

# **Building on CDAT: Application development**

## Why build on top of CDAT?

- It has a standard and universal scripting language interface (our old friend *Python*).
- It provides access to a range of useful packages such for data plotting, I/O, manipulation, processing etc.,
- Python binds easily to other languages and software packages.
- A critical mass of scientists working on CDAT packages will result in a suite of fantastic freely available routines that can be distributed in future releases.



## What would you build on top of CDAT?

- Some examples are:
  - The CF-checking utility (Hadley Centre/BADC)
  - BADC ERA-40 delivery and caching system & LAS
  - The BADC's Data Extractor web-interface
  - IaGraph
  - and VCDAT of course!

## The CF-Checker (1)

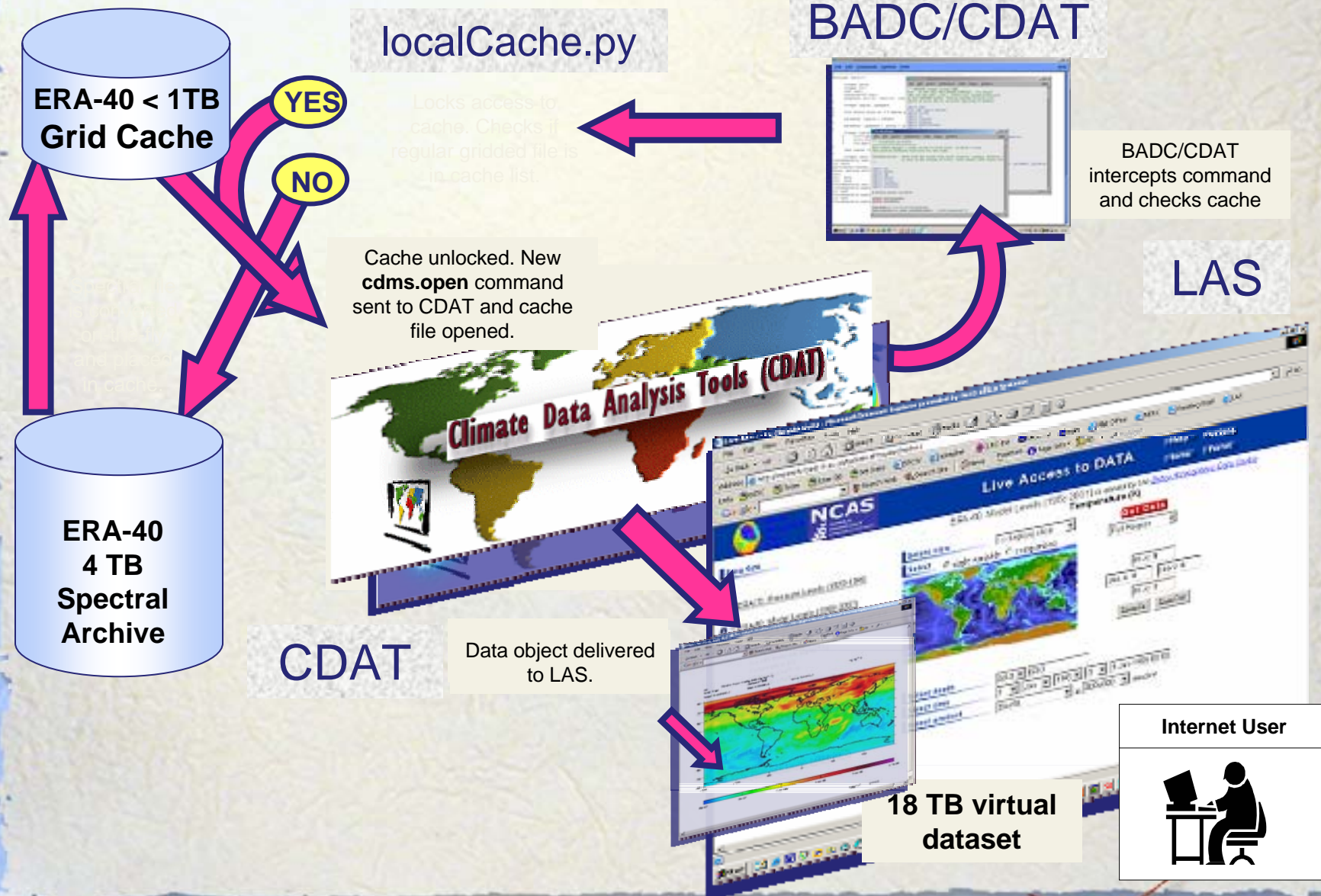
- Code developed in Python calling CDAT for NetCDF interface.
- BADC sub-classed the main version and bound it to a web application.
- Allowing users to upload a file to be checked for CF-compliance.
- Available at:  
<http://titania.badc.rl.ac.uk/cgi-bin/cf-checker.pl>

# The CF-Checker (2)

<div>Home My BADC Data Search Community Help!</div>	
<h2>CF-Convention compliance checker for NetCDF format</h2> <p>This form allows you to run the 'cfchecks.py' script to check that the contents of a NetCDF file comply with the <b>Climate and Forecasts (CF) Metadata Convention</b>. The CF-checker was written by Rosalyn Hatcher of the Hadley Centre for Climate Prediction and Research, UK Met Office. This work was supported by PRISM (PProgramme for Integrated Earth System Modelling).</p> <p>The CF-checker is a Beta release and development work is currently underway. If you have suggestions for improvement then please e-mail Rosalyn Hatcher (<a href="mailto:rosalyn.hatcher@metoffice.com">rosalyn.hatcher@metoffice.com</a>).</p>	
<p>To check your file, please enter the file name</p> <p>For details of the NetCDF format and the C</p> <p>File: <input type="text"/></p>	<h2>CF-Convention compliance checker for NetCDF format</h2> <p><a href="#">Check another file</a>   <a href="#">NetCDF format</a>   <a href="#">CF Convention</a>.</p> <hr/> <p><b>File name:</b> C:\Program Files\NetCDF\nc_files_for_CF_checker\ok.nc</p> <hr/> <p><b>Output of CF-Checker follows...</b></p> <pre>CHECKING NetCDF FILE =====  ----- Checking variable: o3 -----  ----- Checking variable: temp -----  ----- Checking variable: time -----  ERRORS detected: 0 WARNINGS given: 0</pre>
<div>Home Contact</div>	



# BADC ERA-40 delivery system



# BADC's LAS Demo: 1 month to NetCDF

**BADC Live Access Server**

Search:  **Go**

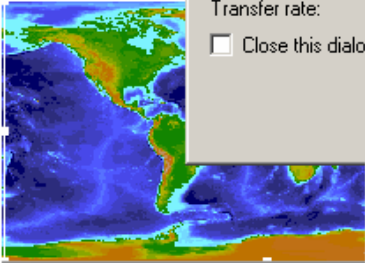
**single data set** **compare two**

**Datasets**  
**Variables**  
**Constraints**  
**Output**  
**Output Options**  
**Previous Output**  
**Define variable**  
**About**

**Datasets > ERA-40 Forecasts: Surface/single Levels (1958-2001, 1.0 deg)**  
**Variable(s): Large-scale snowfall (m of water equivalent)**

Select your desired variable(s):

**Select view:**  
**Select output:**  
**Select region:**



**Select time range:** 01 Dec 1 31 Dec 1

**File Download**

Saving:  
LASoutput.nc from titania.badc.rl.ac.uk

Estimated time left:  
Download to:  
Transfer rate:

☐ Close this dialog

**Save As**

Save in: Desktop

My Computer  
My Network Places  
History  
Desktop  
My Computer  
My Network P...

avi2mpg  
Carys - work  
Chocolate-crunch Torte with Pistachios and Sour Cherries - recipes from Delia Smith\_files  
Delia Online Recipes\_files  
ERA-40 selector  
grace book  
My laptop settings  
RecipeSource Marble Chocolate Mousse\_files  
sodar\_macehead\_files

File name: LASoutput.nc  
Save as type: .nc Document

**Save** **Cancel**



## The BADC's Data Extractor web-interface (1)

- We found it hard to make progress with the LAS, due to:
  - dependence on many other software products (such as MySQL and Tomcat)
  - complex multi-language code – *very hard to locate where to modify code for minor changes.*
- So, we built our own...using **all-Python** of course...



# The BADC's Data Extractor web-interface (2)

Projection: Standard  
Dimensions: 600x400

Plotting your data...

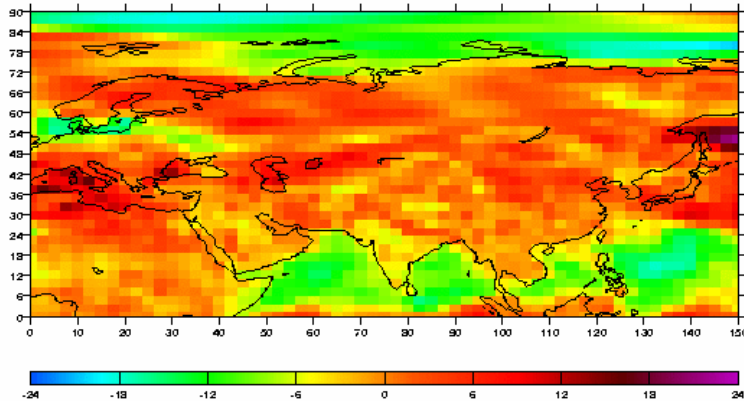
Request processed...



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Source: British Atmospheric Data Centre (<http://badc.nerc.ac.uk>)

new\_year Differenced dataset: no 10u - no 10u 1979/1/1 0:0:00  
Mean: -1.46611 Max: 21.3742 Min: -20.4533



NERC Centres for  
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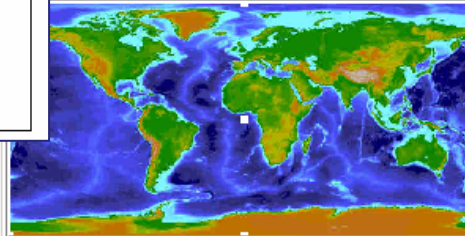
Dataset 2: -> ERA-40 -> Analyses on Surface/Single Levels (1.0 deg)

357.5 E

/cdat.badc.nerc.ac.uk/dx\_extra/LiveMap\_30/extractorMap.html - Microsoft ...

Choose this selection

VIEW: Longitude-Latitude



90.0 N

180.0 W

180.0 E

90.0 S

Zoom In

Zoom Out

☐ Dev  
☐ Dev  
☐ Loc  
☐ Me  
☐ Per  
☐ Ski  
☐ Ski  
☐ Sni  
☐ So  
☐ So

Dataset 1: Start time  
1979 01 01 00 00 00  
year month day hour min sec  
1979 01 01 00 00 00  
End time

Format  
NetCDF **Note that you should choose NetCDF format if**

Proceed

# IaGraph - A Python Package for Quick Interactive Graphing

This is my plot.  
By Johnny Lin  
December 2003

University of Chicago  
Climate Systems Center

My Plot

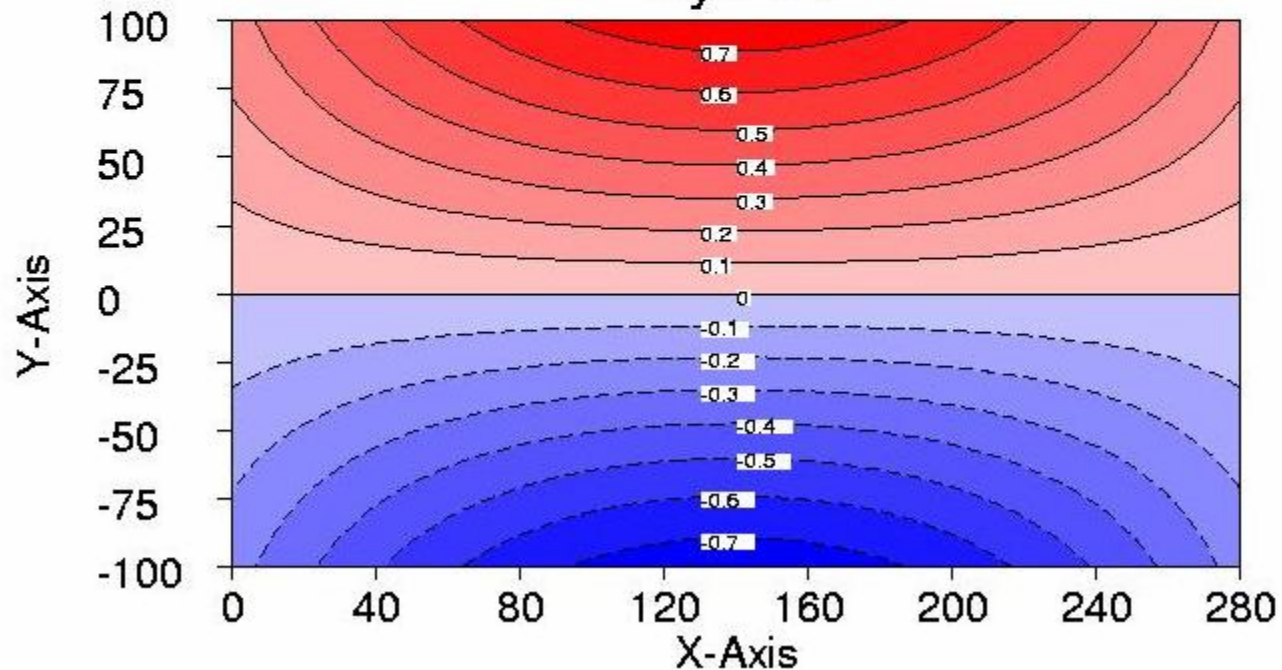


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Introduction

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