

The 169th Annual Report of the Royal Meteorological Society for the period 1st January – 31st December 2019

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Annex A: THE UK WEATHER OF 2019

Review of UK Weather for 2019

2019 was warmer, wetter and sunnier than average for the UK. Notably, February was the second sunniest since 1929 and second warmest since 1910 with a UK winter maximum temperature record of 21.1°C, and the highest ever temperature in the UK was recorded on 25th July at Cambridge Botanical Garden at 38.7°C. There was also record-breaking warmth on the Easter and late-August bank holiday weekends. Temperatures exceeded 30°C somewhere in the UK on 10 days during the summer.

There were five named storms during 2019 – Erik in February, Freya and Gareth in March, Hannah in April and Atiyah in December. Some notable heavy rain events occurred in February, March, April and June with the second half of the year seeing well above average rainfall and numerous incidences of flooding. Parts of the Midlands, Yorkshire and Lincolnshire were particularly wet through the year. Sheffield had its second wettest year in a station record from 1883. In contrast, parts of northern Scotland and East Anglia had a slightly drier than average year.

January started off dry and settled before high pressure moved away and the weather turned mild and more unsettled. The second half of the month was colder with frequent north-westerly winds, though with occasional milder interludes, notably on 24th to 26th. Frost and snow were quite widespread between 17th and 23rd and especially during the last few days of the month. February started off cold, with some snowfall. In contrast, the rest of the month was very mild. Southerly winds from North Africa brought very mild and sunny weather to most parts from 13th to 15th, and returned from 21st to 27th bringing record-breaking temperatures and plenty of dry sunny weather by day, but frost and fog became increasingly widespread by night. The first half of March was mainly wet and windy becoming generally mild and settled for the remainder of the month.

April started off cool and unsettled, turning colder with widespread overnight frosts between 10th and 16th, but becoming more settled. The settled weather continued with lots of warm sunshine especially around the Easter weekend, producing a new record high temperature for Easter Sunday. It turned more unsettled during the last week. May started and ended with unsettled or changeable conditions with warm, dry and sunny weather around the middle of the month.

The first three weeks of June were wetter and cooler than average, but the latter part of June and most of July were more settled with some warm spells. The warmth peaked on 29th June, and again on 25th July. The second half of July had numerous thunderstorms, making the month wetter than average overall. The majority of August was unsettled and showery, with a drier spell towards the end of the month when it became hot across the South East.

Mid-September had plenty of dry and sunny weather, before turning very wet. This unsettled theme persisted for most of October and November, but parts of Scotland and Northern Ireland were relatively sunny and dry. December began with a dry interlude before a return to wet and windy weather with some very large daily rainfall totals. The final week brought drier weather and it was mild at times. December overall was rather mild, with only limited colder interludes and fewer frosts than average.

UK Temperatures

The mean value was 9.4°C, which is 0.6°C above the 1981-2010 average.

UK Precipitation

The total was 1,240 mm, which is 107% of the 1981-2010 average.

UK Sunshine

The total was 1,455 hours, which is 106% of the 1981-2010 average.

Regional Breakdown (data from the Met Office)

Relative to the average (1981-2010)	Mean Max (°C)	Mean Min (°C)	Rainfall (%)	Sunshine (%)
<i>UK</i>	13.1	5.7	107	105
<i>England</i>	14.2	6.3	112	108
<i>Wales</i>	13.2	6.2	107	101
<i>Scotland</i>	11.3	4.7	102	103
<i>Northern Ireland</i>	12.8	6.0	109	97

Annex B: MEMBERSHIP AND ACCREDITATION

Membership

The Membership Development Board (MDB) is represented by members from academic, professional, student and amateur backgrounds who oversee a programme of activities / initiatives to strengthen membership, by reducing the number of members leaving the Society and encouraging new members to join. The MDB is chaired by the General Secretary, and Catherine Heath-Muller was the Membership Development Project Manager. Dr Muller was on maternity leave for the first half of 2019, during which time her Membership Development responsibilities were covered by Fiona Hewer. The MDB sits alongside the Professional Accreditation Board within the Membership and Accreditation Business Area.

In 2019, membership stayed relatively steady compared to 2018 with 0.3% fall in total membership numbers. The MDB has agreed a series of initiatives for 2020 to maintain membership numbers and improve the retention rate.

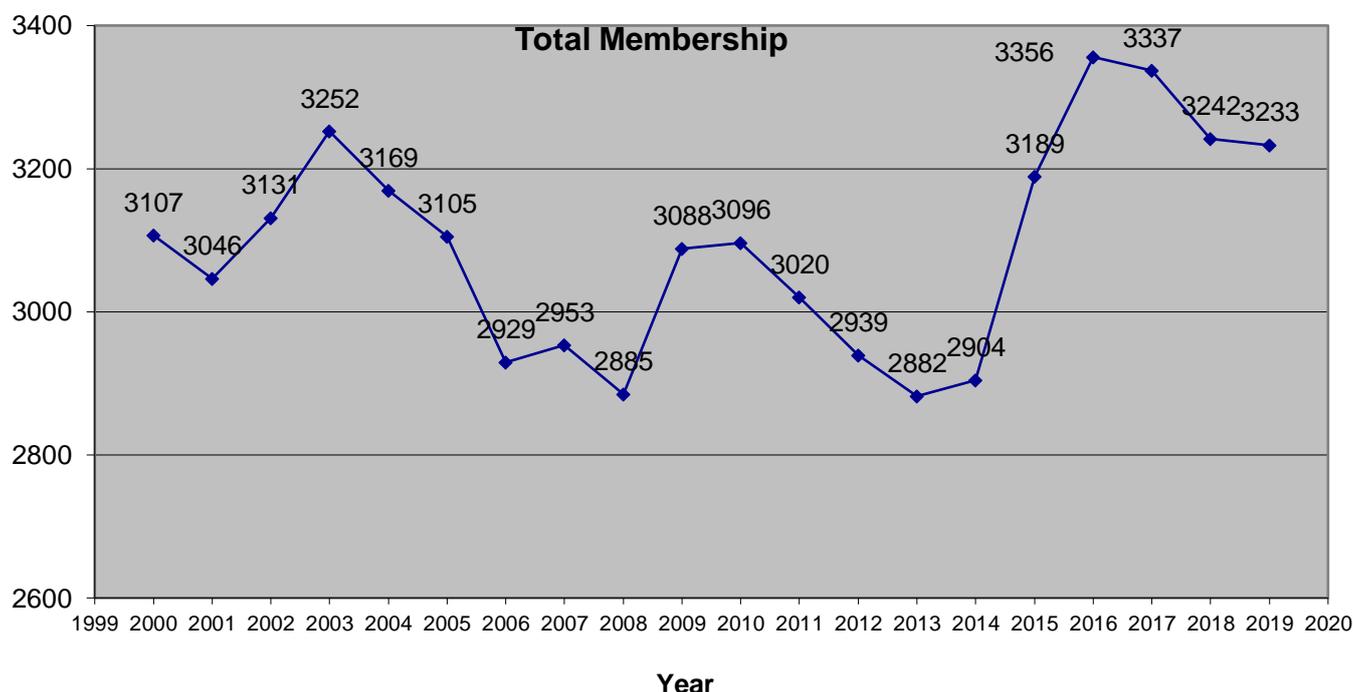
Key Activities in 2019:

- **New Fellowship Scheme:** Our new Fellowship scheme was launched in early 2019 and the first new Fellows to successfully apply for Fellowship were presented with their certificates at the AGM in May. The new scheme is more inclusive, recognising vocational qualifications and long involvement in a variety of meteorological activities and related subjects, as well as formal academic qualifications. It seeks to reward anyone who makes substantial contributions to promoting meteorology as a science, profession or interest. During 2019 we had 39 new Fellows successfully apply to become FRMetS.
- 
- **New Member Acquisition:** The Society has tried several new ways to recruit members. In July we started offering a six-month membership which has been successful, and we recruited 26 new members. In September, we started giving free membership to each StormHour winner, generating approximately one new membership a week. Our £10 student offer started in September encouraging 59 Students to join. Contacting event speakers and offering free membership resulted in six new members, primarily after the ASC conference. At the end of 2019 around 80 subscribers to *Weather* transferred to become members of the Society so that they can benefit from other membership activities, as well as continuing to receive *Weather*.
 - **Communication:** This is key to our engagement with our members and a crucial element of our activity. The new website is central to our digital communication and its use by members continues to grow. Our social media presence continues to grow across all our platforms. We will review our member communications in 2020 to ensure they are relevant and engaging and meet the needs of members.
 - **Accreditation and CPD:** The Society defines the scope of its accreditation activity as recognising excellence in people, in organisations, and their Continuing Professional Development (CPD). The number of accredited members has dropped slightly this year, we suspect due to redundancies at the Met Office. The number of Chartered Meteorologists (CMet) has remained stable at 71 and the number of Registered Meteorologists (RMet) has decreased from 123 to 99. Three new specialisms have been added for RMet accreditation - Catastrophe Risk Analysis, Catastrophe Model Development and Evaluation, and Weather and Climate Services. Two new accreditors have also been trained.
 - **Reciprocal Membership:** The Society continues to foster important strategic partnerships with organisations across the meteorological community and beyond. New reciprocal membership agreements were reached with the Canadian Meteorological and Oceanographic Society and the Indian Meteorological Society in 2019, to go alongside agreements already in place with the American Meteorological Society, the Australian Meteorological and Oceanographic Society, the Royal Photographic Society and the Institute of Physics.
 - **Student Ambassadors:** The Society continues to have an active student community, with 464 student members in 2019. This is partly due to our Student Ambassadors who share social media posts, distribute posters and leaflets, circulate information via local mailing lists and encourage fellow students to join the Society. There are currently 20 student ambassadors signed up from 13 UK institutions and 2 international bodies.

The Society's membership is made up of amateurs (25%), practitioners (30%), academics (30%) and students (15%). The following table shows a breakdown in membership in each category over recent years.

Grade of Membership	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Honorary Fellow HonFRMetS	20	20	20	26	29	30	29	27	30	30	31
Life Fellow FRMetS	41	36	37	34	33	31	99	94	89	76	82
Fellow FRMetS	1,704	1,672	1,662	1,633	1,586	1,586	1,513	1,518	1,510	1,471	1,479
Member (Associate Fellow before 2018)	997	1,086	1,009	914	952	974	1,104	1,217	1,223	1,186	1,164
Student Member	248	215	267	308	260	261	416	473	471	464	464
Corporate Member (including School Member before 2011)	78	67	25	24	22	22	28	27	14	15	13
TOTAL	3,088	3,096	3,020	2,939	2,882	2,904	3,189	3,356	3,337	3,242	3,233

In 2010 the Society abolished its 'Schools Membership' category, in order to make the education benefits freely available to all schools, not just members. These were counted under the 'Corporate Member' category, hence the decrease in this area and some impact on overall numbers from 2011. In 2016, the Society launched a new three-tier Corporate Membership structure aiming to forge stronger strategic partnerships with other organisations. The new structure led to a decrease in the number of Corporate Members in 2017, but an increase in income and more partnership engagement. The following graph shows how total membership of the Society has varied in recent years.



Professional Accreditation

The Society's activities around Professional Accreditation and Vocational Qualifications are overseen by the Professional Accreditation Board (PAB). Members of the Board come from across the breadth of the meteorological community, including the public and private sectors, along with academia. The PAB sits alongside the Membership Development Board (MDB) within the Membership and Accreditation Business Area. The PAB aims to work closely with the MDB; the Terms of Reference for each group have been updated to reflect this closer cooperation, along with standing invitations for the Chairs to attend each other's meetings. A joint PAB/MDB workshop is planned for early 2020 to consider the longer-term aims within the Business Area.

The PAB met twice in 2019, in March and in October. It reports to Council and is supported by the Course Evaluation and Continuous Professional Development (CE/CPD) Panel and the Vocational Qualifications Committee (VQC).

Continuing Professional Development (CPD) and ACCSYS

The CPD Panel reviews members' CPD reports for applications and renewals for RMet and CMet accreditation. The online ACCSYS CPD and application tool is the primary mechanism by which Society members may record their CPD activities and prepare CPD reports in support of accreditation. CPD records are also used by some members to contribute to their own job applications and performance assessments.

The table below shows 2019 saw substantial increases in the number of CPD records and reports held on ACCSYS, indicating both reuse by existing users and new uptake by members. During 2019 the PAB has considered and approved a number of additional ACCSYS CPD types and areas of meteorological specialism to encompass the wide applications of meteorology by members. A process for consideration of future additions was also agreed.

Chartered Meteorologists (CMet)	2012	2013	2014	2015	2016	2017	2018	2019
No. of applications received	3	6	1	5	5	6	4	9
No. of accreditations granted	0	7	1	3	3	4	5	8
No. of CMets resigned/withdrawn	4	5	0	3	1	5	1	8
No. of applications outstanding at year end	3	1	0	1	2	4	0	1
No. of CMets on Dormancy Register			5	4	3	2	2	1
No. of accredited CMets at year end	65	68	64	66	69	67	71	71
CMet CPD	2012	2013	2014	2015	2016	2017	2018	2019
No. of CMet CPDs reviewed	17	34	23	30	35	24	27	28
No. of CMet CPDs approved	16	34	23	30	35	23	27	28

Registered Meteorologists (RMet)	2012	2013	2014	2015	2016	2017	2018	2019
No. of applications received			49	35	11	46	5	4
No. of accreditations granted			44	28	20	46	5	3
No. of RMets resigned/withdrawn							5	19
No. of applications outstanding at year end			2	7	4	7	2	3
No. of RMets transferred to CMet								8
No. of RMets on Dormancy Register					3	5	6	6
No. of accredited RMets at year end			44	72	92	124	123	99
RMet CPD	2012	2013	2014	2015	2016	2017	2018	2019
No. of RMet CPDs reviewed						50	71	93
No. of RMet CPDs approved						50	71	92

ACCSYS	2012	2013	2014	2015	2016	2017	2018	2019
CPD records			642	1,644	4,782	7,820	9,237	11,984
CPD reports						321	391	604

Registered Meteorologist (RMet)

2019 saw a disappointing decrease in the number of active RMets, falling to 99. This was due to external factors, from resignations or withdrawal from the scheme and in part to transfers to CMet that was good to see. Only three new accreditations were granted. The PAB has recognised this slowdown, largely attributable to a slowdown in uptake in the

main employers of meteorologists. It has revised growth expectations in the Business Plan downward and is actively pursuing activities to both retain existing RMets in established areas and to attract applications from new sources.

Chartered Meteorologist (CMet)

The number of CMets has remained steady at around 70 for many years. 2019 saw a growth in CMets awarded compared to 2018. Indeed the 8 awarded is the highest yearly number since 2011. These gains were negated, however, by an equivalent number of resignations or withdrawals. Nevertheless, the signs of gradual growth are encouraging and the PAB has set realistic targets and associated activities to continue this trend and increase numbers in 2020 and beyond.

Vocational Qualifications Committee

The Vocational Qualifications Committee (VQC) support the Society's work to further the professional development of meteorologists through developing and promoting the uptake of high quality, competency-based, vocational qualifications. Included in the VQC's remit are overseeing the development and management of the Society's vocational qualifications and reviewing the performance of the Assessment Centres. The Society supports five qualifications provided by PAA/VQ-SET, an awarding organisation that is nationally recognised and regulated. These qualifications are recognised throughout the EU. Assessments for the vocational awards are based in the workplace and are undertaken by Assessment Centres located at the Met Office and Royal Navy Training Group. The Assessment Centre at MeteoGroup is currently not active. The number of qualifications awarded in 2019 is shown below.

	Royal Navy		Met Office
	Registered	Qualified	
Diploma in Meteorological Observing (Level 3)	0	6	0
Award in Meteorological Briefing (Level 5)	0	0	13
Diploma in Meteorological Forecasting (Level 5)	0	4	7
Diploma in Operational Hydrometeorology (Level 5)	0	0	0
Diploma in Operational Hydrometeorology and Flood Forecasting (Level 6)	0	0	0

Accreditation Review

The RMet and CMet growth aspirations, described above, were agreed within the context of a wider review of the Professional Accreditation Framework and the changing environmental factors, which may influence growth and status of the accreditation schemes. Originally intended to report back to the PAB in Autumn 2019, the review now aims for completion in Summer 2020.

Annex C: AWARDS AND PRIZES

The Society is delighted to have made the following Awards for the year 2019:

Award	Recipient
The Mason Gold Medal	Professor Keith Shine
The Buchan Prize	Professor Adam Scaife
The L F Richardson Prize	Dr Gerard Kilroy and Dr Joanne Waller
The FitzRoy Prize	Dr Helen Dacre
The Adrian Gill Prize	Professor Ken Carslaw
The Society's Outstanding Service Award	Mrs Marcia Spencer
The Gordon Manley Weather Prize	Mr David Bowker
The Climate Science Communications Award	Professor Richard Betts
The Malcolm Walker Award	Ms Emma Howard
Honorary Fellow	Professor Timothy Palmer
International Journal of Climatology Editor's Award (sponsored by Wiley-Blackwell)	Dr Stephen E. Fick and Professor Robert J. Hijmans
Atmospheric Science Letters Editor's Award	Dr Arthur Miller
Quarterly Journal (QJ) Editor's Award	Professor Peter Knippertz
QJ Reviewer's Certificate	Dr Michael Scheuerer and Dr Zhihong Tan
Geoscience Data Journal	Dr Vicky Slonosky



IMAGE: Award winners from 2018 who were presented with their awards and prizes at the Society's AGM in May 2019 at the Institute of Physics.

Annex D: SCIENTIFIC PUBLISHING

During 2019, the Society worked with its publishing partner (Wiley) to determine its long-term open access strategy. The open access landscape has been changing quite dramatically over recent years with an increasing number of funders demanding that their authors submit only to fully open access titles and we are regularly hearing that authors (from UK institutions for instance), are unable submit to the Society journals for that very reason. This movement is a threat to the Society's publishing activities and revenues generated from the journals (which is vitally important in supporting other Society activities), and we can only see the movement to open access getting greater over the next few years.

Whilst there is still a place for hybrid/subscription journals (thanks to several months of heavy petitioning by a multitude of stakeholders including Societies, authors and publishers), there is still ever increasing pressure to transition these into fully open publications (particularly from individual librarians, big consortia and international funding bodies). Thankfully our publishers are having productive conversations with library consortia resulting in a move away from libraries paying for subscriptions to journals and instead agreeing 'read and publish deals', which also cover the cost of open access fees for their academics. A great example of this is Wiley's agreement with [Projekt Deal](#), enabling all researchers within 700+ academic and research organisations in Germany free access to all our journal content as well as funding to publish all their articles open access within any of our titles.

Wiley are discussing similar collaborations with other library consortia, however these negotiations take time and in the meantime the Society needs to look for opportunities within its own portfolio to ensure author choice is available and there are options for authors according to their funding requirements. We are very pleased to be able to show our support to the open access movement and from 2020, 50% of our titles will be fully open access, and the other 50% will continue to offer open choice.

The Society continues to look for ways to support its Editors and Editorial Board and is extremely grateful for the work they do to support the Society in the publication of its journals. Many journals have been successful in expanding their editorial boards internationally and we have now implemented [Publons](#) across the portfolio, an increasingly recognised reviewer reward system, in efforts to support the ever-increasing challenge of finding excellent quality peer reviewers. The ability for Editors-in-Chief to suggest the transfer of manuscripts if unsuitable for their own to another journal has proven particularly successful with close to 60% of all authors given the option to transfer, agreeing to do so, and shows that the system is valued by authors.

Finally, the Society has welcomed a number of new Editors-in-Chief in 2019: Dr Cristina Charlton-Perez and Dr Dino Zardi (*Meteorological Applications*), Gavin Huggett and Dr Eddy Graham (*Weather*) and Prof Andrew Ross and Prof John Methven (*Quarterly Journal*). Already our new Editors-in-Chief have made their mark on their journals and we look forward to working with them going forward.

Highlights from the journals in 2019:

Andrea Montani and Becky Hemingway have been joint Editors-in-Chief for ***Atmospheric Science Letters (ASL)*** for the last two years. They have found the co-editorship to be very beneficial as workloads are shared, ideas are challenged and improved, and more help can be given to Associate Editors (AEs) when required. ASL published 67 research papers and its Impact Factor increased to 1.796, its best in five years, resulting in an improved ranking from 69th to 52nd out of 86 journals in the category. This increase is testament to the dedication of ASL's Associate Editors and the high-quality reviews they attained. ASL welcomed two new AEs in 2019 and said thank you to three who retired. In the coming year, the ASL Board will continue to work with RMetS and Wiley, to improve turnaround times of manuscripts to achieve ASL's aim of being a quick publication journal. The ongoing challenge of finding reviewers for manuscripts remains, however new tools from Wiley and a call for volunteer reviews have proved helpful.

Geoscience Data Journal (GDJ) has continued to grow with submissions doubling and with datasets as diverse as historical weather records in Canada, how the atmosphere behaves on Mars and global tide accuracy assessments. Linden Ashcroft has continued to grow the editorial board adding three new Associate Editors to the team from Germany, China and Brazil. The journal is encouraging authors submitting in other Society journals to publish their datasets in GDJ and has made some changes to the author and reviewer guidelines to make things clearer for those publishing with us. Linden also wrote an Editorial outlining the benefits of publishing in the journal, which was promoted widely through social media.

International Journal of Climatology (IJOC) is the largest of the Society's journals, with over 5,800 pages published in 2019. The number of submissions continued to be high, reaching the record number of over 1,000. The rejection rate remained close to 60%, with about 25% of submitted papers being rejected without review. The backlog is kept within reasonable limits of approx. six months. The average time from submission of a new manuscript to initial decision is about 50 days. The special issue on the *State of the UK Climate* was published in close cooperation with the Met Office for the second time. It received much publicity and we are pleased it will be repeated in 2020.

In March, Dino Zardi and Cristina Charlton-Perez became joint Editors-in-Chief for *Meteorological Applications*. Since taking over, they have worked closely with Wiley and the Society putting procedures in place to streamline the process of reviewing and publishing papers. This has resulted in a substantial reduction in publication timelines. Dino and Cristina have expanded the Editorial Board significantly thus increasing the diversity of the meteorological expertise. There is near gender parity in the team, and they have recruited Associate Editors from more countries. *Meteorological Applications* started its transition to a fully Open Access (gold) online-only format from July.

In early 2019, John Methven and Andrew Ross took over as joint Editors-in-Chief of the *Quarterly Journal*. 372 manuscripts were submitted, and 258 were accepted for publication, giving a 63% acceptance rate. The journal continues to provide an impressively quick turnaround with an average first decision within approximately two months of submission and rapid publication once the paper has been submitted. The journal published Special Issues on *Advances in Remote Sensing of Rainfall and Snowfall* and *25 Years of Ensemble Forecasting* and started two virtual Special Collections: *INCOMPASS* and *Waves to Weather*.

Eddy Graham and Gavin Huggett took over as joint Editors-in-Chief of *Weather* in April. A 12-month surplus backlog of unpublished articles has been largely cleared, with the publication of a special online-only issue at the end of 2019. The journal has recruited several new Editorial board members with expertise which includes renewable energy, satellite meteorology and communications. The Editors have responded to our member survey by cutting down on overly technical articles, expanded 'Weather news' into a two-page feature and incorporated a new series of "Climate Change Shorts" and 'Insights'. The journal is also currently transitioning to the submission of all content to ScholarOne to ensure a more robust method of managing content, maintaining audit trails and protecting personal data. Three Special Issues were published: *Late Winter Weather 2018*, *Student Conference 2019* and *Heatwave and Drought in 2018*.

WIRES Climate Change is a review journal published by Wiley and affiliated with the Royal Meteorological Society and the Royal Geographical Society (with the Institute of British Geographers). Professor Mike Hulme continues as Editor-in-Chief, supported by a team of 13 Associate Editors. The journal received an increased 2018 Impact Factor of 7.057 and was ranked 4th of the 86 journals in Meteorology and Atmospheric Sciences. In 2019, the journal published 55 review and opinion articles, spanning climate change research and scholarship in the physical sciences, social sciences and humanities. *WIRES Climate Change* is known for its online Special Collections, many of which are resources for seminar classes and massive open online courses (MOOCs); they are often made available for free in advance of important academic meetings. From 2020, access is free to this journal for our members.

Submissions and Decisions (All Journals Combined)

Submissions and Decisions / Year	2013	2014	2015	2016	2017	2018	2019
Number of Submissions	1456	1527	1656	1693	1795	1841	1903
Number Reaching Final Decision	1238	1371	1564	1649	1709	1716	1847
Number Accepted	679	715	824	873	853	844	944
Average Journal Rejection Rate (%)	35.2	35.2	47.3	38	47.5	48	44*

*Average of rejection rate of each journal rather than as a collective

Impact Factors

Journal / Year	2014	2015	2016	2017	2018	2019
<i>Quarterly Journal</i>	5.13	3.25	3.67	3.44	2.978	3.198
<i>Intl. Journal of Climatology</i>	3.4	3.16	3.61	3.76	3.1	3.601
<i>Meteorological Applications</i>	1.53	1.34	1.27	1.411	2.391	1.711
<i>Atmospheric Science Letters</i>	1.88	1.52	1.57	1.504	1.198	1.796
<i>Geoscience Data journal</i>			1.56	2.8	1.867	2.667
<i>Weather</i>	1.04	0.64	1.26	0.96	0.812	1.143
<i>WIRES</i>	4.4	3.42	3.31	4.57	5.124	7.057

Academic Book Programme

The Society terminated its book programme with Wiley and will work with a new publisher in 2020. There are three books due to be published with Wiley in the coming months and these will appear with the rest of our academic book series on the Wiley website and within our own Society website.

Non-Academic Books

The Society launched its book endorsement programme in October 2019 and has so far endorsed two books within the programme *The Invisible Killer* and *The Aeronauts*. Both were made available to members in advance of their release date and at a discounted rate. Other discounts have been negotiated for books reviewed in *Weather* with any discount indicated below the review.

Annex E: SOCIETAL BENEFITS

Societal Benefits Board

The Societal Benefits Board (SBB) reports direct to Council and oversees the Societal Benefits area of the Society and its three programmes of work, each of which focusses on delivering the Society's charitable aims, these are Education and Outreach, Meetings and Conferences, and Science Engagement.

The SBB meetings bring these three Committees together to discuss their work programmes and potential new projects, to ensure continuity, effectiveness and strategic alignment and to review the societal benefits being delivered. The SBB also encourages and reviews new project ideas and, once accepted, helps to develop the investment cases for submission to the Strategic Planning Group and then to Council. The Board is chaired by the Society's Treasurer and meets twice a year in the spring and autumn.

In 2019 the SBB approved a proposal to partner with a green energy switching service that are working to support the development of a mature clean energy market and to deliver an engagement campaign with Society members. This partnership provides the Society with a unique opportunity to take an active role in promoting green energy usage. At the September meeting the SBB reviewed two strategic projects:

- A teacher's handbook on weather and climate for 11-14 year-olds, designed to fill an existing gap and aiming for a launch in 2020.
- A Climate Change Continuing Professional Development (CPD) project for teachers. The Society will be working with the Institute of Physics to create teacher training and classroom resources to show science teachers how core curriculum physics can be taught through the lens of climate change.

The SBB reviewed and approved budgets for these projects to be put forward to Council as part of the Society's 2020 Business Plan and Budget.

Climate Science Communications Group

The Climate Science Communications Group (CSCG) was established by Council in the autumn of 2011 to address an important and continuing need to communicate the science of climate change more effectively; the Group is co-chaired by Emily Shuckburgh and Peter Stott. The Society is at the heart of the debate on climate change. It plays a particularly important role in communicating some of the more complicated scientific and technical issues to the public at large and enabling them to understand and engage with what is one of the most important global issues that we face. Continued strong interest in climate change prompted the formation of the Society's Climate Science Special Interest Group (CSSIG) in 2016. The CSSIG builds on the activities of the CSCG and is dedicated to furthering the understanding of climate change and effective responses amongst Society members and the public.

This year the CSCG has continued to expand the range of topics covered by the Climate Science Briefing Papers including developing briefing papers on hurricanes and on the detection and attribution of climate change.

With the support and participation of the CCSG, the Society has delivered four training sessions with BBC weather forecasters and two sessions with weather presenters at ITV on communicating climate science. An adapted version is being developed for journalists, encouraging them to ask the right questions and to report on climate change accurately and efficiently. To support this training, a set of 'Frequently Asked Questions' has been produced to provide succinct and scientifically accurate answers to commonly asked questions about climate change. The aim is that this document will be reviewed regularly and revised appropriately as scientific understanding develops.

In 2019, a review of the committee structure under the Societal Benefits business area was completed and it was agreed that the CSCG would take on a wider brief to also cover communication of weather and broader science topics relating to meteorology. The new committee that will oversee this important work will be called the Science Engagement Committee.

Education and Outreach Committee

One of the core aims of the Society is to support the formal and informal teaching of weather and climate across the UK. This important work is overseen by the Education and Outreach Committee, chaired by Jenny Rourke, and two dedicated members of staff. The Committee has representatives from organisations including the Institute of Physics, the Royal Geographical Society, the Met Office, the World Energy and Meteorology Council and the Geographical Association to

ensure collaboration. The Education and Outreach Committee is aided by the Virtual Committee of teachers and educational professionals who support the work of the main Committee.

Highlights of our Formal Education Activities:

- Regular updates from the Society received by around 2,000 teachers.
- A dedicated section on MetLink, our schools' website for teachers in Scotland, with a set of teaching resources tailored to the Scottish Curriculum.
- A new scheme of work for 11-14 geography focussing on Tropical Cyclones.
- Development and creation of short films for schools looking at:
 - the Coriolis Effect,
 - using tree rings to detect past weather and climate,
 - the passage of a depression,
 - collecting weather data for A Level geography Independent Investigations
 - contour drawing in geography,
 - simple weather fieldwork for KS3 geography,
 - promoting the MetMark, the quality mark we (jointly with the Met Office) award to schools for outstanding weather teaching,
 - showing how Infrared Cameras may be used to demonstrate various atmospheric processes in collaboration with Imperial College London.
- Our online weather course '**Come Rain or Shine**' ran for much of the year.
- Delivery of weather subject knowledge days to hundreds of teachers and trainee teachers in locations across England and N. Ireland.
- A subgroup of the committee has begun Planning for a Future Curriculum, to allow the Society to engage efficiently and effectively with future curriculum reviews across the UK.
- Response to the new draft curriculum for Wales.
- Assessment of the standard of weather and climate questions in past A level geography papers and raised concerns with exam boards.
- Production of an article for Teaching Geography on the probably causes of the Little Ice Age.

New Resources:

- Tropical Cyclone resources including an online, interactive 'cyclone recipe' game
- Tree ring data to investigate past weather and climate.
- Developed a new set of resources for teachers and Society members to use with year 6 students after their KS2 SATS exams.
- Partnered with Create Education to produce resources which will allow schools to 3D print sections of the Central England Temperature record and use the model for weather and climate learning.

Highlights of our Informal Education Activities:

- **theWeather Club (tWC):** tWC newsletters continue to be published and are received by approximately 2,000 members. The website (www.theweatherclub.org.uk) has continued to be developed and improved throughout 2019, with the introduction of new guest writers and loose themes for each newsletter.
- **Social media and other online activities:** The Society have continued to produce podcasts which can be found on our website podcast page. Our Twitter account now has 10,200 followers, 2,425 on Instagram and 2,850 on Facebook. The Society has continued to use Facebook Live for streaming some of its events with great success. The Society continues to support the StormHour weather photo competition, which has been growing steadily on Twitter.
- **Weather Photographer of the Year Competition:** The Society partnered with the MeteoGroup to run the Weather Photographer of the Year competition. The competition is going from strength to strength with 6,000 images submitted by 2,000 participants in 2019 from 60 countries.
- **Media Coverage:** The Society has continued to keep in regular contact with our media partners, with over 150 interviews throughout 2019. Our meeting around the 1.5 IPCC Special Report generated fantastic interest and we continue to promote the work our fellows are doing with the IPCC. Weather Photographer of the Year gained great momentum in the media when the winners were announced. The competition and winners featured in news stories (including the BBC, The Sun, The Telegraph, The Guardian, MSN, and Yahoo), media slideshows and weather photography articles across the globe.

Meetings and Conferences

The Society continues to support a diverse and ambitious programme of Local and National Meetings. The continued success of these meetings is thanks to the voluntary contributions of organisers, speakers and members of the Meetings and Conferences Committee, together with the tremendous efforts made by Society staff.

National Meetings

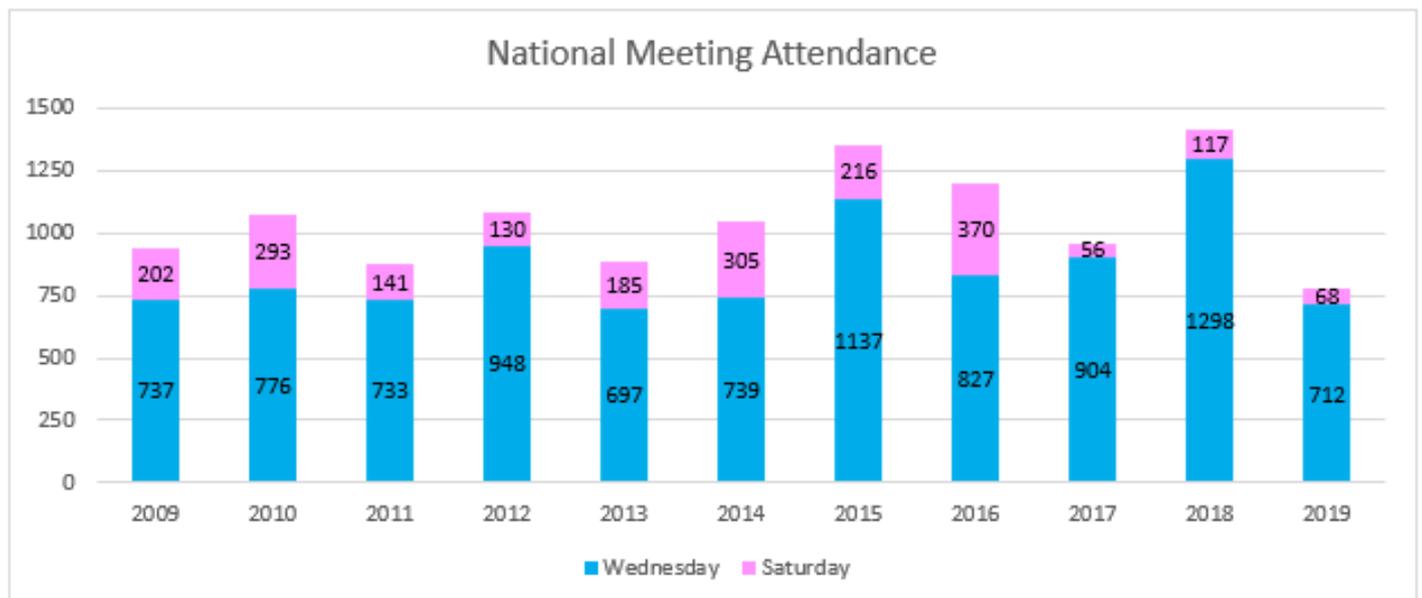
National Meetings offer a varied and stimulating programme for discussion of a breadth of topics covering all aspects of weather and climate science, bringing together people from academic, professional and other backgrounds to discuss topics of current interest. The following National Meetings were held in 2019:

- Jan** • [Tropical Cyclones: From Science to Mitigation](#) (joint with the Met Office)
- Feb** • [The role for climate services in handling climate change risk: contributions of UKCP18](#) (joint with Grantham Institute)
- March** • [Air Pollution in Megacities: Advances in Monitoring and Modelling](#)
• [Understanding the weather of 2018](#) (Saturday meeting)
- April** • [The Pliocene: The Last Time Earth had >400 ppm of Atmospheric CO2](#) (joint with Grantham Institute)
- May** • [I'm a Meteorologist and AGM](#)
- Nov** • [IPCC Special Report Meeting – Climate change around the Globe](#) (joint with Grantham Institute)
• [House of Lords Chamber Debate 2019](#) (members only)
- Dec** • [A Change in the Weather?](#)
• [Symons Gold Medal lecture 2019 - A Century of Remote Measurements of the Atmosphere](#)

The Society was able to offer the exciting chance for members to attend the House of Lords Chamber Debate 2019 on the topic “How can we reach a sustainable future?”. The event brought together schools, civic organisations and members of the House of Lords to participate in an inter-generational debate on climate change.

The Society actively seeks partners to co-sponsor meetings. In 2019 meetings were held in association with the Grantham Institute, the Geological Society, BEIS, Met Office, the Institute of Physics, the University of Reading and the University of Leeds. The National Meetings were held in Reading, Leeds, London, and Exeter. The Society values feedback from attendees to ensure the National Meetings continue to be attractive and of high quality. Feedback continues to be obtained by emailing questionnaire links to those who have registered for a meeting. The feedback shows overall high levels of satisfaction with the National Meeting topics, the quality of the speakers and venues.

National Meeting attendance as a function of year is plotted in the following graph.



The overall attendance numbers dropped for 2019 due to the planned reduction in the number of National Meetings held during the year; 17 meetings took place in 2018 compared to only eight in 2019. In light of this, the average attendance for each meeting actually remained very high.

Conferences and Other Events

The Society's *Atmospheric Science Conference (ASC)* was held jointly with the National Centre for Atmospheric Science (NCAS) on 2nd-3rd July at The University of Birmingham. This was followed by the annual *Student and Early Career Scientists Conference*, which also took place in Birmingham from 4th-5th July. Both were well attended with 180 delegates attending the ASC and 60 delegates attending the Student Conference. The one-day *WeatherLive* conference 'On Cloud Nine' was held on Saturday 19th October at the Royal Statistical Society and was attended by 55 delegates. The day

included presentations on naming clouds, cloud spotting from the Cloud Appreciation Society, using clouds to predict the weather and clouds in art.

The Society added a new one-day event to its conference programme in 2019, targeted at the climate science community. The first “RMetS Climate Change Forum” was held on 4th June in London and saw 60 attendees. Presentations were given by Dr Julia Knights from BEIS, Deborah Owens from DEFRA, Julie Foley from the Environment Agency and Prof Jason Lowe from the Met Office. At the reception a speech was given by Julian Critchlow the Director General at BEIS in charge of Energy Transformation and Clean Growth. The meeting was structured around parallel breakout group discussions on key climate science topics and impacts.



IMAGE: Delegates from the Student and Early Career Scientists Conference at University of Birmingham in July 2019.

Local Centres and Special Interest Groups

Society Local Centres organise meeting programmes across the UK, providing opportunities for sharing common interests and enthusiasm on a wide range of topics. A total of 38 Local Centre meetings were held in 2019 with the Yorkshire, North East, Scottish and South East centres being particularly active. In 2019, the President undertook a tour of the Local Centres to discuss how the Society can support their work and to present a talk on his vision for the Society's direction. Local Centres have been issued with a remote participation kit with some now streaming meetings via Facebook Live. The Local Centres are commended for their vitality in providing members in regions across the UK with regular access to Society events.

Some key meetings in 2019 were partnered with the Society's Special Interest Groups (SIGs): the March National Meeting on 'Pollution in Megacities' was held jointly with the Atmospheric Chemistry SIG; the Climate Science SIG helped organised the Climate Change Forum in June and the IPCC Special Reports event in November. The Data Assimilation SIG also held a meeting on "Assimilation of Big Data" in September 2019.

Changes affecting the Meetings and Conferences Committee

Marcia Spencer, the Society's Meetings Manager, left the Society at end of 2019. The Meetings and Conferences Committee would like to thank Marcia for her tireless commitment to delivering a large and diverse programme of Society events over almost 10 years. Marcia's resignation presented a period of uncertainty for the Meetings and Conferences Committee with a substantial amount of knowledge leaving the Society. Partly as a consequence of these changes, the Chief Executive and the Chair of the Meetings and Conferences Committee made the decision to postpone a small number of National Meetings planned for 2019 to autumn 2020 to ease the pressure on Society staff. A recruitment plan is in place for a renewed Events Team and will provide enhanced support for the Society's Meetings and Conferences in the future.

Reports from Local Centres

The Society's Local Centres offer an extensive programme of events and meetings which are of great interest to Society members and the general public all around the country. The meeting details, speakers and dates are available at: www.rmets.org/events. The Society and its Local Centres offer grateful thanks to all their speakers, who have provided an interesting and varied programme, to the Society's staff for their support, and of course to all the regular and enthusiastic audiences for supporting the Local Centres.

East Anglia Centre

Committee Members:

Chris Bell (Chair), Dr Steve Dorling (UEA Staff)

Activities:

The East Anglia Centre was inactive throughout 2019 but aim to schedule some meetings during 2020.

East Midlands Centre

Committee Members:

Roger Phillips

Activities:

Weather Front is still being produced, and any suggestions for improvement are welcome.

A meeting was held, in conjunction with the Northamptonshire Natural History Society, on 2nd November at the Society's rooms in Northampton. At this meeting the Society's President, David Warrilow OBE, gave a presentation on "Climate Change Meets Politics". Thirty people attended the presentation, which was an achievement considering the appalling weather on the day. The feedback from the Natural History Society was very positive. It was felt that the talk was very understandable and gave a balanced view. The audience particularly appreciated David's willingness to answer questions for a period that lasted as long as the talk itself.

North East Centre

Committee Members:

Dennis Wheeler, Ken Cook, Patricia Uttridge

Activities:

The North East Centre hosted nine meetings with an average attendance of 15. The Annual Gordon Manley Lecture for attracted 60 attendees. A social evening was held on 11th January. Titles of the meetings included:

- 8th February: [The Life and Work of Gordon Manley With Selected Readings from His Publications](#)
Joan Kenworthy and Dennis Wheeler
- 8th March: [From Climate Science to Climate Policy](#)
Prof Piers Forster (University of Leeds)
- 12th April: [A Look Back at the Weather of 2018](#)
John Goulding (Amateur Meteorologist)
- 10th May: [Climate Science Meets Politics](#)
David Warrilow (Royal Meteorological Society President)
- 14th June: [Weather and Climate at Oxford Since 1767](#)
Stephen Burt (University of Reading) and Prof Tim Burt (Durham University)
- 11th October: [Hot Topics in Glaciology](#)
Dr Anna Hogg (University of Leeds)
- 8th November: [Lessons from the Causes and Consequences of the 8.2ka Climate Event](#)
Graham Rush (University of York)
- 6th December: [The Very Deep Cold Pool of 27 February – 1 March 2018 Historical Precedents and Perspective](#)
Edward Graham (University of Highlands & Islands)

The Gordon Manley Lecture was held on 28th November and was presented by Dr Robert Mulvany (British Antarctic Survey). The talk was entitled '[The frozen climate archive: search for the oldest ice](#)'.

North West Centre

Committee members:

Hugo Ricketts (temporary Chair), Emma Simpson, Eoghan Derbyshire

Activities:

The North West Centre hosted 1 meeting, which was:

- 12th February: [Skyworms](#)
Dr Vladimir Janković (University of Leeds)

Scottish Centre

Committee Members:

Dr V Ingram (Chair), Mr D Brener, Mr C J Brown, Ms P Draper, Prof R L H Essery, Prof D Fowler, Mr G H Johnston, Ms A McLure, Mr G G Meldrum, Ms M G Roy, Mr H R Shorter, Dr J A Smith, Mr D Steele, Prof D Stevenson, Dr V Thompson, Mr G Wolverson, Mr A G McDonald (Treasurer) and Mr R C Tabony (Secretary).

Activities:

The Scottish Centre hosted nine meetings with an average attendance of 32. Titles of the meetings included:

- 15th January: [Turbulence Ahead! How Climate Change Affects Air Travel](#)
Dr Paul Williams (University of Reading)
- 22nd February: [Post-Graduate Student Talks 2019](#)
Emily Potter (BAS), James Hodgson (University of Birmingham)
- 22nd March: [Addressing the Global Nitrogen Challenge: From Micro-Meteorology to the Nitrogen Circular Economy](#)
Prof Mark Sutton (CEH)
- 9th and 11th October: Climate Science Meets Politics ([Inverness](#)) and ([Edinburgh](#))
David Warrilow OBE (Royal Meteorological Society President)
- 8th November: [Lightning, Ozone and Climate Change](#)
Dr Declan Finney (University of Leeds)
- 13th November: [Life and Science at Summit Research Base, Greenland](#)
Heather Guy (University of Leeds)
- 4th December: [African Rainfall and African Drought Forecasting](#)
Dr Matthew Young (University of Reading)
- 6th December: [Space Weather: Why on Earth it Matters](#)
Ellen Clarke (BGS)

South East Centre

Committee Members:

Ross Reynolds (Chair), Ross Herbert, Simon Lee, Rob Thompson, Arathy Menon

Activities:

The South East Centre hosted six meetings with an average attendance of 27. Titles of the meetings included:

- 9th January: [Atmospheric Modelling and Health Impact Assessment: From the Urban Heat Island to Air Pollution](#)
Dr Helen MacIntyre (Public Health England)
- 6th March: [Weather Radar in the UK – What the Upgraded Network Brings Us](#)
Dr Rob Thompson (University of Reading)
- 1st May: [The process towards the IPCC VIth Assessment Report, Working Group I](#)
Dr Andy Turner (University of Reading)
- 5th June: [Space Blitz: Discovering the Hidden Impacts of WWII Bombing Raids](#)
Prof Chris Scott (University of Reading)
- 2nd October: [The Life of a Met Office Chief Forecaster](#)
Paul Gunderson (Met Office)
- 13th November: [Department of Meteorology Current PhD Students Annual Prize Winners 2019](#)
 - Fantastic large-scale atmospheric structures & where to find them
Dominic James
 - Remote sensing of the plumes around the British Coast
Agnieszka Walenkiewicz

South West Centre

Committee Members:

Dick Bateman (Chair)

Activities:

In 2019 Bath Royal Literary and Scientific Institution (BRLSI) enjoyed its third year as the Royal Meteorological Society's South West Local Centre; our aim is to host at least one meteorological lecture per year. The centre held one meeting in 2019, which took place at BRLSI and was held in association with BRLSI Science, Royal Meteorological Society and Royal Geographical Society.

- 11th April: [Climate Science Meets Politics](#)
David Warrillow OBE (Royal Meteorological Society President)

Welsh Centre

Committee Members

Dr Michaela Bray (Chair), Cdr Nicholas Rodgers (Vice-Chair), Dr Yunqing Xuan (Treasurer), Thomas Green (Cardiff University)

Activities:

The Welsh Centre was inactive throughout in 2019.

West Midlands

Committee Members:

Dr Ian D Phillips (Chair)

Activities:

The West Midlands Centre hosted two meetings at which the average attendance was 30. Titles of the meetings included:

- 14th February: [And Now the Shipping Forecast...](#)
Dr Michael Sharpe (Met Office)
- 14th March: [Noxious Air Pollution at Birmingham New Street Railway Station](#)
Prof John E Thornes (Public Health England and University of Birmingham)

Yorkshire Centre

Committee Members:

Kamalika Sengupta (Chair), John Goulding (Secretary), Dr Lindsay Bennett (Treasurer), Beth Woodhams (Publicity Coordinator), Ben Pickering and Victoria Smith (Publicity Officers), Dorian Speakman, David Cherry, Clive Mills-Hicks and Jim McQuaid (Committee Officers)

Activities:

The Yorkshire Centre hosted nine meetings plus a summer social at which the average attendance was 30-40. The titles of the meetings included:

- 23rd January: [Moorland Responses to Weather](#)
Prof Joe Holden (University of Leeds)
- 19th February: [The Earth and Atmosphere from Space](#)
Dr Anna Hogg, Dr Richard Pope, Chetan Deva (University of Leeds)
- 21st March: [Monitoring Human CO₂ Emissions](#)
Dr Joey McNorton (ECMWF)
- 17th April: [PhD Research Showcase Evening](#)
Laura Arenas-Calle, Martin Daily and Beth Woodhams (University of Leeds)
- 14th May: [How Cool Are Trees](#)
Dr Cat Scott (University of Leeds)
- 9th July: [The State of the UK Weather and Climate Over Coming Decades: Overview of UKCP18 Results](#)
Prof Jason Lowe (Met Office Hadley Centre)
- 16th October: [The Reality of Climate Change: Increasing Weather Hazards](#)
Hayley Fowler (Newcastle University)
- 13th November: [Using Drones to Measure the Lower Atmosphere](#)
Hugo Ricketts (University of Manchester)
- 11th December: [Christmas Photo Competition and Weather of 2019](#)
John Goulding (Yorkshire Local Centre), Keeley Donovan (BBC Weather Presenter)

Other activities:

An RMetS Yorkshire summer social barbecue event was held on 18th June at Fairbarn House, University of Leeds. The 2019 Christmas Event included a photographic competition, which had two winners and a runner-up declared. The two best photos were judged by BBC presenter Keeley Donovan and through voting by the audience present. There were 30 entries (up to two entries per entrant).

REPORTS FROM SPECIAL INTEREST GROUPS

The Special Interest Groups (SIGs) of the Society are informal groups interested in specific areas of meteorology. The groups are primarily a means of bringing together those with a specialised interest that cannot be explored fully by the general Society meetings.

Atmospheric Chemistry

Committee Members:

Dr Ryan Hossaini and Dr Ruth Purvis (Co-Chairs)

Activities:

A meeting took place at the University of Leeds on 20th March at which the attendance was 44. The meeting was titled '[Air Pollution in Megacities: Advances in Monitoring and Modelling](#)'. This meeting was part of the National Meeting programme.

Atmospheric Electricity

Committee Members:

Giles Harrison (Chair), Martin Füllekrug, Karen Aplin (Treasurer), Alec Bennett, Keri Nicoll

Activities:

The group held a meeting on 21st November at which the attendance was 47. The meeting was titled 'CTR Wilson Meeting on Atmospheric Electricity'.

Aviation Meteorology

Committee Members:

Bob Lunnon (Interim Chair), Jacob Kollegger

Activities:

The SIG was involved in meetings at the UKFSC, GASCo, and continued its efforts in editing the meteorology section of the SKYbrary website. A current project is a SKYbrary 'SKYclip' short cartoon of mountain waves, due to be published soon.

Climate Science

Committee Members:

Richard Betts (Chair), David Warrilow OBE, Nigel Arnell, Tom Burke, Peter Gibbs, Joanna Haigh, David Hone, Jo House, John Mitchell, Liz Parkes, Emily Shuckburgh, Stephen Smith, Richard Walker

Activities:

The Group helped organise the Climate Change Forum in June and the IPCC Special Report event in November. The Group continued to work closely with the Climate Science Communications Group.

Data Assimilation

Committee Members:

Peter Jan van Leeuwen (Chair), Cristina Charlton-Perez (Secretary), Matthew Martin, Stefano Ciavatta, Bruce Ingleby, Keith Haines

Activities:

There will be some changes in 2020 as Peter Jan van Leeuwen and Cristina Charlton-Perez will step down; Amos Lawless will be the new Chair and Joanne Waller will be the Secretary.

The group supported the organisation of a workshop, which took place in March, titled '[Towards a UK Marine Data Assimilation Strategy](#)'. The event, which saw 28 participants, was organised by the Marine Data Assimilation Working Group of the UK National Partnership for Ocean Predictions and was held at the Plymouth Marine Laboratory. The objectives were: i) to share current research in marine data assimilation and assimilation methods in UK centres; ii) to strengthen collaborations; and iii) to gather ideas for a long-term UK strategy in marine data assimilation. An analysis of the current Strengths/Weaknesses/Opportunities/Threats (SWOT) of UK marine data assimilation was performed and discussed. This meeting was highly successful in connecting UK scientists working on marine data assimilation and for the outlining of a shared strategy for future data assimilation research and application in this sector.

The SIG held a meeting on 25th September titled '[Assimilation of Big Data](#)'. The meeting was held at the University of Reading and 37 people attended; attendees provided positive feedback about the event. In advance of the meeting the SIG organised a special collection of papers from *Meteorological Applications* on the topic.

History of Meteorology and Physical Oceanography

Committee Members:

Norman Lynagh (Chair), Julian Mayes (Secretary, Newsletter Editor), Mick Wood (Treasurer), Howard Oliver (Coordinator - Occasional Papers), Chris Folland (Coordinator - Pen Portraits of Past Presidents), Sarah Pankiewicz and Catherine Ross (Representatives from NMLA), Rob Allan, Catharine Bailey, John Gould, Richard Griffith, Peter Rowntree, Andrew Russ-Turner, Dennis Wheeler, Brian Booth (corresponding member)

Group Membership:

At the end of the year, the number of members of the group had remained steady at approximately 90 individuals.

Activities:

There was limited activity during the year; only two newsletters were published. No meetings were held during the year though plans are well under way to have at least one, and possibly two meetings in 2020.

Norman Lynagh will be standing down from Chairmanship of this Group at the end of April 2020. If the Group is to continue it is essential that a new Chair be appointed as soon as possible. Anyone who would like more information regarding the role should e-mail history@rmets.org expressing their interest.

Meteorological Observing Systems

Committee Members:

Steve Colwell (Chair), Mark Dutton (Newsletter Editor), Mike Brettle (Treasurer), Ian Strangeways, Keri Nicoll, Stephen Burt, Dave Bullock, Simon Bell, Stuart Goldstraw

Activities:

The group held its AGM and summer visit at Gill Instruments, Hampshire on 12th July. This special visit included some very interesting presentations, lunch, a tour of the factory and finally a live demonstration of their bespoke wind tunnel. The SIG also produced a document offering advice on the regulations that apply to people who privately own instruments containing mercury; this was included in the newsletter.

Weather, Art and Music (WAM)

Committee Members:

Pierrette Thomet, (Chair), Peter Stott, (Secretary), John Thornes, (Treasurer)

Activities:

Nothing to report.

Weather Service Providers

Nothing to report.

Association of British Climatologists

Nothing to report.

Annex F: UNDERPINNING ACTIVITIES

House Committee

The House Committee reviews and develops the key functions that underpin the general activities of the Society in order to achieve its strategic aims. The Committee, chaired by the General Secretary, normally meets ahead of the Council meetings. The House Committee met twice in 2019 on 24th January and 16th October.

Highlights from 2019:

- The House Committee reviewed the Standing Orders of the Society; in particular By-Laws 41, 46 and 50.
- Monitoring Governance issues is an important activity for the House Committee. An overall governance health check has been completed and highlighted that the Society is in a good position. However, it is crucial that changes in the outside environment, including data protection, charity law and employment law are monitored closely to ensure the Society remains compliant; the Society's Risk Register is one mechanism that ensures ongoing monitoring. The House Committee reviewed updates to policies relating to GDPR, cyber security and to update and clarify a code of conduct for its Trustees.
- The recommendations of the Salary and Remuneration Committee were reviewed.
- Health and Safety issues continue to be carried out by professional experts with any major recommendations reported to House.

Strategic Planning Board

The Strategic Planning Board (SPB) supports the development of the Society's three-year Strategic Plan. It meets biannually to ensure the Strategic Plan remains fit for purpose, to provide guidance on cross-cutting themes and potential strategic partnerships, and to review and prioritise strategic project proposals.

The SPB met in January and October 2018. The Chair of the SPB is President of the Society.

The business of the SPB has again been 'business as usual' this year with scrutiny of strategic projects, and business development plans and projects.

Below is a table of the strategic projects that were prioritised in 2019 and progress against each project.

Project	Description
Teachers Handbook for 11-14 Weather <i>How it Works: Weather and Climate</i>	A project to develop a high quality, teachers' handbook to support weather and climate education for 11-14 year olds with a comprehensive set of supporting classroom resources.
Climate Change CPD for Teachers	To raise the quantity and quality of climate change teaching in secondary school science.

Council and Committees

MEMBERSHIP OF COUNCIL (TRUSTEES OF THE SOCIETY)

Patron: HRH The Prince of Wales, HonFRMetS

From 1 January to 30 September 2019 the constitution of the Council was as recorded in the Annual Report for 2018. On 1 October 2019, the following Council held office:

PRESIDENT

David Warrilow OBE, FRMetS

VICE-PRESIDENTS

Prof David Griggs, PhD, FRMetS
Capt. Derek Swannick, FRMetS
Dr Jon Petch, PhD, FRMetS (also Chair, Strategic Programme Board)

VICE-PRESIDENT FOR SCOTLAND

Dr Vicky Ingram, PhD

GENERAL SECRETARY

Shanti Majithia FRMetS, FRSS (also Chair, House Committee)

TREASURER

Jennie Campbell

COMMITTEE CHAIRS

Dr Amanda Maycock, PhD (Meetings and Conferences Committee)
Dr Jenny Rourke, PhD, FRMetS, CMet, (Education and Outreach Committee)
Prof Peter Stott, PhD, FRMetS (Climate Science Communications Group)
Dr Will Lang PhD, FRMetS, CMet (Professional Accreditation Board)
Dr Anna Ghelli, PhD, FRMetS (Scientific Publishing Committee)

MEMBERS OF COUNCIL

Aisling Creevey, FRMetS, RMet
Helen Rossington, FRMetS, RMet
Karl Shepherdson, FRMetS

Membership of Committees of Council

The Committees listed below are the standing Committees of the Society as at 31st December 2019. Membership of other sub-committees, working groups and similar *ad hoc* bodies are not detailed.

Accreditation Board

Will Lang (Chair), Paul Davies, Andrew Eccleston, Alan Hisscott, Pete Inness, Gordon Jones, Derek Swannick, Julian Mayes, Ross Reynolds, Bob Riddaway, Keith Thomson.

Awards Committee

David Warrilow OBE (President and Chair), Eddy Graham (Co-Editor, Weather), Gavin Huggett (Co-Editor, Weather), John Methven (Co-Editor, QJ), Andrew Ross (Co-Editor, QJ), Becky Hemingway (Co-Editor, ASL), Andrea Montani (Co-Editor, ASL), Cristina Charlton-Perez (Co-Editor, Met Apps), Dino Zardi (Co-Editor, Met Apps), Radan Huth (Editor, IJOC), Linden Ashcroft (Editor, GDJ), Dave Griggs (Vice-President), Jo Haigh, Liz Kent, Martin Miller, Alan Thorpe.

Climate Science Communications Group

Emily Shuckburgh (Co-Chair), Peter Stott (Co-Chair), Michelle Cain, Pierre Friedlingstein, Alyssa Gilbert, Candice Howarth, Dan Jones, John Mitchell, Tim Palmer, Adam Scaife, Ian Strangeways, David Warrilow OBE.

Course Evaluation and Continuous Professional Development Panel

Keith Thomson (Chair), Andrew Eccleston, James Dent, Paul Gundersen, Peter Jonas, Norman Lynagh, Paul Monger, Penny Tranter, Rebecca Venton, Michael de Villiers.

Education and Outreach Committee

Jenny Rourke (Chair), Lindsay Bennett, Richard Allan, Andrew Charlton-Perez, Simon Foster, Geoff Jenkins, John Lyon, Ellen Phillips (representative of the Institute of Physics), James Rae, Paula Richardson (Representative of the Geographical Association), Karl Shepherdson, Jeremy Thomas, Simon Pinfield, Steve Brace (Representative of the Royal Geographical Society) Felicity Liggins (representative of the Met Office), Kit Rackley (representative of WEMC), Phoebe Smith-Barnes.

House Committee

Shanti Majithia (Chair), Anna Ghelli (Chair of Scientific Publishing Committee), Derek Swannick (Vice-President), Jennie Campbell (Treasurer).

Meetings and Conferences Committee

Amanda Maycock (Chair), Karen Aplin, Natalie Harvey, Edmund Henley, Matt Hugo, Simon Levey, Mark Rodwell, Andrew Russell, Sally Woodhouse (Student Representative). Representatives of Special Interest Groups and Local Centres are also invited to attend.

Membership Development Board

Shanti Majithia (Chair), Daniel Brener, Sarah Dennis, Richard Griffiths, Sarah Hewitt, Kaja Milczewska, Roger Webber.

Scientific Publishing Committee

Anna Ghelli (Chair), Eddy Graham (Co-Editor, Weather), Gavin Huggett (Co-Editor, Weather), John Methven (Co-Editor, QJ), Andrew Ross (Co-Editor, QJ), Becky Hemingway (Co-Editor, ASL), Andrea Montani (Co-Editor, ASL), Cristina Charlton-Perez (Co-Editor, Met Apps), Dino Zardi (Co-Editor, Met Apps), Radan Huth (Editor, IJOC), Linden Ashcroft (Editor, GDJ). Representatives of Wiley are also invited to attend.

Strategic Planning Board

David Warrilow (President and Chair), Dave Griggs (Vice President), Jennie Campbell (Treasurer), Shanti Majithia (General Secretary), Steve Noyes, Rob Varley, Will Owen.

Vocational Qualification Group

Bob Riddaway (Chair), Gordon Jones, Julian Mayes, Jodie Ramsdale, David Goldsworthy, Ann Randall.

Other Representatives Appointed by Council

Atmospheric Science Letters

Editors: R Hemingway and A Montani

Associate Editors: E Black, J Booth, A Bott, A Dosio, V Ferracci, S Ghosh, S Hardiman, C Holloway, I Hoteit, C Li, C Liu, O Martinez-Alvarado, J McQuaid, A Miller, A Mohebalhojeh, R Neely, S Pal, R Parfitt, M Pritchard, N Schaller, A Subramanian, N Theeuwes, D Woolf.

GeoScience Data Journal

Editor: L Ashcroft

Associate Editors: C Reason, D Franco, V Slonosky, J Lawrimore, C Vitolo, X Liqiang, J Wagemann, B Hassler, R Crouthamel, K Royse, P Diviaco, J Tedds,

International Journal of Climatology

Editor: R Huth

Associate Editors: E Aguilar, A Cherchi, J Marengo, I McKendry, V Moron, M Roth, T Zhou

Meteorological Applications

Editors: Cristina Charlton-Perez and Dino Zardi

Associate Editors: C Archer, J Bech, S Bell, D Brayshaw, L Carvalho, E Cattani, B Chen, X Chen, A Cherchi, C Coelho, M Dorninger, R Emerton, A Ghelli, L Giovannini, N Petersen, X Huang, M Kobmann, S Kotthaus, J Lundquist, G Marshall, C Mazzoleni, A Merlone, S Orlandini, J Waller.

Quarterly Journal

Editors: J Methven and A Ross

Associate Editors: C Bishop, M Bocquet, D Bouniol, J Broecker, H Coe, C Cotter, S Davolio, A Dornbrack, J Dufresne, T Frame, E Gerber, R Hart, S Havemann, A Illingworth, T Janjic-Pfander, B Lamptey, S Marras, G McFarquhar, A Mitra, M Reeder, R Scott, B Sinha, G Steeneveld, A Turner, M Vellinga, N Vercauteren, A Weisheimer, V Wirth, N Zagar.

WIREs Climate Change

Editor: M Hulme

Associate Editors: T R Carter, L Dilling, A Engels, M Heymann, A Karnein, S Lewis, LO Naess, I Lorenzoni, S Pulver, J Rozenberg, M Rusticucci, J Settele, H Schroeder, L Whitmarsh, E Zorita

Weather

Editors: E Graham and G Huggett

Associate Editors: T Blackmore, M Clark, S Hardy, S Knight, S Keates, P Knightley, R McElwee, J Ramsdale, A Sibley, C Sweeney, M de Villiers, Y Xuan.

Representative with the:

UK Flight Safety Committee (UKFSC):

R Lunnon

General Aviation Safety Committee (GASCo):

P Nicol-Gent

European Meteorological Society (EMS):

S Majithia

International Forum for Meteorological Societies (IFMS):

Chief Executive

Science Council:

Chief Executive

Without Whom

During the year, the following Officers and Council Members retired from office with our grateful thanks. Their successors are shown above.

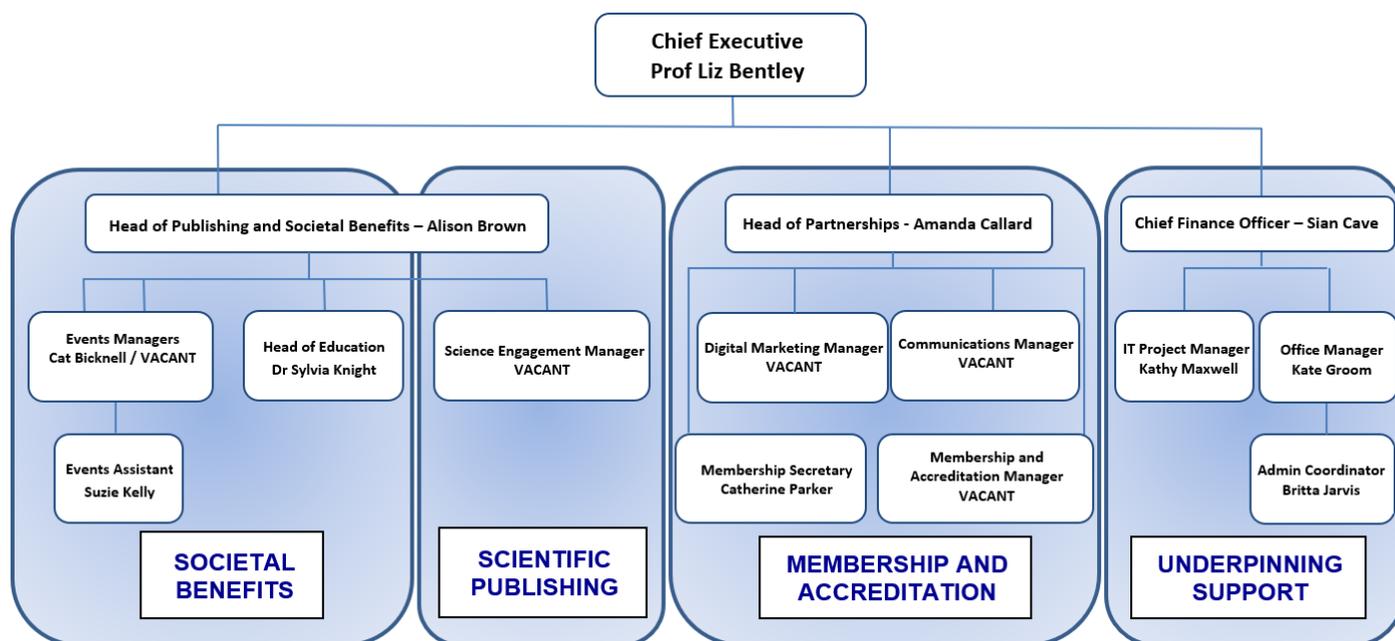
Vice President:
Council Members:

Ellie Highwood
Lindsay Bennett
Will Owen

The Society depends heavily on the valuable and unstinting work done each year by those who hold voluntary office. The Society would like to record its grateful thanks to all of those who give up their time and who contribute with great dedication to the work of the Society. The Society could not achieve all that it does without the kind support of all of its volunteers – thank you.

Staffing at the Society

The Society has a secretariat that supports the day-to-day running of the Society and carries out its executive functions. A detail of the secretariat team and the organisational structure on 31st December 2019 is shown below.



Vicky Dickinson went on maternity leave in May 2019 with Catherine Bicknell recruited to provide maternity cover for the role. Ella Clarke went on Maternity leave in September 2019 with Amanda Callard became interim Head of Partnership providing maternity cover.

The following staff left the Society during 2019.

Caroline Coch
Cat Muller
Fiona Hewer (maternity cover for Cat Muller)
Jo Bayliss
Juan Estrella-Martinez
Marcia Spencer
Peter Heather
Tara Thompson (maternity cover for Cat Muller)

Background to the Society

The British Meteorological Society was founded in 1850 and was incorporated by Royal Charter in 1866. In 1883 the name was changed to the Royal Meteorological Society. A separate Scottish Society had existed from 1855, but in 1921 was merged with the Royal Meteorological Society. The Society is a United Kingdom Charity with a national and international reach and reputation.

The Royal Charter states that the Society was established “for the advancement of Meteorological Sciences”. That remains the aim of the Society and includes advancement of applications of the science and related sciences, including climatology and climate science, the interaction between the atmosphere and the oceans, and environmental awareness. Copies of the Society’s Charter and By-Laws are available on request.

The Society’s Annual Report and Annual Accounts are submitted to the Annual General Meeting by the Trustees, the Society’s Council, who are elected or re-elected each year at the Annual General Meeting. The Annual Report illustrates activities during the year, which reflect Council’s policies in pursuit of the aim of the Society.

The Royal Meteorological Society (Registered Charity No 208222):

Address: 104 Oxford Road
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Telephone: 0118 956 8500
E-Mail: chiefexec@rmets.org
WWW: <http://www.rmets.org>

Bankers: Lloyds Bank plc
PO Box 1000
BX1 1LT

Solicitors: Blandy & Blandy
1 Friar Street
Reading
RG1 1DA

Auditors: Porter Garland
Communication House
Victoria Avenue
Camberley
Surrey
GU15 3HX

Investment Management Ltd
Rathbone Investment
Advisors: 1 Curzon Street
London, W1J 5FB

Investment Powers:

By-Laws (July 2011) 82 and 83 read:

- 82 The monies of The Society which are not subject to any specific trust purpose, and which are not required to meet current expenditure, may be invested in any securities quoted in the official list of any recognised Stock Exchange or placed on deposit with a reputable organisation. Council may only delegate its powers to select and make investments to the extent permitted by the provisions of The Royal Charter and the relevant legislation governing responsibilities of Trustees and Charities¹.
- 83 The Society’s premises shall not be sold or disposed of except with the sanction of a General Meeting of The Society.

¹ Reference should be made to Part IV, Section 11(3) of the Trustees Act 2000.

Policy Statement on the Role of the Reserves

Principal Objectives

The principal objectives of the Society's reserves are to maintain and make use of capital reserves to:

- Ensure the viability of the Society on a year-by-year basis and in the long term as an assurance against significant financial risks.
- Enable the medium to long-term development of the Society's aims and objectives.

Background and Introduction

The Society derives its primary annual income from a combination of members' subscriptions, sales of publications, and income from investments. The Society holds three types of investments: Tangible Assets, a General Reserve, and a Legacies Fund. Council first approved the policy on management of these two last items on 5th December 2001 and this is kept under regular review.

Historically the only major demand (> £100,000) on the reserves has been the purchase of the Oxford Road Headquarters, pending the sale and resolution of the problems with the previous Headquarters (James Glaisher House, in Bracknell). Other demands have been comparatively small (~£50,000 spread over several years) and relate to upgrade of the IT equipment.

The medium and long-term investment strategy of the Society has been formulated by Council, is overseen by the Society's House Committee and is being implemented by the Chief Executive, who reports to Council three times a year. This policy statement provides guidelines on how the reserves may be used *inter alia* to fund non-recurring costs resulting from proposals on strategic development projects of the Society and to mitigate the major risks of the Society. Individual items of expenditure are presented for Council approval in the normal way.

The Annual Budget

The annual budget covers the income and expenditure of the Society in all its activities, including the reserves. Council sets the budget for the Society and at each quarter receives a forecast of out-turn against the budget. The management accounts format is broken down into the four business areas of Publishing, Societal Benefits, Membership and Accreditation, and Underpinning Support.

Overall, the budget shall normally be break even, with the exception of expenditure on strategic development projects, which may fall across some or all of the business areas. The budget for strategic development projects may be funded from previous years' reserves surplus, which have been specifically identified as ringfenced for this purpose. The budget shall be set by taking into account the gains on the reserve available for investment in the Society's charitable objectives. This is informed by the Charity Commission's guidelines on the ratio of annual turnover to capital reserve.

The Reserves - Tangible Assets

Tangible assets, which comprise the premises, the furnishings and equipment are essential for conducting the business of the Society and are an effective way of providing "rent free" accommodation. These shall be routinely maintained primarily through the annual budget at a level appropriate to provide accommodation and facilities to support the normal operational activities of the Society. This includes committee meetings, but not necessarily the regular Society meetings and conferences. Major changes to tangible assets would be funded on a case-by-case basis through the General Reserve and could include external contributions (e.g. on appeal).

The Reserves - The General Reserve

The role of the General Reserve is basically to provide a degree of financial robustness to the long-term survival and mitigation of the major risks of the Society. In line with the Society's Risk Register and its strategic and development requirements, the General Reserve shall:

- provide some resilience against "single event" failures, e.g. a significant failure of a large conference (~£100,000);
- allow front-loaded strategic spend-to-save measures (~£200,000);
- allow some "one-off" expenditures on an opportunist basis (~£100,000);
- allow a recovery period for significant changes in the income/expenditure balance (~£150,000);
- create a margin for medium term market fluctuations (~£100,000).

For this model to work at these sorts of levels over a long period the fund needs to have a topping up mechanism. This has to be through income or growth in the market. This gives a target value of the General Fund and the Legacies Fund together which is approximately equivalent to the annual turnover of the Society.

The Reserves - The Legacies Fund

The policy for this fund is to protect and grow it. Subject to this policy, capital gains and dividends are used to support, in a sustained manner, benefits primarily to individuals through Grants, Awards and Bursaries. The number and level of grants and bursaries shall be determined by the level of available funds and by second priority call on the General Fund.

The Investment Policy

The Management of Investments

The Council, advised by the House Committee, are responsible for overseeing the Society's investments. At present the management of investments is delegated by Council to a professional Fund Manager. The House Committee reviews performance of the Fund Manager twice a year and Council reviews investments normally quarterly, but at least annually. The choice of Fund Manager is kept under annual review in line with performance and the Society's investment requirements.

Choice of Investments

Investments may be made in cash deposits, property, gilts and equities in such proportions as to endeavor to maximise the total return to the Society over the longer term, typically a period of the Society's Strategic Plan, in order to deliver the required investment for the Society's development programme and to mitigate the Society's major risks. To this end investments should not be held in companies whose activities are contrary to the aims of the Society or its social, environmental and ethical responsibilities as the Professional Body and Learned Society for meteorology.

Where investment is made in equity shares, these should be mainly in FTSE-100 companies and no purchase of a single equity should represent more than 5% of the total portfolio value. This guideline excludes shares held indirectly through, for example, Investment Trusts, where there is already an underlying diversity. If any holding reaches 20% of the value of the portfolio a partial sale should be considered. The portfolio should be diversified over both market sectors and geographic markets, and no one sector should represent more than 25% of the total portfolio value.

Cash Flow Requirements

Council, when considering the budget, shall identify the likely demand for withdrawing funds from the investments over the next financial year and this shall be communicated to the Fund Manager so that they are able to anticipate the requirement for sales of investments whilst maximising profits and minimising losses. Any surplus cash on deposit may also be transferred at any time to the Fund Manager for investment at the discretion of the Society's Chief Financial Officer.

Trustee Liability

Charity trustees are responsible for the efficient management of the organisation's assets and may be held personally liable for the financial state of their charity. Delegation and effective performance monitoring of the management of the funds to suitably qualified professionals adequately discharges that responsibility.

The Society carries trustee indemnity insurance against claims of up to £1m (excluding cases of willful fraud). It is important that all those Trustees and Fellows involved in managing the Society's funds are seen to take and act upon relevant professional advice and ensure that the Society Investment Policy is adhered to.

Annex G: REPORTS FROM OTHER REPRESENTATIVE BODIES

Science Council

The Science Council is a membership organisation for professional bodies and learned societies across science, bringing together a range of disciplines and sectors to reflect the multi-disciplinary practice of science in today's society. The Science Council provides a voice on policy and ethical issues affecting the science community, fostering debate and the exchange of ideas across the network. It also supports member organisations to be more effective in meeting the needs of the science community and attracting the next generation into fulfilling science careers.

Over the last couple of years or so there have been a number of changes at the Science Council Executive. The new Chief Executive, Helen Gordon, was appointed in early 2019 and the President is Professor Sir Keith Burnett. The Society continues to be a Member of the Science Council.

General Aviation Safety Council (GASCo) & UK Flight Safety Committee (UKFSC)

The Flight Safety Committee (FSC) comprises of commercial operators including airlines such as EasyJet, Ryanair, and smaller concerns down to British Antarctic Survey: the General Aviation Safety Council (GASCo) comprises umbrella organisations in general aviation such as the Aircraft Owners and Pilots Association, British Balloon and Airship Club, British Gliding Association, British Hang Gliding and Paragliding Association.

Bob Lunnon attended four of the six FSC Safety Information Exchange meetings and all the GASCo meetings in 2019. Meteorology did not feature explicitly in any of the meetings, but came up indirectly in all.

At the January FSC meeting there was a presentation by Mike Broomfield, University of Coventry, on the "Loss of control" research. Loss of control is often affected by meteorological conditions including icing, turbulence, degrading visibility and windshear as meteorological factors. The research project is looking for pilots to participate in trials.

The March FSC meeting was dominated by a discussion of the two Boeing 737Max accidents, which have led to the aircraft being grounded. The meeting provided an opportunity to discuss an aircraft which had done a go-around at Manchester because of windshear and had flown into the wake vortex of an A380 as a result. Attendees queried the likelihood of wake vortices, which would normally dissipate quickly in the presence of windshear.

At the November FSC meeting there was a presentation on the International Civil Aviation Organisation global reporting format for contaminated runways, the most common contaminant being water, solid ice or snow. The format raises issues analogous to other areas of aviation meteorology. What should be reported is the state of the runway, but in addition documents have been generated that characterise the braking performance of specific aircraft types as a function of the runway condition code. This is analogous to converting from turbulence eddy dissipation rate to acceleration of an aircraft.

General Aviation (GA) is in general more sensitive to the weather than Transport Aviation. A database has been compiled of fatal UK GA accidents for the period 1980 to the present day. Fatal GA accidents are investigated more thoroughly than non-fatal ones, so this database is a valuable resource for anyone wanting to better understand the relationship between GA and weather. Across Europe, 14% of GA accidents are weather related, and that, of the weather-related fatal GA accidents, more than half involved attempts to continue to fly under VFR (visual flight rules) into IMC (instrument met conditions).

There was a presentation of the General Aviation safety strategy review, instigated by the department for transport, at the November GASCo meeting. The overall view seemed to be that GA was "safe enough". In terms of fatal accidents per hour of activity, flying is safer than horse riding, boxing or swimming. The presenter acknowledged that safety would be improved if, for example, the required number of hours flown was doubled before a licence is granted, but this was seen as impracticable – with the "cost" of a private pilots licence essentially doubling if this was done. There was acknowledgement that lack of Continuing Professional Development for Private Pilot License level pilots was an issue.

European Meteorological Society (EMS)

EMS Membership and RMetS Representation

The European Meteorological Society (EMS) is an Association of 38 Meteorological Societies from 30 European countries. In addition, EMS has 29 Associate Members made up of National Meteorological Services, international institutions, research and education institutions, and commercial companies. The Society is a permanent member on the EMS Council and the RMetS General Secretary is the Society's representative on the EMS Council.

The following meetings have taken place:

- 40th EMS Council in Copenhagen, Denmark on 14th May 2019 chaired by Bob Riddaway, EMS President. Ewen McCallum, previous General Secretary was the RMetS representative at the meeting.

- 41st EMS Council and 21st EMS General Assembly in Copenhagen, Denmark on 8th September 2019 where Liz Bentley represented RMetS.

Annual Meetings

The EMS Annual Meeting 2019 was held in Copenhagen from 9th to 13th September 2019. There were 846 participants from 50 countries. The focus of the annual meeting was on the Arctic. As well as the conference presentations, there were workshops and side meetings, which have now become a key component of these events. Future EMS Annual Meetings will be as follows.

- **2020 EMS Annual Meeting** will take place in Bratislava, Slovakia, from 7th to 11th September 2020.
- **2021 EMS Annual Meeting** will take place in Barcelona, Spain from 6th to 10th September 2021.
- **2022 EMS Annual Meeting** will take place in Bonn.

EMS Silver Medal Award

Gerald Fleming was selected as the recipient of the EMS Silver Medal 2019. The award was presented at the EMS Annual Meeting 2019 in Copenhagen where he gave the Silver Medal Lecture.

Other activities and developments

The EMS President attended the Open Consultative Platform (OCP), arranged by the World Meteorological Organization, which he attended in Geneva in June. The main objective of the OCP is to foster cross-sectoral, interdisciplinary and long-term approaches in identifying and addressing collaboratively the grand challenges facing the weather enterprise.

Preparation is underway for the 5th Europhotometeo competition to be held in 2020.

International Forum of Meteorological Society (IFMS)

IFMS Membership and RMetS Representation

The International Forum of Meteorological Society (IFMS) is an organisation that aims to foster and encourage communication and exchange of knowledge, ideas and resources among the world's meteorological societies. It is an association of 36 meteorological societies or related organisations.

IFMS Council Elections were held in August 2018, which were ratified at the General Meeting (IFMS GM5). Dr Harinder Ahluwalia (CMOS, Canada) was re-elected as President of the IFMS. Prof Liz Bentley is the Society's representative on the IFMS Council as Councillor for the WMO Region VI. The Council meets every month via teleconference.

IFMS General Assembly Meetings

The International Forum of Meteorological Societies (IFMS) is an organisation of national and regional met societies. Its mission is to foster and encourage communication and exchange of knowledge, ideas and resources among the world's more than 60 meteorological societies to advance the science and application of meteorology. The IFMS has a Council comprising of officers and representatives from the six WMO regions. The Society is currently the representative for the European region. Council meets once every two months via teleconference.

The 6th Global Meeting of IFMS Global Meeting will take place in January 2020, with preparations dominating the second half of 2019.

The IFMS website is updated regularly and a newsletter is produced and distributed two or three times a year. A Webinar on Professional Accreditation was presented by Prof Liz Bentley (RMetS) and Keith Seitter (AMS) and is available on the IFMS website.