

SCM TWP-ICE Meeting: Fri 11 July 2.30 BoM, 9th Flr Seminar Room

An agenda for our upcoming meeting (Fri 11 July, 2.30pm, CAWCR Seminar Room, 9th Floor East, 700 Collins St) is below. See you there!

+ General business: eg an update on SCM development (what will be the next standard SCM for general use - what we hope for and what will be available and when) etc. This will be followed by the following short talks:

+ Hongyan Zhu (CAWCR) - "Multiple Equilibria in UM-SCM of the tropical atmosphere"

+ Vaugahan Barras (CAWCR) – "Some BL results + Outcomes from the 4th PAN-GCSS meeting in Toulouse, June 2-6"

+ Kathrin Wapler (Uni. Melb) – "Comparing SCM and CRM TWP-ICE results"

+ Alain Protat (CAWCR) – "Cloud statistics over Darwin: active monsoon, break and suppressed"

+ Greg Roff (CAWCR) – "Experiments in scale: Global – Regional – SCM + Ideal"

General business

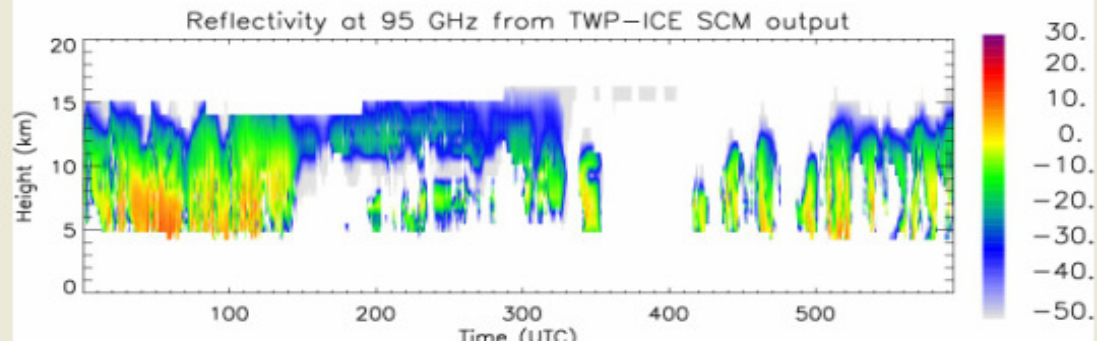
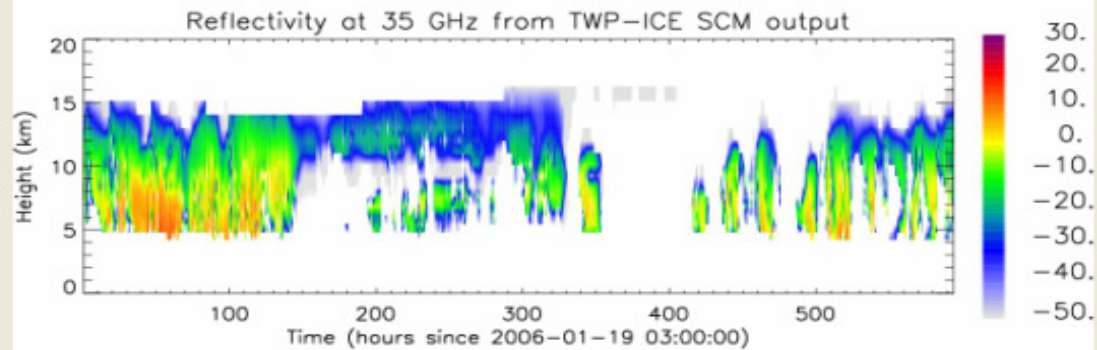
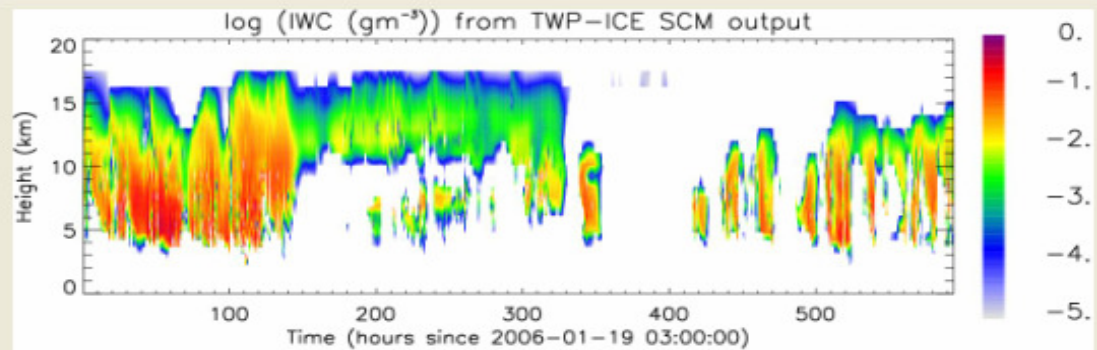
From the December meeting:

- greg: reate a general namelist repository: **/bm/home/glr/scm_nl**
nl_bob_bl nl_gables2 nl_toga nl_twp-ice README – more?
- martin: Mac/Windows/Linux machines with an Intel compiler can run the scm; setup standalone with intel compiler?
- charmaine: John Petch (UKMO) is happy to share his UM6.3 CRM outputs
- peterH: suggested we really need the twp-ice data to be quality controlled and in std format - christian said will be done in 6mnths ie june-july 2008 including just sea and just land
- peterH/Vaughan: have created a procedure to calc scm forcings from analyses – can we make this available to all?
- vaghanB: info from pan-GCSS meeting in Toulouse in June08?
- when to upgrade scm, and how easy is it, especially for the standalone - ask martin; always keep a 3d version in line with the scm

- place info on the our web page <http://www.bom.gov.au/bmrc/projects/scm/>
- alain can calc cloud reflectivity if given ice water content and temperature from scm runs.
 - Alain has an idl program which reads SCM simulations from TWP-ICE and converts the Ice Water Content into two reflectivities at two different wavelengths (35 and 95 GHz).
 - These results are to be taken with caution if you want to compare with the Darwin ARM MMCR, as these are unattenuated reflectivities.
 - These reflectivities could be directly compared to CloudSat for instance (but CloudSat was not there during TWPICE), which could be useful if you have SCM simulations after June 2006.
 - Another comment: the relationships I used have been derived from in-situ microphysic data in the -70 to -10 degrees Celsius range. I used them here in the -80 to 0 degrees range (so I extrapolated a little bit), to get reflectivities in most of the ice part.
 - The follow-up of this work would be to process the liquid part of the simulation (Peter, any suggestion of a reasonable LWC-Z relationship at attenuated frequencies such as 35 or 95 GHz ?), and then to compute attenuated profiles from the total unattenuated profiles.
 - And the last step (easy) would be to apply the sensitivity curve of the radar to the SCM reflectivities to replicate what the ground-based radar would really see (it won't see all the high-level clouds you generate). This would then yield reflectivity profiles directly comparable to the Darwin MMCR 35 GHz radar.

Radar products

Alan has processed the SCM outputs and created some radar equivalent products eg email 6may08:



Experiments in scale: Global – Regional – SCM + Ideal

- can run UM6.3+PC2 as scm

This has been covered before eg

<http://www.dar.csiro.au/access/index.html>

http://gale.ho.bom.gov.au/bm/internal/reg/staf/glr/stuf/access_fame/glr.html

- Introduction to the umui and scum - Greg Roff, BMRC (060914.ppt)

- An introduction to running UM6.3 SCM and UM Seasonal Experiments - Greg Roff, BMRC (070809)

- can run UM6.3+PC2 as AMIP

Martin Dix (dix043) AMIP run = xaepz using UM vn6.3+HadGEM1a+PC2, this uses the HadGAM1a_PC2 prebuild; build=xaepg

Build the exe:

umui cp xaepg xaevf; change user details;

umui/xaevf/Check/Save/Process/Extract/Build/./=runs atq job and

creates the exe: /bm/data3/glr/UM63_ROUTDIR/xaevf/bin/xaevf.exec

build method using martin method get error, but using my old build xaevy - it builds ok, but new build xaevf fails. azs: I was using ksh, but if change to tcsh then it works! I originally was in tcsh, but changed some time ago to be able to run auto-submit (this has since been fixed, so I do not need to be in a specific shell to do scsui auto submit runs). Change shell via: on d2: chsh == chsh // (orig=/usr/bin/tcsh) on eccles: ypchsh

Run the AMIP job: run amip using my exe in martins amip run = xaepz

umui cp xaepz xanuc ; change dix043 to glr in user details; change bmscm machine to sx; get amip scripts via:

cd /bm/home/glr/umui_jobs/scripts; cp ~dix043/umui_jobs/scripts/* .

umui/xanuc/Mod/Sub/Compile: change from

\$UMDIR/vn6.3/sx6/prebuilds/HadGAM1a_PC2/bin + HadGAM1a_PC2.exec

to /bm/data3/glr/UM63_ROUTDIR/xaevf/bin + xaevf.exec

umui/xanuc/Check/Save/Process/.../Submit=ok_tue1jul08, only got sep78 output due to error:

Error job not resubmitted because job script is for a new run. Note: the job is setup to run for 22 years.

- can run UM6.3+PC2 as NWP – global

umui cp xanuc xanub; change cpu 50000->5000, dump, run days 22y4m0d->3d, STASH output, dump times to 1d
umui/xanub/Check/Save/Process/../../Submit=ok_fri4jul08, get da and pe outputs at 00,24,48 and 72 hrs. This is using the exe:
/bm/data3/blr/UM63_ROUTDIR/xaevf/bin + xaevf.exec

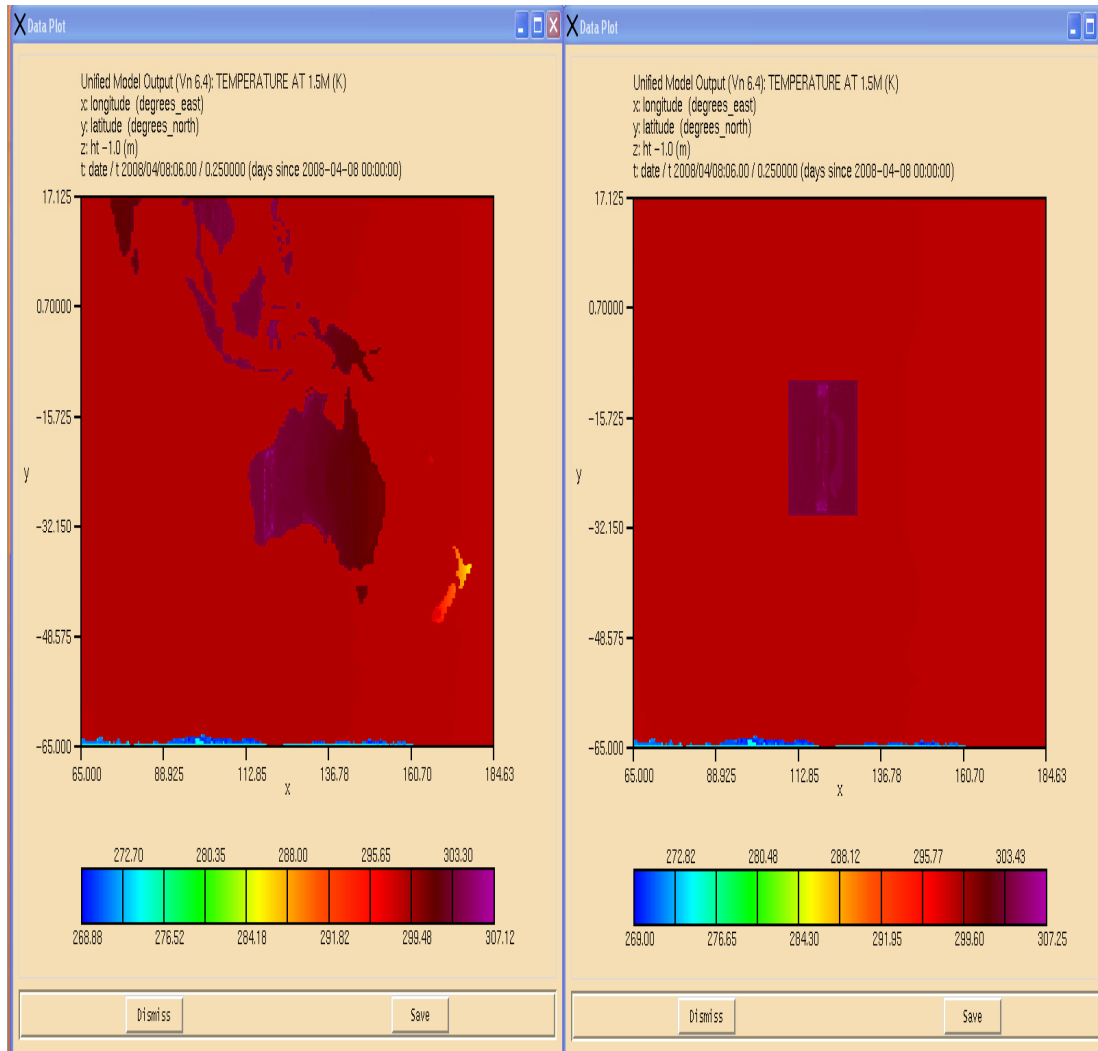
- cannot run UM6.3+PC2 as NWP – regional – can run UM6.4

Copy a standard AUSLAM UM6.4 experiment from les: cp xajvh xamua ; change id from lwl to glr; then run using
umui/xamua/Check/Save/Process/../../Submit=ok
Note: the corresponding UM6.4 global job is ashley's azrba
Note: we are running regional at 37.5km, but should also be able to run at 12km and 5km – I am testing this now.

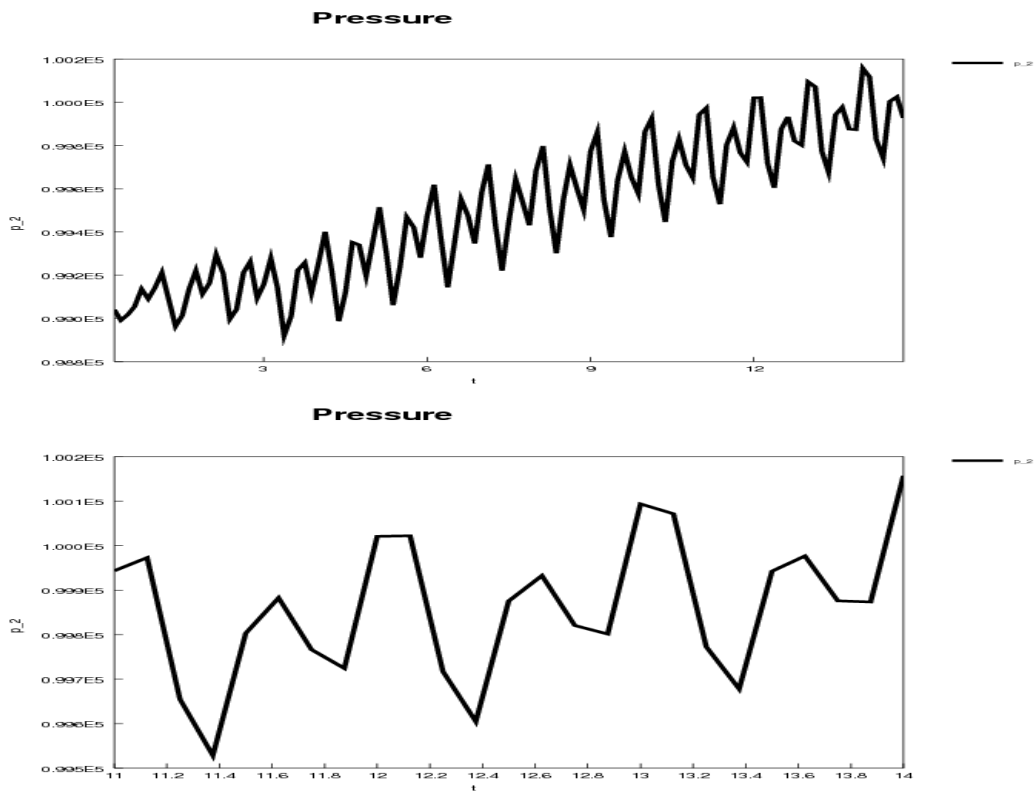
- cannot run UM6.3+PC2 as NWP – regional – ideal – can run UM6.4

This has been used to study the heat low with Roger Smith.
Use an idl routine to edit a standard global dump to remove all land and replace with an island. The idl routine is:
/bm/gkeep/blr/roger/rdancil2_roger.csh_ok2_t4

Run the UM6.4 exe job via: umui/xamub/Check/Save/Process/../../Submit = ok
Run this with the newly created ic, or with a dump from a previous ideal run.
Convert the pp output to nc on d2 using:
/bm/keep/blr/scripts/roger_process_output_0.csh
Process these nc files on flurry-bm, eg to get time series data, using:
/bm/gkeep/blr/scripts/roger_process_output_1.csh
Then view using: /bm/gshare/cdat/bin/vcdat (can create animations with this also)



B6_fm20_dry_t3 This run went out to ~h560 and below (Fig p13) we can see the surface pressure plot at (20S,120E) which on the Australian mainland for days 21-24. There is a drift upward but the basic structure is similar to RS99_fig5d – plotted next to it.



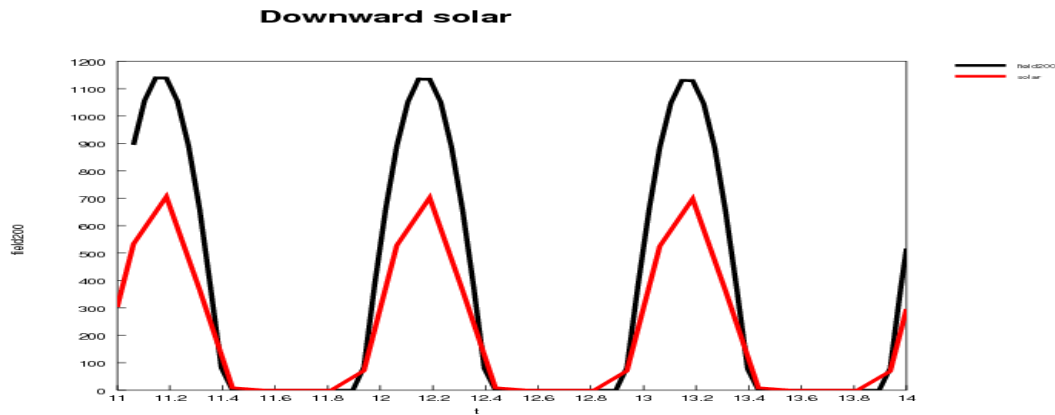


Fig A1: Time series plot of surface pressure at island centre (20S,120E) for (top) full run time and (middle) days 11-14 (similar to RS99 fig5d) with (bottom) the solar sw TOA (black) and solar at surface (red) at island centre for days 11-14.

The boundary layer height at the island centre is shown below – it reaches 1200m.

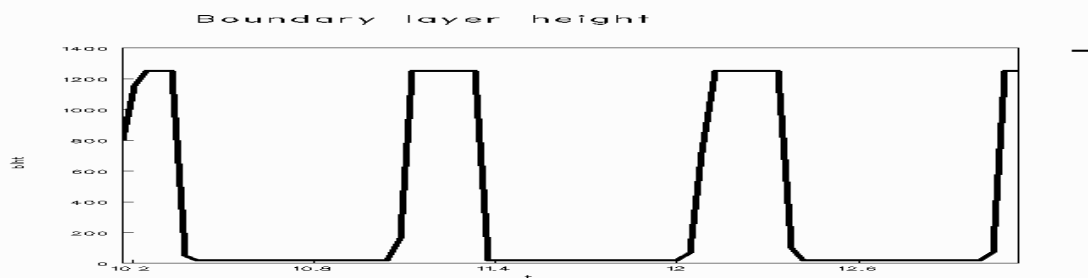


Fig21b Boundary layer height at the island centre for days 10-13.

This is smaller than in Thomas' case, presumably due to my different T profile, and I will be re-run the model with his T profile and see how it compares.

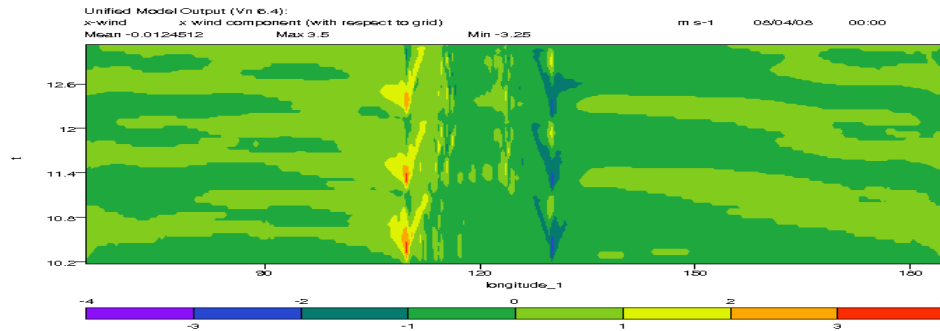


Fig 19a Longitude (110E – 140E) time (day 10 – 13) cross-section plots at 20S of surface x-wind; surf.

Below I have plotted a blow-up, over the West coast of the island, of the u field from Fig 19a below. I think this shows:

- the build-up of the on shore winds near the coast at 110E, starting before mid-day, peaking on the coast in the mid-afternoon, expanding over the ocean – out to 105E – until sunset, then contracting towards the coast until sunrise. This is followed by weak offshore breezes in the morning, and then the cycle is repeated
- near sunset the sea-breeze progresses inland – up to 113E - until sunrise when the offshore breeze between it and the coast cuts it off. There are remnants of the previous days sea-breeze still progressing inland near 115E.

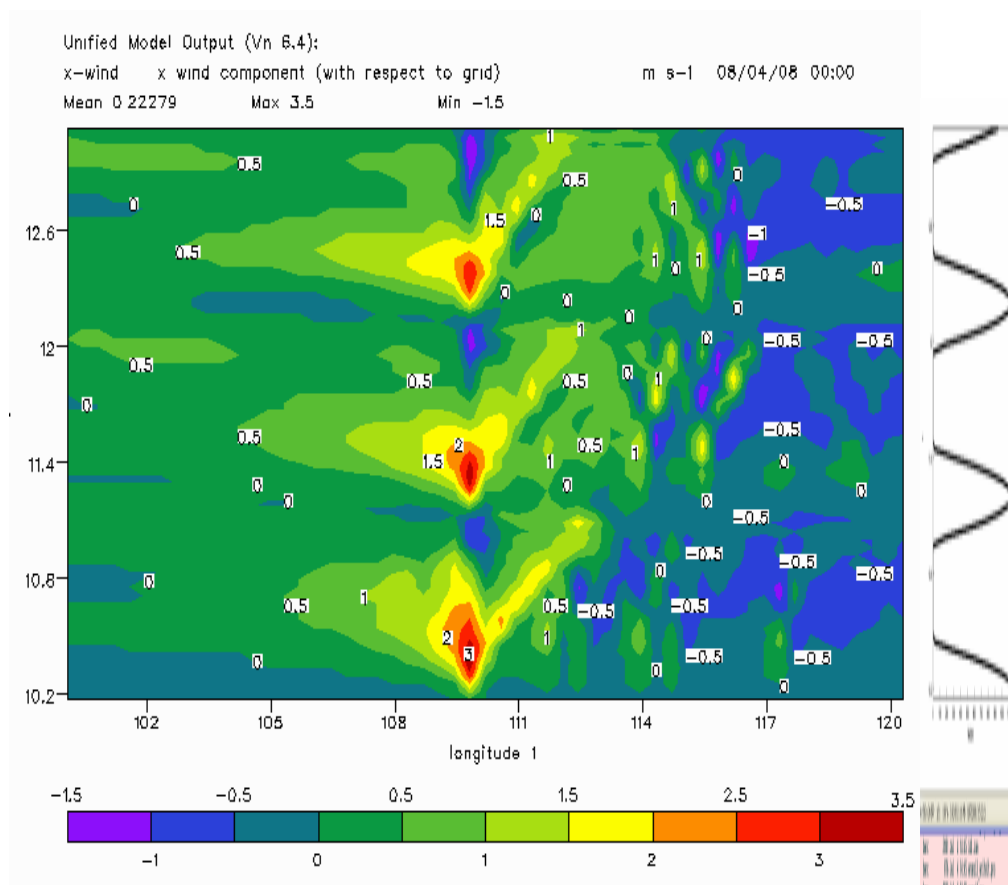


Fig21a (left) blow-up, over the West coast of the island, of the u field from Fig 19a above, and (right) the corresponding sw radiation at the toa at (20S,110E)

The figure below is a longitude/time plot for the boundary layer height, corresponding to the u field in Figure 21a, and it shows the night time deeper mixed layer associated with the movement of the sea-breeze inland.

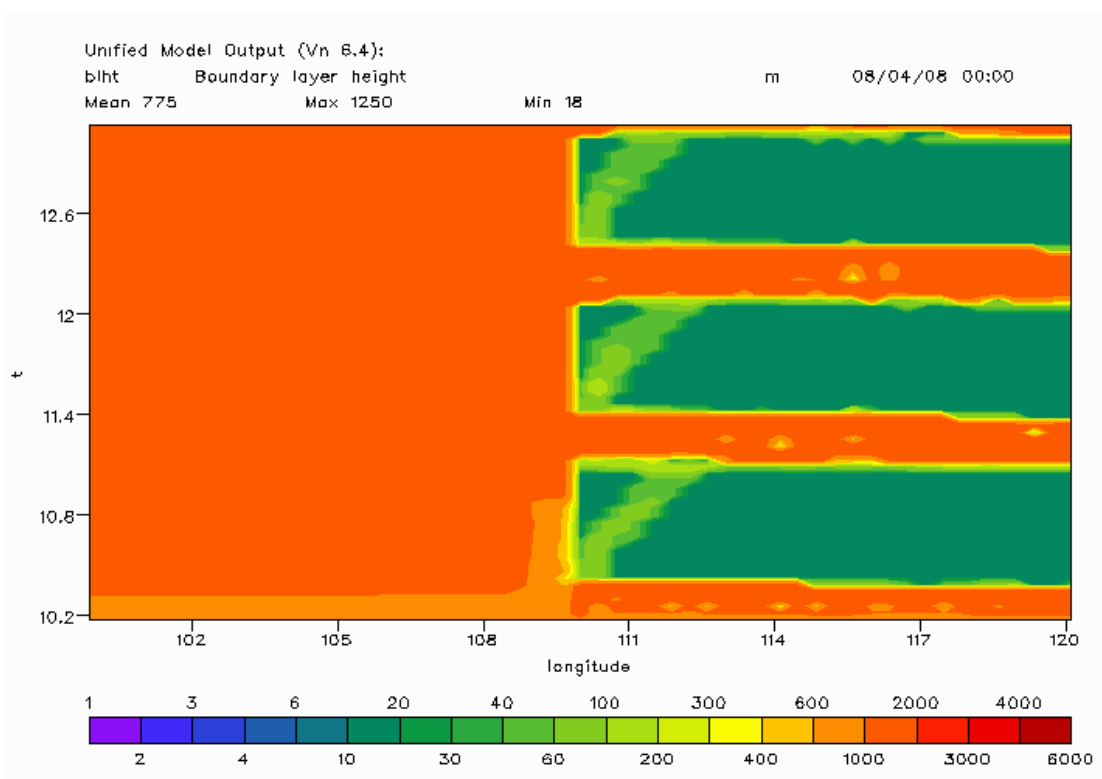


Fig 23a A longitude/time plot over the West coast of the island of the boundary layer height, corresponding to the u field plot in Figure 21a.

TWP-ICE initial conditions

Mon7jul08: I now have access to the badc ukmo-um nwp pp datasets and, in theory, we can convert these to dump files using /bigcommon/access/scripts/pptoanc. I have also asked for the dumps from ukmo.

