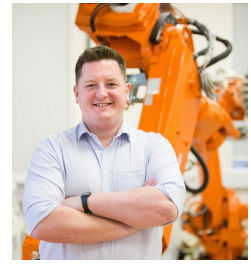


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## Research interests

I work in the University's Flight Lab, using aerial robotics (drones) in collaboration with diverse partners. In earth sciences, conservation, search and rescue, and humanitarian contexts, airborne platforms can enable efficient, safer, and more versatile sensing and impact. I also take an evidence-based approach to my educational work, collaborating and sharing practice and experience in large group design projects; I work in large-scale international collaborations developing emerging researchers and networks; and support development of international accreditation and quality assurance practices.

## Research output

### **Off-setting climate change through formation flying of aircraft, a feasibility study reliant on high fidelity gas-phase chemical kinetic data**

Khan, M. A. H., Tait, K. N., Derwent, R. G., Roome, S. B., Bacak, A., Bullock, S., Lowenberg, M. H. & Shallcross, D. E., 5 Apr 2023, (E-pub ahead of print) In: *International Journal of Chemical Kinetics*. 55, 7, p. 402-412 11 p.

### **The Emissions of Water Vapour and NO<sub>x</sub> from Modelled Hydrogen-Fuelled Aircraft and the Impact of NO<sub>x</sub> Reduction on Climate Compared with Kerosene-Fuelled Aircraft**

Khan, M. A. H., Brierley, J., Tait, K. N., Bullock, S., Shallcross, D. E. & Lowenberg, M. H., 12 Oct 2022, In: *Atmosphere*. 13, 10, 12 p., 1660.

### **Aircraft Emissions, Their Plume-Scale Effects, and the Spatio-Temporal Sensitivity of the Atmospheric Response: A Review**

Tait, K. N., Khan, M. A. H., Bullock, S., Lowenberg, M. H. & Shallcross, D. E., 4 Jul 2022, In: *Aerospace*. 9, 7, 47 p., 355.

### **Fixed-wing approach techniques for complex environments**

Thomas, P. R., Bullock, S., Bhandari, U. & Richardson, T. S., 1 Aug 2015, In: *Aeronautical Journal*. 119, 1218, p. 999-1016 18 p.

### **Collaborative control in a flying-boom aerial refueling simulation**

Thomas, P. R., Bullock, S., Richardson, T. S. & Whidborne, J. F., 1 Jan 2015, In: *Journal of Guidance, Control, and Dynamics*. 38, 7, p. 1274-1289 16 p.

### **Advances in air to air refuelling**

Thomas, P. R., Bhandari, U., Bullock, S., Richardson, T. S. & Du Bois, J. L., 2014, In: *Progress in Aerospace Sciences*.

### **Bow wave effect in probe and drogue aerial refuelling**

Bhandari, U., Thomas, P. R., Bullock, S., Richardson, T. S. & du Bois, J. L., 2013, *AIAA Guidance, Navigation, and Control (GNC) Conference*.

### **International Symposium on Space Flight Dynamics (ISSFD) symposium**

Richardson, T. S., du Bois, J. L., Newell, P., Bullock, S. E. & Thomas, P. R., 2 Nov 2012.

### **Vision Based Closed-Loop Control System for Satellite Rendezvous with Model-in-the-Loop Validation and Testing**

du Bois, J. L., Newell, P., Bullock, S. E., Thomas, P. R. & Richardson, T. S., 2 Nov 2012.

### **Collaborative Control Methods for Automated Air-to-Air Refuelling**

Bullock, S. E., Thomas, P. R., Bhandari, U. & Richardson, T. S., 13 Aug 2012.

### **Collaborative Control Methods for Automated Air-to-Air Refuelling**

Bullock, S. E., Thomas, P. R., Bhandari, U. & Richardson, T. S., 13 Aug 2012, *AIAA Guidance, Navigation, and Control Conference*. Minneapolis, Minnesota, USA: American Institute of Aeronautics and Astronautics Inc. (AIAA)

### **Control Methodologies for Relative Motion Reproduction in a Robotic Hybrid Test Simulation of Aerial Refuelling**

du Bois, J. L., Thomas, P. R., Bullock, S. E., Bhandari, U. & Richardson, T. S., 13 Aug 2012.

### **Collaborative control methods for automated air-to-air refuelling**

Bullock, S., Thomas, P. R., Bhandari, U. & Richardson, T. S., 2012, *AIAA Guidance, Navigation, and Control Conference 2012*.

### **Implementation of a Relative Motion Robotic Rig for Hardware in the Loop Simulation of Automated Air-to-Air Refuelling**

Richardson, T., du Bois, J. L., Bullock, S. E. & Bhandari, U., 11 Apr 2011, *26th Bristol International International UAV Systems Conference*.

## **Projects**

### **Aerial Robotics for Search and Rescue**

Bullock, S. (Principal Investigator), Watson, I. M. (Co-Principal Investigator), Richards, A. G. (Co-Principal Investigator) & Reid, S. (Student)

19/09/22 → 18/09/26

### **AAAR: ASTRAEA II Autonomous Air-to-Air Refuelling**

Bullock, S. (Researcher), Richardson, T. S. (Principal Investigator), Bhandari, U. (Researcher), Thomas, P. R. (Researcher) & du Bois, J. L. (Researcher)

1/07/10 → 30/06/13

### **Data-Driven Aerospace Design through the Statistical Characterisation of the Search and Rescue Environment**

Hoole, J. (Principal Investigator), Andrews, O. D. (Co-Investigator) & Bullock, S. (Co-Investigator)

25/01/22 → 5/07/22

### **Discipline Hopping for Environmental Solutions: Aerospace/Atmospheric Chemistry**

Bullock, S. (Principal Investigator), Lowenberg, M. H. (Co-Principal Investigator), Shallcross, D. E. (Co-Principal Investigator), Khan, M. A. H. (Researcher) & Tait, K. N. (Researcher)

1/01/22 → 31/03/22

### **Micro air vehicle performance, stability and control**

Bullock, S. (Principal Investigator), Wood, D. M. (Student) & Richardson, T. S. (Manager)

30/09/05 → 30/07/06

### **Mitigation of non-CO2 climate impact of civil aviation - Aerospace Engineering/Atmospheric Chemistry collaboration**

Bullock, S. (Principal Investigator), Lowenberg, M. H. (Co-Principal Investigator), Shallcross, D. E. (Principal Investigator), Khan, M. A. H. (Researcher) & Tait, K. N. (Researcher)

1/10/20 → 1/04/24

### **WildDrone**

Bullock, S. (Collaborator), Richardson, T. S. (Collaborator), Watson, I. M. (Principal Investigator), Nguyen Ngoc, D. (Student), Meier, K. (Student), Burghardt, T. (Collaborator) & Mirmehdi, M. (Collaborator)

1/01/23 → 31/12/26

## Activities