



Barometer

Magazine Issue 31 | www.metoffice.gov.uk



Getting
the weather
message out



Dee Cotgrove, Executive Head of Media and Communications, outlines the importance of reach and engagement in our role as official forecaster for the nation and describes how new digital media is shaping the way we interact.

Welcome

Reaching and engaging audiences

The public particularly come to us in times of severe weather so it is vital that we are trusted, listened to and acted upon. Therefore, we make our forecasts as accessible as we possibly can.

We also know that weather is of daily interest to the British public. We live in a changeable climate and so provide content that services that continual interest.

Public interest – public trust

Public trust in the Met Office is high. Figures from regular surveys show that around 80% of people trust us, either a little or a lot. It is essential that the public feels confident in our forecasts and we know the drivers of trust are accuracy, professionalism and expertise, and our science and technology.

As weather impacts on so many aspects of our lives, we work with a range of partners. For example, we work with the highways agencies across the UK providing safety information for the road network and with tourist boards to relate the weather to pastimes and interests. See page 9 to read about how we are communicating through new, innovative partnerships.

Digital is more efficient

Like other public sector organisations we are acutely aware of the need to be efficient. Innovative digital delivery is one important way of achieving this.

In the multi-media, digital age, making our forecasts accessible and providing relevant content has, in some ways, been made easier. The public can access forecasts from our own channels, with audiences broadening out from traditional broadcast content consumption to online video, apps, six-second Vines (looping, animated videos), as well as social engagement with personal referral.

Our current reach is wide, with 850,000 followers on social media (300,000 of these on Twitter), over 3.5 million YouTube views and 5.4 million views of our Vines. Our app has had over 12 million downloads and will be upgraded soon (see page 13 for more about our app). Our content is shared widely and even trends on Twitter at times (see page 21).

We also work with a range of media partners. Our video and graphical content is increasingly posted online by news providers such as the Mail Online and The Telegraph (see page 11 for more on our work with media partners including print media and TV broadcasters).

Nothing without people

With such an attention on new digital media it is important to remember that the people component remains vital. For instance, Met Office weather advisors support decision making during severe weather, often helping emergency responders with particular concerns in their regions. See page 5 to find out how we're listening to emergency responders, finding out how to improve our knowledge of what matters to them.

Weather presenters (page 22) many of whom trained with the Met Office, are the familiar faces on TV helping people make informed choices. We are also finding that our operational Met Office forecasters are increasingly popular on our daily online video forecasts. The Met Office continues to train people all over the world in weather and climate. One recent example is our climate modelling training in Tanzania (see page 17).

People love sharing stories about the weather. Our Weather Observations Website (WOW) enables crowdsourcing and sharing observations of weather – from temperatures to snow depths (page 4). WOW is not only helping us to see the real-time impacts of weather on the ground, it is even helping our outreach to young people, feeding the next generation's interest in weather. 🌩️

Dee Cur

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WIN!



Win a copy of *Come rain or shine* by Storm Dunlop



In brief

A quick look at the news and updates from around the world of the Met Office.



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21-CMP11

COP21

From 30 November to 11 December Paris will host one of the most important climate negotiations since the Kyoto Protocol came into force in 1997; the

United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP21).

Comprising over 190 world Governments, COP will convene for the 21st time, with the intention of reaching a new global agreement to mitigate climate change and keep global average temperature rise

below 2°C relative to the level before the industrial revolution. The Met Office plays a lead role in providing impartial scientific advice to Government to underpin the UK's climate negotiations.

As in previous years, we will attend the Paris meeting – known as COP21 – to communicate to the several thousand conference delegates the most relevant scientific findings and to provide scientific support to the UK Government's negotiators in the Department of Energy and Climate Change (DECC). COP21 is an opportunity to share the Met Office's latest science on climate change to a large and diverse audience including the many hundreds of scientists and policy makers who use our science to inform their research and decision-making.

Professor Dame Julia Slingo, Chief Scientist at the Met Office, recognises the importance of the Met Office's role in providing sound scientific evidence on which decision-makers can make the most informed choices on how to tackle the effects of climate change.

Julia said, "The COP21 meeting is an excellent example of how world-leading science from the Met Office Hadley Centre is pulled through to enable critical decisions to be made that will affect us all, from societies and governments to businesses and industries. Shaping our science around societal needs is a core part of the latest Met Office Science Strategy, and we will continue to support all our customers by providing climate science and services to help them respond to the challenges of climate variability and climate change." 📌



50th anniversary of Numerical Weather Prediction

November is the 50th anniversary of the launch of the first operational Numerical Weather Prediction (NWP) system.

Numerical models are at the heart of our forecasts and warnings as well as much of our research and

development. As the Met Office has developed, numerical weather models have marked our transition in to a world-leader in weather science.

The 50th anniversary will be marked on Wednesday 18 November with the Royal Meteorological Society holding a national meeting at the Met Office. The meeting will look forward to the challenges and opportunities in the future, and celebrate the collaborative nature of NWP development. 📌



Charity of choice

Met Office staff have chosen the RNLI as our new corporate charity. Every three years the Met Office chooses a new corporate charity. Five charities were shortlisted from seventy five applicants and, in August, hundreds of Met Office staff voted to choose the Royal National Lifeboat Institution (RNLI).

For the last three years, WaterAid was the Met Office's corporate charity and we raised over £20,000 helping transform the lives of over 1,300 people around the world. Hopes are high that the new relationship can be a similar success.

Katie Hickmott, Partnership Communications Manager at the Met Office said, "There are clear

connections between the Met Office and the RNLI and we are focussing on developing the already strong relationship we have."

The bond between the two organisations is not just about raising money. By working together we aim to develop a communication programme and communicate forecasts, warnings and safety information to the widest possible audience.

Ros Whitlock from the RNLI said, "We are delighted to have been chosen as the Met Office's charity. The next step will be to work out what our partnership will involve from both a fundraising and non-financial perspective. We look forward to setting this partnership up and really appreciate the support of all of the Met Office employees." 📌

A lifelong passion

An interest, a fascination, a passion – all words that are used in relation to the weather, it holds a spell over many of us. With the Met Office Weather Observation Website (WOW), anyone can share their weather experiences and observations, anywhere in the world. This year WOW has encouraged children to step into the world of weather – hopefully developing an interest that will become a lifelong passion.

Launched in 2011, the Weather Observations Website (WOW) has enabled weather enthusiasts all over the world to log and share their weather observations and photographs. Developed by the Met Office with support from the Royal Meteorological Society and the Department for Education, WOW provides an online hub for weather observations and weather enthusiasts in more than 170 countries.

Fun for kids

This year, there has been a strong focus on engaging with children through schools and families. A video explaining how children can take their own weather observations was a huge hit. It highlighted how children can be a part of the weather forecast, from their own back garden – create personalised observations and see the observations ‘live’ on WOW.

A partnership with BritMums, the UK's largest parent blogger community, involved a ‘Twitter Party’ to raise awareness amongst parents. Meanwhile there was also a competition with children entering via social media and our website for the chance to visit the Met Office and become a forecaster for the day.

Next is WOW Schools. This is an exciting pilot project where schools will set up their own weather station, build hands-on observing kit and submit their own weather observations and impact reports.

To support this, the Met Office outreach team has been preparing educational resources about how weather data is collected and used to create forecasts. WOW Schools will be piloted in ten primary schools selected through an open draw – keep an eye on the Met Office website for more details.

Impactful partnerships

International partnerships are in place with WOW having already been adopted by national meteorological services in Australia, Holland and New Zealand. Back in the UK, a partnership with the Environment Agency is focussing on weather impacts. This crowd sourcing project is specifically looking at reporting the impacts of weather via WOW and building up a repository of high-quality impact reports.

This focus on impacts can help verify the accuracy of our weather forecasts and associated warnings – from Flood and Coastal Risk Management, to the National Severe Weather Warning Service. “The partnership will pull in a range of observers and raise awareness of impact reporting. It can also reach civil contingencies in a really meaningful way,” says Richard Orrell, Deputy Programme Manager - Public Weather Services. 🌩️



i Find out more and get involved at www.metoffice.gov.uk

i You can send your reports of weather impacts on your mobile by going to our mobile website – www.metoffice.gov.uk/mobile and selecting ‘Report severe weather’.



Staying alert

In 2015 over 300 emergency responders from around the UK came together in a series of workshops led by the Met Office. Its objective? To gather insights and opinions that will help develop the National Severe Weather Warning Service (NSWWS), a government-funded service that places the Met Office close to the heart of the response community.



The NSWWS launched in 1988 as a threshold-based service, following the previous year's Great Storm. Met Office forecasters monitored the weather and issued warnings when certain weather levels were reached.

As time went on and the service evolved, it became clear that emergency responders didn't need to know if there would be, say, 40mm of rain or 5cm of snow. Instead, understanding if and how the weather conditions would affect them, their workload and ability to get about was more important.

As Mel Harrowsmith, Met Office Head of Civil Contingencies explains, "Direct feedback from the emergency response community really drove us to shift from a threshold-based to an impact-based warning service in 2011." But this was no small change. So, following a period of 'bedding in', the Met Office sought the opinions of responders once more.

Weighing up the warning service

In 2015, the Met Office hosted emergency responder workshops across the UK, from Exeter right up to Inverness and across to Belfast. These included Category 1 and 2 responders from local government, the emergency services, the Environment Agency, the Scottish Environment Protection Agency, health authorities, and utility companies. Members of key voluntary sector organisations also attended.

The Met Office had two main aims. Firstly, to benchmark the current warning service – making sure it was continuing to work effectively and efficiently, and serving the needs of today's emergency responders. Secondly, the aim was to identify potential improvements.

Listening and understanding

With ten workshops and 371 responders, the Met Office came away with a raft of useful information and insights. Although working through everything will take time, key outcomes are already coming through (see the box for more detail).

The Met Office asked whether NSWWS should expand to cover more impacts than the current five weather types: fog, ice, wind, rain and snow. "We don't currently warn for thunderstorms and lightning, but it's clear that's of interest. So we need to consider bringing those impacts into NSWWS," says Mel. At the same time, emergency responders

In 2011, direct feedback from the emergency response community really drove us to shift from a threshold-based to an impact-based warning service

indicated a need for improved accuracy around summer storms – systems with hazard potential that are notoriously difficult to pinpoint.

"The feedback on this will go right to the core of the Met Office – into the modelling, science and observation work we do," Mel explains. "In turn, this will feed into storm forecasts and warnings making them more accurate."

Responders also talked about the different ways they access weather warnings. For most, any forecast information, however short notice, is key. This is particularly relevant, for example, when a storm is developing. "Thunderstorms can happen very fast," adds Mel, "so we need to make sure we can continue to get messages to the community efficiently and quickly. That's a big area for us to work on in the future."

Evolution – not revolution

At the same time, the Met Office is collating high volumes of information generated by public surveys. Overlaying that on emergency responder workshop feedback has revealed that both groups are saying similar things about their weather warning needs. All that information has given the Met Office a clear steer on where next to take the NSWWS.

Overwhelmingly, emergency responders told the Met Office that the NSWWS is working. The feedback centred on developing the next generation of weather warnings. So, reassuringly, it's now about evolution, rather than revolution. 🏠

The outcomes

The Met Office workshops generated a mountain of fantastic feedback that will improve our ability to:



Increase scope of weather warnings

Summer storms can lead to lightning and localised flooding – putting emergency responders on high alert. There's therefore a big interest in seeing thunderstorms and lightning included as impacts within the NSWWS.



Get the message out

Easy-to-access digital communication channels are becoming increasingly important, especially when emergency responders are 'on the road'. The Met Office plans to continue developing mechanisms that will quickly send weather warnings out – helping emergency responders to plan and respond effectively.



Share results

The sessions pooled a valuable collection of market intelligence that could benefit other organisations across the country. The Met Office now plans to share information on natural hazards, for example, with partners including the Environment Agency and Scottish Environment Protection Agency.



Always here to help

As Head of Customer Service at the Met Office, Craig 'Chalky' Langley plays a vital role in making sure weather information reaches the people who need it.



From deciding whether to hang the washing out to safeguarding vital infrastructure against storms, thousands of people and organisations use the Met Office's weather information services – day in, day out. Whenever they have a query or feedback about a service, Chalky and the customer advisers on the Weather Desk are there to listen.

"It's a really important part of our public service commitment to answer people's questions," says Chalky. "Our customers and users are at the centre of everything we do – if it wasn't for them, we wouldn't be here."

A lifelong interest

Chalky has worked at the Met Office for 31 years, joining straight from school. "Growing up on the west coast of Scotland, I had an active interest in the weather," he says. "So when I saw a job advertised at the Met Office, I applied."

Starting out as a weather observer at airports around Scotland, Chalky saw first-hand the importance of supplying customers with accurate weather information, by collecting observations that would enable aircraft to land safely. From there, he went on to work at weather centres in Glasgow and Aberdeen – and began a career in customer service.

"Aberdeen Weather Centre was a very customer-focused environment, mainly providing weather information for the offshore oil and gas sectors. That's where I really developed my enthusiasm for working with customers and improving the quality of the service the Met Office provides. When I got the opportunity to do that on a bigger platform at our head office, it was just what I was looking for."

All questions answered

Every day brings new challenges for Chalky's teams across the Operations Centre and the Weather Desk – the Met Office's 24/7 helpline and the first point of contact for people getting in touch. Each morning begins with a brief covering everything from IT issues to last night's weather and that day's forecasts. This ensures the customer advisers are ready to answer the up to 1,000 calls that can come in each day.

A proportion of these calls come from the commercial or government organisations that the Met Office supports, such as the transport, energy and retail sectors. "Commercial companies will usually receive a couple of forecasts each day via



“Our customers and users are at the centre of everything we do.”

email or our website," Chalky points out. "Then, if they have any questions about it, or want a bit more detail, they phone up and we can put them through to the meteorologists on call in the Operations Centre."

As well as commercial customers, the Weather Desk receives a large number of questions from the general public – with calls, emails and social media interaction peaking in times of bad weather. Chalky explains that many people use the service as an alternative to finding weather information through the Met Office website, or contact them with problems or complaints.

"We do have people phoning up if a forecast has gone wrong, or if they have constructive criticism about our services. We take all feedback seriously. If there's anything customers think we could improve – such as the performance of our website and forecasting apps – we'll try to feed that in to future updates."

With an open line to callers, the Weather Desk often receives some slightly more unusual requests. "There's almost too many to count," says Chalky, recalling people who phone up to double check if there are thunderstorms forecast for the day because they have a phobia of lightning, and a radio presenter who quizzed them on the Chief Executive's star sign. "Sometimes, people will phone up just to say 'well done, you got the forecast right'," he adds. "It's always great to know when people appreciate what we do."

Number one for customer service

Chalky has big ambitions for customer service at the Met Office. Three years ago, they signed up to a programme called 'Top 50 Companies for Customer Service'. This annual list ranks UK organisations, including big banking and supermarket brands,

according to how well they work with customers – and this year, the Met Office came in at number one.

"Customer services is the face of the Met Office," Chalky says, "so it's a huge source of pride for me that we're doing so well. The Weather Desk is a phenomenal team of people who all handle the questions and criticisms they receive really well."

In addition to managing customer services at our head office in Exeter, Chalky also looks after the offices in London and Aberdeen – giving him a wide view of how the Met Office delivers its weather information across the UK. "In many ways, customer services touches everyone's role at the Met Office at some point. I'm on a mission to make sure the end user is considered every step of the way." 🌩️





Communicating in partnership

The Met Office has a strong tradition of working with national weather services and academic institutions, both in the UK and abroad. Today, we are exploring innovative new partnerships that are taking our messages to a whole new audience.

Visit the Met Office website today and you may be in for a big surprise. The traditional weather information you might expect is there – such as tips on what to do in a flood or severe weather warnings. But there’s also a whole host of new topics that break the mould. Recent posts include the Four Footwear Trends to Kick Start your Autumn, The World’s Best Surfing Destinations, and Take a Bank Holiday Breather with the National Trust.

So what’s it all about? As Katie Hickmott, Partnership Communications Manager at the Met Office explains, this new content is the result of an expanding stable of exciting partnerships – both with government and voluntary organisations that include the Environment Agency, Public Health England, Red Cross and Age UK, but also consumer brands such as National Trust, Helly Hansen and Go Outdoors.

The power of stories

If the web traffic statistics are anything to go by, combining serious content with more light-hearted stories tends to engage audiences – particularly if those stories are about people. For example, one blog post by the Salvation Army about how they help the homeless over winter was hugely popular.

For the partners, the Met Office offers a strong, well-established reputation as an industry authority, as well as enviable reach. The Met Office website is well visited, while the blog and social media sites attract a very wide audience. The benefits to the Met Office are equally compelling. There are some audiences we have difficulty accessing – most particularly the younger generation. Pairing up with alternative brands puts us in touch with those audiences almost instantly.

Going digital

One example is a campaign that is currently being worked on with retailer Helly Hansen. The Met Office has become Helly Hansen’s international rain expert and we are creating video content which will be shared on social media. It’s a format that’s far more youth-friendly than traditional blog posts – as Katie Hickmott says: “We are generating more digital content such as infographics, animations and videos that appeal to a younger audience.”

Other examples include working with the National Trust – which accesses a whole other set of audiences such as young families – and a series of

prize giveaways from various partners that have proved very popular on Twitter.

A strategic approach

As Katie describes, “Once someone’s worked with us they stay on our radar so our pool of partners keeps growing. Part of my job is evaluating the partnerships and making sure we’re both getting something out of the relationship.”

This involves taking a strategic approach from the start: setting objectives, establishing metrics for evaluating progress and being crystal clear about what each partner wants from the relationship. This is a route the Met Office has already established with its new corporate charity, RNLI, and we will both soon be rolling out a communications programme.

So far, the Met Office’s partnerships have worked at an organisation level – but the hope is to go one step further and make it personal.

Our Ambassadors Programme links individuals from partner organisations, former Met Office staff and alumni, and public figures with an environmental background. The ambassadors will benefit from being part of a community and receive news and insights from the Met Office in advance so that they can then share with their own audiences.

It’s an approach that reflects the more personal nature of communicating fostered by social media – and will enable the Met Office to break more new ground and establish ever more innovative relationships with people and organisations around the globe. 🌊

“For the partners, the Met Office offers a strong, well-established reputation as an industry authority – as well as enviable reach.”



HM Government



Get ready for winter

Every year, the Met Office teams up with the Cabinet Office and other partners to launch and manage the Get Ready for Winter campaign. The campaign is centred on a dedicated website that delivers crucial weather information alongside content from partners about health, well-being and staying safe.

The campaign runs from October to March, and last year included content from over 20 different contributors such as the Highways England, Salvation Army, Mind and the Institute of Advanced Motorists.

At the beginning of the season, the Met Office tries to meet all of the people that are going to contribute to establish content: the aim is to get every partner to participate in some way. While the Cabinet Office manages the campaign, the Met Office has editorial control and sets the content schedules.

Measuring success

The Get Ready for Winter campaign has been running for several years and its popularity is increasing. Last year’s website achieved over 300,000 views – almost double the year before. Its most popular blogs covered how to drive safely in winter, common myths about snow, and how cold weather affects us. The Met Office is using the insights gleaned from the previous year to inform this year’s campaign – and build further on its success. 🌊

www.metoffice.gov.uk/get-ready-for-winter

Getting the weather message out

The Met Office News and Social Media team has always worked closely with broadcasters to provide timely and accurate information. Now, as the media world is changing, the team is at the cutting edge – harnessing new methods to get messages out to audiences across the world.



As more and more people turn to online channels for their news, the demand for on-the-spot weather information is also growing. Here at the Met Office, we currently have nine social media streams, including Twitter, Facebook, Google+ and Instagram. This range of communication channels enables us to broadcast our expertise and our science across the widest possible audience – from stories in online news forums through to blogs for journalists.

For Helen Chivers, Head of the News and Social Media team, Vine is proving particularly interesting. “Six second video is the ideal format for showing weather,” she explains, “as we can take a view from space and then animate it to illustrate how the weather is affecting the UK, or quickly show what sort of impact severe weather may have.”

We know that this format is very popular with online news channels. For instance, the Mail Online, the Express and the Mirror all use our videos to add value to any weather story they feature. In addition, we also have the technology to tailor messaging to meet particular broadcasters’ requirements.

A 24/7, 360° world

Online media demands up-to-the-minute information. When extreme weather is forecast, in particular, we have to be able to get the warning out quickly and enable people to protect themselves, their homes and their businesses. “The weather doesn’t stop, so neither do we,” explains Helen.

Teams of Met Office meteorologists work at all times of day and night so we can deliver content to people who need it. An in-house Content team of designers,

writers and video editors is also on hand to work with the News and Social Media team as part of the wider Communications team. The Content team translates messages into graphics and video that can be shared with broadcasters across the world.

At the same time as the desire for up-to-the-minute news has grown, so too has the global need for weather information. Met Office clients and broadcasting partners now require constant updates for locations worldwide.

In-house interviewing

Today, we can also conduct interviews with broadcasters more easily than ever before. Not so long ago the prospect of a news channel like CNN doing a weather story might entail a team travelling to our head office in Exeter, interviewing a meteorologist, editing the footage and finally broadcasting the results – a complex and, sometimes lengthy process. Now, thanks to the Press Association’s Globelynx technology, broadcasters can hook up with the Met Office straight away.

Globelynx is a fixed line over the internet that delivers high-quality footage straight to the broadcaster. Here at the Met Office, we have a camera, green screen and studio set up and ready for any story. This will shortly be joined by a second Globelynx camera in our Operations Centre, so broadcasters will be able to interview meteorologists in situ as soon as there is breaking news on any weather issue.

Several broadcasters have been quick to take up the Globelynx offering. Sky has already conducted a number of interviews and Good Morning Britain broadcast their weather forecasts live from our Operations Centre, booking the line for the whole three hours the show was on the air.

Weather news travels fast

It’s all a far cry from when Helen Chivers joined the Met Office 32 years ago. Back then the team was just getting the first word processors to issue forecasts. Helen even remembers drawing the very charts that would appear in the newspapers the next day. Technology nowadays means we can get the Met Office’s authoritative voice and science out across the whole world within minutes – making us much more responsive to events as they happen. For an audience, and a broadcast community, that demands instant news, we’re ready and responding. 🌩️

A social whirl

Social media enables the Met Office to reach out to thousands of people across the UK, keeping them constantly up to date with the latest weather information and stories about our science and technology.

Our nine platforms have over

865,000
followers



We currently have over

570,000

Twitter followers.
The majority are following our main feed **@metoffice**, which is manned

24/7



We also have

19

**AUTOMATED
SEVERE
WEATHER
WARNING FEEDS**

a dedicated tropical storms channel and a B2B channel.



On Vine we have had over
5.6 million
loops, with a growth of
5 million loops in under a year.

Facebook, one of our most engaging channels, has over **99,000** followers.

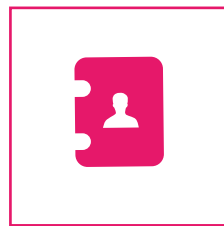
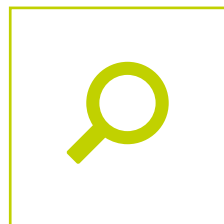
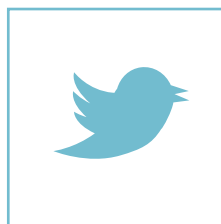
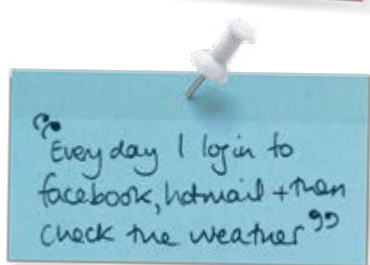
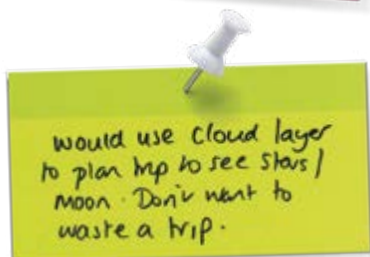


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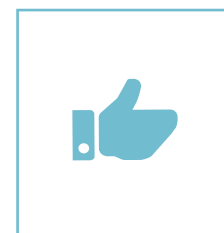
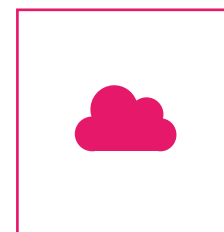
163,000
followers.

This channel is particularly useful for search engine optimisation, as our most recent Google+ posts appear within results whenever anyone searches for ‘Met Office’.

“The desire for up-to-the-minute news has grown, so too has the global need for weather information.”



New age, new possibilities



The Met Office weather app makes the most of the latest mobile technologies – catering for the ever larger audience who wants their weather news on the move.



One are the days when you would rely solely on the newspaper, radio or TV to get the weather forecast. Today, people are turning to a whole variety of channels – from traditional television and radio, to social media and, of course, weather apps.

The way we access information has changed – and continues to evolve at breakneck speed. For example, in the last year alone, the number of 18 to 35 year olds using desktop websites has dropped dramatically. It is estimated by Ofcom that 60% of 16-24 year olds access the internet mainly via smartphone.

What's causing this shift? And how can the Met Office respond so that it continues to deliver content and information that's relevant, efficient and appealing to the UK population?

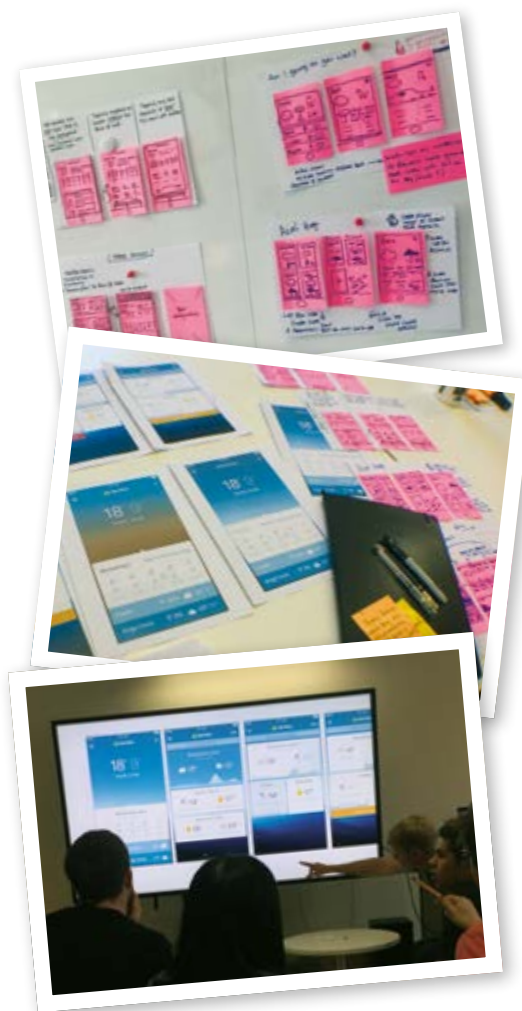
To answer these questions, the Met Office has been researching the needs and behaviour of its UK audiences. Video testing with diverse user groups saw participants given different weather app options – they were then filmed, recording the ways in which they tried to access the information they wanted, and what that information was. The insights gleaned have fed into a new digital strategy, and the development of new age app and digital updates.

A varied audience

What is clear is just how varied people's needs and wants actually are. While some people only check the weather occasionally for a specific purpose – say to find out whether it's likely to snow in their area during an imminent cold snap – others plan their daily life around the forecast. For example, a landscape gardener may choose when to work according to when it's expected to be dry. Others may effectively be amateur meteorologists and want to know the science behind the forecasts.

Catering for the different interests of these audiences is a huge challenge – and Met Office digital channels are doing just that. For instance, more visual and 'snackable' media is being created that particularly suits the younger 'YouTube generation'. One example of this is Vines – very short, looping, animated videos – that have been created for severe weather alerts.

As Owen Tribe, Head of Digital Media at the Met Office explains, "To be relevant and engage with



your audience, you have to meet them where they are in a way that solves a problem or meets a need they have – otherwise they just switch off."

But it's not just about delivering information in an accessible and efficient way. Part of the new digital strategy is to bring context to the data in a relevant way. For example, if there's a storm brewing, Met Office digital users can find out the story behind it and its causes. Besides bringing the weather to life, this also enables the Met Office to share resource, expertise and insights with our audiences.

Creating dialogue round the clock

What's particularly striking is that Met Office digital engagement strives to give users a voice. "We want to be able to have a two-way conversation with our



“To be relevant and engage with your audience, you have to meet them where they are in a way that solves a problem or meets a need they have – otherwise they just switch off.”

users to solve challenges and understand the UK population's needs in a digital landscape that is continually changing," explains Owen.

Users can share ideas, likes and dislikes – and, because the Met Office app is the only one of its kind that comes with an open-all-hours weather desk, we can live up the ideal of being the trusted advisor for weather.

This focus on dialogue also ensures that the Met Office app remains relevant to the people using it. Our digital channels will always be a work in progress, changing and improving according to user feedback. With user behaviour changing as fast as the technology that drives it, this agile approach is the only way to stay relevant and secure the loyalty of the UK consumer. 🌩️



The art of

To maintain its reputation as a world-leading meteorological organisation, the Met Office must attract the brightest minds from across STEM subjects.

As STEM outreach coordinator Felicity Liggins says, “A vital part of this is to engage children and young people in the work the Met Office does – and hopefully spark their interest in pursuing STEM careers. We need the best people to work here, so it’s really valuable to go out into communities and show young people how interesting and exciting STEM subjects are. Outreach is also a great way for our staff to develop their skills.”

So, as well as the sorts of programmes you might expect from a science institution – including the annual, award-winning Met Office Science Camps – STEM outreach has looked to the arts to find innovative ways of getting children and young people interested in meteorology.

Sandscape at Green Man

For the past three years, Met Office scientists have braved the changeable Welsh weather to hold a stall at Green Man, an independent art and music festival in the Brecon Beacons. They’re usually

found in Einstein’s Garden – an area of the festival devoted to creative takes on science.

This year, as well as providing weather forecasts to festival-goers, the Met Office partnered with the University of Exeter in an Einstein’s Garden project funded by the Wellcome Trust, a biomedical research charity. Felicity and the STEM outreach volunteers thought long and hard about how to talk about weather-related health issues, from pollen forecasts to urban heat islands – and landed on sand sculpture.

Working with professional sculptors Sand in Your Eye, they held four, hour-long workshops each day, inviting people to create a sandscape featuring a city, river, farmland and mountains. At the end of each session, Met Office scientists explained how weather and climate change interact with the landscape – such as how traffic and factory emissions affect air quality in urban areas, and how skyscrapers trap and radiate heat.

To finish, they poured dry ice over the sculpture, simulating how fresh, healthy air flows over the landscape, and how it can be blocked and redirected by features such as buildings.

From sand sculptures to storytelling, the Met Office’s Science, Technology, Engineering and Mathematics (STEM) outreach programme is always looking for new ways to inspire young minds.



Astro Science Challenge

The Met Office is also working with primary school classes as part of the Astro Science Challenge, a project running throughout October–December 2015. The Astro Science Challenge was set up by the Unlimited Space Agency (UNSA) which produces arts projects designed to inspire and engage young people in STEM subjects. The project coincides with British European Space Agency astronaut and patron of UNSA, Tim Peake’s mission to the International Space Station in December.

The Astro Science Challenge is made up of six ‘missions’, each led by different institutions, including the UK Space Agency and the Royal Observatory. The Met Office’s mission is based around forecasting space weather events, such as solar flares.

“Space travel is exciting, no matter what age you are.”

Jon Spooner, Director of Human Spaceflight Operations at UNSA said, “Space travel is exciting, no matter what age you are, and there are so many educational angles to Tim’s mission that this project seemed a natural next step for us and the partners.”

By working with the UNSA we can put scientific information across to children in a different, creative way that really grabs their imaginations. This could include storytelling, featuring characters that the children can follow throughout the space mission, and interactive challenges they have to solve. ☞

inspiration

The benefit of holding projects like Sandscape at festivals, Felicity says, is that they attract a wide audience of people. “Green Man attracts a lot of families who are interested in new ideas, and doing something different. Everyone really enjoyed creating the sculpture, and we also had plenty of people interested in hearing about the research we do at the Met Office.”

Breaking boundaries

Whether working with visual artists or taking tips from the theatre, a multi-disciplinary approach can help STEM outreach programmes reach a varied audience. Not only that, but as Felicity points out, collaborating with artists can help Met Office scientists see their work in a fresh way: “The artists will often ask different questions, which we haven’t thought of or are perhaps afraid to ask. This helps us look at our research from a different angle, and explore how we can better communicate that to others.” ☞



The WOW factor

The Weather Observation

Website (WOW) enables people to submit weather data to the Met Office. Over the next few months, a pilot project will encourage UK schools to use WOW to set up their own weather stations and get hands-on with the data. See page 4 for more information on WOW.

WOW Schools will be piloted in 10 primary schools selected through an open draw. Keep an eye on our website to find out more about the project.



Climate modelling training in Tanzania



Thanks to Met Office training and technology, experts in Tanzania and Malawi are now able to conduct climate change projections to the year 2099.

The Met Office has had a long strong relationship with the Tanzania Meteorological Agency (TMA). The Met Office has been involved in various capacity building projects in Tanzania, including installing a TV weather studio with funding from the Voluntary Cooperation Programme (VCP) of the World Meteorological Organization (WMO).

Around three years ago, with funding from the Foreign and Commonwealth Office (FCO), the Met Office conducted an analysis of the TMA and how the Met Office could help it develop its services. The analysis involved Met Office International Business Development Manager, Tim Donovan, visiting Tanzania to further develop the relationship with TMA.

During the visit, Tim also developed a relationship with the UK Department for International Development (DFID) in Tanzania. DFID funds a variety of projects which aim to reduce poverty and hunger. These aims have strong relevance to climate and climate resilience. For instance, in Africa, farmers rely on yearly rains. If it doesn't rain, crops can fail, which can have fatal consequences. Improved forecasts mean that farmers can plan ahead for better crop management.


As result of Tim's analysis, DFID has since funded the Met Office to provide specialist advice to TMA. As Tim explains: "Working as trusted partners with TMA in training, mentoring and transferring knowledge, the Met Office has helped TMA create better forecasts which means people in Tanzania have received better advice."

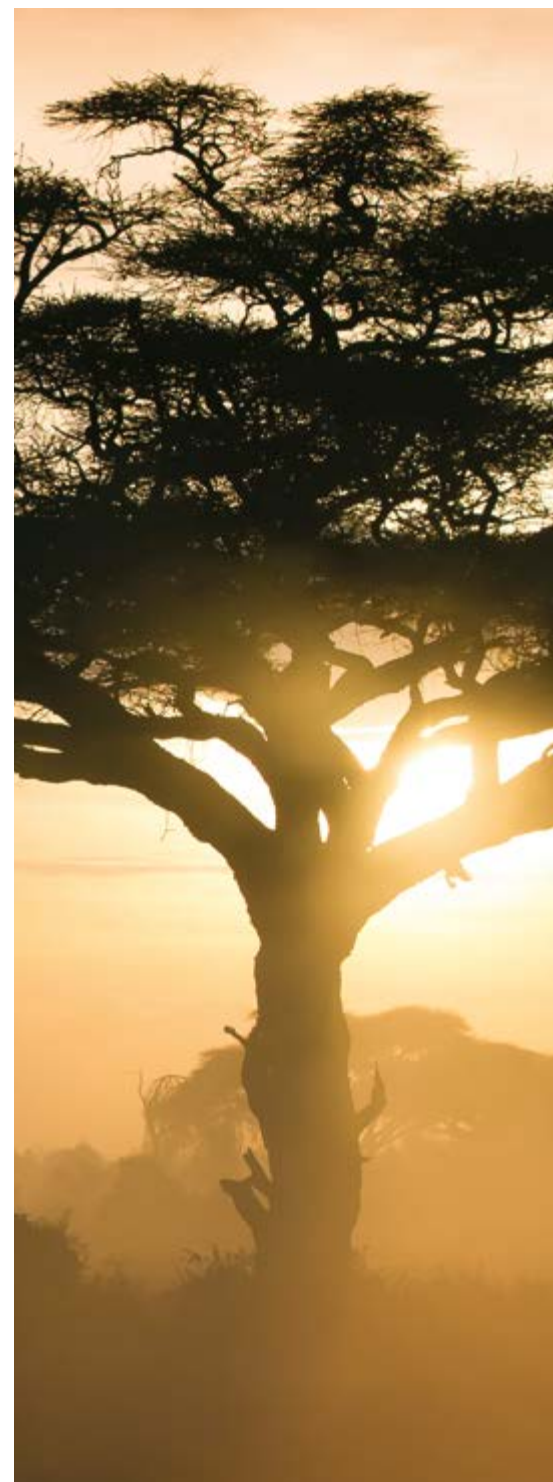
A capacity building project in 2014 demonstrated the effectiveness of the partnership, improving the TMA's service through successful projects. Work is now underway to prepare for further projects.

“The Met Office has helped TMA create better forecasts which means people in Tanzania have received better advice.”

Running in tandem with the capacity building projects, the climate modelling training delivered in Tanzania is funded by the WMO's ongoing Global Framework for Climate Services (GFCS) pilot project in Tanzania and Malawi. The training involved guiding TMA experts in using PRECIS (Providing Regional Climates for Impacts Studies), a regional climate modelling system developed at the Met Office Hadley Centre. PRECIS runs on a Linux-based PC and can be applied to any area of the globe.

David Hein, Manager of Climate Information for International Development (see following profile overleaf), and his team member Joe Daron, travelled to Tanzania to deliver the training to scientists from Tanzania and Malawi.

David describes the benefits of the training: "The PRECIS workshop provides training in the science of climate change and climate modelling which is tailored towards beginner and early career scientists. This gives scientists the knowledge and tools they need to construct high-resolution climate change scenarios for East Africa, ultimately helping to enhance climate resilience in the region." 





Science profile

The Met Office employs professionals and experts who are constantly expanding the boundaries of weather and climate prediction. Here we meet one of them...

David Hein

Manager of Climate Information for International Development

Model teacher

When the Met Office launched its regional climate modelling system in 2002, it broke new ground. For the first time, anyone anywhere could run high-resolution climate change scenarios from a simple Linux-based PC. PRECIS has since been made freely available to scientists in developing countries around the world – and David Hein has been involved in its development almost since its beginning.

Back in 2002, David joined the Met Office as a junior programmer, providing predominantly front-line technical support for PRECIS. With a Bachelors' degree in Computer Science and Maths, he knew how to code the system, but at that point had no background in meteorology.

A subsequent Masters from the University of Reading – sponsored by the Met Office through its graduate programme – changed all that.

Sharing expertise

Today, he plays a key strategic role in supporting PRECIS users and developing the model. Over the years he's given many workshops around the world, training participants both in how to use PRECIS, but also in the science of climate change. "This is what motivates me," he explains. "I like capacity building: being in the classroom, teaching and mentoring. I especially enjoy working with students because they're very motivated and they need time with experts to mentor their career."

David also regularly volunteers his time to participate in Science Technology, Engineering and Maths (STEM) outreach activities, both in schools and at education events (read more about STEM on page 15).

His particular passion is in exploring how to communicate complex scientific ideas in the most accessible way. When delivering workshops for example, he uses images to make the content more accessible to an audience for whom English is not their first language.

Clarity is also crucial when responding to queries from PRECIS users, whether by email or phone. When involved in specific research projects, he's often tasked with clearly communicating the results to policymakers and other stakeholders who may not have a background in climate science.


“Teaching and working with people around the world – it's what I love most.”

Getting software talking

Just as David explores ways to communicate complex ideas to diverse audiences, his work also involves getting different software systems to communicate with each other. Regional climate models have a different architecture and infrastructure to global climate models (GCMs) but those GCMs necessarily inform regional research, and vice versa. Developing interfaces between PRECIS and GCMs is crucial for researchers to obtain the data they need – and this is precisely what David and his team undertake.

The MaRIUS research project is a case in point. Funded by the Natural Environment Research Council and run by the University of Oxford, MaRIUS is using scenario modelling with the aim of identifying mechanisms that trigger drought and water scarcity in the UK. David has not only built all of the software interfaces between the driving GCM and the PRECIS regional model, but he has also run the experiment throughout Europe.

No interface lasts forever. Every few years, institutions develop a new generation of GCMs. Each time, David's team has to write new code to interface between these new models and PRECIS. "As the models become more complex, this becomes more challenging," he explains.

Overall, his work is a finely pitched balance between highly technical software engineering and people-focused training. Ask David if he has a preference and the answer is immediate: "Teaching and working with people around the world – it's what I love most." 

Not really weather



It's not strictly weather but social media engagement about events such as meteor showers, the Northern Lights and festivals reaches out to entirely new audiences.



Traditionally, weather is the main reason people engage with the Met Office, check our website or social media channels. However, we are constantly looking at online social events and trends to think of how the Met Office can engage more fully with people.

As Simon Swan, Met Office Head of Digital Marketing puts it: "We know that lots of people engage with the Met Office through our range of platforms including desktop, mobile, and social, but we are looking at how we can attract more people and create points of interest."

Identifying gaps, analysing key search terms that people use to look for things on the internet and optimising content so it can be easily found is all part of the process of creating content. So far there have been lots of examples of the Met Office creating content on non-weather topics including Wimbledon, the Perseid meteor shower and the partial solar eclipse.

The challenge is understanding the best way of communicating this content, and choosing the most appropriate digital channel, to help us drive our reach and engagement targets.

Analysing trends

Anna Slingo, Social Media Manager explains: "Working together with the Digital and Content teams we share ideas on content and how to create and share it. Sometimes ideas stem from existing media trends and sometimes from new ideas from within the team."

Something must be working as Anna has recently been shortlisted for a Young Digital Leader of the Year award in the Social Media category. Jack Richardson, Senior Digital Communications Executive, has also been shortlisted in the Digital Marketing category. The Met Office has also been shortlisted for two awards at the UK Social Media Communications Awards; Best Use Of Social Media in a Crisis and Best In House Team.

Shareable content

The Met Office Digital and Content teams create a range of shareable content in the form of graphics and teasers. The most successful non-severe weather campaign to date was the Facebook post around the partial solar eclipse which had 8,000 shares – more than the announcement about the headlining act at Glastonbury on Facebook. Ultimately, through multiple shares, the partial solar eclipse Facebook post went viral, reaching over half a million people. The campaign actually had higher levels of engagement across all social media platforms than any of our severe weather warning campaigns – including the rare red warnings.

Another example of 'not just weather' content and engaging with new audiences is the recent 'Name our storms' crowdsourcing project with Met Éireann which invited the public to name storms that are expected to affect the UK and Ireland. We used social media to gather names for inclusion in the list. People suggested names in a variety of ways including tweeting @metoffice using #nameourstorms or providing suggestions through the Met Office Facebook pages. This was the organic top trend for a day on twitter and also engaged with a diverse range of brands including Jack Wills and Paddington Bear.

Creating engaging content around topics related to weather is important. As Anna explains, "Engaging content not only means that the Met Office is reaching new audiences; it also reinforces the Met Office's position at the centre of online conversations around all things weather."



www.twitter.com/metoffice
www.facebook.com/metoffice



Lovely weather for ducks

Reporting from a deflating hot air balloon. Presenting alongside Kermit the Frog. That's all in a day's work for broadcast meteorologist **Laura Tobin**. It's a job involving focus, commitment and in-depth knowledge – not to mention the ability to cope with extremely early mornings.

Laura Tobin fell in love with the weather aged 14 when she found herself pretending to be air in a geography lesson. "My teacher divided the class into cold and warm air and had us running around like lunatics, showing us how a jet stream works. At that point, I knew I wanted to be a weather forecaster." She contacted the Met Office to find out which GCSEs and A-levels she'd need to get there. A few years later, she began a physics and meteorology degree at the University of Reading.

Met Office alumna

All the hard work paid off as Laura achieved her goal of joining the Met Office – beginning at Cardiff Weather Centre before returning to RAF Brize Norton, where she'd trained. Her day-to-day job involved briefing crews that fly all around the world. A detachment at Northwood involved producing NATO forecasts in conjunction with the Royal Navy.

"I never wanted to be a TV weather presenter," Laura remembers. "That just sort of happened." It was while she was at Northwood that a BBC six-month maternity cover contract cropped up. "From quick Radio One bulletins to farming forecasts on Radio Four, I got to talk to all different audiences – I loved it so much that I stayed."

Waking the nation

Today, Laura's the weather expert on ITV's Good Morning Britain – which means early starts. She rises at 3.25am, leaving home five minutes later. On the cab ride in she checks emails, the news and social media, getting up to speed with the world's weather. "Every day I listen to what people are talking about – in the office, on Twitter, on the street – and in my broadcasts I try to answer the questions they're asking," Laura says.

At 4am she calls the Met Office Media Team, running through weather graphics, charts or any special information she's asked for the night before.

4.20am sees Laura arriving at work, stopping first at the newsroom to talk through the upcoming broadcast. After that there's just time for hair, make-up and microphones before it's into the studio, ready to go live at 6am sharp.

Never work with animals... or balloons

Around half of Laura's broadcasts are studio-based. The rest of the time, she's on the road – and on her toes, having presented from Disneyland Paris to Shetland, from roller coasters to zoos. "I was once feeding animals ahead of a live feature from Yorkshire Wildlife Park," she remembers, "but I began my forecast forgetting I was still holding a carrot. Before I knew it, a llama was jumping up desperately trying to get it from my hand!"

Keeping a straight face can be a struggle, but the moment the camera comes on, Laura's utterly focused. "I simply bent down, gave the llama the carrot and carried on with the weather. You have to be good at multi-tasking as a forecaster."

Highlights for Laura include presenting from Buckingham Palace and HMS Britannia the morning the Queen was naming her. She's also presented with Steve Carell, aka Brick Tamland from *Anchorman*, as well as Sooty and Sweep.

On another occasion, Laura was broadcasting from a soaring hot air balloon when the studio asked her, via her earpiece, to subtly stop the pilot firing the noisy engine. "The next thing I know, we're floating down until suddenly we hit the ground and the cameraman falls over. I had to finish the forecast, apologise and reassure viewers that we were ok – in one breath."

Staying connected

Since the early days of Laura's career, getting the weather message out to the public has changed drastically. Earlier this year, to put the summer's weather in context, Good Morning Britain broadcast live from the Met Office Operations Centre using Globelynx, a system that can send on-demand broadcasts anywhere in the world.

Laura embraces new technology to keep connected with audiences. "People want to know about the science behind the forecasts. If there's not time on air, I put extra content online – whether that's a 15-second weather alert Vine or plots showing the outlook for the month." 🌩️

“Being a weather presenter is like being a duck: looking like you're gliding along serenely, but paddling frantically underneath.”

The Sun's atmosphere

This picture shows the plasma (super-heated gas) making up the sun's atmosphere at different temperatures, and therefore heights away from the solar surface. There are still two main competing theories on why the sun's atmosphere gets hotter with height away from the surface of the sun.

The different colours range from the photosphere, the sun's visible surface (around 5,000°C) at the bottom, through the chromosphere (around 50,000°C) in the middle, to the outer corona (around six million °C) at the top.

Some of the corona is bound to the sun by its magnetic field. However it is so hot that some of it also blows out into space, creating the solar wind, which streams outwards past the planets, including Earth, to create a bubble containing the whole solar system – the heliosphere.

To fully wrap round the sun, images from NASA's Solar Dynamics Observatory satellite have been stitched together at successive quarter solar rotations. The result looks relatively continuous as the sun's atmosphere is often quite static on solar rotation timescales (27 days). This stability is used in forecasts in the Met Office Space Weather Operations Centre (MOSWOC), which has just celebrated its first birthday.

The sun isn't always calm though – MOSWOC uses the unstitched images to monitor solar activity. This includes looking for solar flares, or sudden movements of the plasma, which herald space weather which could lead to impacts on satellites or power grids. 🌩️

Find out more about space weather at www.metoffice.gov.uk/publicsector/emergencies/space-weather

