

## **Flight test and calibration of the turbulence probe "MET-POD" mounted on DLR Cessna Grand Caravan.**

C. Mallaun (1), A. Giez (1), and G. Mayr (2)

(1) Flight Experiments, DLR German Aerospace Center, Oberpfaffenhofen, Germany, (2) Institute of Meteorology and Geophysics, University of Innsbruck, Innsbruck, Austria

To assure high quality of turbulence measurements on a research aircraft, intensive flight tests are needed to describe and parameterize the influence of the aircraft on the measurements. In March 2011 several test flights were conducted with the DLR Cessna 208B Grand Caravan (Caravan) to characterize the new turbulence probe (MET-POD) mounted underneath the left wing.

The Caravan is a powerful research platform for probing the atmospheric boundary layer. With a strong turboprop, the aircraft combines good performance with high manoeuvrability and an economic operation. The heart of the meteorological sensor package is the MET-POD containing a noseboom and several inlets to measure pressure, temperature, humidity, acceleration and three-dimensional wind. The fast signals are recorded at 100 Hz, which allows turbulence measurements with a spatial resolution down to 1 m. In the cabin, an inertial reference system combined with differential GPS (AEROcontrol system - IGI) provides precise position and attitude of the aircraft. The high accuracy of the IGI system is crucial for an accurate calculation of the three-dimensional wind vector as well as for the successful realization of the flight tests.

First results of the pitot-static calibration show an accuracy of the pressure probe of  $\pm 0.25$  hPa. Further results from the test flights as well as an error estimation of the different meteorological parameters will be presented.