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## INTRODUCTION

[see: <http://www.badc.rl.ac.uk/>]

The British Atmospheric Data Centre (BADC) is one of the centres and facilities in the NERC Centres for Atmospheric Sciences (NCAS). The BADC provides the atmospheric research community with sophisticated access to data, tools, documentation and support. Our archive is a file-based system from which data can be directly downloaded via the Web or FTP (other transfer means can also be used).

The extensive BADC archive also allows access to over 70 datasets including Numerical Weather Prediction model analyses from both the Met Office and the ECMWF (European Centre for Medium-Range Weather Forecasts), radiosonde, satellite and surface observations. Most datasets are available to the academic community world-wide and a significant portion of the data archived at the BADC is publicly available. In the case of restricted data, access is granted on request and is password protected.

As part of its core activity the BADC is responsible for the data management of projects conducted under the auspices of **UWERN**. These include research undertaken using the University Facilities for Atmospheric Measurement (**UFAM**) instruments.

## DATA PROVISION

[see: [http://www.badc.rl.ac.uk/data/list\\_all\\_datasets.html](http://www.badc.rl.ac.uk/data/list_all_datasets.html)]

All datasets are documented online. This documentation includes scientific information on the data (such as collection and validation procedures, conditions of model runs, etc.) and technical details to allow the user to read the data. Software to read the data, as well as plotting facilities, are provided for many datasets.

In support of UFAM campaigns the BADC can provide near real-time data from the ECMWF as well as a web-trajectory service run using that data. Other datasets may also be obtained at the request of researchers.

Inspired by UWERN scientists the BADC has recently updated its Chilbolton radar datasets with a view to incorporating more quality-controlled instrumental data from the site, and it is hoped that NIMROD rainfall data from the Met Office will be obtained shortly. Recent developments at the Met Office indicate that the BADC's high-resolution radiosonde archive can be significantly expanded in the near future to include recent data.

## SUPPORT FOR UWERN & UFAM

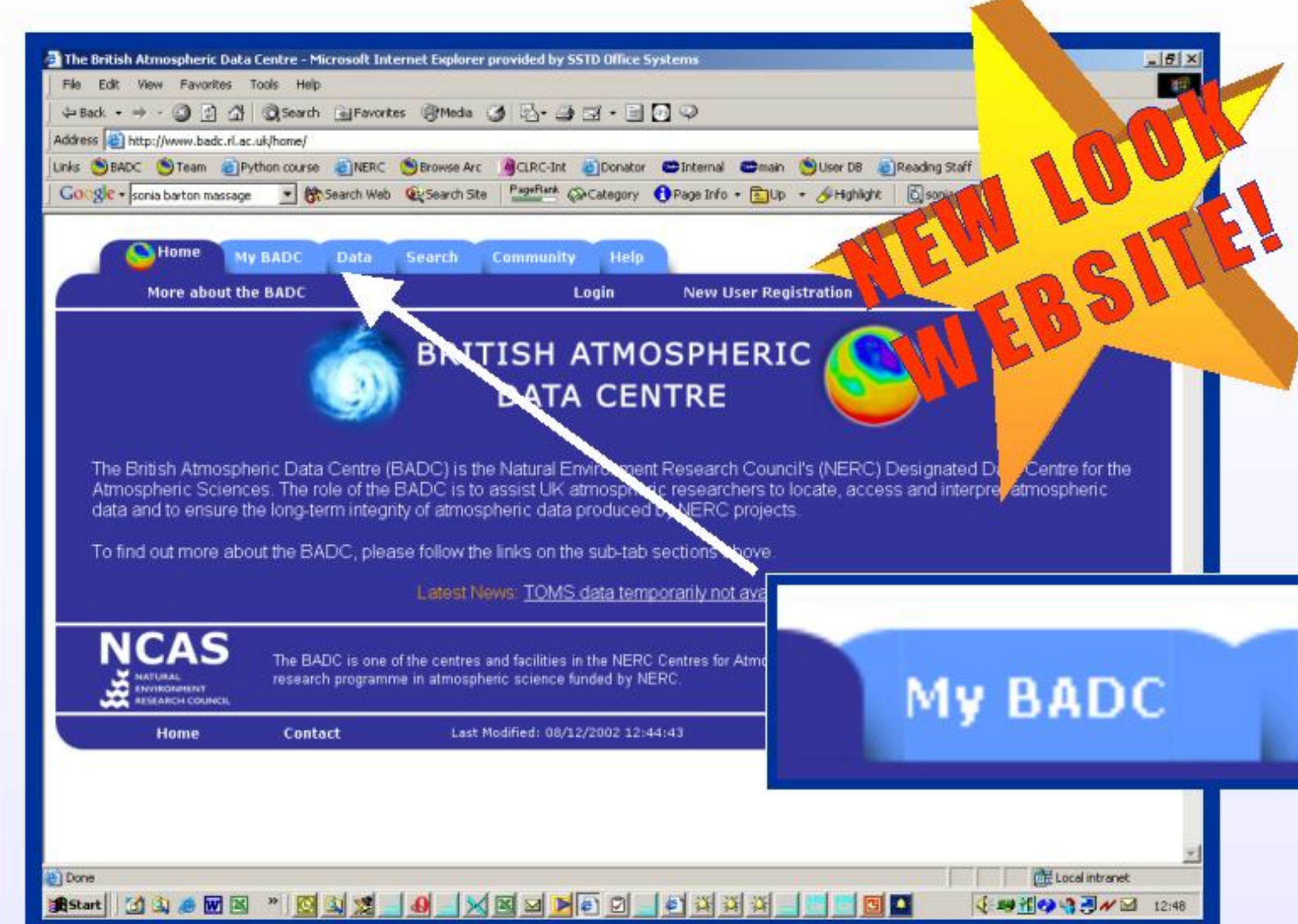
[see: <http://www.badc.rl.ac.uk/data/uwern> and <http://www.badc.rl.ac.uk/data/ufam>]

Through liaison with the UWERN and UFAM communities the BADC is preparing a Data Management Plan to establish guidelines and protocols for future projects.

Whilst the intention is to cover all UWERN research that generates useful data, the initial focus will be on UFAM instrumental data. The BADC is liaising with UFAM Instrument Scientists to develop close links and standards for data formats, archival and metadata.

**Figure 2.** Three of the many observational instruments that make up the University Facilities for Atmospheric Measurement (UFAM):

- (i) UHF Wind Profiler at Aberystwyth.
- (ii) Time of Flight Aerosol Mass Spectrometer at UMIST.
- (iii) Doppler Lidar at Salford.



**Figure 1.**

The recently updated BADC home page provides links to data registration, browsing, documentation, searching and document-sharing facilities. The new 'My BADC' feature allows users to view their details and link directly to datasets for which they are registered.

## METADATA AND FORMATS

[see: <http://www.badc.rl.ac.uk/help/formats/netcdf/>]

As computing technology improves and datasets become larger and more numerous so increases the importance of comprehensive cataloguing and data manipulation systems. In order to deliver these tools effectively new datasets should contain thorough and consistent **metadata** (data about data such as axes, boundary conditions, units etc.) and use standard data formats.

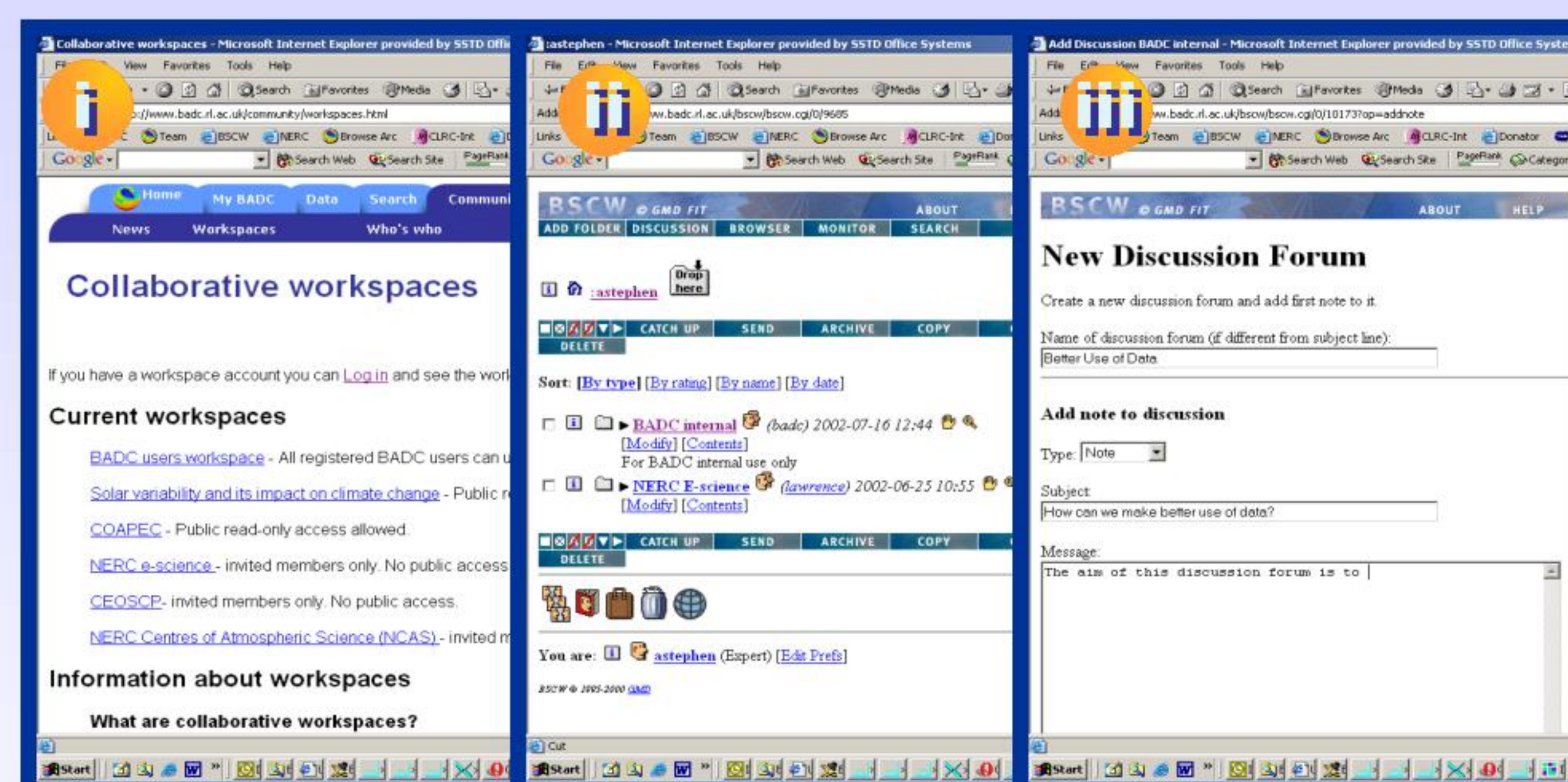
The BADC is encouraging the use of **NetCDF** which is a cross-platform (including Windows) binary data format specifically designed for atmospheric science data. Within NetCDF there are a number of data conventions and we strongly recommend the use of the **Climate and Forecast (CF) Metadata Convention** when writing data to NetCDF files.

## INCREASING COLLABORATION

[see: <http://www.badc.rl.ac.uk/community/workspaces.html>]

The BADC now hosts the **Collaboratory for Atmospheric Science and Technology (CAST)**, which allows registered users to share documents, results, preliminary data and ideas in a secure web-based environment. The collaborative workspaces are ideal for data sharing during and after field campaigns when interpretation and post-processing of instrumental data are required.

**Figure 3.** Collaborative workspaces at the BADC: (i) Overview of collaborative workspaces, (ii) Browsing personal space, (iii) Creating a new Discussion Forum within shared workspace.



## THE FUTURE

[see: <http://www.e-science.clrc.ac.uk/Activity/ACTIVITY=DataPortal;SECTION=2690;>]

The BADC has recently been granted e-Science funding to develop **The NERC DataGrid**, a project that will enable sophisticated access to numerous datasets across multiple sites via a uniform interface. The development of data and metadata standards for the UK atmospheric science community are therefore essential for delivering this objective. Through communication with scientists at all levels we will provide the *next generation* in data accessibility and delivery systems.

