced staff to move from service production tasks to much needed forecasting posts elsewhere.

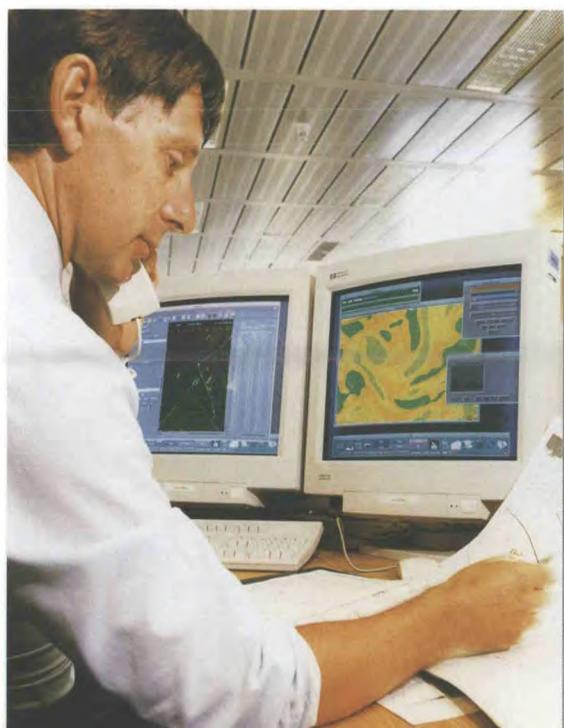


Telecommunications – distributing information

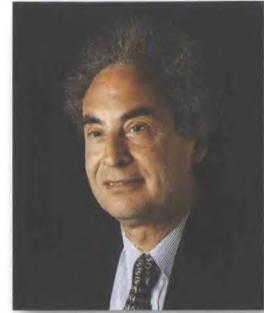
The Weather Information Network (WIN) is the primary means by which we collect information from, and distribute it to, our offices around the UK. WIN passed a major milestone on 17 October 1997 with the completion of the main installation contract. This has allowed us to remove obsolete facilities which in turn has produced savings in running costs. For example on 15 December 1997, after 37 years' use, we stopped the distribution of weather charts by analogue fax. Charts are now sent in digital form via WIN direct to computer systems at our forecasting offices, saving about £200,000 per year on the cost of telephone circuits.

Data gathering and forecasting are critically dependent on the Global Telecommunication System (GTS), which connects all the world's national meteorological services (NMSs) for real-time exchange of data and products. During the year we contributed to the planning of two important developments – the renewal of the whole GTS network in Europe and the definition of standards for using techniques derived from the Internet on the GTS – that will overcome many of the deficiencies evident in the existing ageing system.

Forecasters in the NMC make extensive use of the Horace graphics system, often combining different types of information on-screen



Colin Flood, Forecasting Director



Avoiding the problems of 2000

In March 1997, we set up Project 2000 to minimise the potential risk to our services posed by the century date change. During the year, we assessed the magnitude of the task and developed a strategy to manage the issues. Since then, we have started 70 separate compliance projects, and established a central management team to co-ordinate the work. We expect to have corrected any problems and tested for compliance of individual projects by the end of 1998, with end-to-end testing of linked systems planned for early 1999. The Met. Office is also working closely with the WMO, other NMSs and suppliers to try to ensure the integrity of the international data chain and to minimise the impact on our customers.

Rationalising our forecasting production

We have completed implementation of the Forecast Rationalisation project, started in 1997. As part of this work, we have redefined the role of the NMC at Bracknell. The NMC now comprises a national Guidance Centre, responsible for giving guidance to all the regional and local offices and three centralised teams – the National, Aviation and Commercial Production Units.

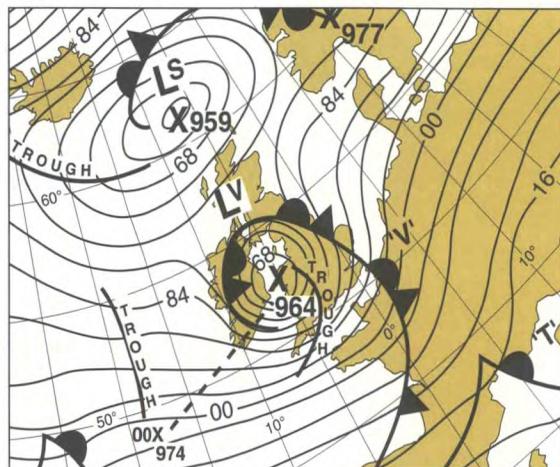
We have also made good progress with a full-scale refurbishment of the NMC. The new environment reflects the change in role of the NMC and an increased emphasis on teamwork.

Christmas and new year storms

Over Christmas 1997 and the new year period 1997/98, a number of intense low pressure areas brought severe weather to the UK, the worst occurring on 24 December and 4 January.

The Christmas Eve storms affected mainly the northern half of the UK with the greatest disruption over North Wales. We issued the first warning of severe weather for this period on 20 December; the final warning was an emergency flash message advising of wind strengths up to storm force. A number of locations suffered gusts in excess of 80 m.p.h. with Aberdaron reporting a gust of 112 m.p.h. The storm on 4 January affected mainly southern parts of the UK with the strongest winds over south-west England; warnings of severe weather were issued during the previous evening and indicated that gusts could reach 100 m.p.h.

The combination of human experience and computer predictions ensured that we provided good forecasts for these dramatic events. There is no doubt that our timely issue of warnings helped reduce the level of disruption and gave the emergency services, local authorities and the general public time to prepare for severe weather.



Weather chart for midday, 4 January 1998, around the time of the storm's 'peak'

Improving and developing our services

The Met. Office provides services for five main customer groups – Defence, aviation, the Public Meteorological Service, commercial and climate research.

Defence

The Defence area remains our largest customer group. While our greatest effort goes into supporting aviation and trials activity at fixed locations for the Royal Air Force, Army and Defence Evaluation and Research Agency, we remain immediately responsive to crisis requirements and the needs of the Royal Navy and NATO.

Forecasting in the field

The Mobile Met. Unit (MMU) continued to support Defence operations in Turkey, Italy and the former Republic of Yugoslavia throughout the year. In February, staff also deployed to Kuwait as part of the response to the Iraq crisis. The MMU took part in

19 overseas exercises with different elements of the UK Armed Forces; locations included Turkey, Germany, Sardinia, Greece and Norway. A joint exercise was also held with the newly formed French mobile met. unit.

Software and support systems

The Forecasting Ocean–Atmosphere Model, developed for the Royal Navy, is now fully operational at Bracknell. We plan to have communications in place to deliver data to the Fleet Weather and Oceanographic Centre, Northwood, by Autumn 1998. We have also started the development of ‘Horatio’, an offshoot of our Horace display system, that will give Navy forecasters much better graphical displays of oceanographic data.

We installed 15 computer servers and 150 terminals, about half the final number, at RAF and Army airfields around the UK as part of the new system for delivering weather information electronically to military

Forecasters provide face-to-face briefings to aircrew of Tornado squadrons at RAF front-line stations



customers. We released several versions of the software that not only distribute routine data but also allow the forecaster to 'publish' documents on the system for display on demand by the users.

Preferred NATO display format

During the year, NATO set up a dedicated meteorological satellite broadcast system, and a demonstration of prototype Met. Office software has led to this being accepted as the preferred NATO display format. We have almost completed development of the system; it will become operational in May 1998. This will be a major step forward in data availability and interoperability for NATO forces.

Streamlined forecast production

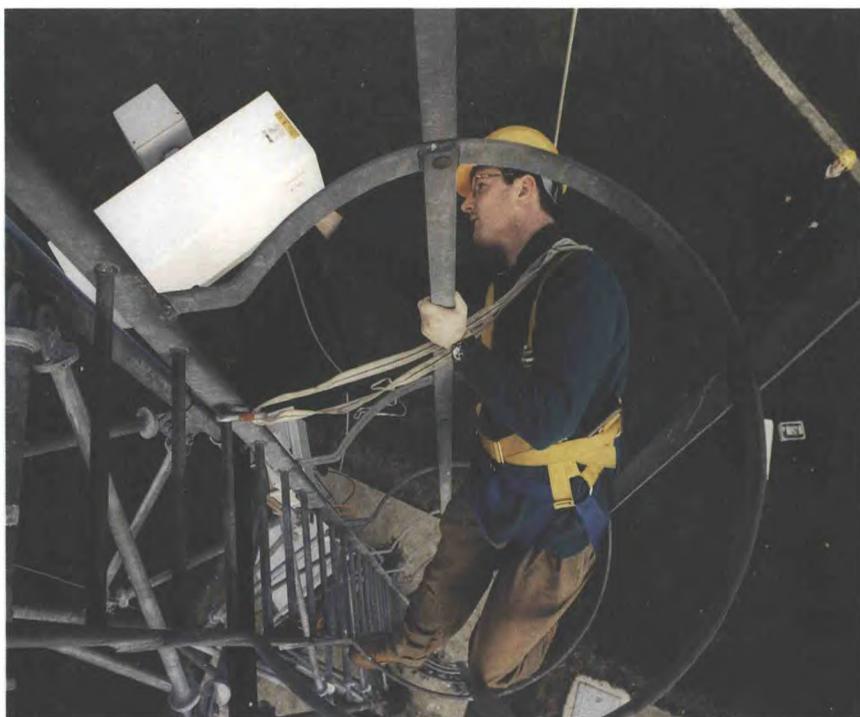
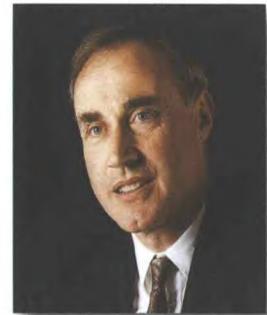
The outcome of the Forecast Rationalisation project has been the streamlining of the production of forecasts for Defence customers. A good deal of this has

involved cutting out the back-up facilities put in place in the 'cold war' period. However, in emergencies, we can still produce vital guidance and services from our office at HQ Strike Command, RAF High Wycombe.

Forecasting by closed-circuit television (CCTV)

CCTV cameras are now providing images of sufficient quality for our forecasters to use them to produce their forecasts. During the year, we carried out a trial to measure the advantages of using CCTV to help forecasters with this important task; we plan to carry out a cost-benefit analysis next year.

*Roger Hunt,
Acting Business Director*



*A technician working on a
CCTV camera, now
increasingly being used in
Defence forecasting*

Aviation

We provide services to civil aviation under two major contracts, one with the Civil Aviation Authority (CAA) and the other with National Air Traffic Services Ltd (NATS), the UK meteorological authority for aviation.

The Met. Office as a World Area Forecast Centre

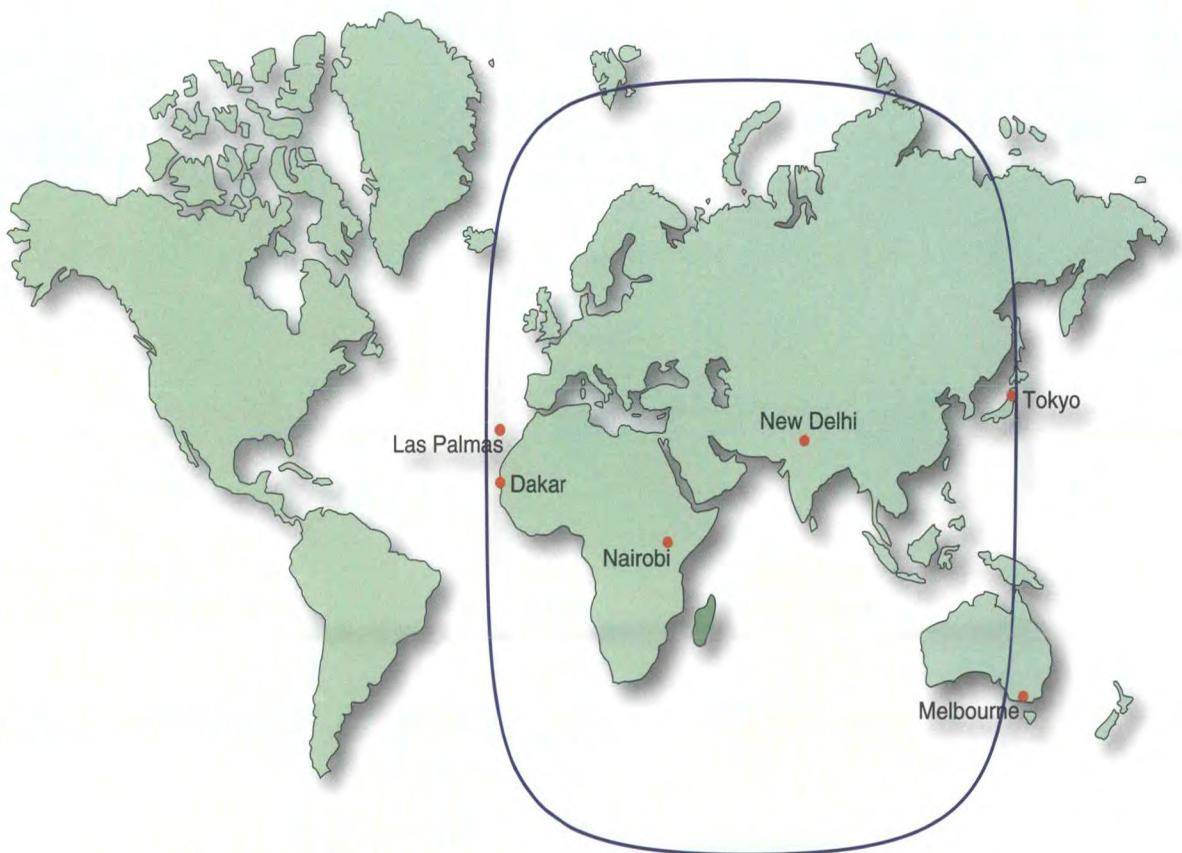
The Met. Office provides and manages the World Area Forecast Centre (WAFC) London, one of just two International Civil Aviation Organization (ICAO) WAFCs in the world, the other being in Washington, DC. WAFC London now issues all European regional aviation products. During 1997, we continued to arrange the transfer of regional aviation responsibilities in Asia and Africa to WAFC London. The first of these

transfers, from the Regional Area Forecast Centre Cairo, took place in April 1998, allowing us to deliver products to customers in Asia and Africa via the ICAO satellite distribution system, SADIS.

More customers for satellite distribution services

On behalf of ICAO, The Met. Office, through WAFC London, provides and operates SADIS for aviation products. During the year, 60 more customers throughout Europe, Africa, Asia and Western Australia started using the SADIS service. We expect another 50 users to be linked to the system soon.

Area served by SADIS



More data provided successfully

The principal products issued by the two WAFCs are the routine global forecasts of upper winds and temperatures used to provide flight planning data for all international flights. Following ICAO approval, and as requested by the airlines, we extended the range of forecast data supplied routinely; data for six hours ahead and 36 hours ahead are now included. While this has significantly increased the volume of coded data issued (twice a day), we still met our demanding timeliness targets for the availability of the information to users.

Smooth handover of observing

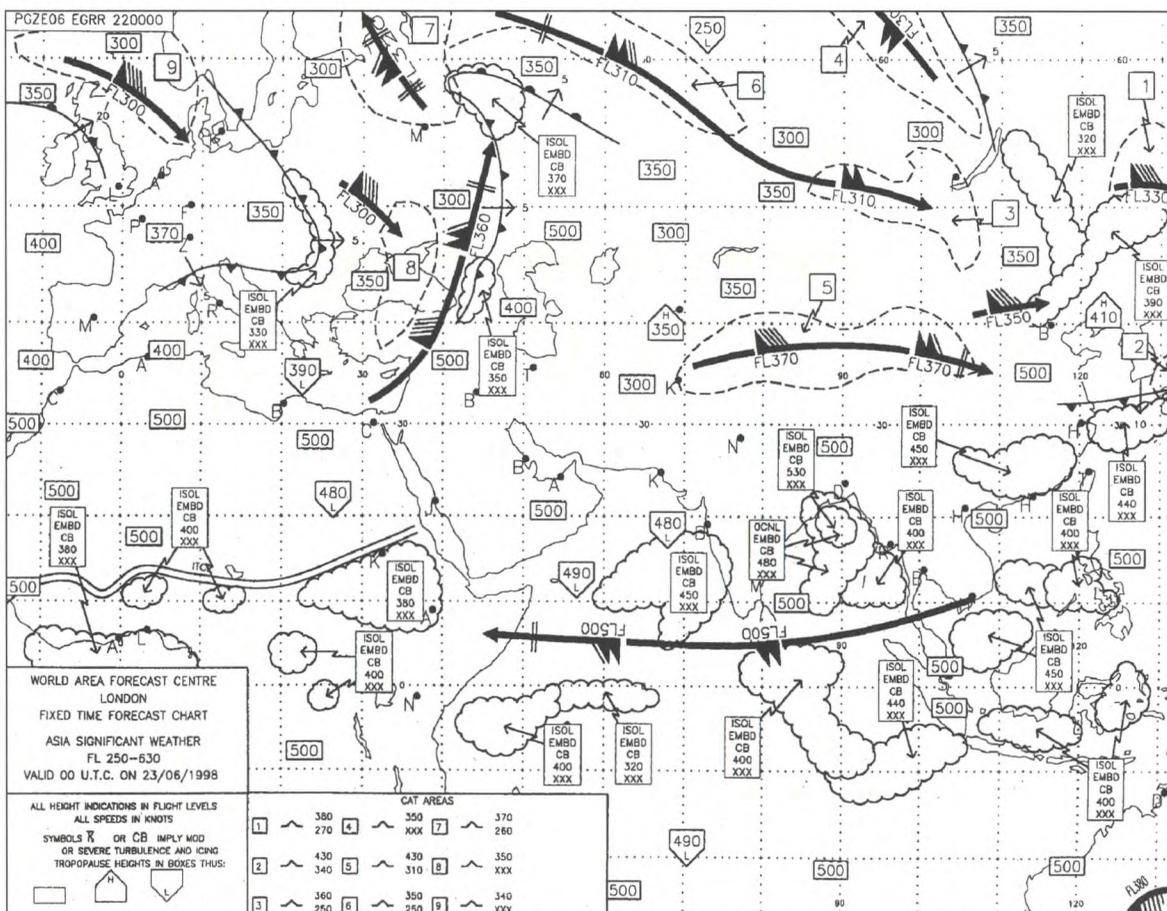
Working closely with NATS Airports, we achieved a smooth transfer of responsibility for observing the

weather from our staff to Air Traffic Services observers at Stansted, Birmingham and Cardiff. Prior to the handovers, a Met. Office training officer carried out a successful training programme for the new observers, including on-the-job supervision.

Improved forecast accuracy

We improved the accuracy of global aviation wind and temperature forecasts during the year, achieving the 2% annual improvement target. We also achieved the challenging accuracy target for national aviation forecasts; this is based on the reliability score for the aerodrome forecasts achieved at four major civil airports.

A typical chart for WAFc London's additional area of responsibility



Public Meteorological Service

We provide the Public Meteorological Service (PMS) on behalf of Government for the 'public good'. The PMS comprises several specific services relating to the safety of life as well as the provision of general weather information. The National Severe Weather Warning Service (NSWWS) provides the public and emergency authorities with warnings of severe weather likely to present a danger to life or produce widespread disruption. The Storm Tide Warning Service (STWS) gives warning of significant tidal events that may breach coastal defences. The gale warning, shipping and inshore waters forecasts provide mariners with a range of vital weather information to ensure safety at sea, and the pollution services provide emergency agencies with guidance on the airborne spread of pollutants.

Review of the NSWWS

We carried out a major review of the NSWWS in conjunction with the Home Office and several representative emergency authority users. As a result, we have now introduced a two-way consultancy service during severe weather events and a new *Weather Watch* service which will warn of potentially severe

or hazardous weather even when the probability of occurrence is lower than that which would formally trigger a Flash or Early Warning. We are also working towards providing warnings direct to individual recipients rather than distributing them by the original 'cascade' system.

New procedures for STWS

The main direct customer for the STWS in England and Wales is the Environment Agency. Working closely with them, we have developed new operational procedures to provide better forecasts of tidal floods, giving improved protection to members of the public living in coastal regions.

CHEMET: our response to chemical atmospheric pollution

Following a review of the CHEMET system with both the Chief and Assistant Chief Fire Officers Association and the Association of Chief Police Officers, we redesigned the form used to pass on forecast information. This simple change will bring greater understanding of the situation during the first minutes of a chemical emergency and increased efficiency of the service itself.

The STWS can provide vital protection for those living near the coast



Commercial

This year has been particularly successful for the growth of our commercial business. Revenues have increased by 20% from 1996/97 and our financial contribution to Core and central services was well above target (see Key performance targets, page 14). With progress in many parts of the market, the following are of particular note.

Major contract for the Thailand Meteorological Department

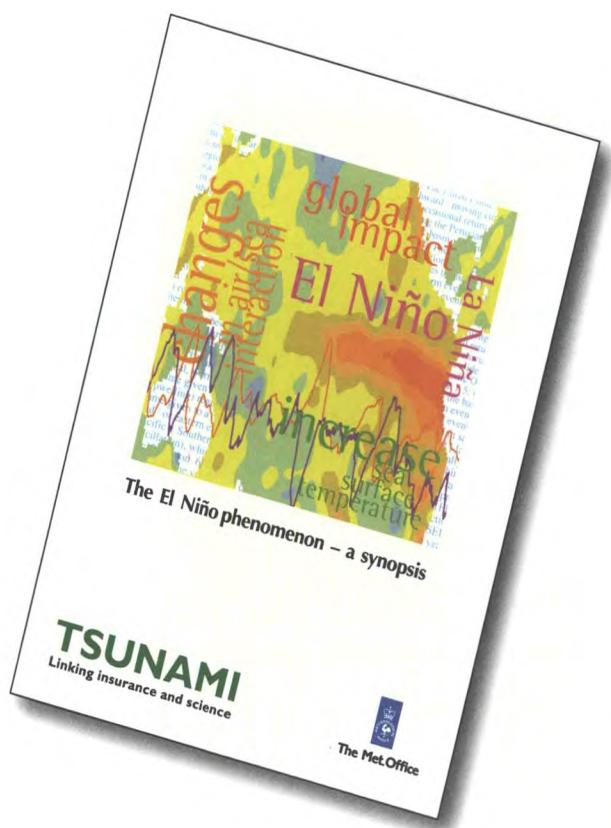
We are a major sub-contractor in the project to upgrade the forecasting facilities and capabilities of Thailand's national met. service. We provided a modified version of our complete NWP model and a 'tailored' version of our Horace graphical display system. This involved rewriting the software for both systems to allow them to run on the IBM computers used in Bangkok; we met all performance milestones on schedule and within budget. The contract is due to be completed, and the new facilities fully operational, by late 1998.

Agricultural Development and Advisory Service (ADAS)

We renegotiated the contract successfully with ADAS following its privatisation. The new contract involves The Met. Office taking a greater share of the risk of jointly developed services but also a better share of the returns. ADAS has welcomed this new style of working and we identified four projects already as suitable for a joint approach.

TSUNAMI

TSUNAMI is a consortium of insurers, supported by funding from the Department of Trade and Industry, the aim of which is to improve the industry's understanding of natural hazards. We have played a major supporting role in securing funding for the work (around £1 million over three years) and have now been awarded three separate contracts. Work to date includes studies of the El Niño phenomenon and the seasonal predictability of tropical storms.



We presented the report on El Niño to the TSUNAMI consortium in January 1998

Developing heave forecasts

During the year, we worked closely with BP Research and Development to investigate the effect of long-period swells on semi-submersible drilling rigs and 'dynamically positioned' vessels. The important issue is the scale of movement of the rig, the so-called heave. Heave forecasts will become increasingly important as oil exploration moves into deeper water in more exposed locations, presenting increased challenges for vessel moorings and to drilling operations. The research and trials have resulted in a method of forecasting the motion of a rig or vessel, dependent on the nature of the swell. BP are currently using the new forecasts at one of their exploration sites.

Expanding TV services

In November 1997, the BBC launched their new BBC News 24 and BBC Online services. BBC News 24 includes three weather forecasts each hour and this meant we had to find and move an additional six broadcast meteorologists to the BBC Weather Centre. Our media business unit International Weather Productions (IWP) won the contract to supply the weather service to the independent TV company in Northern Ireland, Ulster TV. However, IWP lost a number of services supplied to The Weather Channel when that company ceased operations in December 1997.

Our new heave forecasts can provide important advice to operators of vessels like the FPSO Petrojarl Foinaven in the Foinaven oilfield, west of Shetland (* Floating production storage off-loading)*

IWP started providing the weather service to Ulster TV in January 1998



Electronic service delivery

Revenue from our MetFAX services – weather forecasts provided to customers via their fax machines – increased by 38% from last year, with over one million calls handled. During the busiest day, we took over 6,400 calls.

Our Internet service MetWEB is being used by customers involved in leisure marine, aviation, walking and climbing, and various small businesses, including overseas users. We have extended the system of virtual tickets pre-purchased by credit card to accommodate payment by Barclaycoin, a 'cybercash' system

which allows users to set up an electronic wallet on their PC. A customer survey at the end of the year showed a high level of satisfaction with the service.

Introducing quality systems

All our Weather Centres and most of our Bracknell-based consultancy units now have a working quality management system in place. We want to ensure that customers receive what they have requested, in the right format and to the right quality level, within the agreed timescale. The systems follow the requirements of ISO 9000 without, at this stage, official accreditation.



The weather presenters appearing on BBC News 24, left to right (top) Darren Bett, Peter Gibbs and Helen Willetts; (bottom), Daniel Corbett, Sally Cummings and Sarah Wilmshurst



Climate prediction and research

The Met. Office's Hadley Centre for Climate Prediction and Research is contracted by the DETR to carry out its major Climate Prediction Programme. We also carry out additional climate-related work under the PMS research and development programme and a number of contracts from the European Commission.

The Hadley Centre aims to improve our understanding of the full climate system, to develop increasingly realistic computer models for climate, to use these models to simulate the global climate in recent times and to predict how the global and regional climates might change over the next century or so, particularly in response to human influences. Additionally, we monitor the variability of climate, using both observations and climate models to detect changes in climate, and seek to find the reasons for those changes, such as those caused by human activity.

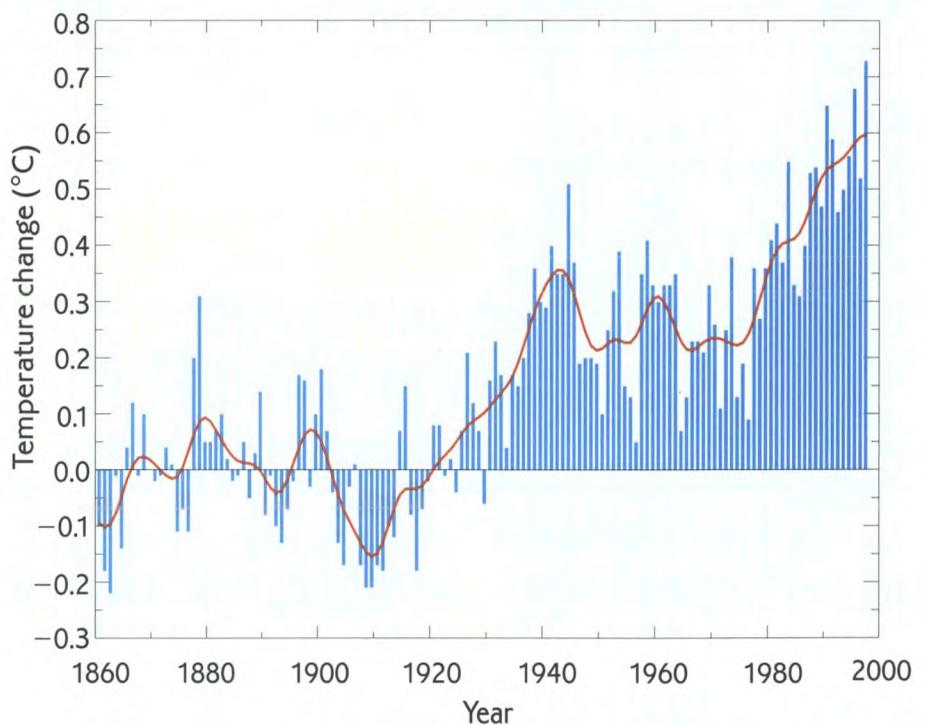
International conference, Kyoto, Japan

As part of our role to inform the Government on climate change issues, we prepared a comprehensive report on climate change and its impacts. This was in support of the Government's significant contribution to the Third Conference of the Parties to the UN Framework Convention on Climate Change held in Kyoto, Japan, in December 1997. Our staff displayed, presented and distributed the report at the conference and it was very well received. Since then, we have distributed it widely within the international community.

The warmest year ever!

In close collaboration with colleagues at the Climatic Research Unit, University of East Anglia, we continue to make, maintain and use global climate data sets. These allow us to demonstrate quickly, and with confidence, how globally averaged surface temperature

*Globally averaged
temperatures since 1860
(red line shows ten-year
running mean)*



has changed over the years. The data showed that, globally, 1997 was the warmest year ever recorded. A major reason for this was the very strong El Niño warm event in the eastern Pacific Ocean; by December 1997, sea-surface temperatures were more than 3 °C above normal over a large area of the eastern tropical Pacific and locally as much as 5 °C above normal.

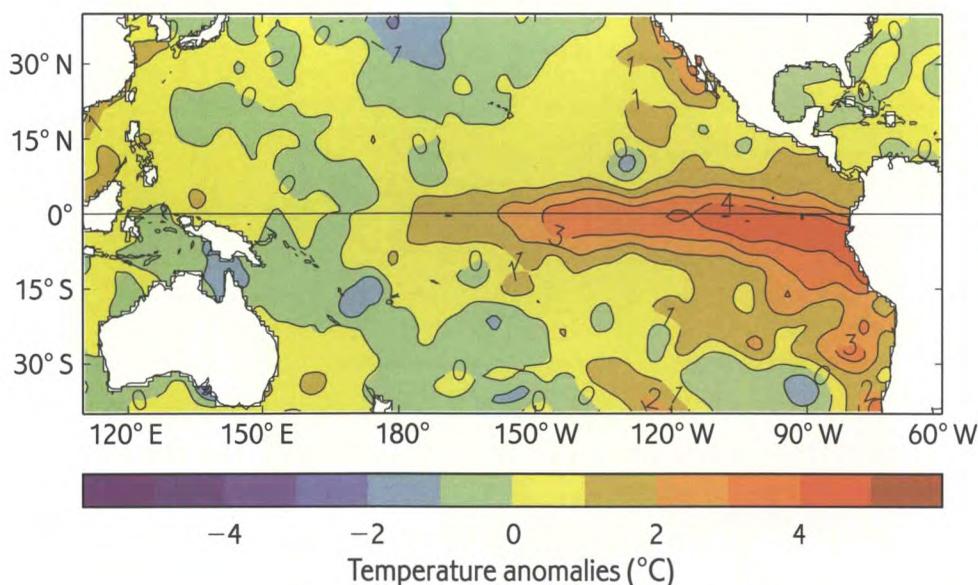
Predicting climate change – a new climate model

Over the past two years we have developed a new version of our climate model. It gives good simulations of present-day climate without using the so-called 'flux adjustments' needed in previous models. This represents a major step forward in climate modelling. The temperature changes over the next century predicted by the new model are consistent with those predicted by the previous version which used 'flux adjustments'. We continue to commit a significant

proportion of our overall research effort to improving the model's full range of capabilities and performance.

Seasonal forecasting

We made considerable progress in our ability to make and interpret forecasts for a season or so ahead. The Met. Office has already established some useful results from the development and application of statistical seasonal forecasting methods, especially for selected tropical regions. We are now researching the possibility of developing an operational method, based on our global models, that would provide seasonal and interannual forecasts for non-tropical regions, particularly Europe. As part of this work, we are collaborating in a major European project involving 11 institutes in six countries. It is a three-year programme, co-sponsored by the European Commission, which began in March 1996.



Pacific sea-surface temperatures for November 1997. The red and brown 'tongue' extends westwards from the equatorial coast of South America, indicating a major El Niño event

Human resources

Recruitment

We have made recruitment a high priority this year with 255 people joining The Met. Office. This is more than double the number recruited last year and, although there has been an increase in the wastage rate over the same period, this recruitment drive is an indication of The Met. Office's success and expanding business. At least half of these people hold graduate qualifications in mathematics, physics or computing and many of the remainder hold business or other professional qualifications.

It is our policy to recruit staff in accordance with the Civil Service Commissions' Recruitment Code 1996. Individual appointments are made on the basis of fair and open competition. We did, however, have to take exceptional action to reappoint 27 former Met. Office staff who were needed to meet increased business requirements, particularly in weather forecasting, and to staff our Project 2000.

Staff recruited in 1997/98

	Male	Female	Total	Ethnic minority*	Disabled people*
Total	183	72	255	11	8

* All entrants were surveyed but some chose not to respond

Equal Opportunities

Through a variety of initiatives, The Met. Office continues to promote equality in the workplace, recognising that all staff contribute to our success. Our human resource policies and procedures are thoroughly checked to ensure that all staff and customers are treated fairly and with respect. We base decisions about career advancement only on an individual's ability, qualifications and suitability for the work.

During the year, we continued to train our managers in the awareness of diversity, equal opportunities and disability. As part of the 1997/98 Diversity, Equality and Disability Programme of Action, our Equal Opportunities & Disability Officer visited Met. Office sites around the UK. Work is under way to improve access to buildings for mobility-impaired staff and customers. We also continued to encourage disabled potential recruits to choose The Met. Office as an employer.



The Lodge, the original part of The Met. Office College

- Women 19% – no change from last year
- Ethnic minority background 1.0% – no change from last year
- Disabled people 2.8% – down from 3.6%, mostly due to the definition of disability under the Disability Discrimination Act 1995
- Part-time 3.8% – up from 3.6% last year

Development and professional training

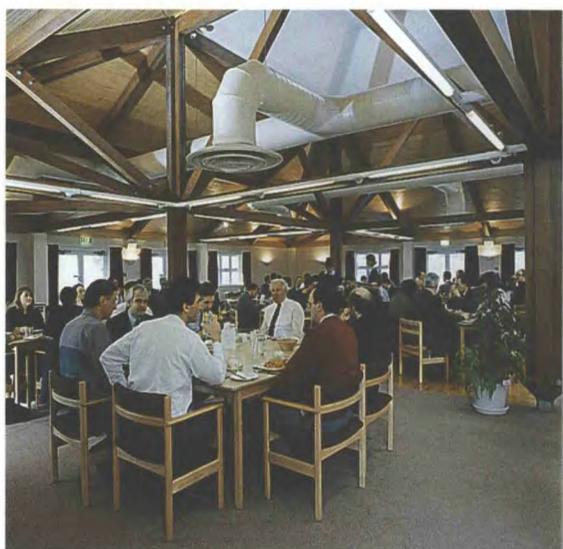
We continued our comprehensive programme of staff development, with 460 delegates taking part in some 1,026 days of training. Our main focus was on improving project management skills and managing and communicating change. We also put 190 of our senior staff through a successful series of management development workshops linked to informing and involving managers in our Corporate Plan, a significant but fruitful investment in time and money. (Further workshops took place from April to June 1998 taking the total number involved to around 300.)

This year, we have carried out a much greater volume of training in meteorology and its applications than

in recent years. This is mainly due to the increased recruitment of scientific and IT staff, and the need for more forecasters and observers to overcome shortages. For example, 47 staff entered the Forecaster Foundation Training Programme compared with just nine in 1996/97. The total number of trainee days was up 9% to 10,100. Despite this increase, and with no additional staff resources, we still exceeded our target for the level of student satisfaction.

Investors in People

The Met. Office is committed to achieving *Investors in People*, the national quality standard for effective investment in the training and development of staff. Our staff development project, which is itself part of our *Improving our Performance* programme, is aimed at bringing The Met. Office to *Investors in People* accreditation by December 1999.



Ann Tourle, Company Secretary

The restaurant in the more recent College building

Financial strategy and progress

Strategy

Our key financial strategy continues to be to deliver a full range of services that meet our customers' requirements at prices which make sufficient return to meet our financial obligations and provide for our investment programme. As part of this strategy, we aim to repay all the loans we took on when we became a trading fund, by 2002. This represents a much shorter timescale than agreed originally, and mentioned in last year's Report; we made an early repayment of £5 million in June 1998.

Our financial support for the EUMETSAT satellite programme, a substantial element of our capital investment programme, is in ECUs, thus exposing The Met. Office to changes in currency exchange rates.

Similarly, some of our other international commitments are denominated in foreign currencies. Our strategy is to hedge these risks by using financial instruments such as currency option contracts and forward purchases.

Agreement has also been reached for The Met. Office to participate in the EPS research and development programme for the new European polar-orbiting satellite. This will involve additional investment of some £29 million over the next seven years.

Progress

In our second year as a trading fund, we exceeded our key financial targets again (see *Key performance indicators and targets*, page 12). We have also increased our liquidity to provide for future investment. Revenue for the year was £154.8 million, £2.1 million above budget, and £2.8 million more than last year. This includes a significant increase in revenue from our commercial services in the face of increasing competition. In line with our strategy of improving efficiency, we held our operating costs to £135.2 million, £4 million less than budget.

Our operating profit was £19.6 million after the provision for one-off estimated costs of £4.9 million associated with Year 2000 compliance, to be incurred over the next two years.

We achieved an increase of £17.8 million in cash balances over the year, more than planned. This has come from a combination of cost savings, effective credit control and the co-operation of our Core customers regarding the timing of payments. The strength of sterling has helped with expenditure for our satellite programme and other international commitments. Net interest is now positive, with returns from cash on deposit exceeding interest payable on outstanding loans.

See also *Foreword to the accounts*, page 34.



David Roberts, Finance Director

Accounts and financial information

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Foreword to the accounts

Statutory background

The accounts for The Met. Office have been prepared in accordance with the Direction given by HM Treasury on 19 June 1997 in pursuance of section 4(6) of the Government Trading Funds Act 1973. The Direction is reproduced on pages 55 and 56 of the Annual Report and Accounts.

History

The Met. Office was established as the Meteorological Department of the Board of Trade in 1854 and adopted its present title in 1867. Separate meteorological branches for each of the armed forces were set up in 1914 and The Met. Office became part of the Air Ministry in 1920 and subsequently part of the Ministry of Defence in 1964. The Met. Office became an Executive Agency on 2 April 1990 and started operating as a trading fund on 1 April 1996, in accordance with Statutory Instrument SI 1996/774.

Review of activities

The principal activities of The Met. Office are set out on page 2. There have been no significant changes in these activities during the year.

Board members

The operation of The Met. Office is overseen by the Defence Meteorological Board, and the Chief Executive is advised by the Meteorological Committee and its Research Sub-committee. The day-to-day business of The Met. Office is managed by The Met. Office Board, as shown on page 6.

Payment policy

Payments to suppliers are predominantly made direct from The Met. Office. The policy is to pay suppliers within contracted payment terms or, in the absence of specifically agreed terms, within 30 days of receipt of a valid invoice (as specified by the CBI Code – Prompt Payment), or of the delivery date if later. In the year ended 31 March 1998, 92% of undisputed invoices were paid within 30 days of receipt (31 March 1997, 89%).

Results and appropriations

The Met. Office's turnover for the year was £154.8 million (1996/97, £152.0 million). Total expenditure, before exceptional items and interest, was £135.2 million (1996/97, £130.3 million) and operating profit was £19.6 million (1996/97, £21.7 million). The return on capital employed (ROCE) key target of 7% was met with a performance of 17.6% (1996/97, 20.7%). Profit after interest was £23.1 million (1996/97, £20.4 million). Net assets as at 31 March 1998 were £144.4 million (31 March 1997, £117.6 million). Tangible fixed assets increased to £33.5 million (31 March 1997, £24.4 million), primarily as a result of the purchase of a Cray T3E supercomputer for £10.2 million. As agreed with HM Treasury, no dividend is to be paid to the Consolidated Fund in respect of the first two years of trading and the retained surplus has been transferred to the General Reserve, to meet future investment needs.

Market value of land

It is considered that there is no significant difference between the open market value and the book value of land on an existing use basis. The surplus site at Aughton, Lancashire, which was valued in the accounts at 31 March 1997 at £0.2 million for existing use, was sold for redevelopment at a profit of £2.1 million. This exceptional profit is included in the calculation of ROCE.

Research and development

A programme of applied research and development is conducted in support of the operational services provided by The Met. Office. Additional research and development concerning man-made climate change is conducted under contract to the Department of the Environment, Transport and the Regions.

Year 2000

For information regarding our activities that address the Year 2000 issue, see item on page 19.

Disabled persons

The Met. Office is committed to a policy of Equal Opportunity. The only test applied for recruitment, retention, training or advancement is the ability to do the job.

Employee involvement

Formal consultation with staff is undertaken through The Met. Office Functional Whitley Committee, its sub-committees and local committees. The Met. Office regards the health, safety and welfare of its employees (and others) as of paramount importance. A full-time Health and Safety Officer is employed to ensure that all staff are fully aware of new and existing requirements and of their responsibilities. Employee involvement is through the Health and Safety sub-committee of the Functional Whitley Committee. In addition, the Trades Unions have been consulted on a range of special issues including changes in personnel management arrangements and the *Improving our Performance* initiative. Staff are informed of new developments within The Met. Office by team briefings and by *Mercury*, the house magazine.



P D Ewins
Chief Executive
7 July 1998

Profit and Loss Account for the year ended 31 March 1998

	Notes	1997/98 £ '000	1996/97 £ '000
Turnover	1, 2	154,784	151,987
Cost of sales	3, 5	114,235	109,958
Gross profit		40,549	42,029
Operating expenses	3, 5	20,965	20,281
Operating profit		19,584	21,748
Profit on disposal of fixed assets		2,179	50
Profit / loss on ordinary activities		21,763	21,798
Interest receivable		4,208	1,867
Interest payable	4	(2,920)	(3,265)
Retained profit		23,051	20,400
Return on capital employed (ROCE)		17.6%	20.7%
Target (taken year on year)		7.0%	7.0%

ROCE is calculated as operating profit plus profit on disposal of assets as a percentage of the average Government funds (excluding unrealised capital reserves) and the self-insurance fund employed in the business at the beginning and end of the year.

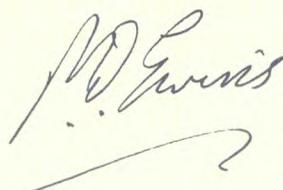
The notes on pages 40 to 51 form part of these accounts.

The movement on the General Reserve is set out at note 15 on page 49.

Balance Sheet as at 31 March 1998

	Notes	31 March 1998		31 March 1997	
		£ '000	£ '000	£ '000	£ '000
Fixed assets					
Intangible	1, 6		58,324		53,023
Tangible	1, 6		33,497		24,382
			91,821		77,405
Current assets					
Stocks	1, 7	1,409		1,454	
Debtors and prepayments	8	24,681		29,835	
Cash on deposit	9	61,500		40,600	
Cash at bank and in hand	9	3,555		6,691	
		91,145		78,580	
Creditors: amounts falling due within one year	10	(38,056)		(26,107)	
Net current assets			53,089		52,473
Creditors: amounts falling due after more than one year	10		(552)		(12,296)
Net assets			144,358		117,582
Financed by					
Provisions for liabilities and charges	12		8,200		4,214
Capital and reserves					
Public dividend capital		58,867		58,867	
Long-term loans	13	18,968		32,162	
Revaluation Reserve	14	3,388		1,939	
General Reserve	15	54,935		20,400	
Government funds		136,158		113,368	
			144,358		117,582

The notes on pages 40 to 51 form part of these accounts.



PD Ewins
Chief Executive
7 July 1998

Cash Flow Statement for the year ended 31 March 1998

	Note	1997/98 £ '000	1996/97 £ '000
Reconciliation of operating profit to net cash inflow from operating activities			
Operating profit		19,584	21,748
Permanent diminution		0	1,013
Depreciation charges		16,254	18,663
Provisions for liabilities and charges		3,986	1,164
Decrease in stocks		45	302
Decrease/(increase) in debtors		5,304	(14,898)
Increase in creditors		4,015	15,168
Net cash inflow from operating activities		49,188	43,160
Cash flow statement			
Net cash inflow from operating activities		49,188	43,160
Returns on investments and servicing of finance	17	1,129	(1,489)
Capital expenditure	17	(27,042)	(13,635)
Management of liquid resources	17	(20,900)	(40,600)
Financing	17	(5,511)	(10,220)
Decrease in cash		(3,136)	(22,784)
Reconciliation of net cash flow to movement in net debt			
Decrease in cash		(3,136)	(22,784)
Increase in cash on deposit	17	20,900	40,600
Other movements	17	5,511	7,269
Change in net funds	17	23,275	25,085
Net funds/(debt) at 1 April		9,618	(15,467)
Net funds at 31 March		32,893	9,618

The notes on pages 40 to 51 form part of these accounts.

Statement of recognised Gains and Losses for the year ended 31 March 1998

	Note	1997/98 £ '000	1996/97 £ '000
Profit for the financial year		23,051	20,400
Transfer from creditors falling due after more than one year	15	11,484	0
Surplus on revaluation of fixed assets credited to the Revaluation Reserve	14	1,449	1,939
Total recognised gains and losses relating to the year		35,984	22,339
Reconciliation of movements in Government funds			
		1997/98 £ '000	1996/97 £ '000
Government funds at 1 April		113,368	96,540
Total recognised gains and losses relating to the year		35,984	22,339
Movements in long-term loans	13	(13,194)	(5,511)
Net movement in Government funds		22,790	16,828
Balance at 31 March		136,158	113,368

The notes on pages 40 to 51 form part of these accounts.

Notes to the accounts

1 Accounting policies

(a) Basis of accounting

The accounts have been prepared in accordance with the accruals concept and the historical cost convention, modified to include revaluations of fixed assets and stocks. They comply with the accounting and disclosure requirements of the Companies Act 1985 and the Accounting Standards Board, where appropriate.

(b) Turnover

Turnover comprises the invoiced value of services (net of VAT) supplied to the private sector, the wider public sector and other Government departments. Income received under collaborative arrangements for the capital installation of rainfall radar systems is credited as deferred income within creditors until tangible fixed assets are acquired.

(c) Research and development

All research and development expenditure is charged to the Profit and Loss Account.

(d) Intangible fixed assets

The Met. Office is a member of EUMETSAT and, as such, contributes to the cost of its satellite programmes. The Met. Office benefits from the data and services resulting from these programmes. Expenditure on programmes is capitalised and

revalued annually using the Aerospace Combined Input Cost Index. The depreciation is calculated using the straight-line method, and is based on the expected operational life, currently to 2012.

(e) Tangible fixed assets

Valuation

Where the Agency is the principal beneficial user of the Departmental Estate, such estate is treated as an asset of the Agency although legal ownership rests with the Secretary of State for Defence.

Freehold land and buildings are revalued by qualified valuers every five years, or at shorter periods if it is considered that values have changed materially.

Plant and equipment, including computers, is capitalised where the useful life exceeds three years and the cost of acquisition and installation exceeds £5,000 (excluding VAT). From 31 March 1996, The Met. Office has also capitalised networked minor computers, and related equipment, which individually do not meet the criteria. Major items are revalued annually using the Gross Domestic Product Deflator Index.

Certain meteorological equipment installed in commercial aircraft or at sea is not capitalised as it is outside the direct control of The Met. Office and has an uncertain operational life.

Depreciation

Freehold land is not depreciated.

Depreciation on buildings is calculated to write off the cost, or value, by equal instalments over each asset's estimated useful life (not exceeding 50 years).

Computers, plant and equipment are generally depreciated by the reducing balance method at a rate calculated to reduce the net book value to 5% of current replacement cost over each asset's estimated useful life (between three and ten years).

Major assets, where the benefit accrues evenly over the life of the asset, are depreciated by the straight-line method. There is currently one asset, the Cray T3E, in this category with a life of five years.

(f) Leasing commitments

Assets held under finance leases, which are those where substantially all the risks and rewards of ownership of the asset have passed to The Met. Office, are capitalised in the Balance Sheet and are depreciated over their useful lives. The interest element of the rental obligations is charged to the Profit and Loss Account over the period of the lease and represents a constant proportion of the balance of capital repayments outstanding. All leasehold property is held under operating leases which are charged to current expenditure.

(g) Stocks

Stocks are valued at the lower of cost, or net current replacement cost if materially different, and net realisable value.

(h) Insurance

In line with Government policy, it is normal practice for The Met. Office to insure itself against insurable risks. A Balance Sheet provision has been set up for this purpose. In the event of a loss occurring which exceeds the insurance provision, The Met. Office will consult with the Ministry of Defence about the action to be taken.

(i) Pensions

Excepting locally employed civilians, all staff are covered by the provisions of the Civil Service and Armed Forces Pension schemes. Payments are made into the Consolidated Fund at contribution rates determined by HM Treasury.

(j) Foreign exchange

The Met. Office policy is to buy forward foreign currency for payments to international bodies as soon as amounts can be reliably estimated. The payments are in respect of annual subscriptions and contributions including payments for intangible fixed assets. In this case, payments are accounted for in sterling at the forward purchase rate. All other foreign currency payments are accounted for at the sterling equivalent at the exchange rate ruling on the day the payment is made.

2 Turnover

This note meets the requirements of HM Treasury's *Fees and Charges Guide*.

a) Customer Group Analysis

	Main customer	1997/98			1996/97		
		£ '000	£ '000	£ '000	£ '000	£ '000	£ '000
		Core	Direct Services	Total	Core	Direct Services	Total
Defence	MoD	31,040	23,079	54,119	31,364	21,855	53,219
Civil Aviation	CAA	19,071	8,700	27,771	18,338	8,218	26,556
Public Met. Service		31,045	5,065	36,110	31,363	5,095	36,458
Climate Research	DETR	0	6,658	6,658	0	9,490	9,490
Commerce & Industry		0	24,486	24,486	0	21,865	21,865
Other		1,745	3,895	5,640	1,516	2,883	4,399
Total turnover		82,901	71,883	154,784	82,581	69,406	151,987

- (i) All turnover relates to the same class of business, the provision of meteorological and related services. There were no acquisitions or discontinued operations.
- (ii) 'Core' is the programme of work necessary to generate, and make available centrally, the underpinning weather forecasts and climatological services which are the basis for specified 'Direct Services' to Core customers.
- (iii) 'Commerce & Industry' contracts are subject to open competition.

b) Commerce and Industry Analysis

	1997/98 £ '000	1996/97 £ '000	1996/97 £ '000
	Actual	Restated	Actual
Turnover	24,486	21,865	23,587
Expenditure	18,207	17,647	18,269
Contribution to Core and Central Services	6,279	4,218	5,318

The Commerce & Industry customer group achieved a contribution to Core activities and Central Services of £6.3 million, against a target of £3.0 million. Prior year figures have been restated on a comparable basis because of changes in the attribution of revenue and costs to customer groups.

3 Cost of sales and operating expenses

	Note	1997/98 £ '000	1996/97 £ '000
Staff costs	5	65,932	62,621
Travel and subsistence		3,148	3,456
Equipment and services		28,717	27,715
Accommodation		8,659	8,685
Depreciation	6	16,254	18,663
International subscriptions		6,784	7,667
Other administrative expenses		5,706	1,432
Total cost of sales and operating expenses		135,200	130,239

- (i) Accommodation includes £1.7 million (1996/97, £2.1 million) operating lease rentals of property.
- (ii) International subscriptions include the European Centre for Medium-range Weather Forecasts, the World Meteorological Organization and EUMETSAT (excluding amounts capitalised as intangible assets).
- (iii) Other administrative expenses include a provision for Year 2000 of £4.9 million (1996/97, £1.0 million), and an audit fee of £50,000 (1996/97, £50,000).
- (iv) Total cost of research and development, which was funded by customers including the Department of the Environment, Transport and the Regions was £16.3 million (1996/97, £15.3 million).

4 Interest payable and similar charges

	1997/98 £ '000	1996/97 £ '000
On loans wholly repayable within five years	2,920	0
On loans not wholly repayable within five years	0	3,265
Total interest payable and similar charges	2,920	3,265

5 Staff

(a) Staff costs

	1997/98 £ '000	1996/97 £ '000
Salaries, bonuses and allowances	54,818	51,929
Social security	4,216	3,994
Pension contributions	6,898	6,698
Total staff costs	65,932	62,621

Pension rates, advised by HM Treasury, ranged from 11% to 19.5% – see note 1(i).

(b) Average staff numbers

	1997/98 number	1996/97 number
Senior Civil Service	8	8
Scientific, managerial, technical	1,513	1,463
Support	598	638
Locally engaged civilians overseas	20	20
Monthly average staff numbers	2,139	2,129

There were 2,183 staff employed at 31 March 1998 (2,118 staff at 31 March 1997), both expressed as full-time equivalents.

(c) Chief Executive's emoluments

PD Ewins, the Chief Executive, received total emoluments, excluding pension contributions, of £50,688 from the date of his appointment (1 August 1997). Professor JCR Hunt, his predecessor, received total emoluments, excluding pension contributions, of £19,355 for the period 1 April to 30 June 1997 (1996/97, £77,420). They are ordinary members of the Principal Civil Service Pension Scheme.

(d) Employee information

The number of other employees, including members of the Board, whose remuneration exceeded £40,000 was:

	1997/98 number	1996/97 number
£40,000–£49,999	84	73
£50,000–£59,999	20	21
£60,000–£69,999	7	7
£70,000–£79,999	3	0
Total number of employees whose remuneration exceeded £40,000	114	101

Remuneration includes allowances subject to UK income tax but excludes pension contributions.

(e) Early retirement

	1997/98 £ '000	1996/97 £ '000
Expenditure incurred in current year	27	142
Expenditure to be incurred within one year or later	0	0
Total early retirement expenditure	27	142

This represents the full cost of employees who left in year. £18,000 (1996/97, £142,000) was offset by a grant from the Ministry of Defence.

6 Fixed assets

The movements in each class of assets were:

	Intangible	Tangible		
	Satellite programmes £ '000	Land and buildings £ '000	Plant and equipment £ '000	Total £ '000
Cost or valuation:				
At 1 April 1997	74,041	11,792	21,137	32,929
Additions	13,599	0	15,893	15,893
Disposals	0	(150)	(191)	(341)
Revaluation	1,889	0	157	157
At 31 March 1998	89,529	11,642	36,996	48,638
Depreciation:				
At 1 April 1997	21,018	614	7,933	8,547
Charged during year	9,651	419	6,184	6,603
Disposals	0	(25)	(45)	(70)
Revaluation	536	0	61	61
At 31 March 1998	31,205	1,008	14,133	15,141
Net book value:				
At 1 April 1997	53,023	11,178	13,204	24,382
At 31 March 1998	58,324	10,634	22,863	33,497

- (i) The net book value of freehold land and buildings includes £4.5 million of freehold land (1 April 1997, £4.6 million) which has not been depreciated.
- (ii) Plant and equipment was valued on 14 December 1995 by Grimley. The net book value at 31 March 1998 includes the purchase of a Cray T3E supercomputer for £10.2 million.
- (iii) Land and buildings were valued by the Valuation Office at 1 November 1995, in accordance with the Statements of Asset Valuation Practice in guidance notes prepared by the Royal Institution of Chartered Surveyors, on the basis of open market values for existing use, except that specialised buildings have been valued on the basis of depreciated replacement cost.

7 Stocks

	31 March 1998	31 March 1997
	£ '000	£ '000
Meteorological equipment	959	857
Reserve equipment	280	386
Consumable stores	170	211
Total stock	1,409	1,454

8 Debtors and prepayments

	31 March 1998	31 March 1997
	£ '000	£ '000
Trade debtors	13,107	19,435
Other debtors	646	649
Prepayments and accrued income	10,928	9,751
Total debtors and prepayments	24,681	29,835

9 Cash at bank and in hand

	Note	1997/98	1996/97
		£ '000	£ '000
Balance at 1 April		6,691	29,475
Net cash outflow	17	(3,136)	(22,784)
Balance at 31 March		3,555	6,691

Cash which is surplus to immediate requirements is held in interest-bearing accounts – £61.5 million (31 March 1997, £40.6 million).

10 Creditors

	Note	31 March 1998 £ '000	31 March 1997 £ '000
Operating expenditure			
Amounts falling due within one year:			
Current instalment on long-term loans	13	13,194	5,511
Trade creditors		3,042	2,586
Taxation and social security		5,112	7,102
Early retirement payments		10	142
Accruals and deferred income		16,487	10,555
Total operating expenditure within one year		37,845	25,896
Amounts falling due after one year:			
Dilapidations		552	812
Deferred income		0	11,484
Total operating expenditure after one year		552	12,296
Total operating expenditure		38,397	38,192
Capital expenditure			
Amounts falling due within one year:			
Deferred income for capital expenditure		211	211
Total capital expenditure		211	211
Total amounts falling due within one year		38,056	26,107
Total amounts falling due after one year		552	12,296
Total amounts due		38,608	38,403

The provision for deferred income was transferred to General Reserve (see note 15).

11 Finance lease obligations

Analysis of changes in finance leases during the current year:

	1997/98 £ '000	1996/97 £ '000
At 1 April	0	4,709
Inception of finance lease contracts	0	0
Capital element of finance lease payments	0	(4,709)
At 31 March	0	0

The finance charge to the Profit and Loss Account was £nil, (1996/97, £81,000).

12 Provisions for liabilities and charges

Note:	Reorganisation (i)	Insurance 1(h)	Year 2000 (ii)	Total
	£ '000	£ '000	£ '000	£ '000
Balance at 1 April 1997	2,164	1,050	1,000	4,214
Transferred from Profit and Loss Account	0	400	4,935	5,335
Utilised in year	(414)	0	(935)	(1,349)
Balance at 31 March 1998	1,750	1,450	5,000	8,200

- (i) Provision has been made for the future cost of leasehold properties which are surplus to requirements following reorganisation.
- (ii) Provision has been made for the costs of additional resources necessary to ensure that IT and other systems are year 2000 compliant.

13 Long-term loans

Government loans, repayable by instalments, and bearing interest at 8% and 8.25% per annum:

	31 March 1998 £ '000	31 March 1997 £ '000
Loans at 31 March comprise amounts repayable		
In two to five years	18,968	27,155
After five years	0	5,007
Total long-term loans	18,968	32,162

Amounts repayable in one year are included in creditors – see note 10.

14 Revaluation Reserve

	1997/98 £ '000	1996/97 £ '000
Revaluation Reserve at 1 April	1,939	0
Revaluation of intangible fixed assets	1,353	1,745
Revaluation of tangible fixed assets	96	194
Revaluation Reserve at 31 March	3,388	1,939

£571,000 (31 March 1997, £347,000) of the Revaluation Reserve was realised.

15 General Reserve

	1997/98 £ '000	1996/97 £ '000
General Reserve at 1 April	20,400	0
Transfer from creditors falling due after more than one year	11,484	0
Retained profit	23,051	20,400
General Reserve at 31 March	54,935	20,400

The net assets appropriated to the Trading Fund on 1 April 1996 included a provision for deferred income in recognition of the change from a Vote-funded basis of accounting to a full accruals basis. It has been determined that this provision is no longer required and that it should be transferred directly to the General Reserve.

16 Related parties

The Ministry of Defence (MoD) is regarded as a related party. During the year, The Met. Office has had material transactions with the Department and with other entities for which MoD is regarded as the parent department, primarily the Defence Evaluation and Research Agency. In addition, The Met. Office has had material transactions with a number of other public bodies, Government Departments and their agencies, principally the Civil Aviation Authority, the Department of the Environment, Transport and the Regions, the Home Office and the Ministry of Agriculture, Fisheries and Food. None of The Met. Office Board members, key managerial staff or other related parties has undertaken any material transactions with The Met. Office during the year.

17 Cash Flow Statement

a) Gross cash flows	31 March 1998		31 March 1997	
	£ '000	£ '000	£ '000	£ '000
Returns on investments and servicing of finance				
Interest received	4,058		1,767	
Interest paid	(2,929)		(3,175)	
Interest element of finance lease payments	0		(81)	
		<u>1,129</u>		<u>(1,489)</u>
Capital expenditure				
Payments to acquire intangible fixed assets	(13,599)		(12,477)	
Payments to acquire tangible fixed assets	(15,893)		(1,404)	
Receipts from sales of tangible fixed assets	2,450		246	
		<u>(27,042)</u>		<u>(13,635)</u>
Management of liquid resources				
Net payments to National Loans Fund deposit account	(20,900)		(40,600)	
		<u>(20,900)</u>		<u>(40,600)</u>
Financing				
Loan repayment	(5,511)		(5,511)	
Capital element of finance lease payments	0		(4,709)	
		<u>(5,511)</u>		<u>(10,220)</u>
b) Analysis of changes in net funds				
	At 1 April 1997 £ '000	Cash flows £ '000	Other changes £ '000	At 31 March 1998 £ '000
Cash at bank and in hand	6,691	(3,136)		3,555
Cash on deposit	40,600	20,900		61,500
Debt due within one year	(5,511)	5,511	(13,194)	(13,194)
Debt due after one year	(32,162)	0	13,194	(18,968)
		5,511		
Total	9,618	23,275	0	32,893

18 Operating leases

	1997/98	1996/97
	£ '000	£ '000
Annual commitments for land and buildings were as follows		
Leases expiring within:		
One year	24	12
One to five years	138	141
Over five years	1,656	1,509
Total	1,818	1,662

19 Capital commitments

	1997/98	1996/97
	£ '000	£ '000
Contracted	837	11,235

- (i) £0.6 million (1996/97, £nil) relates to contracts in support of year 2000 compliance.
- (ii) £nil (1996/97, £9.2 million) was attributable to the purchase of a Cray T3E supercomputer.

The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament

I certify that I have audited the financial statements on pages 36 to 51 under the Government Trading Funds Act 1973. These financial statements have been prepared under the historical cost convention as modified by the revaluation of certain fixed assets and the accounting policies set out on pages 40–41.

Respective responsibilities of the Meteorological Office, the Chief Executive and Auditor

As described on page 54 the Meteorological Office and the Chief Executive are responsible for the preparation of the financial statements and for ensuring the regularity of financial transactions. It is my responsibility to form an independent opinion, based on my audit, on those statements and on the regularity of the financial transactions included in them and to report my opinion to you.

Basis of opinion

I conducted my audit in accordance with Auditing Standards issued by the Auditing Practices Board. An audit includes examination, on a test basis, of evidence relevant to the amounts, disclosures and regularity of financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgements made by the Meteorological Office and Chief Executive in the preparation of the financial statements, and of whether the accounting policies are appropriate to the entity's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations which I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by error, or by fraud or other irregularity and that, in all material respects, the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them. In forming my opinion I have also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In my opinion:

- the financial statements give a true and fair view of the state of affairs of the Meteorological Office at 31 March 1998 and of the profit, total recognised gains and losses and cash flows for the year then ended and have been properly prepared in accordance with the Government Trading Funds Act 1973 and directions made thereunder by HM Treasury;
- in all material respects, the expenditure and income have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

See also my report on opposite page.

John Bourn
Comptroller and Auditor General
10 July 1998

National Audit Office
157–197 Buckingham Palace Road
Victoria
London SW1W 9SP

Report of the Comptroller and Auditor General

During the period, a senior official at the Meteorological Office was dismissed for gross misconduct following discovery by the National Audit Office of irregular travel expense claims. This came to light as part of the National Audit Office's routine audit of the Office procedures and accounts. The Chief Executive acted swiftly to instigate further investigations, and replaced the self-certification procedures for travel and subsistence claims for senior staff with a system of counter-signature for all staff. I acknowledge the prompt and decisive action taken by the Meteorological Office and the Ministry of Defence in this matter.

John Bourn
Comptroller and Auditor General
10 July 1998

National Audit Office
157–197 Buckingham Palace Road
Victoria
London SW1W 9SP

Statement of the responsibilities of the Agency and the Chief Executive

Under section 4 (6) of the Government Trading Funds Act 1973, HM Treasury has directed The Met. Office to prepare a statement of accounts for each financial year in the form and on the basis set out in the Accounts Direction on page 55. The accounts are prepared on an accruals basis and must give a true and fair view of the The Met. Office's state of affairs at the year end and of its income and expenditure, total recognised gains and losses and cash flows for the financial year.

In preparing the accounts, the Agency is required to:

- observe the Accounts Direction issued by HM Treasury, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates on a reasonable basis;

- state whether applicable accounting standards have been followed, and disclose and explain any material departures in the financial statements;
- prepare the financial statements on the going concern basis, unless it is inappropriate to presume that the Agency will continue in operation.

The Accounting Officer of the Ministry of Defence has designated the Chief Executive of The Met. Office as the Accounting Officer for the Trading Fund. His relevant responsibilities as Accounting Officer, including responsibility for the propriety and regularity of the public finances and for the keeping of proper records, are set out in the Accounting Officer's Memorandum, issued by HM Treasury and published in *Government Accounting*.

Treasury Accounts Direction and Schedules

ACCOUNTS DIRECTION GIVEN BY HM TREASURY IN ACCORDANCE WITH SECTION 4(6) OF THE GOVERNMENT TRADING FUNDS ACT 1973

1. The Met. Office shall prepare accounts for the financial year ended 31 March 1997 and subsequent financial years comprising:

- (a) a foreword;
- (b) a profit and loss account;
- (c) a balance sheet;
- (d) a cash flow statement; and
- (e) a statement of total recognised gains and losses,

including such notes as may be necessary for the purposes referred to in the following paragraphs.

2. The accounts shall give a true and fair view of the profit or loss, and cash flows for the financial year, and the state of affairs as at the end of the financial year.
3. Subject to this requirement, the accounts shall be prepared in accordance with:
- (a) generally accepted accounting practice in the United Kingdom (UK GAAP);
 - (b) the disclosure and accounting requirements contained in *The Fees and Charges Guide* (in particular those relating to the need for segmental information for services or forms of service provided) and in any other guidance which HM Treasury may issue from

time to time in respect of accounts which are required to give a true and fair view;

- (c) the accounting and disclosure requirements of *Government Accounting* (in particular Chapter 17) and HM Treasury's guidance paper *Next Steps Agencies—Annual Reports and Accounts* (February 1993), as amended or augmented from time to time,

insofar as these are appropriate to The Met. Office and are in force for the financial period for which the accounts are to be prepared.

4. Clarification of the application of the accounting and disclosure requirements of the Companies Act and accounting standards is given in Schedule 1 of this Direction. Additional disclosure requirements are set out in Schedule 2 of this Direction.
5. The Profit and Loss Account and Balance Sheet shall be prepared under the historical cost convention modified by the inclusion of:
- (a) fixed assets at their value to the business by reference to current costs; and
 - (b) stocks at the lower of net current replacement cost (or historical cost if this is not materially different) and net realisable value.
6. This direction and, where appropriate, the Treasury Minute (see paragraph 2 of Schedule 2) shall be reproduced as appendices to the accounts.

Signed: Jamie Mortimer
Treasury Officer of Accounts
19 June 1997

Schedule 1

Application of the Accounting and Disclosure Requirements of Companies Act and Accounting Standards

Companies Act

1. The disclosure exemptions permitted by the Companies Act shall not apply to The Met. Office unless specifically approved by HM Treasury.
2. The Companies Act requires certain information to be disclosed in the Directors' Report. To the extent that it is appropriate, the information relating to The Met. Office shall be contained in the foreword.
3. When preparing its Profit and Loss Account, The Met. Office shall have regard to the Profit and Loss Account format 1 prescribed in Schedule 4 to the Companies Act.
4. When preparing its Balance Sheet, The Met. Office shall have regard to the Balance Sheet format 1 prescribed in Schedule 4 to the Companies Act. The Balance Sheet totals shall be struck at 'net assets'.
5. The Met. Office is not required to provide the historical cost information described in paragraph 33(3) of Schedule 4 of the Companies Act.
6. The foreword and Balance Sheet shall be signed by the Accounting Officer and dated.

Accounting standards

7. The Met. Office is not required to include a note showing historical cost profits and losses as described in FRS 3.

Schedule 2

Additional Disclosure Requirements

1. The foreword shall, inter alia:
 - (a) state that the accounts have been prepared in accordance with a direction given by HM Treasury in accordance with section 4(6) of the Government Trading Funds Act 1973;
 - (b) include a brief history of The Met. Office and its statutory background.
2. The notes to the accounts shall include details of the further financial objectives set by the responsible Minister as described in a Treasury Minute in accordance with section 4(1)(b) of the Government Trading Funds Act 1973, together with an indication of the performance achieved.

To receive a copy of the *Scientific and Technical Review 1997/98*, or for information on careers in The Met. Office, please write to us at the address below.

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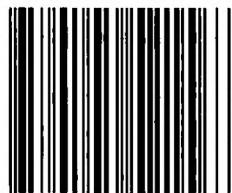


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