



## Profiling of MAX-DOAS BrO measurements from Antarctica and NO<sub>2</sub> measurements from CINDI

Tim Hay (1,2), Karin Kreher (1), Paul Johnston (1), Greg Bodeker (3), Robyn Schofield (4), Alan Thomas (1), Adrian McDonald (2), and Monica Martinez-Aviles (1)

(1) NIWA Lauder, Omakau, New Zealand (t.hay@niwa.co.nz, 0064 34400055), (2) Department of Physics and Astronomy, University of Canterbury, Christchurch, New Zealand, (3) Bodeker Scientific, Alexandra, New Zealand, (4) Alfred Wegener Institute, Potsdam, Germany

We will present a newly developed algorithm for the retrieval of tropospheric trace gas profiles from MAX-DOAS measurements. A Monte Carlo radiative transfer model, NIMO (NIWA Monte Carlo model) is used to calculate the weighting functions and forward model DSCDs (Differential Slant Column Densities). NIMO uses the local estimation technique to substantially speed up the determination of DSCDs for any given set of measurement geometries, enabling use of the model 'online' rather than using pre-calculated lookup tables. The optimal estimation method is used to retrieve profiles for either single or multiple scan sequences or over prescribed time intervals. This inversion method is used to derive NO<sub>2</sub> profiles from MAX-DOAS measurements made during the CINDI campaign at Cabauw, Netherlands, in June/July 2009. BrO profiles retrieved from sea-ice MAX-DOAS measurements, made during two Antarctic springtime campaigns in 2006 and 2007, are also presented.