



The SCOUT-O3 Tropical Aircraft Measurement Campaign in Darwin, Nov – Dec 2005

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In November to December 2005 an extensive measurement campaign involving the German Falcon and the Russian Geophysica research aircraft will be conducted from Darwin, Australia. This campaign will form a central element of the SCOUT-O3 (Stratosphere–Climate–Ozone Linkages with Emphasis on the Upper Troposphere, an Integrated Project funded by the EU) tropical activity consisting of aircraft, balloon, ground- and satellite-based measurements which, in conjunction with modelling activities, will be used jointly to address four main scientific questions: What are typical air residence times in the TTL and how are very short-lived ozone-depleting substances transported through the TTL? What is the influence of deep convective and cirrus clouds on the tropical UTLS? How can processes in the TTL influence stratospheric water vapour trends? What is the role of the TTL and possible TTL changes for the stratospheric aerosol layer? Strong convective activity occurs over the Western Pacific and Maritime Continent (WP/MC) and both Lagrangian and Eulerian studies show that this is the main source region of air in the global TTL. Lagrangian studies further suggest that air parcels entering the stratosphere experience final dehydration preferably over this region which is supported by satellite observations showing maximum subvisual cirrus cloud coverage over the WP/MC in winter. Darwin was selected for

its position near the southern border of the WP/MC, its excellent science and working infrastructure, and the prospect of close collaboration with the Australian-American TWP-ICE program. A vigorous, isolated, and potentially tropopause-penetrating thunderstorm named Hector forms almost daily north of Darwin during the Nov/Dec period. This will provide an excellent opportunity to study the impact of deep convective clouds on the TTL. Measurements during the transfer flights between Europe and Australia will investigate a wide region in the tropics and thus help to put the local measurements in a global context.