Aircraft performance logger

Reference: B-PAR10-2  
Supervisor: Dr Paul Robertson  
Email Contact: [par10@eng.cam.ac.uk](mailto:par10@eng.cam.ac.uk)  
Contact Location: CAPE – 101  
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# Description

A couple of the performance parameters quoted for light aircraft are: the take-off roll (length of runway used to leave the ground) and total distance covered to reach 15 m height (an indicator of what length of runway you need to clear trees at the far end). Both are 'measured' by a test pilot using an element of judgement - and the figures are often not very accurate.

The objective of this project is to develop a 3-d logger unit to be carried in the aircraft which measures distance and height very accurately. Basic GPS cannot do this, as the height indication is not very good (worse than 2-d coordinates). So, the idea would be to include a high accuracy pressure sensor for an altimeter, and to use differential GPS in some way. As flight tests are conducted near the airfield, a base GPS unit with radio telemetry is possible.

So, there are some similarities to the 'electric sheep' project, but the performance parameters are very different: we need say 10 Hz 3-d data to 15 cm resolution. Real-time display would be useful but not essential, post processing when back on the ground is OK (they do this for the other data). Pressure sensing will also be tricky as dynamic pressure due to airspeed will need to be compensated in some way. Flight testing should be possible next year in the Dept.'s hybrid aircraft.