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**The CSIRO Mk3L climate system model:**

**Compiling and running on APAC facilities**



TPAC



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CSIRO Mk3L climate system model workshop, UNSW, 25-26 May 2006

# The APAC National Facility



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## **SGI Altix AC (ac.apac.edu.au)**

- SGI Altix 3700 Bx2 cluster
- 1680 1.6Ghz Itanium2 processors
- 52 nodes, each with 32 processors and at least 64GB of RAM

## **Linux Cluster (lc.apac.edu.au)**

- 152 2.66GHz Pentium 4 processors
- Single-processor nodes, each with 1GB of RAM

For more information, see <http://nf.apac.edu.au/>



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## Exercise: Using the SGI Altix AC

- Log on to the SGI Altix AC
- Familiarise yourself with the basic UNIX commands



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# Basic UNIX commands

<code>ls</code>	lists the contents of a directory
<code>ls -l</code>	create a long listing
<code>mkdir &lt;directory&gt;</code>	create the directory <directory>
<code>cd &lt;directory&gt;</code>	change to the directory <directory>
<code>cp &lt;file1&gt; &lt;file2&gt;</code>	copy the file <file1> to <file2>
<code>mv &lt;file1&gt; &lt;file2&gt;</code>	move the file <file1> to <file2>
<code>rm &lt;file&gt;</code>	delete the file <file>
<code>rmdir &lt;directory&gt;</code>	delete the directory <directory>
<code>man &lt;command&gt;</code>	display the manual page for <command>



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# Filesystems

/home

- For storing irreproducible data, such as source code
- Backed up on a regular basis

/short

- For short-term storage of data
- NOT backed up

See <http://nf.apac.edu.au/facilities/userguide/>

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# Exercise: Installing Mk3L

- Install the CSIRO Mk3L climate system model in your home directory, using the command:

```
tar zxvf mk3l-1.0.tar.gz
```

- Have a look at the contents of the directory `~/mk3l-1.0/`

<code>core/</code>	Source code, data files and scripts for Mk3L
<code>doc/</code>	Documentation
<code>post/</code>	Utilities for the post-processing of model output
<code>pre/</code>	Utilities for generation of restart and auxiliary files
<code>workshop/</code>	Material for this workshop

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## Exercise: Compiling and testing Mk3L

- Compile the model, by entering the following commands:

```
cd ~/mk3l-1.0/core/scripts/  
./compile
```

- Test the model, by entering any of the following three commands:

`./test_atm` Runs the atmosphere model for one day

`./test_cpl` Runs the coupled model for one day

`./test_oce` Runs the ocean model for one month



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# Queueing systems

- The command which runs Mk3L is simply:

```
./model < input
```

- The model writes diagnostic information to standard output
- This is usually redirected to an output file, by running the model using a command such as:

```
./model < input > output
```

- For short jobs, the model can be run interactively
- For production purposes, we need to use a *queueing system*

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# Exercise: Running Mk3L

- Run the model, by entering any of the following three commands:

`qsub qsub_test_atm`    Runs the atmosphere model for one day

`qsub qsub_test_cpl`    Runs the coupled model for one day

`qsub qsub_test_oce`    Runs the ocean model for one month

- Try using the command `nqstat`
- Using the `less` command, look at each of the above scripts
- What do they do?
- You've just used another filesystem: `/jobfs`
- Familiarise yourselves with the PBS directives

