

# Hannah Ruth Wakeford | CV

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## Professional Appointments

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### Space Telescope Science Institute

*Giacconi Research Fellow*

administered by AURA

**Baltimore, Maryland, USA**

*Nov 2017 – Present*

### University of Exeter

*Research Fellow*

**Exeter, Devon, UK**

*July 2017 – Nov 2017*

### NASA Goddard Space Flight Center

*NASA Postdoctoral Research Fellow*

administered by USRA

**Greenbelt, Maryland, USA**

*Aug 2015 – May 2017*

## Education

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### University of Exeter

*PhD in Physics, Supervisor David K. Sing*

Dissertation title: "Cloudy with a chance of water: Investigating hot Jupiter exoplanet atmospheres through observation and analysis"

**Physics Building, Stocker Rd, Exeter, UK**

*2011–2015*

### University of Wales: Aberystwyth

*Combined Bachelors and Masters of Physics*

Physics with Planetary and Space Physics

Dissertation title: "Relating geomagnetic substorm observations in the upper polar atmosphere to large scale solar CME events"

**Llandinam Building, Aberystwyth, UK**

*2007–2011*

### University Center in Svalbard (UNIS)

*Masters program taken as part of 4-year MPhys*

Radar diagnostics of space plasma and the upper Polar atmosphere

**Longyearbyen, Svalbard**

*2011*

## Selected Honours and Awards

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**2017: Geological Society of Washington's Bradley Award** - Best technical paper presented to the society in 2017.

**2016: NASA Robert H. Goddard Honor Award** - individual recognition award for scientific achievement.

**2016: Winner** of the NASA@Work public engagement video competition

**2015: X-Media Awards Winner - Best Show** for The Science Hour on XpressionFM

**2015: X-Media Awards Winner - Best Innovation** for Top Female Scientists card game from The Science Hour on XpressionFM

**2014/15: UK Women in Astronomy Network Role Model**

**2014: National Grand Prize Winner** of the Institute of Physics "3 Minute Wonder" competition, £500 prize

**2014:** International Womens Day Inspirational Women, University of Exeter

**2013: Regional Winner** of the Institute of Physics “3 Minute Wonder” competition, £250 prize

**2013: BBC Academy Expert Women**, Selected in the top 3% of all national applicants.

**2010:** Royal Astronomical Society (RAS) student fellowship, University of Aberystwyth, UK

## Selected Observational Programs

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PI and Science-PI programs.....

**HST C24, GO-14918, P.I H.R. Wakeford:** 10 orbits, Definitive measurement of WASP-17b's water abundance in preparation for JWST

**HST C23, GO-14169, P.I H.R. Wakeford:** 5 orbits, Measuring the absolute H<sub>2</sub>O abundance of WASP-39b's atmosphere

**CFHT 2014A & B, acting P.I with Lecavelier des Etangs:** 5 nights, Characterizing the K-band atmospheric transmission of hot Jupiter exoplanets.

**Subaru 2013-2014, Co-P.I with N. Narita:** 3 nights, in collaboration with the National Astronomical Observatory of Japan.

Co-I programs.....

**HST C25, GO-15469, P.I N. Nikolov:** 10 orbits, Characterizing a new prototype Saturn-mass exoplanet with the clearest atmosphere yet

**HST C25, GO-15288, P.I D.K. Sing:** 10 orbits, How small and how high? Enabling UV exoplanet cloud and exosphere science with WFC3/UVIS

**HST C25, GO-15135, P.I T.M. Evans:** 10 orbits, An exoplanet with a stratosphere: seeking the unknown absorber

**HST C25, GO-15134, P.I T.M. Evans:** 52 orbits, A global map of thermal inversions for an ultra-hot planet

**HST DD GO-14873:** 23 orbits, Exploratory observations of the TRAPPIST-1 system: essential prelude to an immediate JWST follow-up

**HST C24, GO-14619, P.I J. Spake:** 15 orbits, Characterizing the atmosphere of a uniquely low-density, sub-Saturn mass planet

**HST C24, GO-14767, P.I D.K. Sing:** 498 orbits, The Panchromatic Comparative Exoplanetary Treasury Program

**Spitzer C13, P.I D. Deming:** 554 hours, Transits and Eclipses of the Best of the Best: 23 Hot Jupiters for Atmospheric Characterization by Spitzer, Hubble, and JWST

**HST C23, GO-14260, P.I D. Deming:** 111 orbits, A Metallicity and Cloud Survey of Exoplanetary Atmospheres Prior to JWST

**HST C24, GO-14642, P.I K. Stevenson:** 25 orbits, A Preparatory Program to Identify the Single Best Transiting Exoplanet for JWST Early Release Science

**HST C23, GO-14500, P.I J. de Wit:** 4 orbits, Two Birds One Stone: Simultaneous Atmospheric Pre-Screening of Two Temperate Earth-Sized Exoplanets During Their Double Transit.

**HST C23, GO-14468, P.I T. Evans:** 5 orbits, Characterizing an extreme planet on the verge of tidal disruption

**HST C23, GO-14110, Co-P.I with D.K. Sing:** 10 orbits, Characterizing the atmosphere of the enlarged Neptune-mass planet HAT-P-26b

**HST C23, GO-14099, P.I T. Evans:** 15 orbits, Measuring the L-T transition for a warm Saturn exoplanet

**HST C19, GO-12473, P.I D.K. Sing:** 124 orbits, An Optical Transmission Spectral Survey of hot-Jupiter Exoplanetary Atmospheres

## Scientific Communication and Public engagement

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I am an advocate for science communication and public engagement. I particularly enjoy media related work and public talks to engage with large audiences and project scientific research in to the public conversation. For this I have been recognised with many commendations and appointments.

Video, Audio, and Print Media.....

**2016-Present:** [Exocast](#) - The Exoplanet Podcast, **co-host, -producer, and -editor**

**June 2018:** Sky at Night Magazine, **Book Reviewer**

**Feb 2018:** Sky at Night Magazine, **Book Reviewer**

**Dec 2018:** Sky at Night Podcast, **Expert Guest**

**Dec 2018:** [SimonOxPhys](#), YouTube channel video, 'Could Star Wars Planets Really Exist?', **expert guest**

**May 2017:** [Press Release:](#) NASA Study Finds Unexpectedly Primitive Atmosphere Around 'Warm Neptune'

**Feb 2017:** NASA TV live shots: TRAPPIST-1 press event, **expert guest**

**Jan 2017:** [Cool Worlds](#), YouTube channel video, 'Clouds made of Rubies', **expert guest**

**Oct 2016:** [BBC Horizon](#), TV documentary, "Extreme weather in the Universe", **expert guest**

**July 2016:** [Press Release:](#) NASA HST makes first atmospheric study of Earth-sized exoplanets.

**July 2016:** Sky At Night Magazine - Update on JWST, article, **scientific expert**

**June 2016:** Many Worlds Online Column - "[JUNO, Jupiter and Exo-Jupiters](#)", **scientific expert**

**May 2016:** NASA TV live coverage of Mercury Transit, scientific contributor.

**Oct 2015:** NASA TV: [What's new in aerospace? Exploring Alien Atmospheres](#), **expert guest**

**Mar 2015:** BBC Radio Devon, Solar Eclipse Special, **science expert**

**Mar 2015:** ITV Regional News, Solar Eclipse Special, **science expert**

**2015:** [Top Female Scientists Card Game](#), co-developer and producer - *all the media associated with the cards can be found on the attached link.*

**2013-2015:** **Producer and host** of [The Science Hour on 87.7 XpressionFM](#)

**2014-2015:** **Producer and host** of [H&M Astro Video Log](#)

**2014-2015:** ITV Regional News, **expert guest**

**Sep 2014:** [BBC Sky at Night](#), TV series, "Hunt for E.T", **expert guest**

**2013-2014:** BBC Radio Devon, Fitz Drive-time News, **science expert**

**July 2013:** [Naked Scientists Podcast](#), "planets around other stars", **expert guest**

## Invited Seminars & Public Talks

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**Feb 2018:** Iowa Science Center, Des Moines, MD, USA - **Public lecture**

**Feb 2018:** STScl Public Lecture Series, Baltimore, MD, USA - **Public lecture**

**June 2017:** Awesome Con, Washington DC, USA - **Organizer & Panel Expert** for 'The Total Solar Eclipse from NASA' and 'Alien Climates on Planets Near and Far' **Public Event**

**May 2017:** Philosophical Society of Washington, Cosmos Club DC - **Public lecture**

**May 2017:** Geological Society of Washington, Cosmos Club DC - **Public lecture**

**April 2017:** Taste of Science DC - **Public lecture**

**Mar 2017:** The Franklin Institute, Philadelphia, Night Skies in the Observatory - **Public lecture**

**Feb 2017:** University of Arizona, AZ, USA - Origins seminar series.

**Nov 2016:** Pennsylvania State University, PA, USA - CEHW seminar.

**Nov 2016:** NASA GSFC, MD, USA - Solar Systems seminar series.

**Oct 2016:** University of California: Santa Cruz, CA, USA - OWL seminar.

**Oct 2016:** California Institute of Technology, CA, USA - Astrophysics seminar.

**Oct 2016:** Jet Propulsion Laboratory, CA, USA - Exochem seminar.

**June 2016:** Awesome Con, Washington DC, USA - **Organizer & Panel Expert** for 'Exoplanets: Stranger than Fiction' **Public Event**

**May 2016:** Astronomy on Tap DC - **Public lecture**

**Apr 2016:** University of Exeter, UK - Astrophysics seminar.

**Apr 2016:** University of Oxford, UK - Planetary seminar.

**Apr 2016:** University of Cambridge, UK - Astronomy seminar.

**Apr 2016:** University of Surrey, UK - Astrophysics seminar.

**Mar 2016:** University of Delaware, DE, USA - Astronomy seminar

**Jan 2016:** University of Maryland Observatory, MD, USA - **Public open house.**

**Nov 2015:** Harvard/Smithsonian Center for Astrophysics, MA, USA - Astrophysics seminar.

**Oct 2015:** Carnegie DTM, Washington DC, USA - DTM seminar.

**May 2015:** NASA GSFC, MD, USA - Astrophysics seminar.

**May 2015:** Soapbox Science, Exeter city center, UK - **Public Event**

**Mar 2015:** Solar Eclipse Viewing party, University of Exeter - **Organizer & host** for local schools and ~2,000 members of the public.

**Jan 2015:** Crewkerne Astronomy Society, UK - **Public lecture**

**July 2014:** Sherbourne Science Cafe, UK - **Public lecture**

## Professional Conferences

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**Apr 2018:** EWASS, Liverpool, UK - **Invited Talk; JWST**

**Apr 2018:** EWASS, Liverpool, UK - **Invited Talk; Exoplanets**

**Mar 2018:** UK Exoplanet Meeting, Oxford, UK - **Contributed Talk**

**Oct 2017:** BDExoCon, DE, USA - **Invited Talk**

**July 2017:** Exoplanet Obs with JWST, MD, USA - **Invited Talk**

**Jan 2017:** AAS 229, TX, USA - **Contributed talk**

**Oct 2016:** AAS DPS 48/EPSC 11, CA, USA - **Contributed talk**

**Aug 2016:** Exoclimates 2016 Conference, BC, Canada - **Contributed talk**

**June 2016:** Emerging Research in Exoplanet Science II, Cornell Uni, USA - **Contributed talk**

**Dec 2015:** AAS Extreme Solar Systems III conference, Hawaii, USA. **Poster**

**Nov 2015:** JWST: Transiting Exoplanets workshop, STSci, MD, USA. **Workshop Poster**

**Nov 2015:** AAS DPS 47, National Harbor, MD, USA. **Dissertation presentation**

**Sep 2015:** Comparative Climate of Terrestrial Planets 2, NASA AMES, USA. **Contributed talk**

**June 2015:** From super-Earths to brown dwarfs, IAP, Paris, France - **Contributed talk**

**Mar 2015:** UK Exoplanet Meeting, Warwick, UK. **Contributed talk**

**June 2014:** RAS National Astronomy Meeting, Portsmouth, UK. **Contributed talks**

**Feb 2014:** Exoclimates III conference, Davos, Switzerland. **Poster**

**2012-2014:** Bristol, Exeter, Cardiff Student Seminars series, UK. **Contributed talk**

**July 2013:** RAS National Astronomy Meeting, St Andrews, UK. **Poster**

**Apr 2013:** Exeter-Oxford Exoplanet Atmospheres Workshop, Switzerland. **Contributed talk**

**Mar 2012:** RAS National Astronomy Meeting, Manchester, UK. **Poster**

**Mar 2012:** STFC Workshop: Exoplanets and their host stars, Oxford, UK. **Contributed talk**

## **Professional Activity and Affiliations**

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**Committee Member:** - ExoMAST science consultant, 2017-present.

**Committee Member:** - Webb Science Content Working Group, 2018-present.

**Team Lead:** - JWST DD-ERS Exoplanet Community Program: Transmission Working Group, 2017-present.

**Organizer:** - Exoplanet Club Seminars Series, NASA GSFC, 2015-2017.

**LOC:** - UK Exoplanet Meeting, 2016.

**Committee Member:** - University of Exeter Athena Swan Award, 2014-2015.

**SOC:** - ExoMOS instrument Science consortium meeting, 2014.

**Panelist & Chair:** - NASA ROSES and NESSF program selection reviews, 2015-present, Swiss National Science Fellowships, 2017.

**Reviewer:** : Monthly Notices for the Royal Astronomical Society (MNRAS), The Astrophysical Journal (ApJ), The Astronomical Journal (AJ), 2015- present.

**Outreach and Public engagement officer:** : XRT-C, 2013-2014.

**Fellow:** - Royal Astronomical Society (FRAS), 2011-present

**Member:** - American Astronomical Society (AAS), 2015-present

**Member:** - Division of Planetary Science (DPS), 2015-present

**Member:** - Institute of Physics (IOP), 2007-present

## Teaching/Mentoring Experience

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**2018-presnet:** Supervising STScl RIA, Iva Laginja - *Publicly available code for data reduction and analysis of giant planet spectroscopy.*

**2017-presnet:** Supervising STScl RIA, Julia Fowler - *Data reduction and analysis of HST exoplanet transit spectroscopy.*

**2016-2017:** Co-supervising PhD Graduate student from University of Maryland at NASA GSFC - *Analysis and interpretation of HST exoplanet eclipse observations in the IR.*

**2018:** Planets Life and the Universe Course, Johns Hopkins University, MD, USA - *Teaching classes on Exoplanets*

**2018-present:** Astronomy for non-Astronomers course - Expert presenter

**2013-2015:** Lecturer, Communicating your research course, Researchers Development Program, University of Exeter, UK - *Methods of communicating scientific projects to different audiences, through public engagement and the media.*

**2011-2014:** Laboratory Demonstrator, Department of Physics and Astronomy, University of Exeter, UK - *Supervising multiple experiments for 2nd year undergraduate physics students.*

**2011-2013:** Mathematics tutor, Medical Imaging Department, University of Exeter, UK - *Tutoring and mentoring mature students with special needs or limited education.*

### Invited Outreach in Schools.....

**Mar 2015:** Eggbuckland community college, UK - Special assembly for the Solar Eclipse.

**2014-2015:** Eggbuckland community college, UK - Skype Q&A lessons

**Summer 2013:** Catalyst Seed Fund Family Project, University of Exeter/Royal Albert Memorial Museum, The physics and culture of light and color.

**Mar 2013:** Ratcliff School for autistic children, Dawlish, UK - Planets in our solar system & beyond.