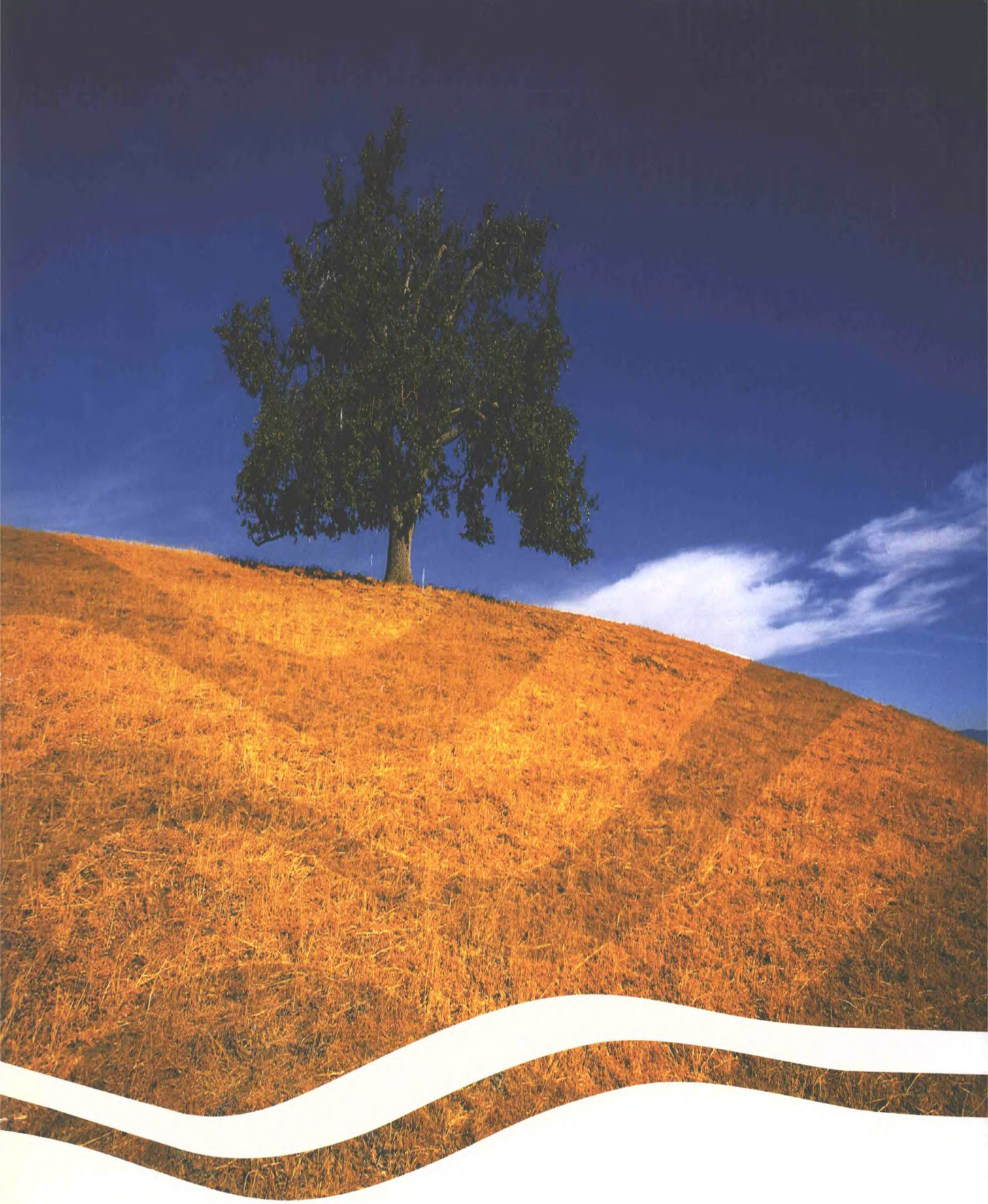


Annual Review 2000/1

Met Office

An Executive Agency of the Ministry of Defence

Annual Review 2000/1

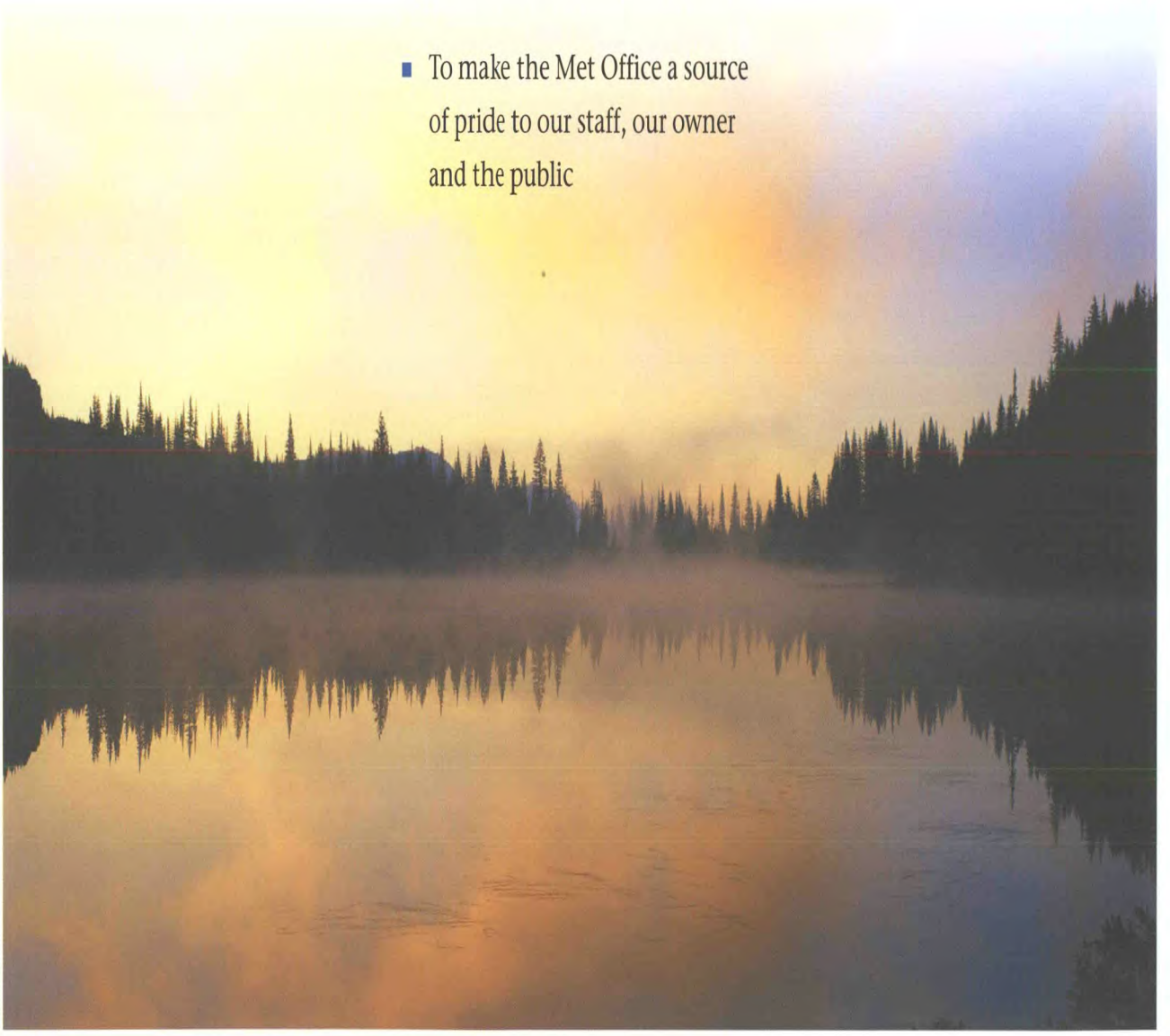
Vision

Through unrivalled know-how, to enable individuals, society and enterprises everywhere to make the most of the weather and the natural environment.

Goals

- To lead the world in advice on the weather and the natural environment

- To make the Met Office a source of pride to our staff, our owner and the public



Annual Review 2000/1

Contents

Introduction

About this Review

This *Annual Review* provides our customers and staff with a summary of our main activities during 2000/1 and of our performance against key targets. We hope that it will also be of interest to members of the public.

The Review is in three main sections. Following the Chief Executive's overview, the section *Meeting our customers' needs* provides information about how well we have delivered our core customer services and developed new ones. *Progress for our future* looks at what we have achieved in implementing our key strategies, while *Our future business strategy* outlines our plans for the next few years. We have also included a *Glossary* on page 32.

Readers might like to know that we also produce two related publications — our *Annual Report and Accounts 2000/1*, aimed at providing the Ministry of Defence (MoD), as our owner, and Parliament with a review of our activities, and the *Scientific and Technical Review 2000/1*, aimed at providing the worldwide scientific community with information about our scientific and technical programmes.

To obtain a copy of the *Annual Report and Accounts 2000/1*, please contact The Stationery Office — see inside back cover for details.

To obtain a copy of the *Scientific and Technical Review 2000/1*, please contact our Communications Branch — see inside back cover for details.

Alternatively, you might like to view both documents by visiting our web site at www.metoffice.com

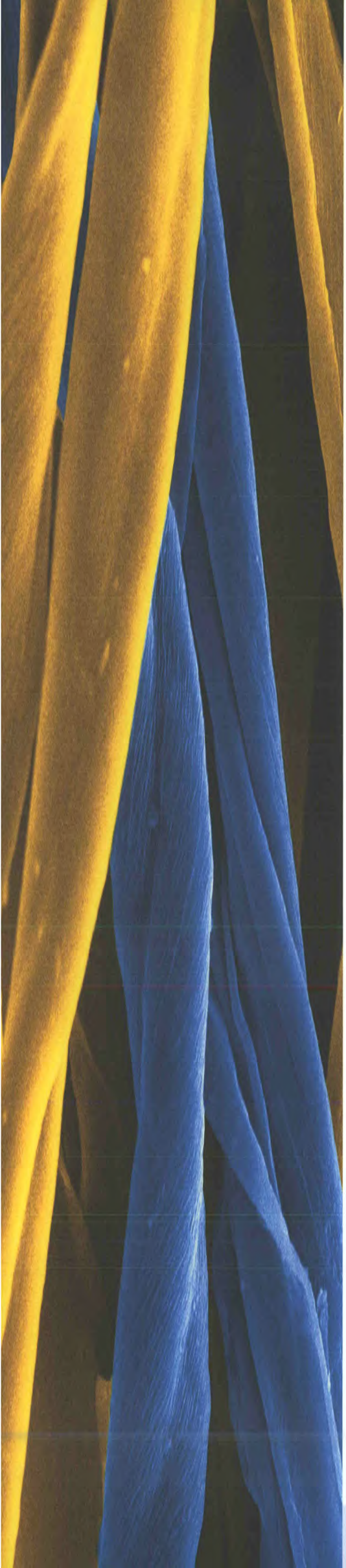
About the Met Office

The Met Office, formed in 1854 as a small department within the Board of Trade, was taken under the wing of the Air Ministry just after the First World War, later moving into the Ministry of Defence. It became an Executive Agency in 1990, and started operating as a trading fund in 1996.

The Met Office employs around 2,100 people, over 70% of them scientists. Some 950 staff are spread across more than 80 locations around the UK and overseas. The remainder work at our main offices in Bracknell, Berkshire.

Highlights of 2000/1

- Successfully achieved five out of six key targets
- Achieved £13.6 million of strategic investment
- Good forecasting of autumn extreme rainfall events
- Excellent outcome to the review of our Hadley Centre for Climate Prediction and Research climate modelling performance
- Successful launch of new vision and brand
- Redesigned web site leads the field for weather information and wins education award
- Exeter chosen as our preferred future location
- Achieved *Investors in People (IiP)* re-accreditation
- *Time and Place* wins prestigious Mobile News award



Chief Executive's overview

The past year will probably be best remembered for two notable events – floods throughout the UK and the outbreak of foot-and-mouth disease. In both these events the Met Office has played a crucial role, illustrating the breadth of our activities and the positive impact we can have on individuals, society at large and business. The heavy rainfall leading to flooding was well forecast by the Met Office, giving timely warning to the general public and the emergency services, while our work on the airborne dispersion of the foot-and-mouth virus has helped keep the spread under control as well as informing critical policy decisions.

More generally, our success over the past year is confirmed by the fact that we met five out of six key performance targets, with forecast accuracy, service quality and overall efficiency significantly above target. At the same time, we exceeded our profit target while investing over £13.6 million to ensure our future success. The one disappointing area was the financial contribution from our commercial services, but even here we made real progress, with revenue and profit both up on last year.

I am also delighted to report that our internationally renowned work on climate change won further recognition through a formal review which concluded that our Hadley Centre was '...the number one climate modelling centre worldwide'. At the same time, our new mobile internet service, *Time and Place*, won the 'Most Innovative Service (Mobile Internet)' award in the Mobile News Awards 2001. These illustrate our determination and success in maintaining our pre-eminent position in the science of meteorology and in the services we offer our customers. But we must do even better if we are to succeed in the future.

Relocation to new custom-built accommodation is vital to our future business success. In November we chose Exeter as the location for our new 'home'. We expect to have selected and agreed terms with a final development partner by September 2001. Alongside our work on relocation, we have been reviewing, refining and documenting our main processes prior to moving, so that we can achieve the ISO 9001 standard as well as ensuring we are lean and fit before we move.

Peter Ewins, Chief Executive

We are already responding to new opportunities within the natural environment – collaboration with the Centre for Ecology and Hydrology to open the Joint Centre for Hydro-Meteorological Research (JCHMR) in Wallingford is just one example. Indeed collaboration is high on our agenda, as reflected in our new agreements with Météo-France and Met Éireann, our French and Irish counterparts.

We will also continue to develop our underpinning science, investing in new infrastructure – especially greatly increased supercomputing capability – research and development and innovation. Our continuing success in numerical weather prediction (NWP), our automation programme and our new 'Weather and Health' service all serve to illustrate our commitment to science and technology and to our success in exploiting them.

Successful business development is heavily dependent on well-qualified and highly motivated staff. This year we have invested strongly in 'people training' and have been successfully re-accredited as an *Investor in People*. Our commitment to training, both performance and management, remains as strong as ever, and our training programme will continue while we make the move to Exeter.

The weather business is changing. We must anticipate that change and keep at least one step ahead. We now have a clear vision to help provide a focus, and new accommodation will be vital to our success. I know that the next two years will be very challenging – keeping to our plans for growth while moving nearly 200 miles will not be easy. But, at the same time, those two years will be exciting, and a major step in the development of the Met Office.

My directors and I are committed to delivering a wider range of quality services to our customers. We are also committed to making our move to Exeter as painless as possible for our staff, with no more than minimal impact on our customers. We are well on the way to creating the Met Office of the future and to adding another chapter to our proud history.

"This is a year in which we have almost certainly forecast the severe weather events better than ever before, communicated them more boldly than ever before – and had a greater impact on the safety of life and property than ever before."

Colin Flood, Forecasting/Operations Director

Meeting our customers' needs

The remarkable weather of the past year, not least the record-breaking wet autumn, presented us with three significant challenges – providing accurate day-by-day forecasts of the extreme weather events, at home and overseas; developing and marketing our customer services; and continuing to address the possible underlying cause of the extreme weather: climate change.

Forecasting the weather

In the UK

Last year was the wettest since 1872, with record-breaking rainfall in April and again in the autumn. Throughout the worst of the weather, we gave our customers in central and local Government, especially the Environment Agency (EA), accurate warnings and forecasts of all the major severe weather events. We were able to do this by using our improved numerical weather prediction (NWP) models and other new forecasting and visualisation techniques, coupled with better human interpretation of all the information. Our success is typified by a comment from John Prescott, Deputy Prime Minister, who praised the Met Office for a 'brilliant' performance.

From February 2001, we also provided specialist advice to the Ministry of Agriculture, Fisheries and Food (MAFF), the EA and the emergency services in relation to the foot-and-mouth outbreak. Our services included weather forecasts for field teams and, in collaboration with MAFF and the Institute of Animal Health, detailed computer modelling of the possible airborne dispersion of the disease.

The following examples give a 'taste' of our UK weather forecasting performance.

- 3/4 June – successful advanced warning of the very heavy overnight rainfall which brought flooding to northern England, in particular the Calder Valley in West Yorkshire. This event demonstrates well the effect of heavy rain falling over an already saturated catchment.

- 28-30 October 2000 — after a period of very wet weather in early October, this was another exceptionally wet period, many places in the Midlands and southern England seeing almost 50 mm (2 inches) in 12 hours overnight on 29/30 October. Our forecasts of the track and intensity of the three depressions involved were accurate and consistent, allowing us to give four days' advanced warning of damaging severe winds and heavy rainfall.

- 5-8 November — our medium-range forecasts were extremely good, the three- to six-day predictions showing near-perfect forecasts of a significant depression in the English Channel. Again, this allowed us to issue confident warnings of further disruption due to heavy rain, greatly helping the EA to manage the consequent flooding.

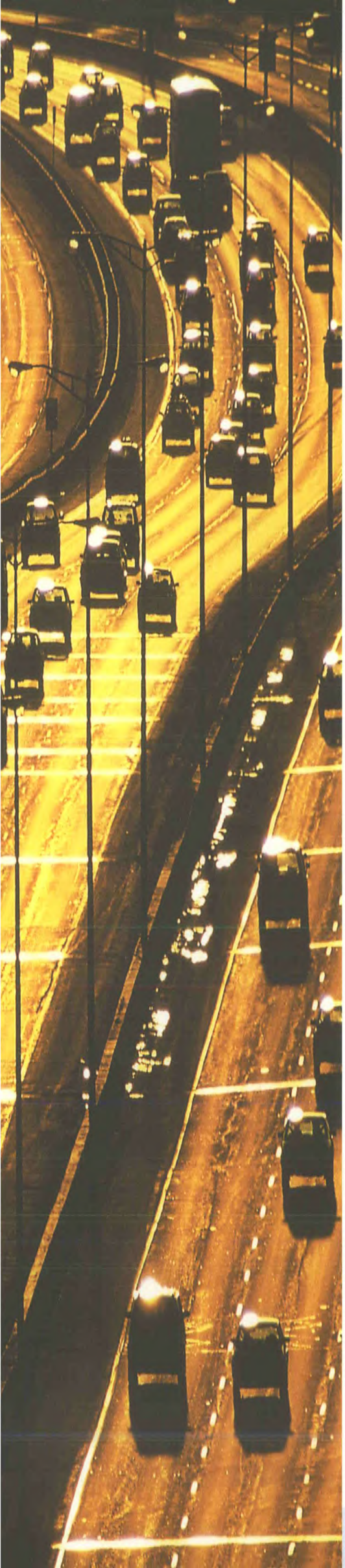
- 'White Christmas?' — forecasts in the lead-up to Christmas provided helpful guidance on the change from the very wet autumn to a cold, drier picture. The 'big freeze' that followed more general snow on the 27 December was correctly forecast, as was the return to milder weather in the new year.

Overseas

As in previous years, we have provided significant support to our armed forces around the world. For example:

- after almost eight years, the Mobile Meteorological Unit (MMU) at Divulje Barracks at Split in Croatia closed in December 2000 (The forecasting commitment has been handed over to the Royal Netherlands Air Force. The MMU remains in the Bosnia theatre of operations at Gioia del Colle in Italy and in the NATO Combined Met. Unit at Sarajevo and Pristina.);

- short-notice forecast services were provided to the Department for International Developments in support of their response to the earthquake disasters in Gujarat, India and in El Salvador, and to the floods in Mozambique.



Developing and marketing our services

This year has seen us take great strides in the way that we have developed and marketed our services. The proliferation of new electronic systems and media has enabled us to package and promote our offerings in new ways, and in some areas we are truly leading the field.

Web-based and mobile services

This year saw us create web-delivered service solutions for Shell and Railtrack. These have proved so successful that they have become the de facto 'reference sites' for the oil and rail industries in the UK, clearly signposting the future delivery potential for weather services.

The Met Office has also been highly innovative in the promotion of our products and services. The launch of *Time and Place* in November 2000 (see page 20) required that we build general public awareness of both the product and the Met Office's new identity. We achieved this with a national advertising campaign — the advert being seen on billboards in London and in all the national and specialist leisure press. The campaign also included internet advertising; a first for the Met Office. We intend to build our sales and marketing strategy for the coming year on this improved awareness of our new capabilities. See our web site for details — www.metoffice.com

Computer systems for Defence

Our unique forecast visualisation systems, Horace and Nimbus, have continued to impress the overseas military sector, especially within different areas of NATO. We have pursued many promising sales opportunities during the year. Most significantly, we have completed a deal with our own Royal Navy that will eventually see our systems installed in over 80 ships.

Aviation

The Met Office has joined a consortium called FARANDOLE, comprising European air traffic control (ATC) organisations and software consultants. FARANDOLE, amongst eight other consortia, has been chosen as one of EUROCONTROL's preferred contractors. As the only meteorological service provider in all of the consortia, we have the potential to win any of the EUROCONTROL tender requests that have a weather element. Already, in collaboration with DERA, we have been awarded a contract to review the retrieval of atmospheric data from civil airliners, using global positioning system satellite technology.

Good opportunities exist for the provision of automated, low-level aviation weather products overseas. We expect to collaborate with other NMSs to deliver these services, possibly using some locally-based staff. We are presently putting together a business plan to exploit these opportunities.

Finally, we have already responded to the general aviation community by making far more information — for example, airport forecasts and observations — freely available on our web site.

Customer Centre

Since becoming a 24-hour, seven-day operation in April 2000, the role of the Customer Centre has grown considerably. Its main tasks are to deliver the Public Meteorological Service (PMS) and deal with aviation enquiries. Through careful investigation of customer needs, Customer Centre staff also sell an increasing range of commercial products, generating revenue in excess of £1 million.

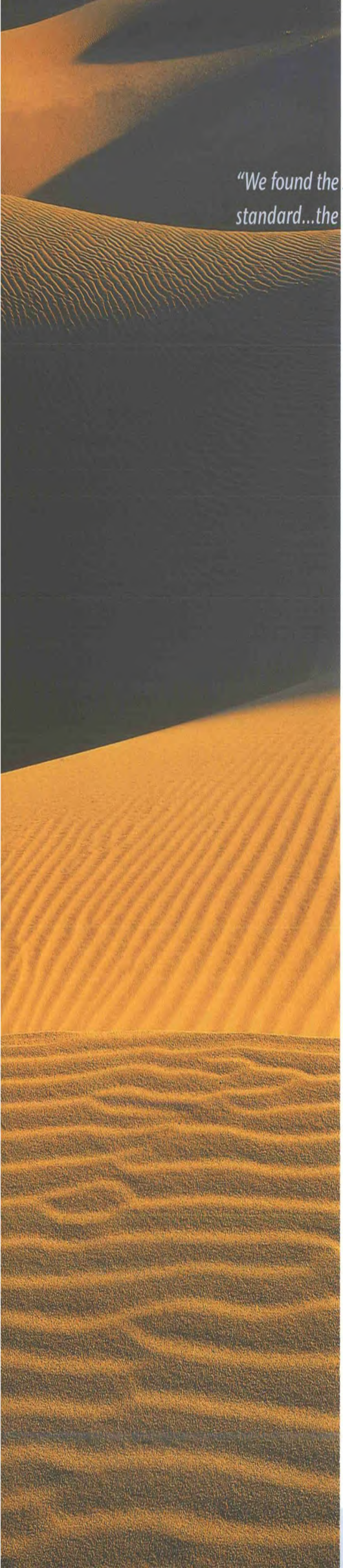
In the future, the Customer Centre will manage most smaller commercial accounts and provide registration, helpdesk and support functions for an increasing number of internet-based products, including our new mobile service *Time and Place*.

Impacts of severe weather

We have carried out important work in assessing the assets at risk during severe weather and the actions that can be taken by emergency authorities to mitigate their impact. It is becoming clear that considerable savings can be made in many areas of the economy if these issues are better understood. We expect to take the work forward with the relevant Government departments and agencies during the year ahead.

Education

In June 2000, we launched a new range of teaching materials, including a new interactive web site designed to integrate weather into the National Curriculum. The new aids, approved by the National Grid for Learning, aim to broaden the teaching of weather into a range of cross-curricular subjects — not just science and geography but also English, IT, history and maths. You can visit the web site at www.metoffice.com/education



"We found the scientific performance to be outstanding and of the highest international standard...the Hadley Centre is the world's number one climate modelling centre."

Climate prediction and research

The Met Office's Hadley Centre for Climate Prediction and Research celebrated its tenth anniversary in May 2000. Its two main customers, the Department of the Environment, Transport and the Regions (DETR) and the MoD, chose this year to carry out a major review of the Centre's capability and performance. Coupled with input in November to the Sixth Conference of the Parties to the UN Framework Convention on Climate Change, this has been a particularly busy year.

Performance review

An external review of the Hadley Centre's performance, completed in October 2000, aimed to consider the excellence of the science carried out, whether it had met the needs of policy-makers and other users, and whether this dedicated research programme is the best and most cost-effective way to deliver what is needed.

In response, we outlined the Hadley Centre's achievements over its ten-year history and our research strategy for the next five years. The consultancy firm contracted to carry out the review, ESYS, appointed a seven-strong international Science Expert Panel, four of whom visited the Hadley Centre in May 2000. Another group of seven international scientists was asked to comment on the publications of the Hadley Centre.

The review was extremely positive and found '...the scientific performance to be outstanding and of the highest international standard' and that '...the Hadley Centre is the number one climate modelling centre worldwide'. Just as important, the science of climate change is judged as being directly relevant to policy, and the dedicated programme at the Hadley Centre is seen as the best way to deliver the required advice.

Advice to ministers

The international negotiation of the Kyoto Protocol reached a critical stage in November this year at the Sixth Conference of the Parties to the UN Framework Convention on Climate Change, in The Hague. The Hadley Centre had a strong presence at the conference. Our staff gave a well-received presentation, attended by the Rt Hon Michael Meacher, Minister for the Environment, and the press. Our presence proved especially important for the negotiations on carbon sinks.

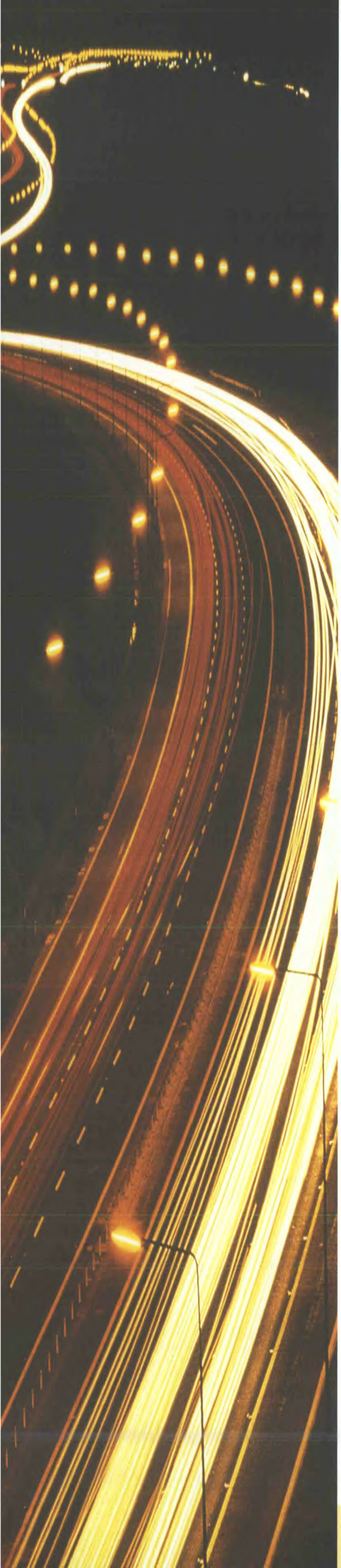
Science highlights

- Our climate model, including all the natural agents that can change climate and those produced by human activities, has shown that the observed global temperature rise over the past 40 years can be largely attributed to the human production of greenhouse gases.

- The unique use of a fully interactive land and ocean biosphere component in the climate model has shown that the positive feedback between land ecosystems and climate change may add several further degrees of global warming over the next 100 years.

- We have calculated that the effect of high-latitude planting of so-called Kyoto forests – to absorb carbon dioxide – can actually further warm the atmosphere.

- 2000 was the 22nd consecutive year with the global mean temperature above the 1961-90 average. We expect 2001 to be warmer than 2000 but unlikely to be warmer than 1998, the warmest year on record.



Progress for our future

Over the past 12 months, we have built on a number of strategies introduced during 1999/2000. These directly support our new vision and goals – see page 2. We believe that successful progress with these strategies is vital to the Met Office's continued development. The following sections give a summary of the progress made in these important areas.

Relocating our head office and centre of operations

This major programme, initiated in January 2000, will provide us with new accommodation that will, through good visual and technical design, demonstrate our commitment to protecting and enhancing the natural environment. We expect the ambience of the new building to encourage more-open communication, in turn leading to greater sharing of knowledge and innovation in the way we work. We also expect to make a substantial reduction in our operating costs – see page 26.

While running to a very challenging timetable, the programme remains on track. We have made significant progress as follows.

January 2000	Approved the outline business case and initiated our Relocation Programme
March/April 2000	Initiated a site search across the UK and also a competitive procurement for the new accommodation and a range of support services
July 2000	Invited nine consortia to submit outline proposals Directors chose four potential sites (Norwich, Bracknell, Reading and Exeter)
August 2000	Outline proposals received from eight consortia
September 2000	A shortlist of three consortia were invited to negotiate with the Met Office with a view to submitting full tenders in late February 2001
November 2000	Exeter chosen as preferred site One consortium withdrew from the bidding
February 2001	Plans for two different building designs submitted to Exeter City Council for planning permission Tenders received from both bidders

During March and April 2001 we evaluated the tender bids. We chose a preferred bidder in early May 2001 and expect to award the contract by September, allowing work to begin on site in the autumn. Our intention is to have moved all our operations and support activities to Exeter by Summer 2003 (date revised since the *Annual Report and Accounts 2000/1* was laid before Parliament).

Staff and their families have been kept fully informed of progress through a variety of channels. The most notable of these has been the series of face-to-face seminar presentations given by directors, members of the central relocation team and guest speakers from Exeter City and Devon County Councils. We expect these to continue throughout the coming year. We plan to carry out reconnaissance visits for staff and families in May, June and July.

We are absolutely committed to ensuring that this programme, so vital to our future success, progresses to target and that our staff can make the move with as little upheaval to their working and personal lives as possible. We are equally committed to ensuring that customer services remain as unaffected as possible during the period of transition. We will keep all our customers informed of our plans and progress during the coming two years and look forward to welcoming them to our new home in 2003.

Strengthening our brand

In Spring 2000, we completed our work on the new long-term vision and goals for the Met Office — see page 2. This included creating values and behaviours for the organisation that will help us to achieve our goals. Together with our promise to customers and the features that differentiate us from competitors, these define the Met Office brand.

On 13/14 November 2000, we launched our new vision, direction and strategies to staff and customers, together with the new logo and identity that represents this changing emphasis.

The staff launch was designed to give the maximum number of employees access to the same information at the same time in a cost-effective manner. This communication approach, which included a brochure for all staff, a video by the Chief Executive, and direct access to him, either face to face or on the phone, was especially commended by the external *IiP* assessor in the interim accreditation review — see page 24.

The customer launch was very well received and included presentations by four existing customers, aimed at illustrating how we are putting our new strategies into action.

The introduction of the new identity was a big project that initially involved a significant but relatively small team from across the organisation and ultimately involved everyone. We are now carrying out a training programme to help staff to manage change, especially in terms of corporate culture, and to understand the benefits of the new direction and the brand that represents it.

Diversifying into the environment

In line with our new vision, we intend to diversify our services into the wider natural environment. Our focus so far has been on four areas – hydrology and water resource management; environmental stresses; weather and health; and the environmental impact assessment market.

Hydrology

We have started building a small team of hydrologists to meet the need for services, mainly in the UK and Europe but also further afield. Linked to this, we have also worked with the Centre for Ecology and Hydrology to open the Joint Centre for Hydro-Meteorological Research (JCHMR) in Wallingford.

During Autumn 2000, the Bracknell-based team worked closely with staff at JCHMR to secure a Ministry of Agriculture, Fisheries and Food contract to examine the floods of 2000 in the light of climate change. The final report was completed in March 2001. There are many more contract bids in the pipeline.

Weather and health

During Spring and Summer 2000, Dr William Bird, a GP employed by us since April 2000, and other specialist staff, worked with the Department of Health and the NHS to develop a forecast for emergency workload. As a result, from December 2000 we ran a successful pilot service – forecasting emergency admissions to acute hospital NHS trusts – in five areas of England. Following the success of this pilot, an excellent example of joined-up government at work, we were subsequently delighted to win £1 million of new funding from the Government's Invest to Save programme to further develop this important work.

Environmental stresses and impact assessment

Through funding from the MoD, in June 2000 we began studies into indicators of the environment that could provide input into analyses of regional security. We are developing the necessary techniques through a pilot study of water resources in China.

In Spring 2001, we recruited an expert in the field of environmental impact assessment. Good progress has been made in creating a business plan for development in this area.

Moving forward in Europe

...to accrue medium- and long-term benefits to the Met Office...by engaging positively with the relevant European and global bodies.

This strategy is all about co-operation and collaboration with other meteorological organisations, particularly in Europe, and we have thought widely about how best to realise benefits. For example, during October 2000, we undertook a tour of a cross-section of European national meteorological services (NMS) to gain feedback on their use of our global NWP model and forecast products. This allowed us to highlight possible changes to our forecast production and delivery, helping us to make our products much more easily available and valuable to a wider community.

In February 2000, we entered into an important bilateral agreement with Météo-France, the French national meteorological service. One follow-up to the agreement is the decision to develop jointly the next generation of computer forecaster workstations for both services.

In December 2000, we formalised ongoing discussions with Met Éireann, the Irish national meteorological service. As part of this co-operation, we have agreed a joint programme for extending the coverage of weather buoys off the west coast of Ireland — see also page 23.

We have also been active in EUMETNET, the organisation of European meteorological services. This year, efforts have particularly focused on the planning and operation of European observational networks.

Not only does Europeanisation help to provide an additional focus for our research and business, it also allows our staff to develop a better understanding of the role of the Met Office in Europe. In practice, this means we have:

- promoted professional staff exchanges with other European NMSs and organisations, including welcoming a forecaster from Météo-France to work at our National Meteorological Centre at Bracknell;
- introduced training in European languages at the Met Office College;
- introduced forecasting modules supplied by the École National de la Météorologie in our Met Office College *Training prospectus*.

Innovation

The Met Office has always been at the forefront of innovation in the provision of weather information. To ensure we continue to meet our customers' evolving needs, and, importantly, in line with our strategy of creating new products for developing markets, we embarked on a corporate innovation programme in July 2000.

During the summer, our Innovation Unit carried out a web-based perception audit amongst all our staff, and an external best practice study. The latter included discussions with Hewlett Packard and 3M, and advice from the Department of Trade and Industry Innovation Unit. Having taken these inputs to staff workshops, we created an Innovation Blueprint – a process that provides a series of actions to encourage and support continuous innovation.

Aspects of the Innovation Blueprint that we have already delivered include:

- setting up a web-based Innovation Postbox for staff to submit ideas, supported by a reward and recognition scheme. The scheme went live in December 2000 and generated 280 ideas by the end of March 2001;
- designing and running two-day management training courses to foster a positive approach to change and innovation;
- running a series of 'Creativity' training workshops – 72 staff were trained by the end of March, with an aim to train 400 staff by March 2002.

We have also created an Innovation Centre at our Bracknell site to encourage innovation partnering with our customers by 'showcasing' our latest innovative products and services.

Embracing the internet

Recognising the importance of the internet to the development of our business, in May 2000 we started a major programme to update our web site and launch a number of 'leading-edge' mobile weather services. We successfully went live with these at the launch of our new vision and identity on 14 November.

Our redesigned web site, recognised as a leader in its field, now delivers over 100 million pages each year. Used to demonstrate one of our forecasting systems during the Olympics in Australia, the site contains many new features, including:

- 'showcases' for over 150 products and services;
- an expanded Education area for use in schools — this won a Geographical Society Silver Award in April 2001;
- a wide range of current climate information for the UK, maps, tables and text;
- free observations, forecasts and charts for registered aviation users;
- new pages for energy traders, providing UK and European temperature and rainfall data;
- a new service for the offshore sector, providing site-specific forecasts and weather charts;
- monthly reports of past weather for the construction industry, accessible using online credit card payment;
- a web-based version of GeoProof, our service for insurance companies to verify weather-related claims.

In December 2000, we started to carry banner advertising on some pages — a very new concept for us. The site can be visited at www.metoffice.com

Our new mobile service, *Time and Place*, won the Mobile News Awards 2001 'Most Innovative Service (Mobile Internet)' award in March 2001, acknowledging the huge achievement of a Government organisation in delivering such a novel service. Based on our Nimrod short-period forecast system, *Time and Place* allows users to set up their favourite locations, using a mapping interface, and then get hourly forecasts on their mobile phone using text messages or using their mobile internet (WAP). Alternatively, users can simply input a postcode directly into their phone to retrieve a 'local' forecast.

Keeping the IT edge

- Massive data storage system improves service

During the year, we introduced a mass data storage (tape) system, completing full acceptance tests around the end of the year. The system, known as MASS, has eight processors at its heart with 4 Gb memory, a 5000 Gb disk cache and 16 tape drives. MASS provides a system that can grow – up to 953 Tb (terabytes) in a single repository – to meet our increasing office-wide data-archiving requirements for the next five years. It uses standard access methods and gives all users improved responsiveness and productivity while allowing the phasing out of slower, less-reliable equipment.

- Shared telecommunications network reduces costs

Implemented in Summer 2000, our Regional Meteorological Data Communication Network provides us with a new telecommunications network to link national meteorological centres in Europe. This different approach to providing Global Telecommunications System links between centres emphasises our European co-operation, those involved being able to reduce the variety of telecommunications links and enjoy the benefits of shared, managed services.

- Improving access to information

At the same time as developing better European links, we have also significantly improved the telecommunications network between the Met Office at Bracknell and our front-line stations around the UK. As stations come online, increasing numbers of our staff have started to enjoy access to corporate information, in some cases for the first time. This flexible network uses open systems technology and is more cost-efficient than the previous network.

Developing our science

Improving the performance of our NWP models

Developments in our NWP models have continued to feed through as significant improvements in the NWP skill index — see page 27. Contributions to this excellent result have come largely from introducing:

- improvements to the way we assimilate data into our global and small-scale models (May and June 2000 respectively), allowing more-timely and more-accurate use of observational data. We expect this to increase our forecast skill, particularly for extreme weather events;
- a new scheme for representing the physical exchanges between the Earth, sea, ice and the atmosphere (October 2000), expected to improve forecasts of 'surface' temperatures and winds.

We have also made good progress with the development of a radical new representation of the dynamics of the atmosphere in our NWP model. This has meant revising our extensive observation processing and assimilation schemes. Although initial trials have shown encouraging progress, it is clear that we still need to make improvements to the new version of the model before results exceed the current operational system.

Automating observing

We have enhanced our semi-automatic observing system to provide fully automated working on sites where observations by trained observers were previously considered essential. A trial at Aviemore in the Cairngorms and Hemsby in Norfolk ended successfully in March 2001, allowing plans to progress for the introduction of the improved system at a number of observing sites over the next 12 months. This will provide more-frequent and cheaper observations than previously possible, without compromising quality.

Better rainfall advice

In partnership with the EA, we have begun the roll-out of an improved processor for our weather radar equipment in England and Wales. This is already providing better 'pictures' and wider coverage than before. A new system at the Chenies site in Bedfordshire is providing information directly to the EA's Thames Region Flood Warning team. During the very wet weather of November 2000, enhanced radar coverage allowed improved assessment of flooding.

Co-operation brings enhanced buoy network

The Met Office, the Marine Institute of the Republic of Ireland and Met Éireann agreed to collaborate in setting up the Irish open-ocean buoy network of five weather buoys and to jointly develop the next generation of such buoys. One of our existing weather buoys, on loan to the Marine Institute, was deployed in November 2000. We plan to provide a second buoy on repayment, and to help specify the new systems. Both organisations will benefit from the resulting new designs and data to upgrade their respective operational networks.

Modelling and observing the oceans

Operational oceanography is a key area of diversification for the Met Office. Over the year, in response to customer needs, we have:

- introduced an Atlantic version of our deep-ocean forecasting model to our operational NWP suite;
- implemented a shelf-seas model and a wave model for UK waters, giving wave-current interactions;
- deployed our first 'ocean floats', part of the UK's contribution to the international 'Argo' programme to observe the global oceans.

Predicting and understanding atmospheric pollution

Increasingly, the Met Office is providing the Government with informed, authoritative and timely advice on the important, complex scientific issues surrounding atmospheric pollution. Predicting and understanding how pollutants are transported in the atmosphere is a particular issue of concern.

We applied our NAME computer-based dispersion model to a range of 'pollution' problems. These included a study of the impact of Saharan dust on UK air quality, estimating European source strengths of greenhouse and ozone-depleting gases, forecasting air quality over the UK and investigating the origins and transport of nitrate aerosols.

This year also saw the start of a three-year project to develop a new, integrated dispersion model capable of predicting the spread of a wide variety of pollutants over the whole range of distances from as little as 300 metres up to thousands of kilometres.

Our people

This has been a very significant year for our staff. We have asked everyone to embrace a new vision and asked a number to take on the challenge of working in new fields.

We are putting in place a human resources (HR) strategy, better placed to support our business objectives, particularly relocation — see page 14. We expect relocation to generate a good deal of additional personnel-related work and have started work on reshaping our HR activities to address this and other related issues. We intend to ensure that the planned move to Exeter is achieved as smoothly as possible for all our people, whether or not they are relocating.

Other changes and developments have included:

- the introduction of a new performance appraisal system in April 2000;
- operational working, from June 2000, of the personnel element of a new HR database;
- the creation of a Staff Skills Index, to be baselined (as a key performance target) during 2001;
- re-accreditation in December 2000 as an *Investor in People*;
- establishment of an Assessment and Development Centre for staff seeking promotion to senior management.

Staff numbers have reduced during the year. As in previous years, a high proportion of our new entrants hold graduate qualifications in mathematics, physics or computing, in line with the need to maintain our lead in the field of meteorology. However, this year, we also recruited staff with specialist professional qualifications to fill roles in marketing and sales. We continued to attract support staff through the local employment service.

Staff recruited during 2000/1

	Male	Female	Total	Ethnic minority*	Disabled people*
Total	77	65	142	4	2

*All entrants were surveyed but some chose not to respond

It is our policy to recruit staff in accordance with the Civil Service Commissioners' Recruitment Code 1999. Individual appointments are made on the basis of fair and open competition. We did, however, have to take exceptional action to extend one casual contract beyond 12 months. This action was required to assist with a key part of our strategic diversification theme of 'Weather and health'.

Improving our business processes

Back in 1999, we analysed our business and identified 24 distinct business processes that cover the full spectrum of our activities. Our objective was to provide a framework to establish more-efficient business processes, to make more-effective use of staff time and to provide the framework for our planned relocation to Exeter.

Early in 2000, we reviewed each of the 24 processes in a rolling programme. During the year, we started implementing many of the recommended improvements, documenting the new processes and checking that they comply with the ISO 9000 standards. We propose integrating the final documented processes into an overall framework during 2001, followed by a nine-month 'bedding-in' period. We expect this to provide the evidence to demonstrate that we have attained the necessary standard for ISO 9000 registration by July 2002.

The benefits of this work are twofold — to provide greater efficiency throughout the Met Office, and to meet the increasing requirement from our major customers that their contractors have achieved ISO 9000 registration. We estimate that we have already accrued savings in excess of £250k.

Better management information

A prerequisite to the efficient management of business processes is the information needed to both manage their day-to-day operations and to allow process managers to make their processes ever more efficient. Generally, in the past, the former has been available but the latter — management information — has not.

Linked to the ISO 9000 work described above, we have started a review of existing and 'required' management information to address the problem; we plan to complete this by mid-2001. Thereafter, we will build a 'system' — our aim is to give process managers a single point of access to all the information they need, within the limits of cost-effectiveness.

Our future business strategy

Background

In the first few years as a trading fund, the Met Office made substantial profits. These were achieved largely by neglecting investment in almost all aspects of the business and prejudicing the future. During these years, income remained at about £150 million a year. Allowing for inflation, this represents a significant decrease in real terms, brought about by the increasing efficiency in operation which was passed on to customers through price reduction. Thus, the early days can be summed up as increasing efficiency, reducing revenue and under-investment.

Over the past two years, investment has been largely restored, while cost reductions have continued. However, revenue has not increased. We now plan a period of high investment (out of profits), increased revenue and further cost cutting. The first signs of progress can be seen in our results for 2000/1. There has been a small increase in income, costs have been reduced and staff numbers have begun to fall. There has also been substantial investment in the polar-orbiting satellites programmes, preparatory work for the move to Exeter and our new internet services. As we are funding these investment programmes ourselves, we have agreed with our owners that no dividend will be paid in respect of 2000/1.

Looking ahead

While overall income will increase, our traditional public sector income will continue to decline. We expect revenue to increase as we develop new sources of income within the public sector. We plan to become even more efficient — staff numbers continuing to reduce — in order to deliver these services at a price our customers can afford.

Investment will continue. The satellite programme will continue to receive significant funding, but our principal investment will be in the construction of new buildings in Exeter and in moving there. Moving our people will be a major upheaval for all concerned. However, once complete, the move will enable us to make further efficiencies through lower running costs and the adoption of improved working practices.

The Met Office is a robust business, with excellent staff, first-class products and services, and a solid, if reducing, customer base. We now face the challenge of increasing revenue and investment, reducing costs and staff numbers, while managing our move to Exeter. Progress during 2000/1 has been encouraging.

Performance against key targets 2000/1

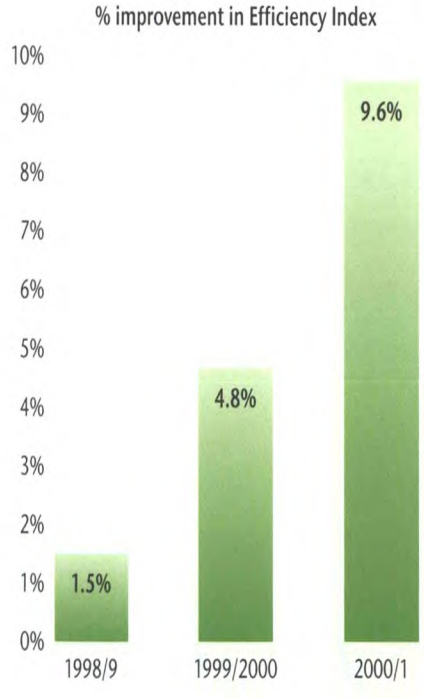
Our six key performance indicators (KPIs) provide the crucial overview of how well the business is performing. The Chief Executive and the Secretary of State for Defence agree annual targets for these KPIs and these are announced in Parliament. These targets, which are intended to be both challenging and achievable, provide a benchmark against which we and our stakeholders can judge our actual performance.

Accuracy

We run NWP models several times a day, every day, on both a global and a local (UK) scale. Since the accuracy of our published forecasts depends increasingly on the accuracy of these models, our NWP Index provides a good measure of our forecasting accuracy.

A new method of analysing data in our model, introduced in late March 1999, continues to produce significant improvement in NWP performance, measured over a rolling three-year period. We have exceeded this target.

Service Quality Index (SQI)



This index covers a representative range of services and products across defence, civil aviation, public and business users; the target level is agreed each year, based on specific customer requirements.

Particularly good performances from our Storm Tide Forecasting Service and OpenRoad have contributed to an excellent end-of-year result, well above the target.

Efficiency Index

Our Efficiency Index measures the change in outputs in relation to the costs for three major areas of our activities — core services, defence services and civil aviation services.

We have again been able to deliver improvements in efficiency, reflecting the increasing quality of our outputs and tight control over our costs.

Financial

Return on capital employed (ROCE) and strategic investments

This year, we agreed with our owner that we would not deliver any return on capital employed. Instead, we would invest significantly in the business. In the event, while investing £13.6 million in projects vital to our future, we have also produced a modest ROCE.

Commercial activities contribution

This indicator measures the financial contribution to Core and central services from commercially competed activities.

While we have increased commercial revenue since last year, we have not been able to meet the challenging contribution target we set ourselves.

Targets for 2001/2 (see Table right)

- To increase the NWP Index to 105.2
- To achieve a Service Quality Index of 107.8
- To achieve an Efficiency Index of 111.0
- To achieve a positive ROCE while making operating profit of at least £14.4 million before strategic investments
- To make further strategic investments of £15.9 million ± £1.5 million
- To deliver £4.4 million contribution from our commercial activities

Performance against key ministerial targets

Key ministerial targets		Targets, outturns and achievements 1998/9	1999/2000	2000/1	Targets for 2001/2
Efficiency					
Efficiency Index[1]	Target	n/a	n/a	103.7	111.0
	Outturn	*n/a*	*100.0*	*109.6*	
Quality					
Service Quality Index[2]	Target	104.8	105.0	107.1	107.8
	Outturn	*114.5*	*119.1*	*120.5*	
Financial performance					
Return on capital employed[3]	Target	n/a	2.9%	0.0%	>0.0%
	Outturn	*6.3%*	*3.5%*	*2.8%*	
Profit before strategic investments	Target	n/a	n/a	£13.7m	£14.4m
	Outturn	*n/a*	*n/a*	*£17.6m*	
Strategic investments[3]	Target	n/a	n/a	£13.5m	£15.9m ± £1.5m
	Outturn	*n/a*	*n/a*	*£13.6m*	
Commercial activities contribution[3]	Target	£1.1m[4]	£2.2m[4]	£3.575m[4]	£4.4m
	Outturn	*£1.8m*	*£0.3 m*	*£2.676m*	
Forecast accuracy					
NWP Index	Target	n/a	n/a	101.6	105.2
	Outturn	*n/a*	*100.0*	*103.2*	

[1] A revised form of the Efficiency Index, with a three-year target of 111.6 by 31 March 2003, was introduced with effect from 1 April 2000. Current index values are therefore not directly comparable with those from the original Efficiency Index, which covered the three years ending 31 March 2000.

[2] The baseline for the Service Quality Index is 100.0 as at 31 March 1997.

[3] See note 2 to the Accounts on page 50 of the *Annual Report and Accounts 2000/1*.

[4] The basis of the Commercial activities contribution measure changed with effect from 1998/9 and again from 2000/1. The targets and results are therefore not directly comparable across each of the past three years.

Additional key targets 2001/2

Other performance

Staff Skills Index. A new key performance measure, based on staff competencies, as demonstrated in the annual staff appraisal form, has been developed. The baseline for this index has been set as 100.0 as at 31 March 2001. A target of 107.5 has been agreed for the period to 31 March 2004. Due to the nature of this measure, it has been agreed that interim targets are not appropriate, however, progress towards the 2004 target will be reported in future Annual Reviews/Reports.

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.

The management team

The operation of the Met Office is overseen by the Defence Meteorological Board, which advises the Secretary of State for Defence, the agency's owner. Management of the Met Office was largely carried out through quarterly meetings of the Met Office Board and monthly meetings of the Management Board.

Ann Tourle, then Company Secretary, left the Met Office on 12 May 2000 and was replaced by Martin Sands.

Board members at 31 March 2001 were (front to back):

Peter Ewins, Chief Executive

Jim Caughey, Technical Director

Martin Sands, Company Secretary

Roger Hunt, Public Sector Business Director

Colin Flood, Forecasting Operations Director

Paul Mason, Chief Scientist

Stephen Lawrenson, Managing Director Commercial

Philip Mabe, Finance Director

External members

James May, Director-General, UK Offshore Operators Association

Ms Anabel Gammidge, AMEC Border Wind

The Management Board comprised Board members plus Steve Noyes, Director of Relocation; John Ponting, Director IT; Alan Thorpe, Director Climate Research; and Dave Carson, Director NWP. In June 2000, Alan Dickinson replaced Dave Carson.

The Defence Meteorological Board

The Defence Meteorological Board advises the Secretary of State for Defence, owner of the Met Office. 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 2001 were:

Sir Roger Jackling KCB CBE, Second Permanent Under Secretary, MoD

Prof Sir Keith O'Nions, Chief Scientific Adviser, MoD

Mr JM Legge CB CMG, Deputy Under Secretary (Civilian Management), MoD

Air Vice Marshal P Walker CBE, Assistant Chief of the Defence Staff (Operations), MoD (replaced Air Vice Marshall G Torpy CBE DSO in March 2001, who replaced Rear Admiral S Moore in August 2000)

Mr PD Ewins, Chief Executive, Met Office

External members

Sir Brian Fender CMG, Chief Executive, Higher Education Funding Council for England

Mr CM Brendish CBE, Deputy Chairman, CMG Admiral plc

Mr David Filkin, TV producer/author — retired

Glossary

Atmosphere–ocean model

Using actual measurements of ocean temperature, our atmosphere-ocean model produces real-time analyses and forecasts of the temperature, salinity and currents of the deep ocean.

Carbon sinks

An area on the Earth's surface that absorbs carbon dioxide from the air.

Investor in People (*IiP*)

A national quality standard that improves investment in staff development and training, which we hope to achieve as part of the *Improving our Performance* process.

ISO 9000

A family of international standards that describe how quality management systems should be set up and managed, corresponding to the working practices expected from an 'excellent' company.

Mobile Meteorological Unit (MMU)

Our team of Met Office weather forecasters, who are 'ready' to deploy anywhere in the world to provide local forecasts and advice to our defence customers.

Numerical weather prediction (NWP)

Our primary method of weather forecasting — by solving a set of equations, a computer model of the atmosphere shows how weather conditions will change over time.

OpenRoad

Our system for predicting road surface conditions by analysing data from a network of road sensors; primarily used for road gritting purposes during the autumn and winter.

Polar satellite programme

A programme of launches of polar-orbiting satellites — those that orbit the earth passing over the poles — controlled by EUMETSAT, the European organisation responsible for the exploitation of meteorological satellites.

Upper-air observations

Weather observations, taken at various heights above ground by weather balloons and aircraft, for use in our forecast models.

Wireless application protocol (WAP)

A system that enables users to access the internet via their mobile phone.

World Meteorological Organization (WMO)

Comprising over 160 states and territories, WMO is a specialised agency of the United Nations, encompassing the field of meteorology.

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To obtain a copy of our *Annual Report and Accounts 2000/1*, please contact The Stationery Office, PO Box 29, Norwich, East Anglia NR3 1GN

Parliamentary hotline: Locall 0845 702 3474

Fax orders: 0870 600 5533

E-mail: book.orders@theso.co.uk

www.ukstate.com

To obtain a copy of our *Scientific and Technical Review 2000/1*, please contact our Communications Branch — see table left.

If you would like more information on any particular topic, please contact the most appropriate person directly, as shown in the table. Alternatively, if you are unsure about who to contact, please call our Customer Centre on 0845 300 0300.

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