Southern Methane Anomaly Project Background

Tropical methane sources account for nearly two-fifths of the global budget (200Tg/yr), and are the main contributor to annual variability in the atmospheric methane growth rate (Bousquet 2006). In 2010, arguably the largest recent excursion in the global methane record occurred in the tropics. This Southern Tropical Methane growth anomaly continued through 2012. Such anomalies are a direct “fingerprints” of short-term biogeochemical feedbacks onto climate and, as such, are a key science target for the Southern methane anomaly project (SMA); an integrated programme of observations, field campaigns and modeling studies to be undertaken in 2014 to investigate these anomalies in their wider Southern Tropical setting (Figure 1).

Gas Grab Sampler

The grab-sampler payload consists of 7 sampling vessels (Teddar bags), a valve switching system, a DC pump, and sampling inlet (Fig. 3). The inlet projects forwards and includes a chemical drier. A low cost, lightweight ARM processor controls the pump, multiport valve, polls the autopilot for positional data, and records sampling parameters. The system can either automatically sample predefined volumes of air at designated altitudes, or be manually operated via surface telemetry. A typical 2hr sortie would comprise ascent to above the trade wind inversion, with subsequent pauses for grab-sampling at several levels on the way down (Fig. 2b).