

Assimilating trace gas observations into the Australian NWP Model using TM5

- Motivation
- Plans
- Needs and outcomes.

Motivation

- Based on experience from GEMS/MCAA
- Assimilate GHGs to improve temperature retrieval and climate model performance and stratospheric ozone for UV forecasting
- Assimilation windows too long for operational NWP
- Try to avoid the two step approach of MACC but at a cost.
- Australia is using the UKMO Unified Model plus the terrestrial model CABLE

General Approach

- Clone, as far as possible, the UM using TM5 (like the IFS)
- Obviously test this clone
- Take prior fluxes, a priori O_3 , P&L and forcings from UM
- Use TM5 adjoint to improve GHG fluxes and O_3
- Test improved estimates using UM

Climate Applications

- The UM is used for NWP and climate
- Can also expose parameters of CABLE to assimilation system
- Can, in principle, produce somewhat consistent flow of information from NWP to climate prediction

What do I need, what can I offer?

- Preprocessing software for converting analyses to TM5 inputs;
- A standalone TM5 adjoint;
- Can offer access to UKMO analyses
- Some interesting intercomparisons.