

Small Drones for Environmental Research – 2016 Conference Report

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About the Conference

The University of Worcester recently welcomed over 100 delegates from across the UK and Europe for a 2-day conference on the use of drones (or UAVs) for environmental research. The aim of this conference was to bring together academics, practitioners and those with a developing interest in drones for a range of applications, including geomorphology. The event was affiliation to the UAV special interest group of the Remote Sensing and Photogrammetry Society (RSPSoc), and showcased the latest scientific applications of the use of small drones (<20kg), often in conjunction with novel structure-from-motion (SfM) photogrammetric image processing workflows. The conference included oral and poster presentation sessions, a very well attended conference dinner (>70 guests!), an exhibition area for sponsors and 2 international keynote addresses.



Figure 1. Delegates at the University of Worcester's 'Small UAS for Environmental Research' Conference, 28-29 June 2016



Figure 2. The Cinca River, Spain. One of the study sites described in the keynote presentation by Damia Vericat.

Focus on Geomorphology

To date, the development of the drone and SfM based data acquisition methods for environmental applications has been led predominantly by geomorphologists, with wide reaching applications from natural hazards and engineering to glaciology and river science to name just a few. As a result, we were keen for one of the conference keynote sessions to be focussed specifically on geomorphology. The BSG kindly awarded us a grant to enable geomorphologist Dr Damia Vericat of the University of Lleida (Spain) to attend and deliver this keynote address. Within his talk, Damia recounted his personal knowledge and experiences in applying drone-related approaches for the study of fluvial morphodynamics.

Recent advances in drone platforms, related sensors and image processing techniques have revolutionised and democratised data collection methods within geomorphology as a whole, now providing *"...an unprecedented trilogy to acquire field information: speed, cost and resolution"*. Damia evidenced how this unprecedented trilogy is *"...permitting new understandings of fluvial environments and allowing us to test a new generation of hypotheses about how river landscapes evolve, particularly in response to flood events and anthropogenic modifications such as gravel mining"*. As researchers who test and develop drone-based methods, we hope that such methodological innovations, and the new understandings which they permit, will help to enhance environmental management strategies for the benefit of all stakeholders, both within fluvial systems and elsewhere.

In addition, by holding regular conferences such as the one held in Worcester this summer we hope to facilitate the on-going exchange of knowledge and best practice both between researchers and with environmental managers and practitioners who are beginning to recognise the enormous value of adding drones and SfM to their data acquisition toolkits.



Figure 3. Damia Vericat receiving a token of thanks for delivering the keynote address at the conference (Worcestershire style!).



Figure 4. The Draganflyer X6 drone used for geomorph. research by the University of Worcester.

Plans for the Future - Help Needed!

We hope that this conference will become an annual event in the calendar of geomorphologists as well as remote sensing scientists. Plans are underway to hold some future events outside the UK with a view to increasing interaction with our European counterparts. We also aim to increase awareness amongst managers and practitioners and have recently enhanced our online presence through LinkedIn (RSPSoc UAV SIG group) and a new Twitter account (@UAS4Enviro). We will shortly be establishing an online repository for sharing conference presentations and posters. Whilst this group is associated with the RSPSoc in the first instance, involvement is by no means limited to RSPSoc members, and we welcome participants from the BSG and farther afield. We are also looking for people to assist in the development of this rapidly growing interest group, so if you fancy getting involved please contact me for further information (a.woodget@worc.ac.uk). We don't mind what stage of career you're at, what field you work in, or whether you are an academic or not. You need only to be enthusiastic and proactive, and able to dedicate a small amount of time to help develop the group. We look forward to hearing from you!

Further Information

- Join our mailing list: email your name & contact details to uas4enviro@gmail.com
- Websites
 - 2016 conference website: <http://www.worcester.ac.uk/discover/uav-conference.html>
 - RSPSoc UAV SIG website: www.rpsoc.org.uk/index.php/special-interest-groups/unmanned-aerial-vehicle.html
- Twitter: @uas4enviro
- LinkedIn Group: RSPSoc UAV SIG