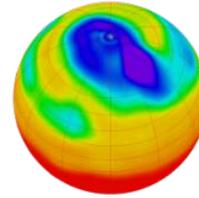




**National Centre for
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Python basics

Thanks to all contributors:

Alison Pamment, Sam Pepler, Ag Stephens, Stephen Pascoe,
Kevin Marsh, Anabelle Guillory, Graham Parton, Esther
Conway, Eduardo Damasio Da Costa, Wendy Garland, Alan
Iwi and Matt Pritchard.

BEFORE WE START (1)

I cannot teach you Python in a few hours...
...but hopefully I can show you that it is:

- Human-readable (relatively)
- Useful (even if you only know a bit)
- Flexible (you can use it in many places/ways)

BEFORE WE START (2)

Teaching materials courtesy of:

<http://www.software-carpentry.org/>



Overview

- Introduction – why we recommend Python
- Basics and control flow
- Lists, tuples and slicing
- Input/output
- Strings and text processing
- Functions, libraries and scripts
- Sets, dictionaries and OOP

What is Python?

- A simple interpreted language
- Very human-readable with clean syntax
- Making it a very good “learn to programme” language

Why do we recommend Python?

- It is **open source** and **free**
- It is **cross-platform** (including Windows)
- It can be used for simple scripting through to writing full-blown complex applications
- Many libraries/tools to tackle all kinds of problems
- In the environmental science community it continues to grow in popularity...so **we can share code!**

Python version?

Python has multiple personalities!

- **Python 3** – new; different

But not used much yet

- **Python 2.6+** – established,

Used extensively in our community.

Used in this course!

But what changes?

E.g. `print` changes from a statement to a function...

```
>>> print "hello" # in Python 2.* to...
```

```
>>> print ("hello") # in Python 3.*
```



What can you do with python?

```
Python Shell
File Edit Shell Debug Options Windows Help
>>>
>>> print "I am on Windows"
I am on Windows
>>> import os
>>> print os.getcwd()
C:\Python27
Ln: 50 Col: 4
```

Interactive "shell": allows quick learning/testing/use.

Web-programming: frameworks make this easy.

Bounding Box ⓘ

Current Bounding Box:

North:

West: East:

South:



Please select a valid bounding box within the following geographical extent: -180., -55.75, 180., 85.75. ⓘ

Output Format ⓘ

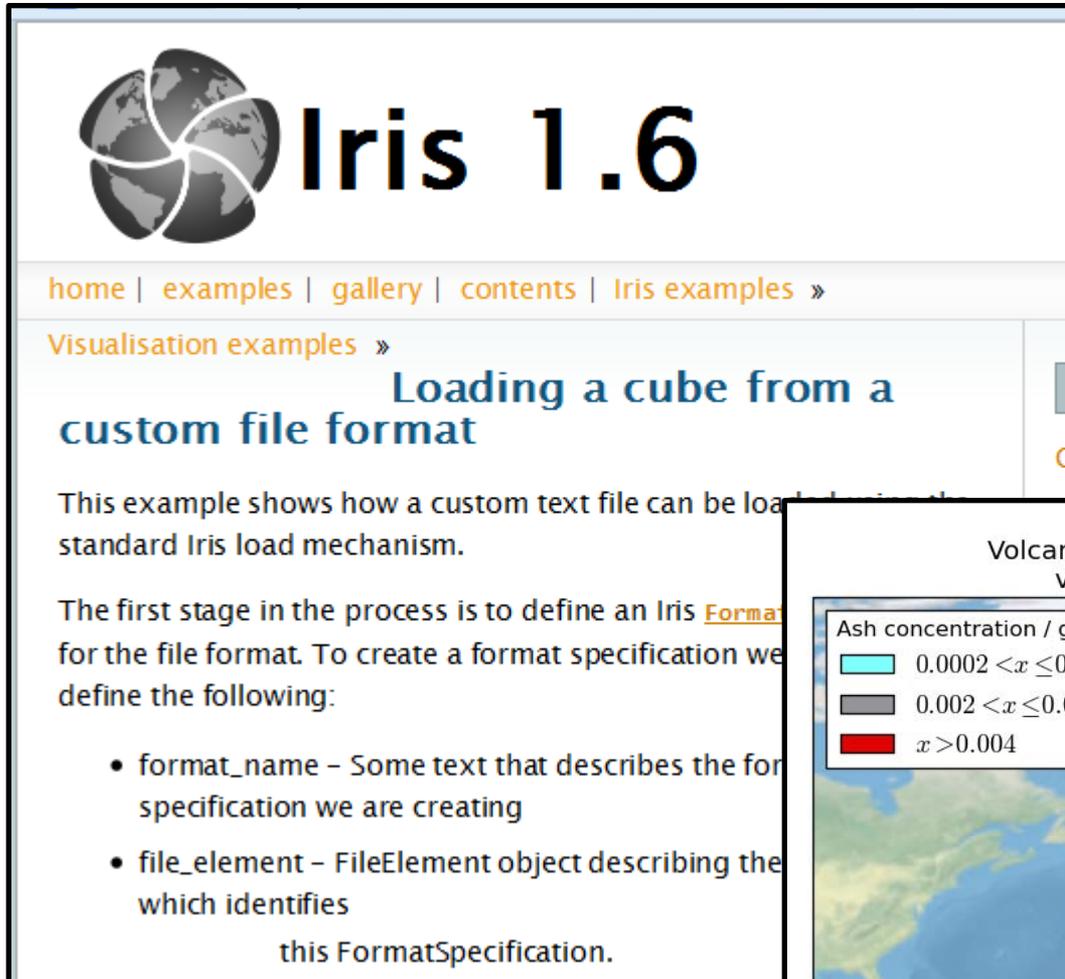
Please select an item from the list shown.

Split Output Files Into Time Chunks ⓘ

Please select an item from the list shown.

ⓘ ⓘ ⓘ

What can you do with python?



 **Iris 1.6**

[home](#) | [examples](#) | [gallery](#) | [contents](#) | [Iris examples](#) »

[Visualisation examples](#) »

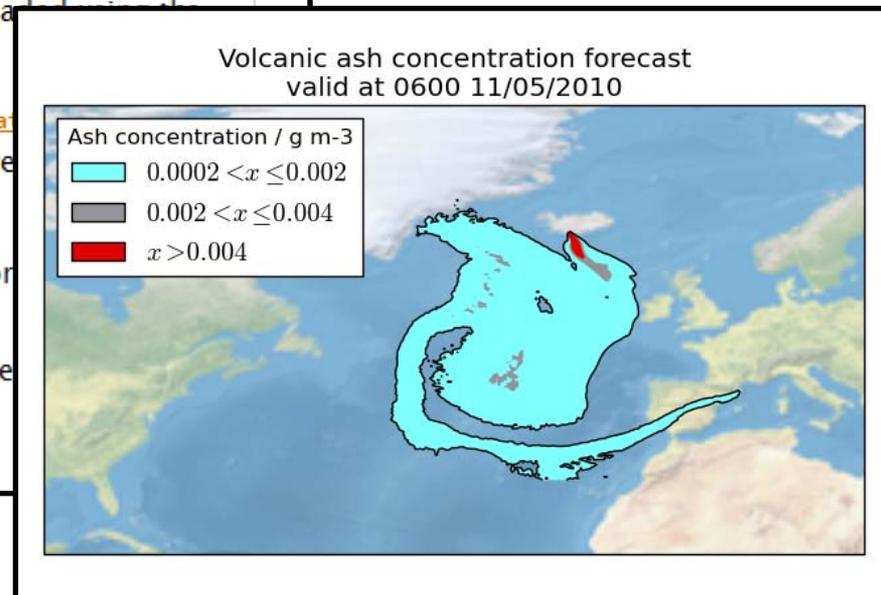
Loading a cube from a custom file format

This example shows how a custom text file can be loaded using the standard Iris load mechanism.

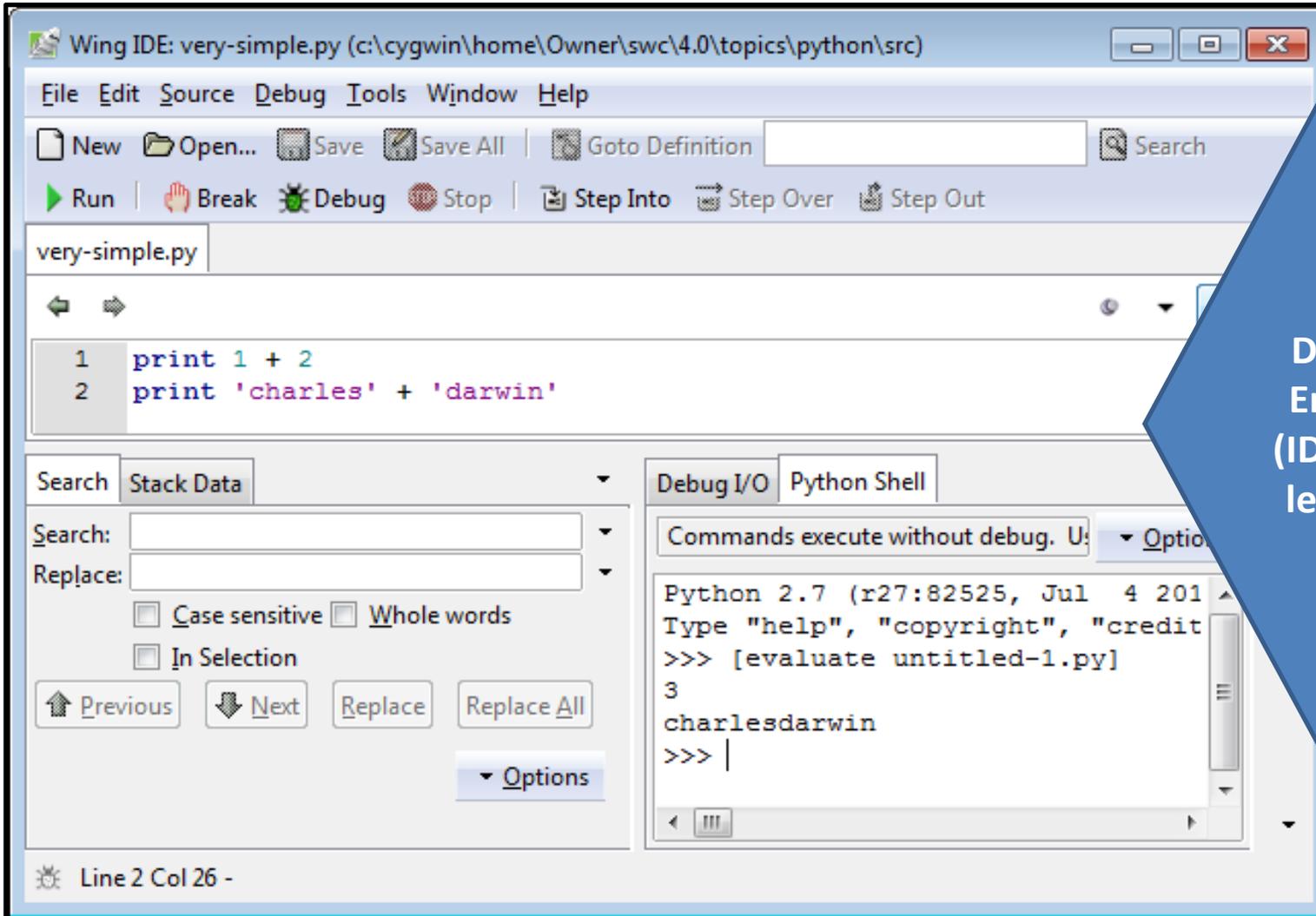
The first stage in the process is to define an Iris [FormatSpecification](#) for the file format. To create a format specification we need to define the following:

- `format_name` – Some text that describes the format specification we are creating
- `file_element` – FileElement object describing the file format which identifies the format specification.

Open source packages for data analysis and visualisation.

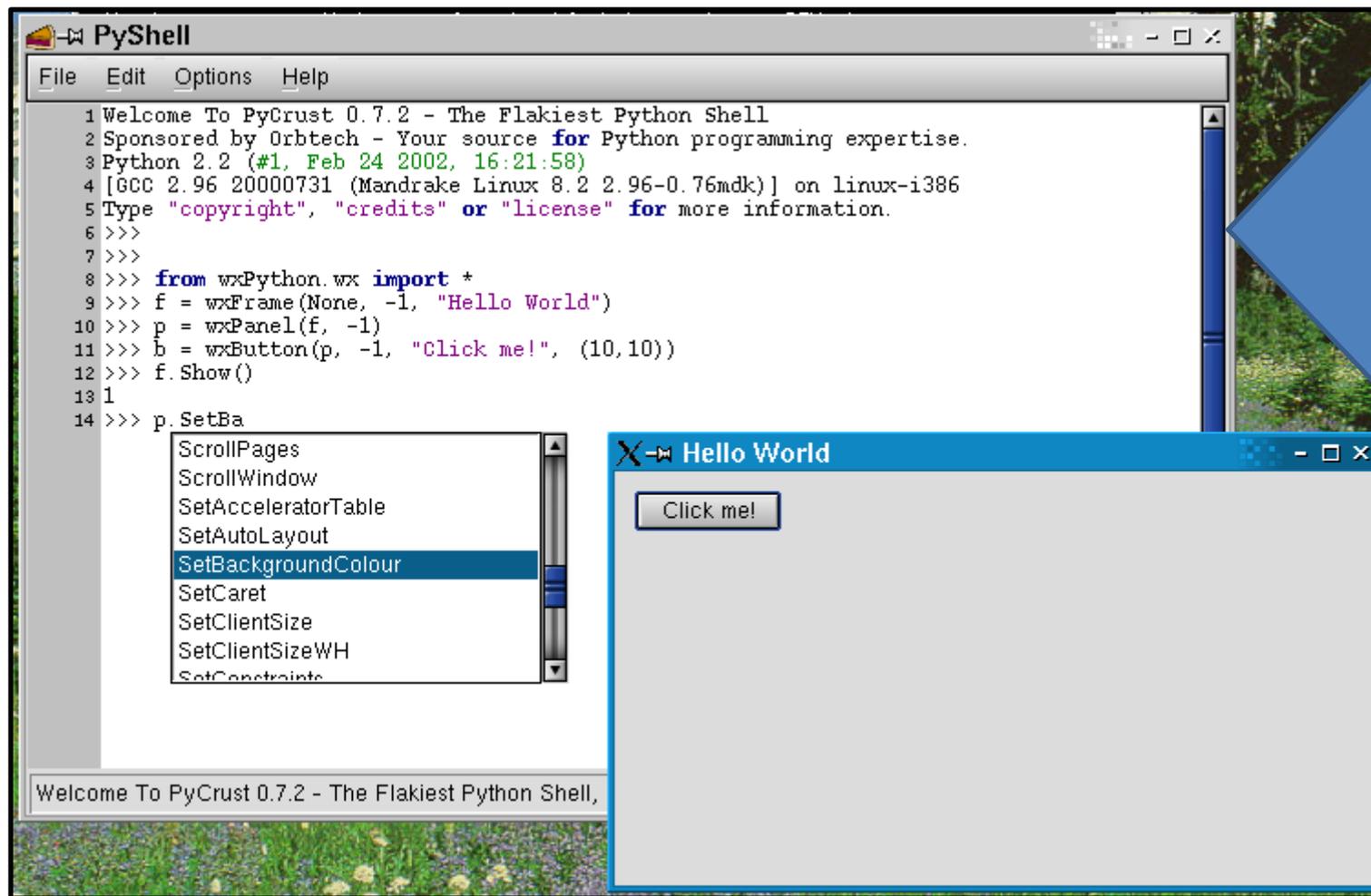


What can you do with python?



Integrated Development Environments (IDEs): help you learn/manage coding.

What can you do with python?



```
PyShell
File Edit Options Help
1 Welcome To PyCrust 0.7.2 - The Flakiest Python Shell
2 Sponsored by Orbtech - Your source for Python programming expertise.
3 Python 2.2 (#1, Feb 24 2002, 16:21:58)
4 [GCC 2.96 20000731 (Mandrake Linux 8.2 2.96-0.76mdk)] on linux-i386
5 Type "copyright", "credits" or "license" for more information.
6 >>>
7 >>>
8 >>> from wxPython.wx import *
9 >>> f = wxFrame(None, -1, "Hello World")
10 >>> p = wxPanel(f, -1)
11 >>> b = wxButton(p, -1, "Click me!", (10,10))
12 >>> f.Show()
13 1
14 >>> p.SetBa
ScrollPages
ScrollWindow
SetAcceleratorTable
SetAutoLayout
SetBackgroundColour
SetCaret
SetClientSize
SetClientSizeWH
SetConstraints
```

Welcome To PyCrust 0.7.2 - The Flakiest Python Shell,

Tools for building GUIs: e.g. wxpython

Let's get to work...