



NATIONAL COMPUTATIONAL INFRASTRUCTURE

NCI ESG install in the cloud

Ben Evans
11 December 2014

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Welcome to the NCI ESGF Node



Peer Nodes

-  [ANL Node](#) 
-  [BADC Node](#) 
-  [BNU Node](#) 
-  [CCCR-IITM Node](#) 
-  [CMCC Node](#) 
-  [DKRZ Node](#) 
-  [DMI Node](#) 
-  [E INIS-ICHEC Node](#) 
-  [IPSL Node](#) 
-  [NASA-GSFC Node](#) 



About esgf.nci.org.au

This is the NCI ESGF production node, configured to peer with the ESGF production grid.



Resources



Quick Links

- [Create Account](#)
- [MyProxyLogon](#)
- [Expert Search \(XML\)](#)
- [Wget Script Generator](#)
- [ESGF aggregated RSS feed](#) 
- [Contact ESGF](#)



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Installation

- ESGF installation in the OpenStack cloud. Mix of puppet, esg-install, snapshot, config
 - Production:
 - IDP+portal
 - 4x international cached supernodes (1=PCMDI, 1=replicate NCI publisher)
 - 1x private publisher index node
 - 1x data (TDS) + LAS server (why colocated?)
 - 2x gridftp + globus online (internal ESGF private node replication)
 - Test Federation:
 - Similar setup
 - Development:
 - Severed from Federation
- 2x perfSONAR (ICNWG)
- UV-CDAT installed (integrated in VDI – 10s of nodes, and growth).

Operational Status

- (Re)publishing Australian data after older failed node
- Data to be published with LAS working
- December to properly rejoin the federation, including NCI IDP and sharding





Live Access Server

OPeNDAP (F-TDS) / THRE

ESGF LAS

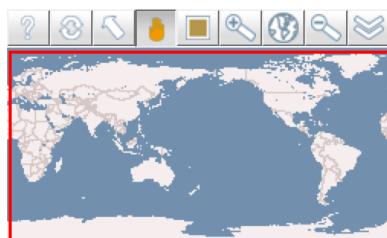
Help

Data Set Update Plot <

Print... Animate Correlation Viewer Google Earth Show Values Export to Desktop Application Save As...

One Plot Annotations

Plot Options ESGF Search



87.62 N
0 E 3 W
89.38 S

Compute: None
over: Area

Maps

Latitude-Longitude

Line Plots

- Time
- Longitude
- Latitude
- Z

Vertical Section Plots

- Longitude-z
- Latitude-z

Hofmuller Plots

- Longitude-time
- Latitude-time
- Z-time

OPeNDAP URL: <http://esg7.nci.org.au/thredds/dodsC/cmip5.CSIRO-BOM.ACCESS1-0.historical.day.atmos.day.r1i1p1.ta.20131108.aggregation.1>

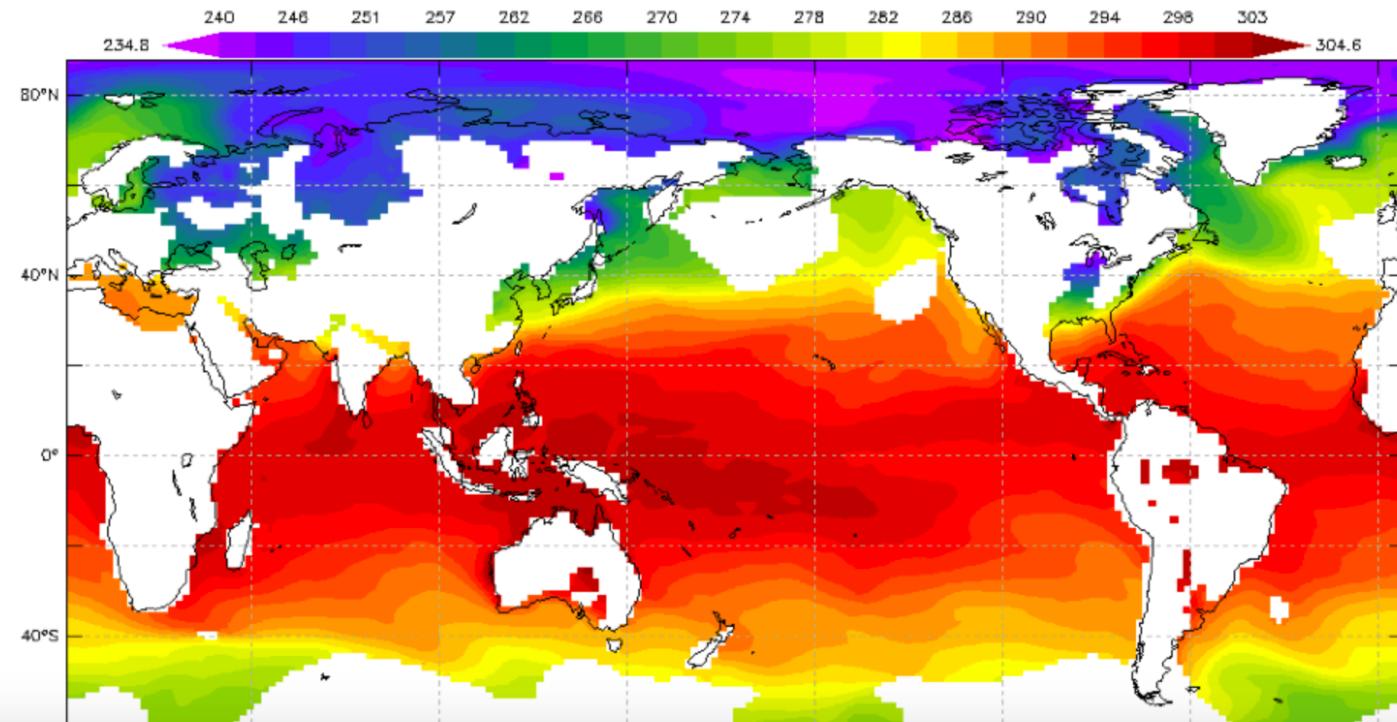
DATASET: project=CMIP5, model=ACCESS1.0, Centre for Australian Weather and Climate Research (CAWCR), experiment=historical, time_frequency=day, modeling.realm=atmos, ensemble=r1i1p1, version=20131108 [?](#)

VARIABLE: Air Temperature (K)

Z (Pa) : 100000

TIME : 31-DEC-1949 12:00

LAS 8./Ferret 6.9 NOAA/PMEL



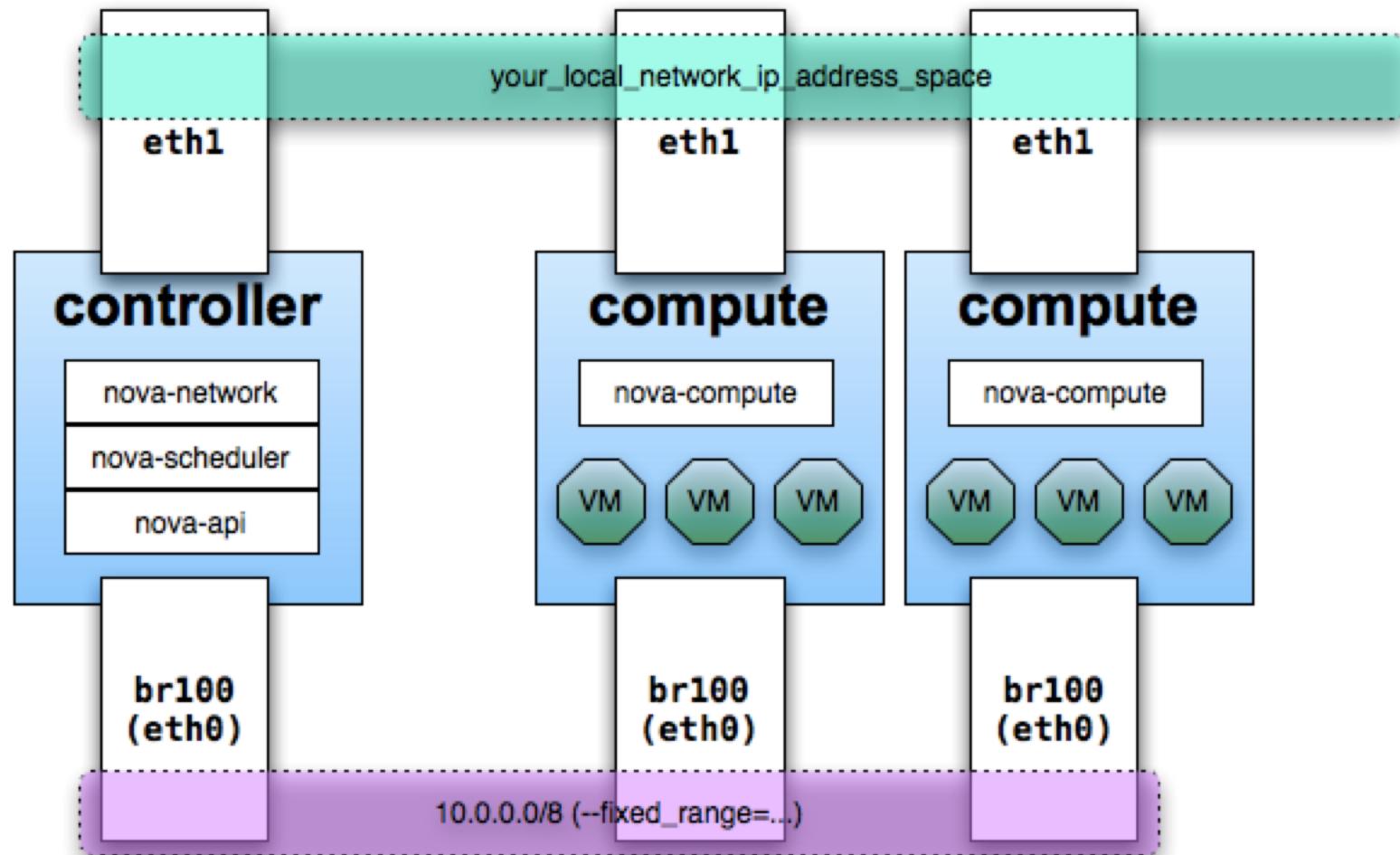
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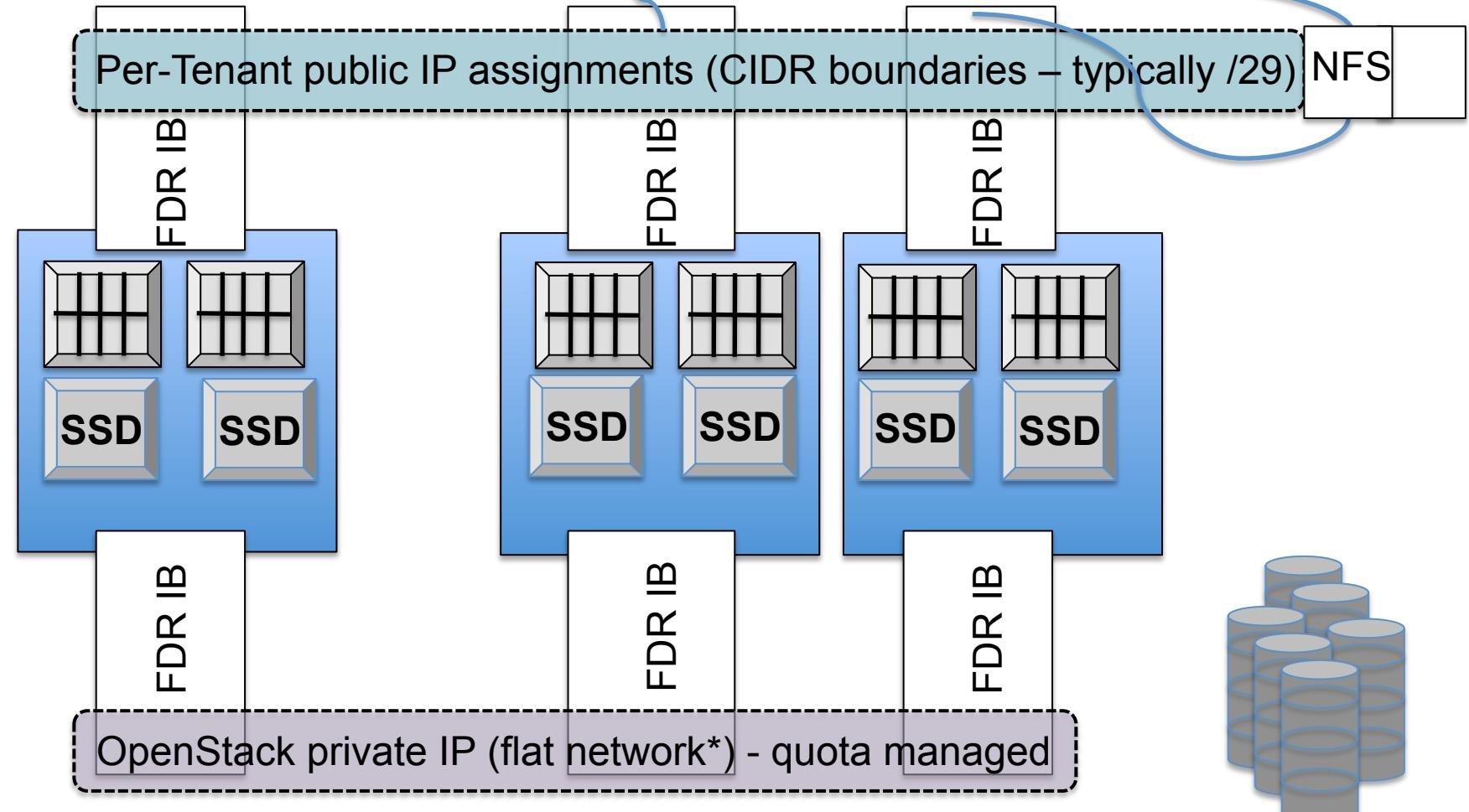
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- Progressed / Resolved at this meeting
 - Group permissions management and authorisation fixed
 - Thanks Luca and Prashanth (*and featuring another esg-node bug!*)
 - LAS working – Thanks Roland (*& looking forward to next LAS install*)
 - DOI minting and QC (progressed) – Thanks Martina
 - Replicating data with DKRZ (progressed) – Thanks Martina
 - Globus online/gridftp – TIA Eric Blau
 - Improve transfer performance





Lustre



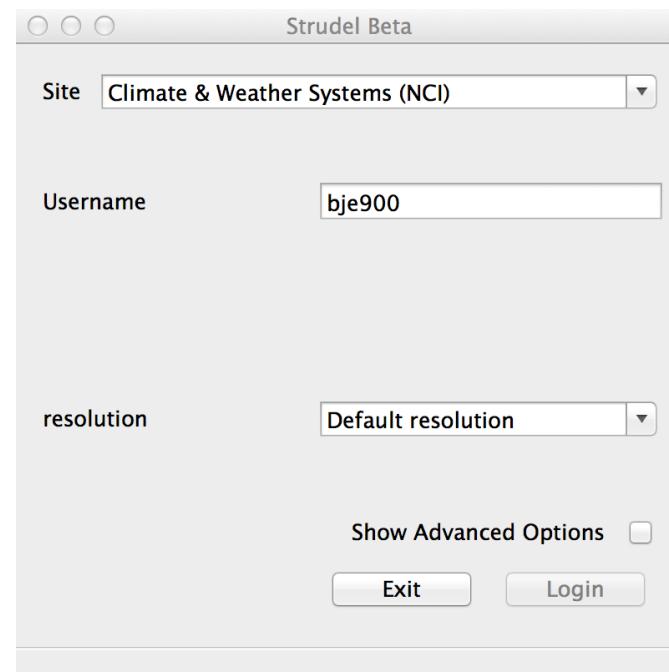


VDI – Visual Display Interface

Secure connection to dedicated nodes – see <http://vdi.nci.org.au/help>



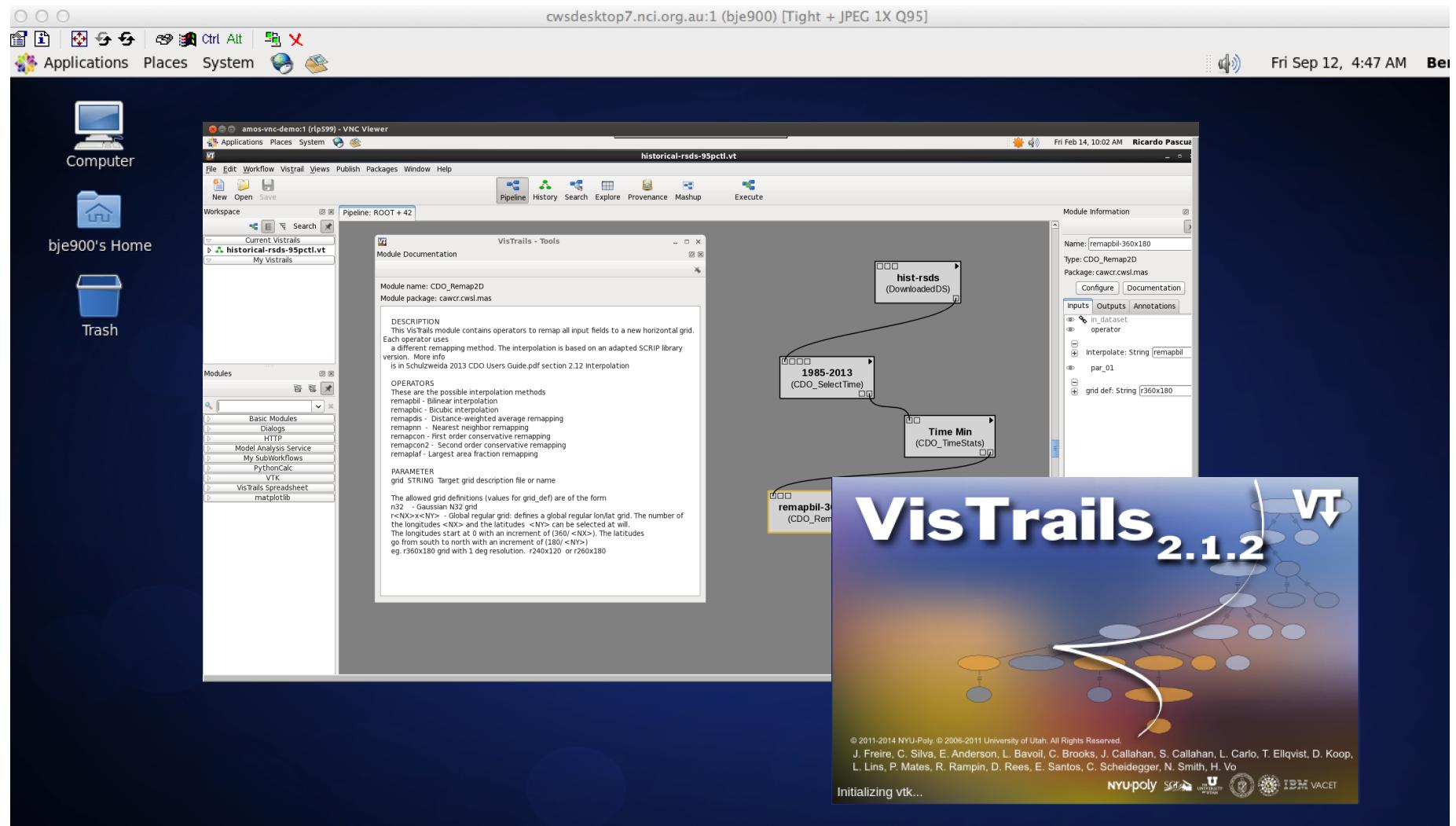
Strudel



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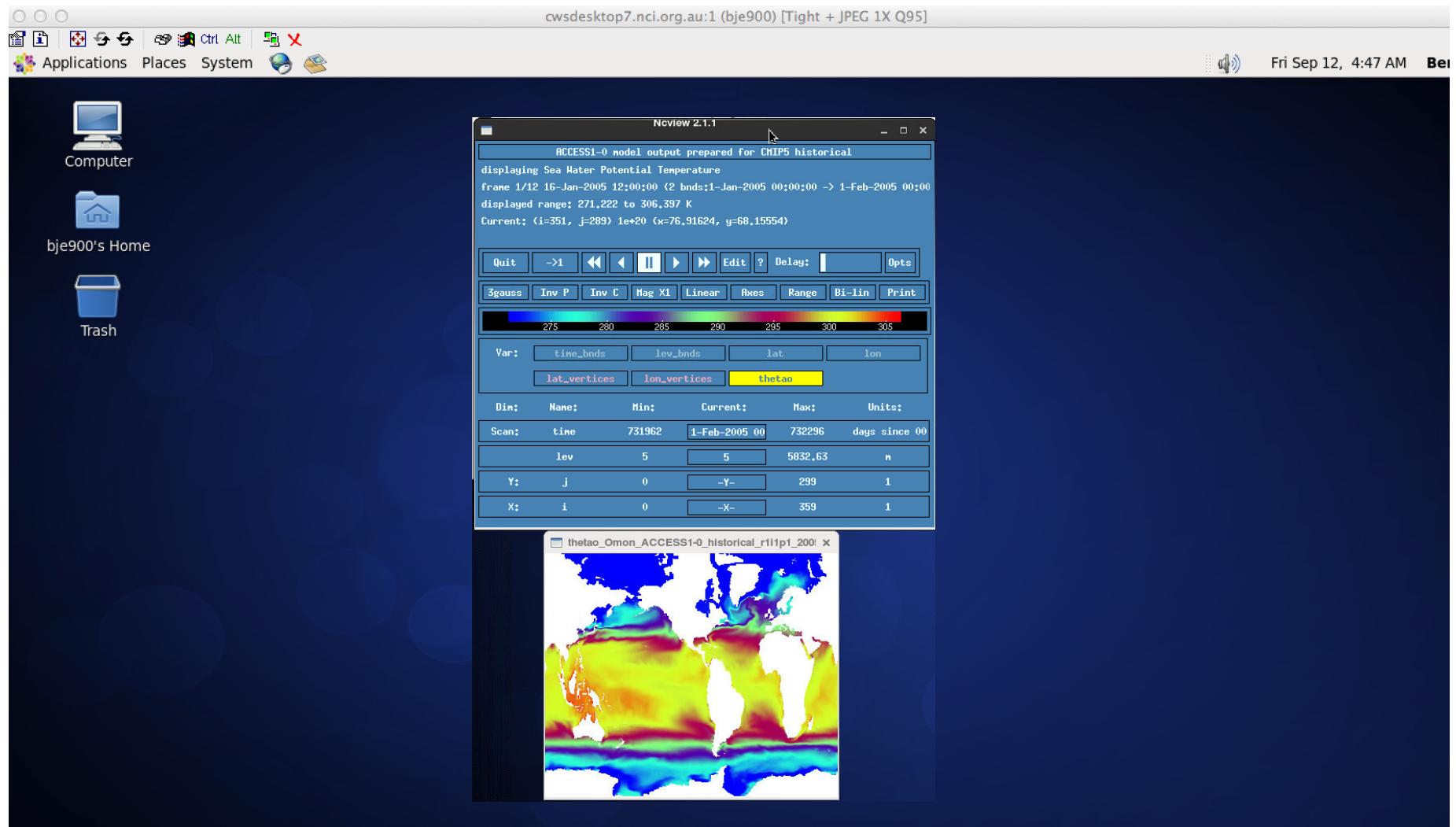
nci.org.au

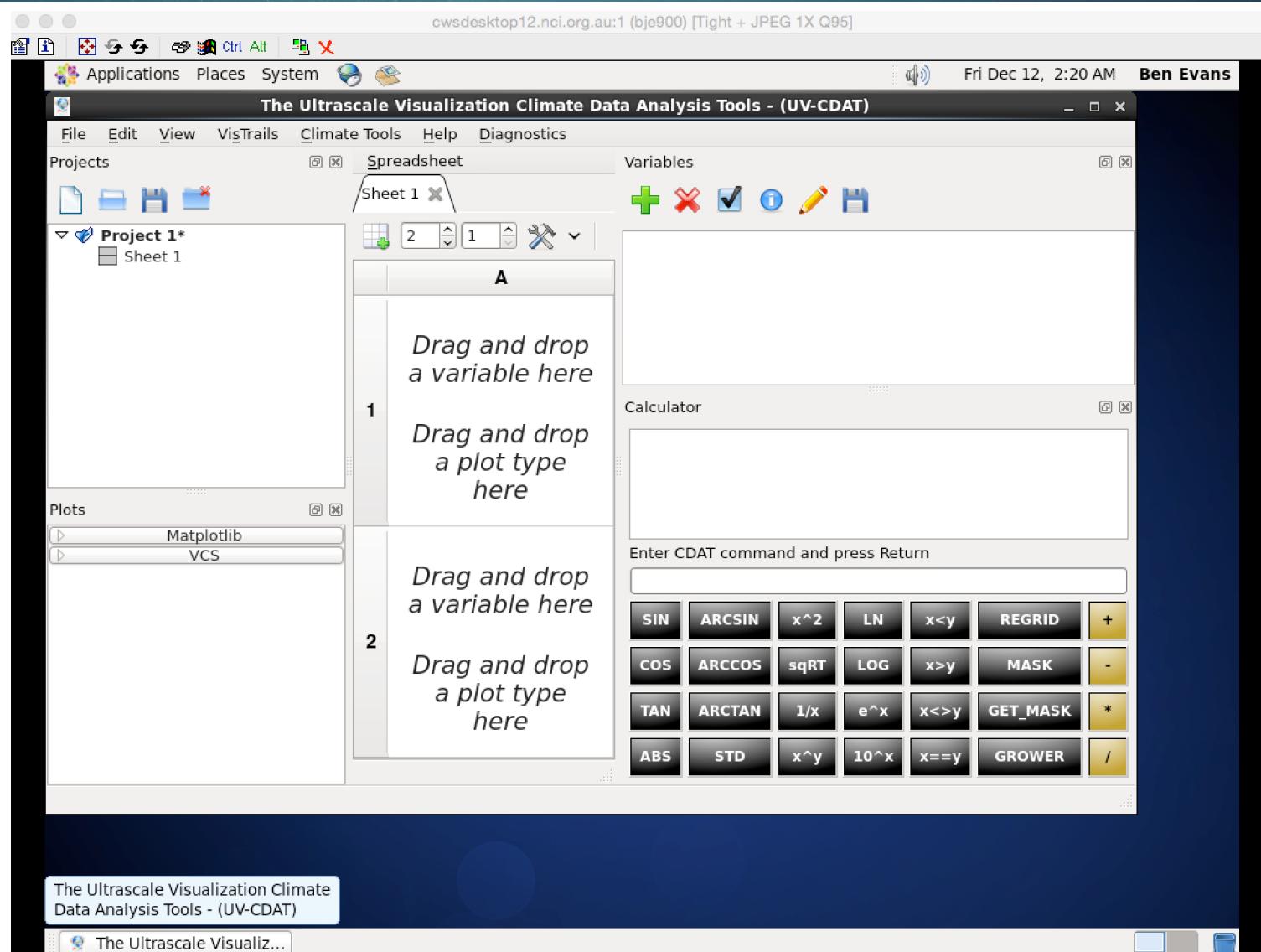


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The Ultrascale Visualization Climate
Data Analysis Tools - (UV-CDAT)

The Ultrascale Visualiz...



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ESGF in the cloud

- Started on this at ESGF(2013)+AGU(at least one day)
- By end understood the pre-requisite packages – Thanks Gavin and Charles

Wishlist – short-medium term

Installer:

- Install (basically) **all** the software without asking for input
 - Make yum ready / rpms for all parts?
 - Don't assume dedicated ESGF wrapped node (eg our VDI for compute node)
- Configuration made after
 - Give a node a personality (IDP, Portal, data)
- Allow IP addresses and hostnames to be changed more easily
 - Information gets baked into the database

Ideally ESGF should be more about the specifics of the configuration and federation, and not about the install.

NCI Core Bundles



Community1 repo



Virtual Laboratory Operational Bundle

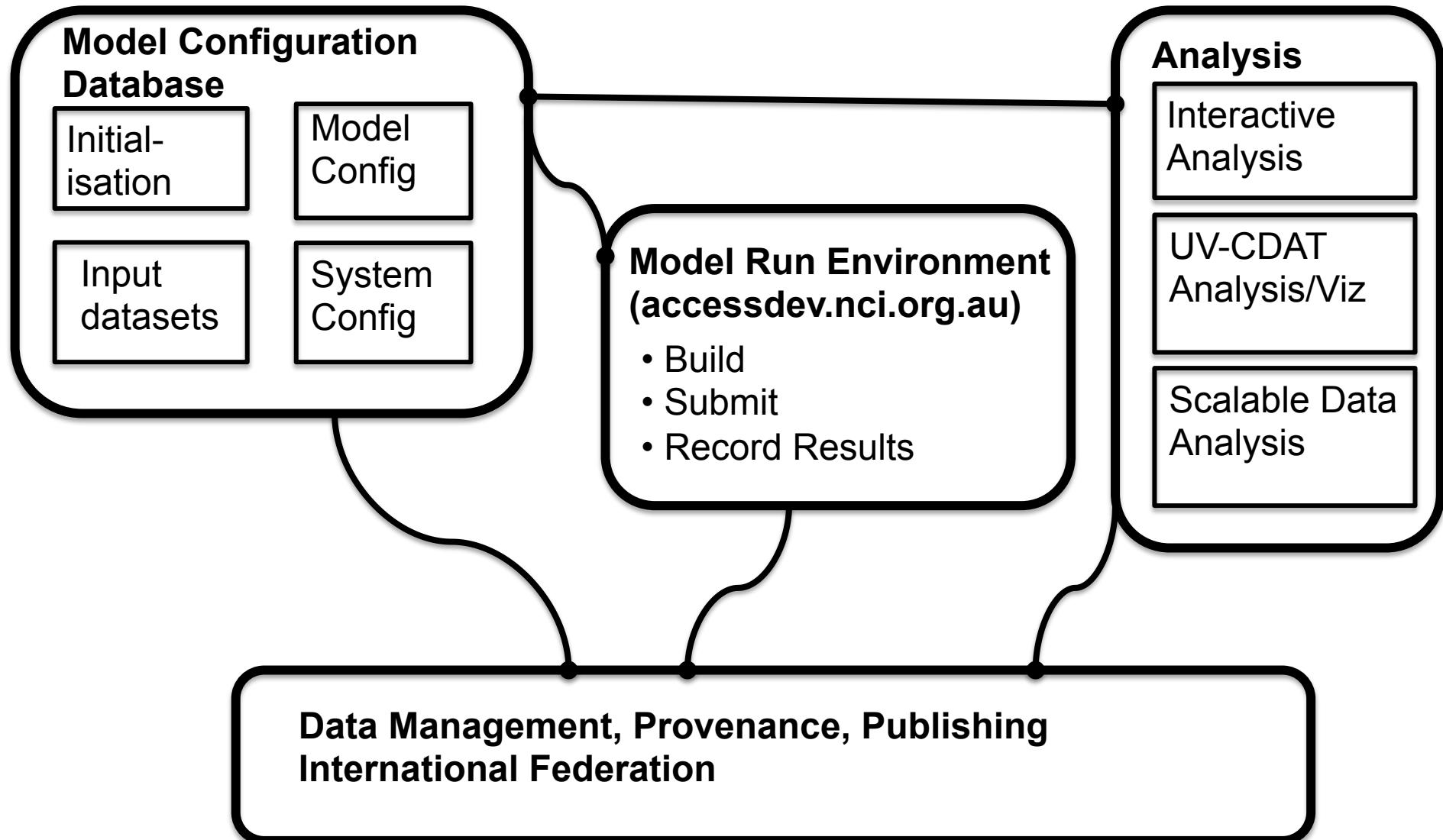
- Git controlled
- pull model
- continuous integration testing

Community2 repo



Virtual Labs	Climate & Weather lab	Earth Systems Grid	Australian Geoscience Data Cube	Workflow/Tool VIs - VHURL - VGL - (MARVL TBC) - Data processing	External Environments
Specialised Services	<u>Specialised web portals</u> - PALS, NRM, SPEDDEXES <u>AusCover</u>	<u>Specialised Subsetting and aggregations</u> - <u>datacube</u> - AODAAC (Nov)	Web Processing Services - <u>zoo</u> - WPS	Harvesting/ <u>CrossWalks</u> - NEII, Find - ANDS/RDA - ESG	<u>Viz</u> (in progress) - <u>Drishti</u> - <u>Voluminous</u>
Common Services & Registries	Data Catalogue Services - <u>GeoNetwork</u> (Sept) - scalable search - Harvesting	Scalable OGC & DAP - TDS, [<u>ncWMS</u>], ERDDAP - Hyrax (Oct) - <u>GeoServer</u> (Sept) - (<u>inc Customisations</u>)	Data Transfer - <u>Globus Online</u> - <u>GridFTP</u>	<u>Vocab Services</u> - SISS Voc (Oct) - Ocean (TBC)	Provenance Services (being evaluated) - PROMS - Sumatra
Cross-platform Tools & Services	Software Apps & Packages	Workflow Tools - <u>Vistrails</u> (Sept) - Luigi (<u>eval</u>)	Publication Tools - DOI minting (Sept) - Publishing (data and software) - Metadata QA/QC - DMP (plans)	AA - Authentication - Authorization	Monitoring & Audit - Usage - Service monitoring
Platform	Cloud Environment - NCI Puppet Framework - <u>DevOps</u> - High IOPS - integrated with data & HPC	Data Storage - <u>Lustre</u> (global and system specific) - CEPH (object, swift) - Databases			





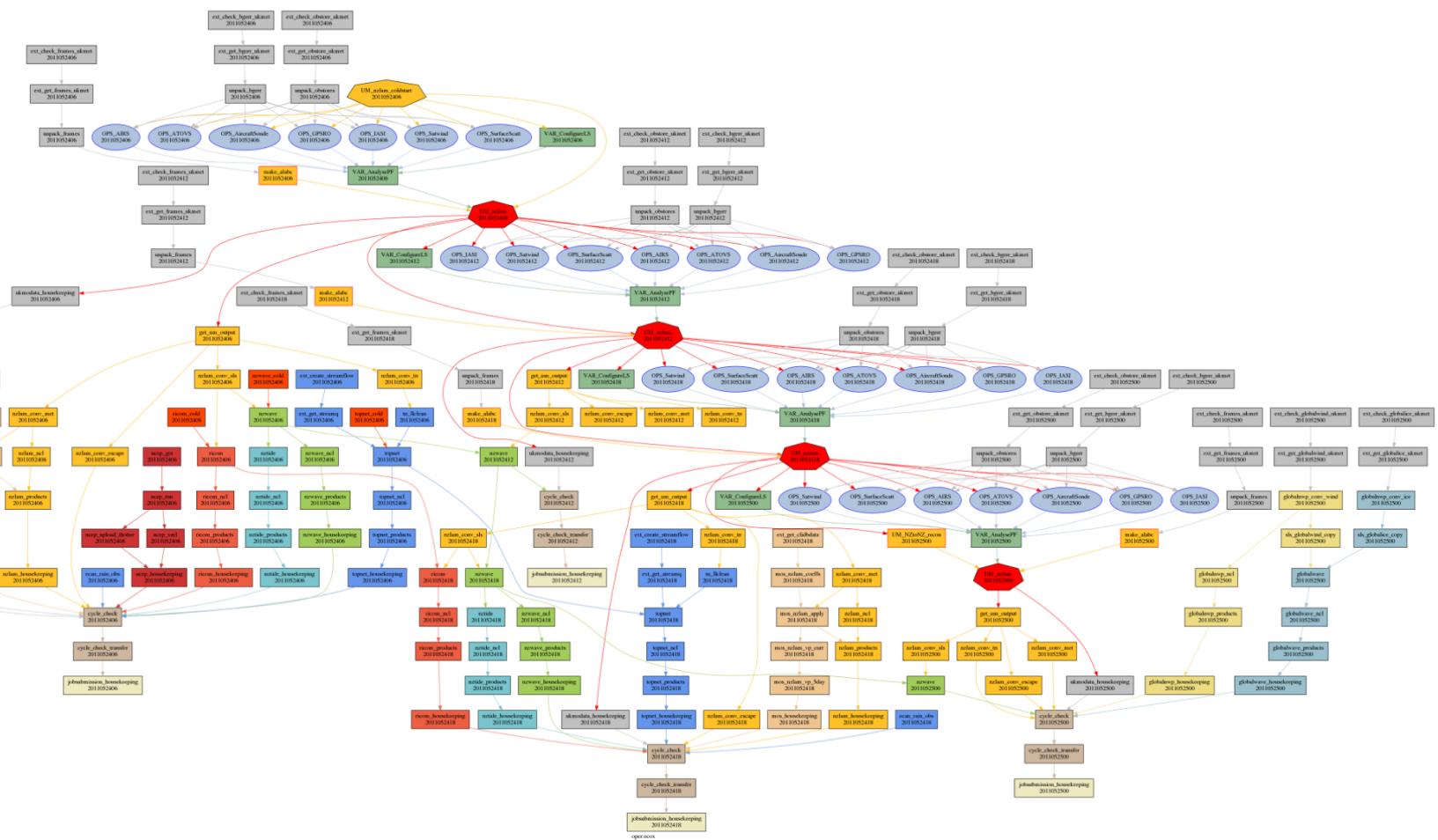
accessdev.nci.org.au

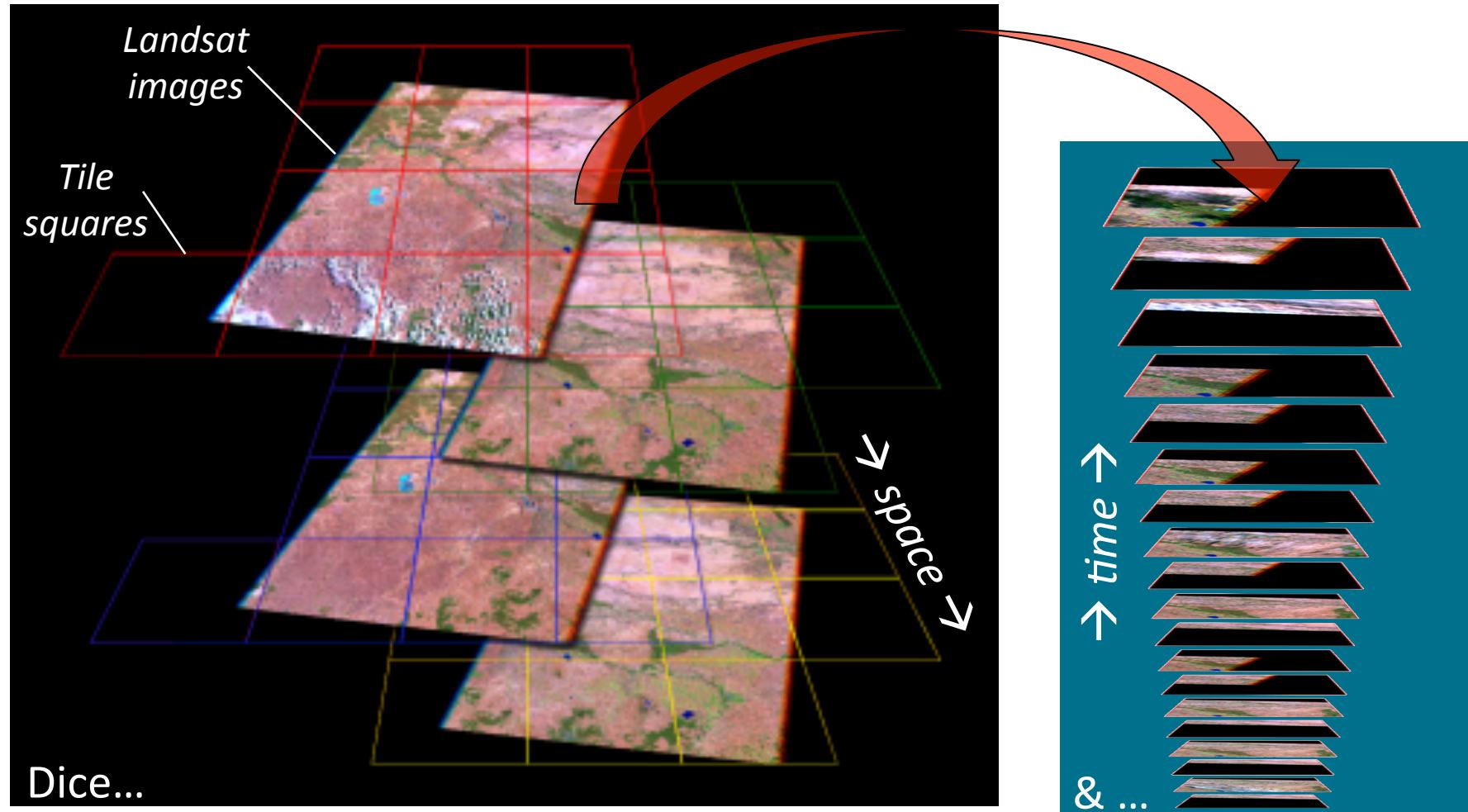
- Cyc – replacing SMS
 - Controls suites of tasks
 - NWP forecast
 - Long running climate simulations
 - Submits and monitors jobs on remote hosts
 - Takes care of job dependencies, triggering other jobs on success or failure etc
- Rose, Rosie, Rosie-Go, Rose-bush
 - Single Interface for editing various models MOM4, CICE and UM
 - Simple mechanism for sharing or copying suites between users





Cylc is a replacement for SMS (eg NIWA)







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