

SCM TWP-ICE Meeting: Thu 30 April 10.30 CMAR, Lecture Theatre, Aspendale

[ <http://www.bom.gov.au/bmrc/projects/scm/> ]

## Agenda

### General business

- an update on SCM development: CABLE; experimental hierarchy; namelist library; next standard SCM for general use
- SCM + TWP-ICE projects, past, present and future: 1-2 pages from each user on their projects

This will be followed by the following short talks:

- Eva Kowalczyk (CAWCR, CMAR) - SCM/UM and CABLE
- Charmaine Franklin (CAWCR, CMAR) - SCM simulations for the CFMIP/GCSS intercomparison case
- Vaugh Barras (CAWCR, BOM) - Driving UM-SCM with reanalysis/model data
- Laura Davies (Monash Uni.) - Ensemble Single Column Modelling of TWP-ICE
- Greg Roff - an update on the SCM -> NWP-global -> NWP-regional -> AMIP experimental strategy

Summary + Discussion + Future meetings (combine with FAME/Physics meetings?)

## General business:

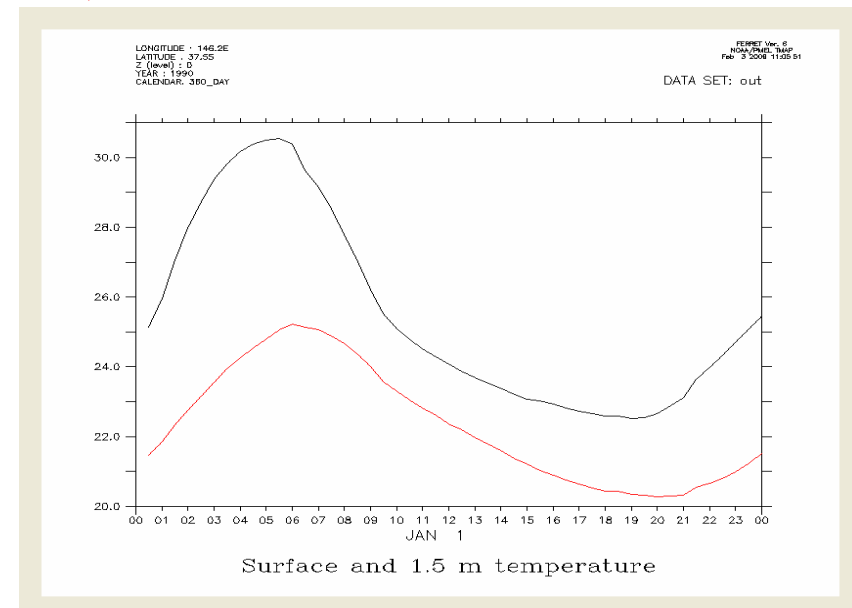
### SCM update

- CABLE (Eva talk)
  - Running in SCM with dummy namelist input fields (soil type etc)
  - 3D version running with dummy datasets hardwired  
(plot =land surface+1.5 m temp for the Melbourne grid point, thanks martin)
  - 3D testing CABLE ancillary (holding the CABLE input fields) created and being tested by replacing MOSES ancillary
  - 3D testing inputting CABLE ancillary via user ancillary method
- Experimental hierarchy (Greg talk)
  - SCM(UM6.3+PC2) -> global: NWP(UM6.3+PC2) + AMIP(UM6.3+PC2) -> NWPregional(UM6.4) + NWPideal(UM6.4)
- Namelist library
  - Namelist site: d2:/bm/home/blr/scm\_nl (nl\_bob\_bl nl\_hongyan\_rad\_conv\_equil nl\_twp-ice nl\_gables2 nl\_toga nl\_vaughan\_4era40\_locations README)
  - Namelist development from analyses and model output (Vaughan talk)
- Next SCM: UM7.1? – leave for discussion later

### SCM + TWP-ICE projects

I would like to get a 1-2 page summary of your SCM, SCP + TWP-ICE, and TWP-ICE projects (past, present or future) to place on our web site – or a link to your work.

The aim is to make it easier for people to see who is doing what, so we can run complementary studies.



## Short talks:

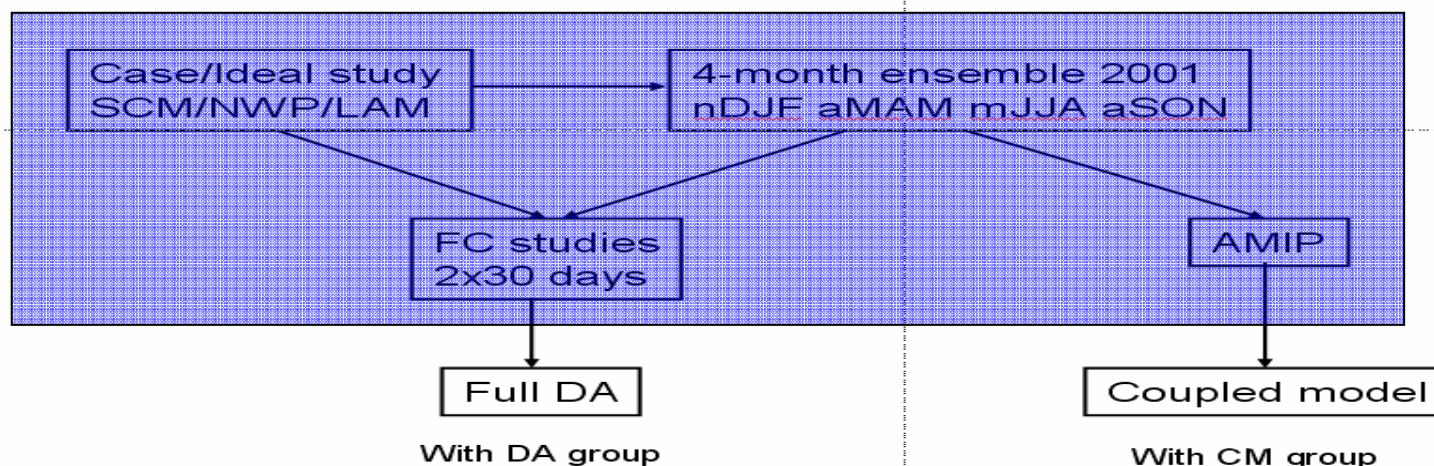
- Eva Kowalczyk (CAWCR, CMAR) - SCM/UM and CABLE
- Charmaine Franklin (CAWCR, CMAR) - SCM simulations for the CFMIP/GCSS intercomparison case
- Vaughn Barras (CAWCR, BOM) - Driving UM-SCM with reanalysis/model data
- Laura Davies (Monash Uni.) - Ensemble Single Column Modelling of TWP-ICE
- Greg Roff - an update on the SCM -> NWP-global -> NWP-regional -> AMIP experimental strategy

# ACCESS Experimental Strategy

Case study = IOP (TWP-ICE); NWP interesting event

Ideal study = UM namelist; Aqua planet; edit ic fields; change model parameters eg gw

4-month => throw away 1<sup>st</sup> month, analyse last 3; ic era (not so good) AMIP ic (better)



Ensemble experiments: periods are the four seasons nDJF, fMAM, mJJA, aSON in 2001, with 2001 selected due to a good range of ‘observational’ datasets being available then eg see above; the first month is discarded and analyses are made from the last 3 months; ensemble runs can be made by using ic from the 10 days preceding the target period; climatological or variable SSTs could be used; 2hr elapsed time per month N48L50 1cpu; an SCSUI job could be setup to run these automatically (this has been done for NWP jobs). The ic (10 days for each initiation month) can come from ERA-40, but it would be better if we extend the UM AMIP run to get them – then the moisture fields will be in balance. These experiments will be on the UMUI and can be copied and run and an updated document on how to do this is being prepared.

# A hierarchy of UM experiments: SCM, Seasonal, AMIP and Ideal

SCM (UM6.3+PC2)

global: NWP (UM6.3+PC2) + AMIP(UM6.3+PC2)

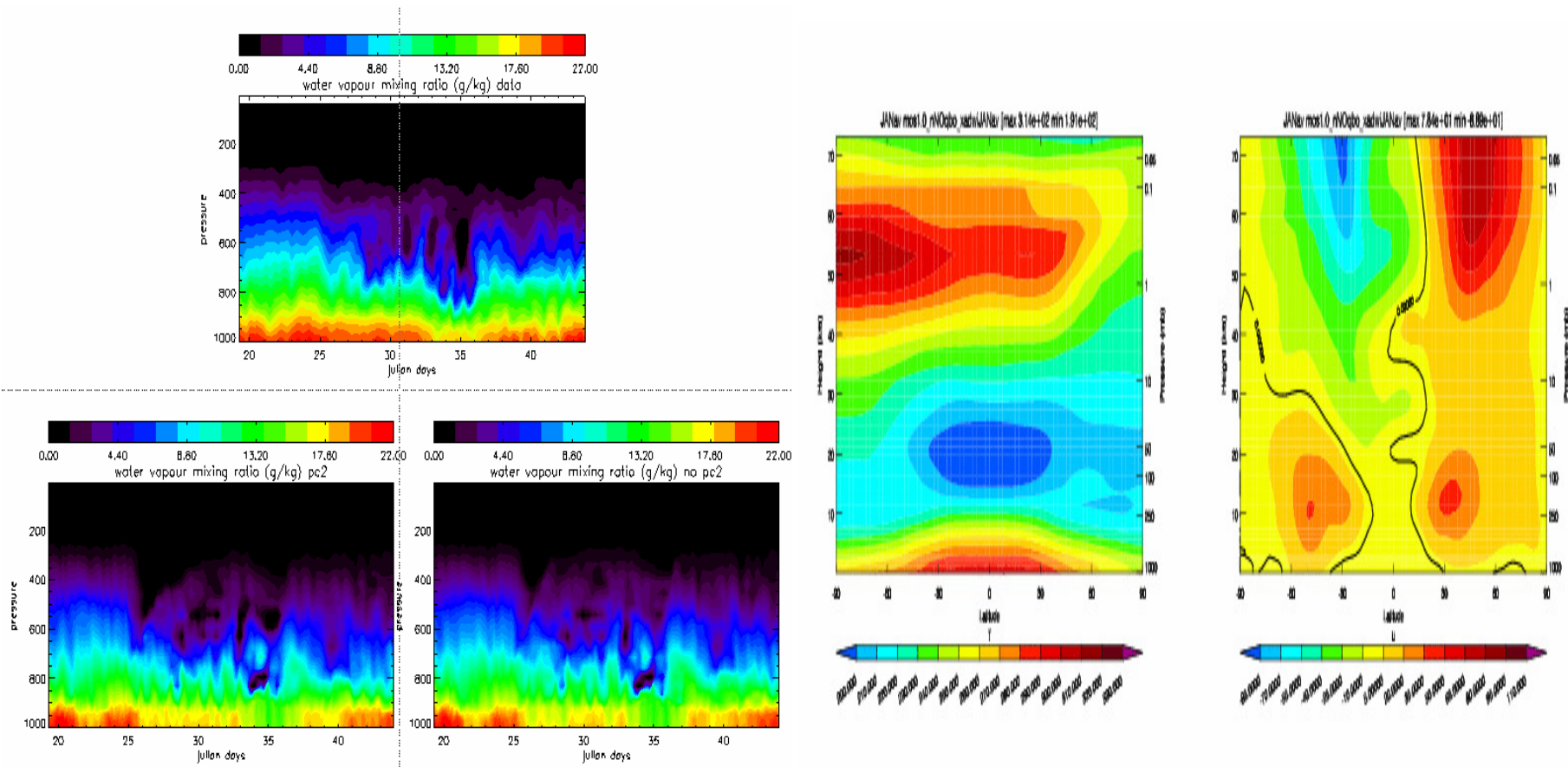
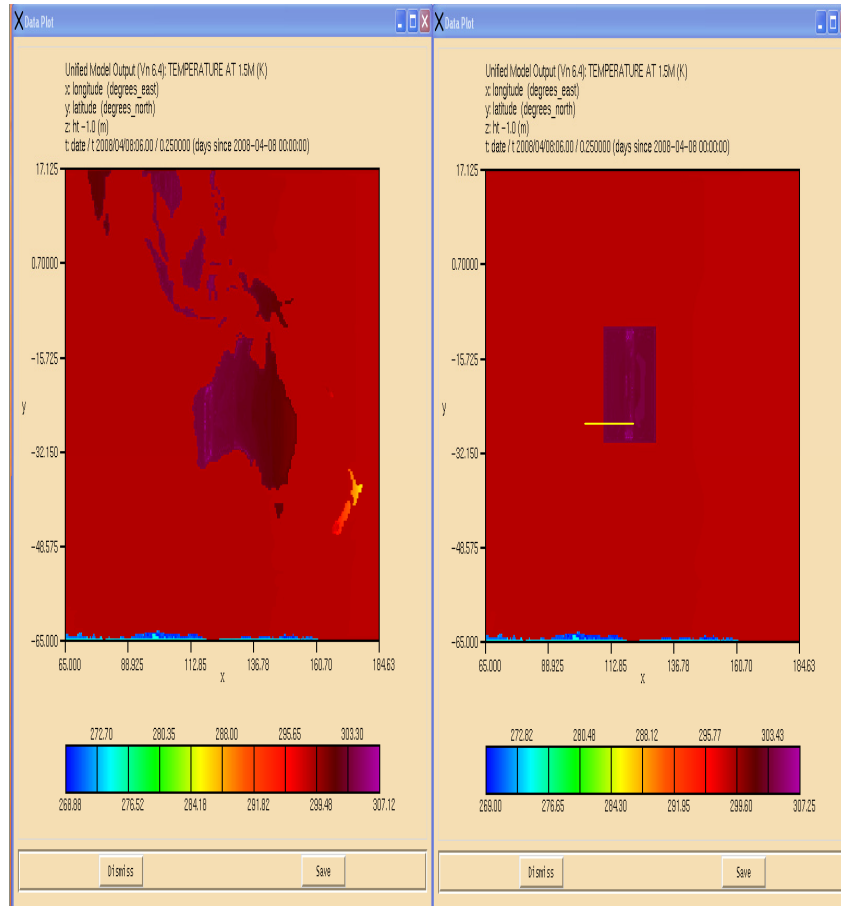


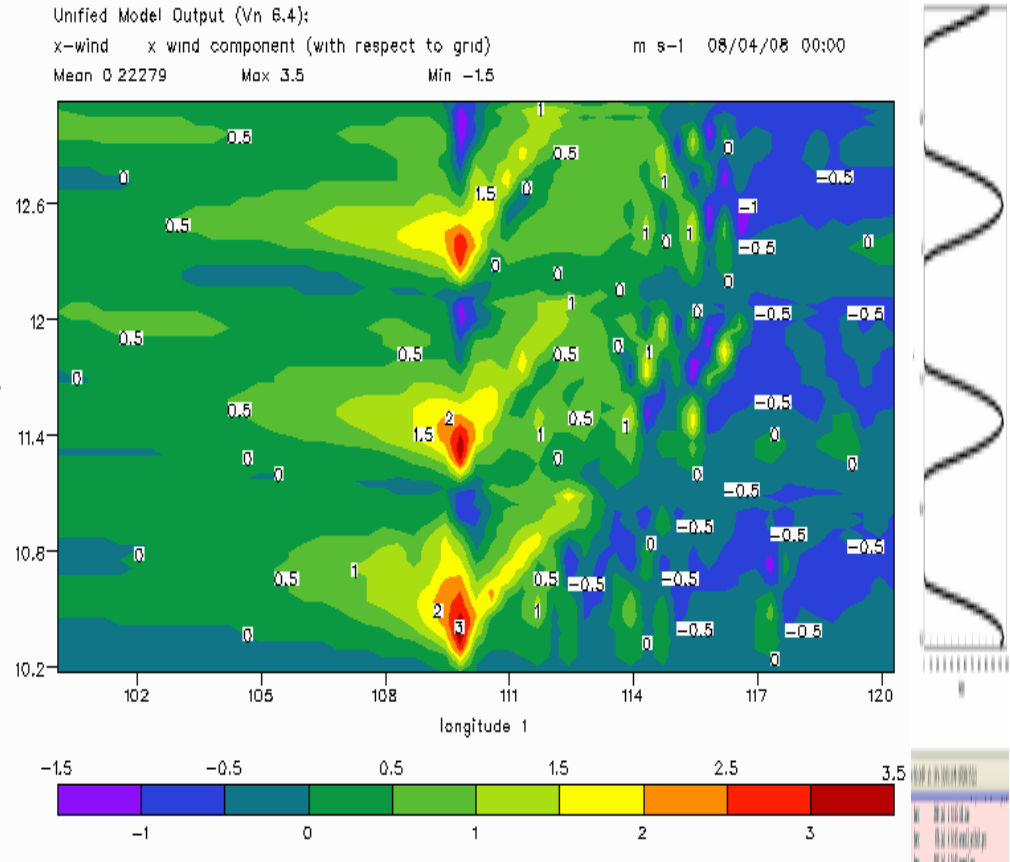
Figure 1 TWP-ICE SCM specific humidity (kg/kg) from the 2006 IOP (top) observations, (left) SCM with PC2; and (right) SCM without PC2.

## NWPregional(UM6.4)



(a) AUSLAM std orography; (b) 20degX20deg island centred (20S,120E); (c) hovmoller Longitude (100E – 120E) time (day 10 – 13) cross-section plots at 20S and centred over the west coast of surface x-wind; and (d) the corresponding sw radiation at the toa at (20S,110E)

## NWPideal(UM6.4)



UM6.3 UM6.4 changes: <http://www.metoffice.gov.uk/research/collaboration/index.html>

<p><b>UM6.4 : --- 26 February 2007</b> (Details)</p>	<p><b>G45/46/47/48</b> (PS16/17/18/19) [Aug 07 -- Nov 08] <b>E17/18/19</b> (PS16/17/18) [Aug 07 -- Jul 08] <b>U4.9/10/11</b> (PS16/17/18) [Aug 07 -- Jul 08]</p>	<p>No.</p>
<p><b>UM6.3 : --- 10 November 2006</b> (Details) First UM release under FCM.</p>	<p>---</p>	<p>Yes: 5 June 2008</p>

**Parallel Suites**

**What changed in each Met Office Operational cycle ?**

**Gxx** Global Model Upgrade cycles  
**U4.xx** UK 4 km Model Upgrade cycles  
**Exx** NAE (Regional LAM) Model upgrade cycles  
**(PSxx)** Met Office Parallel suite identifiers  
**[Date -- Date]** Operational dates

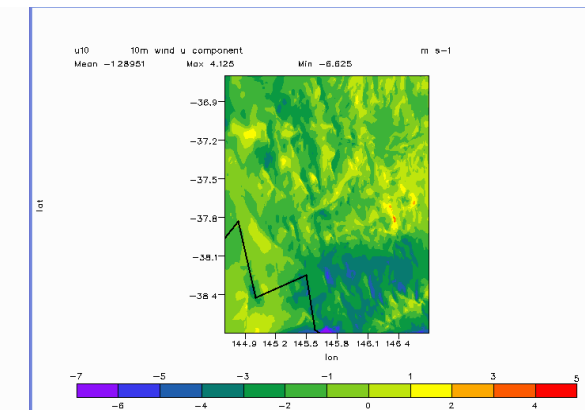
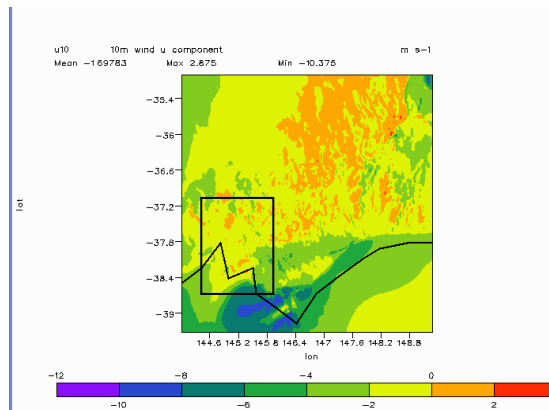
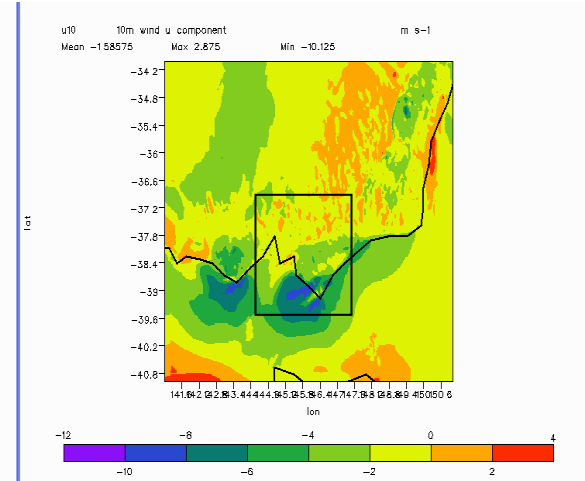
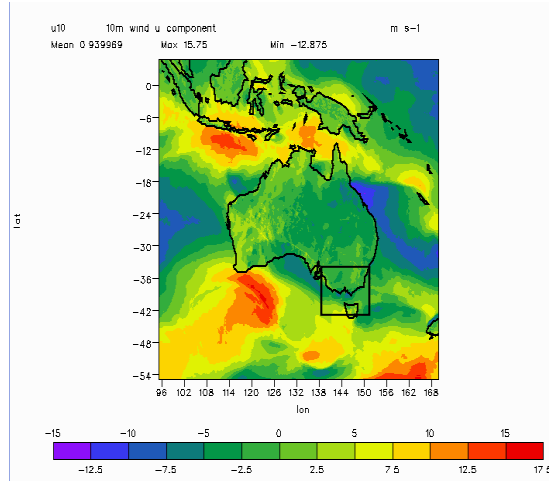
<p><b>G48</b> 22 July 08 – 25 Nov 08</p>	<p><b>Parallel suite 19 changes</b> DA/SA changes</p> <ul style="list-style-type: none"> <li>■ Surface stationlist height corrections (SYNOP).</li> <li>■ GPSRO: Add CHAMP and GRACE to current set of (6 COSMIC) satellites.</li> <li>■ Assimilation of cloudy AIRS radiances.</li> <li>■ Satwind changes: update the observation errors to allow for errors in satellite wind height assignment.</li> </ul>
<p><b>G47</b> 1 Apr 08 – 22 Jul 08</p>	<p><b>Parallel suite 18 changes</b> DA/SA changes</p> <ul style="list-style-type: none"> <li>■ Changes to UM soil properties. Correction of a) UM soil hydraulic properties and b) an improved parametrization of soil thermal conductivity.</li> <li>■ Assimilation of surface T, RH and winds over land</li> <li>■ Removal of RH boost for sondes.</li> <li>■ GPSRO: Increase vertical range over which COSMIC refractivity data is assimilated from 4-27 km to 0-40 km</li> </ul>
<p><b>G46</b> 27 Nov 07 – 1 Apr 08</p>	<p><b>Parallel suite 17 changes</b> DA/SA changes</p> <ul style="list-style-type: none"> <li>■ PF model: fuller implementation of PF physics convection.</li> <li>■ Upgrade to OPS23.4/VAR23.4.</li> <li>■ Within UM: Switching off soil moisture nudging where there is snow cover (threshold &gt; 0.05 kg m<sup>-2</sup> [same as switching off soil T nudging under snow]). To avoid potentially erroneous results.</li> <li>■ IASI (METOP). Details</li> <li>■ ASCAT (METOP). Wind scatterometer. Main benefit to surface fields.</li> <li>■ GPSRO: Increase from 4 to 6 COSMIC satellites.</li> </ul>
<p><b>G45</b> 14 Aug 07 – 27 Nov 07</p>	<p><b>Parallel suite 16 changes</b> Model/DA/SA changes</p> <ul style="list-style-type: none"> <li>■ UM 6.4</li> <li>■ Improved use of GPSRO, AIRS/ATOVS Update</li> <li>■ Increased frequency of SYNOps (hourly)</li> <li>■ Extra PF model physics (convection)</li> </ul>

U  
L  
S  
UM  
Me  
CA  
No  
Ins  
So  
Se  
Na  
Atr  
Ko  
Ad  
Mir  
(In  
Th  
Res  
ext

Main changes: UM6.3: FCM introduced, physics for HadGEM1; UM6.4 – 6.6: 70L improvements, FLUME, UKCA (George Pankiewicz)

## Future development/projects:

- SCM radar comparison with Darwin reflectivity during TWP-ICE (Alain Protat)
- SCM/CRM/UM3D comparison during TWP-ICE (Kathrin)
- Setup high res study during TWP-ICE eg NWP(UM6.4)  
deg:0.375>0.11>0.03>0.0135>0.004 [km  
42 > 12 > 3.3 > 1.5 > 0.4] (Les Logan)



## Summary + Discussion:

-Next SCM: UM7.1?

-Future meetings?

Quite a few of us have been using the SCM and TWP-ICE data for our studies, but the SCM can only go so far. Hence we have developed the experimental hierarchy to enable 1D-> 3D -> 1D parameterization and case study experimentation. Thus we are expanding from our SCM base into the big bad 3D world, and so should our meetings now become a subset of the FAME/Physics meetings?

This is food for thought, and we can discuss this now or perhaps in the FAME meeting in the afternoon.

**THE END**

