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From the Shed to the Skies: A Journey of Sensor Development and Deployment Involving Bicycles, Drones and Eagles.

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Sensor development doesn't always occur in high tech, air-conditioned laboratories. The first iteration of a lightweight meteorological package designed to be carried by birds involved cycling to a local shop late at night to pick up a Raspberry Pi zero which came free with a magazine. After maturation in a garden shed, involving late-night Python programming and a sprinkling of additional sensors, a functioning prototype emerged capable of making meteorological and positional measurements at up to 5Hz. This prototype was tested first on a bicycle, then a drone, and then a White-tailed eagle (Haliaeetus albicilla) called Victor in the Scottish highlands (Thomas et al. 2017). A smaller version has been deployed on pigeons and is undergoing modifications to use the LORA network for realtime data transmission.

Come and view this poster (with props!) exploring the successes and failures during this sensor development and the rigorous scientific testing and continuing miniaturisation allowing it to primarily address the important scientific challenge of improving pollution and heat event forecasting in urban areas.

1. Thomas, R.M., et al., Avian Sensor Packages for Meteorological Measurements in Complex Terrain and Urban Environments. Bulletin of the American Meteorological Society 2017. (In press. Early release available: http://journals.ametsoc.org/doi/10.1175/BAMS-D-16-0181.1)