**Professor Ian Alasdair Renfrew**

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My research is on dynamical and physical processes that are important for weather forecasting and climate prediction; in particular mesoscale dynamical meteorology, air-sea interaction, atmospheric forcing of the ocean and North Atlantic climate. I am regarded as an international expert on these processes in the polar regions. I have published over 80 peer-reviewed articles in the leading journals in my field and contributed invited articles for encyclopedias and edited books. I received the 2017 Adrian Gill Prize from the Royal Meteorological Society, which recognises significant multi-disciplinary meteorological research achievements over the preceding 5 years.

***Employment and Education***

2017-present: Associate Dean for Research, Faculty of Science, UEA

2010-present: Professor, School of Environmental Sciences, UEA.

* 2010-2013: Director of Research for the School; REF 2014 UoA7 Coordinator

2006-2010: Reader, School of Environmental Sciences, UEA.

* 2008-10: Head of Marine and Atmospheric Sciences sector

2004-2006: Lecturer, School of Environmental Sciences, UEA.

* 2004-06: Certificate in Higher Education Practise, UEA

1998-2004: Research Scientist, British Antarctic Survey (BAS), Cambridge.

* 2003-04: Project Leader of ACES-FOCAS project (£4M).
* 2001: promoted to Senior Scientific Officer.
* 2000 and 2002: Completed two field seasons in the Antarctic (in total 6 months).

1995-1998: Postdoctoral Research Fellow, Dept. of Physics, University of Toronto, Canada.

1992-1995: PhD in Meteorology, University of Reading.

1987-1991: BSc (Hons) in Mathematics (First Class), University of Edinburgh.

***University Teaching***

* 2004/5-present: Teach ~50% of 2nd year Meteorology I to 65 students.
* 2004/5-present: Teach and organise 70% (previously 100%) of 3rd year Modelling Environmental Processes (20 credits: 12 h lectures, 36 h practicals) to 20-45 students.
* 2004/5-odd years: Teach on Environmental Sciences 1st year field course.

***University Administration***

* April 2017-present: Associate Dean for Research, Faculty of Science
  + Member of UEA Research Executive, Science Faculty Executive, Chair of Science Research Executive.
* Jan 2016- July 2017: Co-director Centre for Ocean and Atmospheric Sciences
* Aug 2015-present: Deputy Chair of Examiners
* Aug 2010-Dec 2013: Director of Research, member of School’s Executive, Research and Promotions committees; Member of Faculty of Science Research Executive.
* Aug 2010-Dec 2013: Coordinator and strategic director of UEA’s REF2014 submission for Earth Systems and Environmental Sciences (UoA7).
* 2008/9-2009/10: Sector head for Marine and Atmospheric sciences sector
* 2005/6-2008/9: Course Director of MSc Atmospheric Sciences.
* 2004/5-2006/7: Member of the School’s teaching committee.

***International and National Leadership***

* 2015-present: Member of the *Met Office Strategic Advisory Committee*.
* 2015-2017: Member of the NERC/Met Office *Facility for Airborne Atmospheric Measurements Strategy Committee.*
* 2012-2013: **Co-Chair** Scientific Steering Group of the *Met Office and NERC’s Joint Weather and Climate Research Programme (JWCRP).*
* 2011-present: **Founding member** of the Scientific Steering Group of the *World Meteorological Organisation’s Polar Predictability Project:* a ten-year project with the aim of *“promoting cooperative international research enabling development of improved weather and environmental prediction services for the polar regions, on time scales from hourly to seasonal”.* PPP is one of only three WMO World Weather Research Programme projects.
* 2011-2012: I was seconded (10% time) to **NCAS** (the National Centre for Atmospheric Sciences) to lead and develop an *“Expert Group” on Boundary-layer Meteorology*. The aim being to develop a more coherent boundary-layer research community across the Weather and Climate science communities, e.g. bringing University, NERC and Met Office scientists together with the aim of improved collaboration and better grant proposal success.
* 2011-2012: **Member** of the Met Office/NERC’s *Facility for Airborne Atmospheric Measurements* *Operations Committee.*
* 2008-2012: **International member** of *US CLIVAR’s Working Group on High Latitude Surface Fluxes.*
* 2004-2007: **Co-chair** of the *World Climate Research Programme’s CLIVAR/CLIC/SCAR Implementation Panel on Southern Ocean Climate.*
* 2002-2008: **Member** of the *American Meteorological Society’s Committee for Polar Meteorology and Oceanography.*

***Recent Major Research Projects***

* *Arctic Summertime Cyclones: Dynamics and Sea-Ice Interaction*, 2020-2023; NERC Discovery grant. UEA PI (£270k to UEA from £1M for the project), Lead PI is john Methven (U. Reading).
* *SOC, Southern Ocean Clouds*, 2020-2024: NERC Uncertainty in Climate Sensitivity due to Clouds Programme. UEA PI (£370k to UEA from £2.3M for the project), Lead PI is Tom Lachlan Cope (BAS).
* *FOGGI: Fog Over the Indo-Gangetic plains of India, 2019-2021:*  Newton WCSSP Weather and Climate Science Services Partnership. UEA PI (£280k) with lead PI Andrew Ross (U. Leeds)
* *CANDIFLOS, Characterising and Interpreting FLuxes Over Sea-ice*, 2019-2021: NERC Discovery grant. UEA PI (£320k) with lead PI Ian Brooks (U. Leeds).
* The *Iceland-Greenland Seas Project* *2016-2021:* The atmospheric component (£0.9M) has been funded from NERC’s highly competitive Discovery grant round, as the *Atmospheric Forcing of the Iceland Sea* grant*.* I am PI and conceived and wrote the vast majority of this grant. The *IGP* is a major (~£4M) international programme of research – including a winter research cruise, moorings, buoys, gliders and aircraft-based field work as well as a suite numerical modelling – with significant funding from the USA and Norway.
* *Ocean2Ice: Processes and variability of heat transport in the Amundsen Sea 2013-2016:* Funded as a consortium from NERC’s Ice Sheet Stability Research Programme (iStar). I was a Co-I in this UEA-lead project and also won funding for a PhD studentship.
* *ACCACIA, Aerosol Cloud Coupling and Climate Interactions in the Arctic, 2011-2016:* Funded as a consortium of UK Universities and the Met Office, with funding so far from NERC and NCAS. I was the UEA PI and a work package leader. I played a leading role in obtaining funding for this major (£3.3M) new project and in the field campaigns.
* *DIAMET, Diabatic influence on mesoscale structures in extratropical storms, 2011-2015:* Funded as a consortium of UK Universities and the Met Office by NERC via their Storm Risk Mitigation Programme. I was one of four PI’s and a work package leader. I played a leading role in developing this project and running the field campaigns undertaken in 2011-12.
* *OFCAP, Orographic flows and climate over the Antarctic Peninsula, 2009-2012:* Funded as a NERC-Antarctic Funding Initiative project lead by British Antarctic Survey. I played a key role in developing this project and directing the field campaign. The UEA-led publications from OFCAP are of outstanding quality and have been nominated for prizes.
* *GFDex, The Greenland Flow Distortion Experiment, 2005-2009:* Funded initially as a NERC standard grant, this blossomed into a major (£3M) international project with funding coming from Canada, Norway, the EU and the US (for allied oceanographic work). I instigated, obtained funding for, and developed this project into the major international enterprise it became. I led a team of twenty scientists during our three-week field campaign from Iceland in 2007, led the writing of a high-profile overview paper and instigated a special issue of *Quarterly Journal of the Royal Meteorological Society*, with ten published articles. More than 30 articles were published from GFDex science, including 4 of the top ten most cited articles of 2009 in *QJRMS*.

***Research Metrics***

* As of September 2019, I have 84 journal articles published, plus 2 contributions to edited volumes, 3 contributions to encyclopedias and 11 other articles.
* Total citations = 4116; 3012; 2925; (Google Scholar; Scopus; Web of Science)
* h-index = 39; 34; 32;

***Research Impacts***

* I have ongoing (2005-present) collaborations with scientists at the *UK Met Office* on surface-layer, boundary-layer & cloud parameterization and the simulation of orographic flows. This has recently led to changes of the surface exchange scheme in the Met Office suite of forecasting and climate models and in the ECWMF model. Our new surface drag scheme was tested in ‘Parallel Suite 41’ during 2018 and became operational in the Met Office’s forecasting system in September 2018; it has also been incorporated in the GL8 climate model configuration. This impact has been written up as a potential REF2021 Impact Case Study for UEA.
* I provided written evidence for the *House of Lords Arctic Committee*, which was cited in their report *“Responding to a Changing Arcti*c” published in 2015.
* During GFDex (2005-2010) I collaborated with the *UK Met Office* working on the impact of targeting observations into areas of forecast sensitivity; and evaluating the marine surface layer of the *Met Office’s* operational NAE forecasting model. This has led to forecast improvements, assessments of the usefulness of targeted observations, and contributed to a decision by the *Met Office* to change their operational SST product.
* Through the GFDex, DIAMET and ACCACIA projects (2005-present) I have collaborated with scientists at the *Met Office and NCAS* to develop the ability of the FAAM’s BAE146 large research aircraft to measure turbulent fluxes of heat, moisture and momentum.
* During the *Labrador Sea Deep Convection Experiment (1996-2002)*, our aircraft- and ship-based observations were used to interpret and validate numerous oceanographic and atmospheric studies; including discovering the surface flux parameterisation used in the *US National Center for Environmental Prediction (NCEP)* model was inappropriate at high wind speeds; our work contributed to *NCEP* changing this parameterisation scheme. Discussions with the *Met Office* on this problem contributed to their decision to update the their parameterisation.

***Research Group***

* Postdoctoral supervision:
  + Dan Smith (Newton WCSSP FOGGI, Oct 2019-present)
  + Annick Terpstra (Norwegian Research Council Fellow, 2017-2019)
  + Andy Elvidge (NERC AFIS, 2016-present)
  + Alex Poulidis (NERC CASHI, Feb-June 2015)
  + Andy Elvidge (NERC ACCACIA, 2013-2015)
  + Peter Cook (NERC DIAMET, 2011-2013)
  + Nina Petersen (NERC GFDex, 2005-2008)
* Primary PhD supervision:
  + Will Hodder (NERC Industrial Case, 2018-present)
  + Chris Barrell (NERC EnvEast DTP student, 2017-present)
  + Daniel Smith (NERC Industrial Case, 2015-2019)
  + Denis Sergeev (Zuckerman, 2014-2018)
  + Richard Jones (NERC iSTAR, 2013-2018)
  + Rhiannon Davies (NERC ACCACIA tied-studentship, 2012-2017)
  + Jan Chylik (NCAS, 2011-present)
  + Alex Poulidis (UEA, 2011-2015)
  + Andy Elvidge (NERC OFCAP tied-studentship, 2009-2013)
  + Ben Harden (NERC quota, 2008-2012)
  + Dave Sproson (NERC quota, 2006-2010)
  + Stephen Outten (NERC GFDex tied-studentship, 2005-2009)
  + Hanneke Luijting (EU Marie Curie, 2005-2009)
  + Emma Fiedler (NERC quota, 2005-2009)
* Secondary PhD supervision:
  + Jake Opher (BAS, NERC DTP, 2016-present)
  + Ella Gilbert (BAS, NERC DTP, 2016-2020)
  + Shenjie Zhou (UEA, self-funded, 2016-2020)
  + Dan Bannister (BAS, NERC quota, 2011-2015)
  + Emma Irvine (Reading, NERC GFDex tied-studentship, 2006-2009)
  + Alan Condron (Sheffield, NERC COAPEC, 2002-2006)
* MSc dissertation supervision – 5 students over 8 years.

***Recent Outreach Activities***

* 2018: Iceland Greenland Seas Project Outreach – short films, radio interviews and participation in *The Weather Adventure* for French National TV.
* 2015: UEA Christmas Lectures for children (audience of ~800)
* 2013: Inaugural lecture, Polar Weather, Global Climate, UEA
* 2012 and 2013: Lead development of educational videos and material for DIAMET project. Filmed for videos, provided auxiliary material, helped develop educational material.
* 2012: Filmed for BBC One’s *The One Show* during research aircraft flight into a storm.
* 2011: Appearances on number of radio stations and newspapers as part of flying campaign.
* 2008: New Scientist article, *Windiest location in world ocean.*
* 2007: NERC Planet Earth article on GFDex field campaign.
* 2007: Dozens of newspaper articles in UK, Canada, Iceland and Norway on the GFDex field campaign and the launch of the International Polar Year. 7000 hits on the GFDex website.
* 2007: Sky News television piece on GFDex field campaign and IPY.

***Academic Activities***

* 2019: Lecturer at Winter School on the *Influence of Diabatic Processes on Atmospheric Development,* Kvalheim, Bergen, Norway.
* 2018-present: Core member of NERC Peer Review College.
* 2015: Co-organised a workshop on *Dynamics of Atmosphere-Ice-Ocean Interactions in the High-Latitudes,* at Rosendal, Bergen, Norway.
* 2014 & 2016: Guest lecturer at UNIS, Svalbard; 1 week on the Arctic ABL
* 2008-09: Guest Associate Editor for the GFDex special issue of *QJRMS*
* 2009: Co-convened Air-Sea-Ice Interactions session, IAMAS/IAPSO/IACS, Montreal.
* 2008: Organised GFDex workshop, UEA, Norwich.
* 2005: Co-organised a workshop on *Modes of Southern Hemisphere climate variability*, Cambridge, UK, sponsored by CLIVAR/CliC/SCAR Southern Ocean panel.
* 1999-2004: Member of the Editorial Board of the Royal Meteorological Society’s *Weather.*
* 1999-present: Fellow of the Royal Meteorological Society.
* 1995-1999: Member of the Royal Meteorological Society.
* Referee for numerous international journals.
* Referee for Canadian Foundation for Climate and Atmospheric Sciences, US National Science Foundation, Research Council of Norway and NERC.
* PhD examinations: 2 international (Bergen, Helsinki); 8 national (Edinburgh, Exeter, Imperial 2, Leeds 2, Reading 2), 8 at UEA.
* Presented at more than 30 international conferences and workshops.

***Recent Invited International Talks***

* 2019: ECMWF: Observational campaigns for better weather forecasts, Reading, UK
* 2019: Year of Polar Prediction Arctic Science Workshop, Helsinki, Finland
* 2018: Royal Meteorological Society National Meeting, The Arctic
* 2018: Tsukuba Global Science Week, University of Tsukuba, Japan
* 2018: Disaster Prevention Research Institute, University of Kyoto, Japan
* 2018: The Iceland Greenland Seas Project, University of Akuryeri,
* 2017: IAMAS, International Association of Meteorology and Atmospheric Sciences, Cape Town, South Africa
* 2017: Bjerknes Fellowship lecture, Geophysical Institute, University of Bergen, Norway
* 2016: Polar Prediction Project workshop, NMEFC, Beijing, China
* 2015: High-latitude dynamics workshop, Rosendal, Bergen, Norway
* 2014: Geophysical Institute, University of Bergen, Norway
* 2013: Finnish Meteorological Institute and University of Helsinki, Finland
* 2013: IUGG: IAPSO Conference, North Atlantic Climate session, Gothenborg, Sweden.
* 2012: American Meteorological Society’s Air-Sea Interaction Conference, Boston, USA
* 2010: European Geophysical Union, Vienna
* 2010: US CLIVAR Air-sea interaction at high latitudes workshop, Colorado.

***Honours and Awards***

* 2018: The *Adrian Gill Prize* from the Royal Meteorological Society for 2017- recognising significant multi-disciplinary meteorological research achievements over the preceding 5 years
* 2017: *Bjerknes Visting Fellowship* – fully-funded visit to University of Bergen.
* 2008: Visting Professorship, University of Toronto.
* 2003: Received the *Law’s Prize* - awarded annually to the best young scientist at BAS.
* 1990: Awarded a Faculty of Science Scholarship to carry out a summer research project.
* 1989 & 1990: Awarded a Keasbey Memorial Bursary for academic & sporting excellence.
* 1988, 1989 & 1990: Awarded a Faculty of Science Bursary for academic achievement