Project Acronym: CORRAL
Version: 3
Contact: Dennis Wheeler
Date: 17th November 2008

JISC

Project Document Cover Sheet

Project Information			
Project Acronym	CORRAL		
Project Title	UK Colonial Registers and Royal Navy Logbooks		
Start Date	1st October 2008	**End Date**	30th September 2009
Lead Institution	University of Sunderland		
Project Director	Dennis Wheeler		
Project Manager & contact details	Dennis Wheeler, School of Applied Sciences, SR1 3PZ tel. 0191 515 2233 fax 0191 515 2229 dennis.wheeler@sunderland.ac.uk		
Partner Institutions	Met Office Hadley Centre & British Atmospheric Data Centre		
Project Web URL	To be confirmed		
Programme Name (and number)	Navy logbooks (PDIGCS002)		
Programme Manager	Alistair Dunning		

Document Name			
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Document History		
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2	28th October 2008	Passed by project committee

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JISC Project Plan

Overview of Project

1. Background

Climatic change and global warming are recognized as key research areas of importance both to the scientific community and the wider population. Whilst much attention is rightly concentrated on predictions of future change, such forecasts require the support of a comprehensive knowledge and understanding of how climate has changed in the past. For many years natural 'proxy' records from ice cores and tree rings have provided a foundation for such undertakings. Valuable though these sources are, and they provide a view of changing climate going back over many millennia, they lack high temporal resolution being often resolved only at annual or, at best, seasonal levels. Documentary sources of the character to be employed in this project, whilst not spanning the same time scale and being confined to the past three centuries, have the advantage of being resolved at the daily level, often with precise locations and dates at which those observations were made. Moreover, these 'observations' fall into two distinct, but complementary, categories, one being instrumental data such as air pressure and temperature, and the other being non-instrumental data such as wind force and wind direction. For the two very good reasons that the planet's surface is nearly three-quarters ocean and sea and that those areas are notoriously deficient in meteorological observations, particularly for the years before 1850, the sample of archive documents to be used in the project is drawn from records made on board ships or at coastal sites such as lighthouses. None have hitherto formed part of the growing and important number of widely-available climatic databases to which they will add substantially as well as enjoying value in their own right.

Archived collections of Royal Navy (RN) ship's logbooks and UK colonial meteorological registers contain notable quantities of historical daily weather information, all of which would be invaluable to climate researchers if digitized and made widely available. For many years logbooks in particular were overlooked, leading Professor Hubert Lamb to observe "For climatic research this is a vast treasure trove waiting to be used…"[1] ; this project is one of a number of endeavors by this team to remedy this

[1] Lamb, H. H., 1982: *Climate, History and the Modern World*, Methuen. London. (p. 79)

[2] Vecchi, G.A., A. Clement and B.J. Soden, 2008: Examining the Tropical Pacific's Response to Global Warming. *EOS, Trans. Amer. Geophys. Union,* **89**(**9**), 81-83.

[3] David W. J. Thompson, John J. Kennedy, John M. Wallace & Phil D. Jones, 2008: A large discontinuity in the mid-twentieth century in Observed global-mean surface temperature. *Nature,* **453**, 646-649 (29 May 2008) doi:10.1038/nature06982.

[4] Brohan, P. *et. al*., 2008 (in press) Marine observations of old weather. *Bull. Am. Met. Soc*.

oversight. In this particular exercise attention is given to the identification, collation, verification and rendering available of early marine instrumental data. Any non-instrumental data that appear in the source material will also be used but do not form the principal focus of the project.

The source material is confined, helpfully, to just two archives; the National Archives (TNA) at Kew, which holds the RN logbooks, and the National Meteorological Archives (NMA) in Exeter, which holds many of the colonial meteorological records.

2. Aims and Objectives

The principal objectives of this project are designed to meet a number of needs, these being those of data identification and acquisition, data authentication and, finally, the making available of both the processed data and, where of particular historical and wider public interest, high-quality images of the original material.

Objective 1. To identify and catalogue all RN logbooks from before 1850 which contain instrumental weather observations.

Objective 2. To create a database of instrumental climatic data derived from RN logbooks, from logbooks of vessels on voyages of scientific discovery and from colonial records.

Objective 3. To create a web-based library of images of the most important logbooks from ships on voyages of scientific exploration (1700 to 1850).

Objective 4. To make the instrumental database freely available to the wider scientific community through supported website 'gateways'.

Objective 5. To promote a wider interest in the large quantity of archived but hitherto unused climatic data.

3. Overall Approach

This undertaking, although original in terms of the source material that it calls upon, is part of a wider and longer term attempt by this team and colleagues to take advantage of the large quantities of data and weather information to be found in archived documents. As noted above attention is concentrated on ship's logbooks and colonial records that contain instrumental data. Some of the current team were involved in the EU-funded CLIWOC (Climatological Database for the World's Oceans: 1750 to 1850) project (www.ucm.es/info/cliwoc). This was the first attempt to conduct a comprehensive study of logbooks for climatic research; and since its conclusion in 2004 a number of new projects have

developed and logbook data are being used as contributing elements in more wide-ranging research projects of which the EU-funded Millennium (http://geography.swan.ac.uk/millennium/) and international ACRE (Atmospheric Circulation Reconstructions over the Earth) (http://brohan.org/hadobs/acre/acre.html) initiatives are good examples. More wide-ranging activities in promoting climate data recovery have been carried out by the NOAA-based RECLAIM (Recovery of logbooks and International Marine Data project) group http://icoads.noaa.gov/reclaim/). In all these undertakings, members of the current team have been active participants whose experience will contribute to the project's success. However, and despite these efforts, the majority of UK logbooks remain untouched by scientists. The same situation applies to the meteorological registers of British colonies from the 18th, 19th and early 20th centuries. This is particularly unfortunate, as those marine, coastal and island weather data that have already been recovered and digitized have been demonstrated to make a valuable contribution to the study of past climates [2,3]. Such documents offer a number of advantages in respect of the project's objectives and outcomes:

- the logbook archive collections are large (in the UK alone they number about 250,000) offering the possibility of providing a comprehensive coverage over space and time
- they provide daily to sub-daily reliable data for the World's seas and oceans where the Royal Navy served
- they provide data and information for as far back as the late 17th century, and embrace the period immediately before anthropogenic influences on climate are detectable
- the colonial registers are equally important, and although less numerous they provide valuable instrumental weather observations for distant areas that even today are relatively data-deficient

The project's objectives are reflected in its strategy and can be summarized as a series of overlapping undertakings:

1. the identification of documents containing instrumental climatic data from amongst the large number of RN logbooks and colonial records.
2. the digital imaging of selected source material for purposes of preservation, ease of abstraction and, eventually and where appropriate and of particular historical interest, public availability through website access
3. the abstraction and digitisation of the raw climatic data into a working (unpublished database)
4. the verification and calibration where necessary of the instrumental data to meet scientific standards of accuracy and reliability

5. production of a finished database (which will be freely available through website access)

6. the scientific investigation and analysis of these new data, sometimes in isolation but also in association with other existing and related datasets

The common theme running through much of the strategy, and the major issue to be addressed, is that of a more comprehensive provision of reliable climatic data. These will be used to produce an improved understanding of past climates and in doing so provide for more reliable predictions of future climates based on models that require calibration against such 'historic' information.

The success of the project will be gauged largely by the scientific value, quantity and the quality of the derived data. In this respect the 'quality' of the data should be seen not merely in terms of the intrinsic statistical reliability but also of its contribution to providing observations from geographic (oceanic) areas and from time periods (pre-twentieth century) for which there has been a long-standing scarcity. The complementary availability of a large number of digital images, some from the logbooks of historically important voyages of exploration but others from ships attached to the Hydrographic Survey of the RN will provide source material for researchers climatological and related fields of maritime studies. It will not be possible to either image all instrumental data sources or to abstract all of the data, and the project allows for attention to be concentrated on the 'special collection' (ADM55) within TNA of logbooks of voyages of exploration, with attention also being given to the related group of logbooks of vessels engaged in the RN Hydrographic Survey.

4. Project Outputs

The project's outputs can be categorised under four headings:

- catalogues of all logbooks and documents that contain relevant meteorological observations
- images of selected logbook source material
- database sets of quality-controlled observations
- events, published papers and reports

In all categories the outputs will be available either freely through the project's website or through published journal media.

The project workshop offers an additional avenue for disseminating the project findings and outputs. Equally importantly opportunity will be taken to promote a wider interest and participation in logbooks and similar archived sources amongst both established and young scientists.

5. Project Outcomes

The principal project outcome will be the provision of readily accessible climatic data. The primary beneficiaries of this will be the research community for whom a more comprehensive knowledge of

past climates will yield more confident predictions of future climates, thereby embracing the political and planning authorities as stakeholder groups. The simultaneous availability of original source material in digital image form will be of benefit to teaching and learning groups who can call upon such material to allow student-based abstraction, processing and investigation to take place at many different levels in the education system from primary to tertiary.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
The National Archives	Logbook provision, image preparation and processing/ document preservation and access	high
The UK Meteorological Office Hadley Centre	Archived document provision/ data use and development	high
British Atmospheric Data Centre	Provision of database and image storage/ access to data and images	high
US National Oceanic and Atmospheric Administration	NOAA are interested in the data outputs for possible inclusion in the world-standard ICOADS database	medium
The scientific community	The need for more and high-quality historical climatic data	high
The political and planning communities	The need to have reliable predictions of future climatic changes for policy-making	high

7. Risk Analysis

Nature of Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
staffing				
Unable to recruit suitable staff	3	3	9	Identify potential staff between short-listing and funding decision
Failure to retain staff	3	5	15	Enforcement of notice period, suitable management strategy,
technical				
Failure in digital equipment	1	5	5	All necessary equipment (for imaging) is already in place at TNA
Loss of digital images	1	5	5	Create on- and off-site back-up (more than one location)
organisational				
Breakdown in consortium partnership	1	5	5	Partners are actively involved in the Project Management Group and kept informed through email list and regular updates
Project not keeping to schedule	3	3	9	Effective management; clear plans and targets for all staff, monitoring, and regular meetings; ensure contingency time in schedule
Underestimate of budget	2	2	4	Increase output through alternative digitisation methods; review objectives and budgets
management				
Underestimate of task time	3	3	6	Divert resources; effective workflow planning and prioritising
Management failure	2	4	8	Review responsibility, reporting lines, control and review
Failure to deliver work packages	2	4	8	Review workload and workflows; revise and monitor
external suppliers				
Supplier failure	1	5	5	TNA & NMA are our only suppliers but long-standing relationships through similar projects reduces to near-zero the risk of failure in this respect
Delivery times	3	3	9	Ensure targets are in place, monitor and review if necessary
Quality of images	4	5	20	Ensure appropriate workflow strategy and QA strategy in place
legal				
Copyright issues	1	1	1	IPR do not apply in this case

8. Standards

Well-established standards exist for all of the project's principle outcomes and products (data and images). Consultation with the BADC partners (who are largely responsible for data and image storage and availability), with the National Archives (our principal archive source) and with other projects indicated that the higher-quality images are best handled in TIFF format. We plan to resolve to a minimum of 300dpi but will experiment to assess how much higher the resolution can be raised before cost and storage issues compromise the overall needs of the project and its budget.

Name of standard or specification	Version	Notes
ISPD	1	International Surface Pressure Databank – standard format for historical land weather observations
IMMA	1	International Marine Meteorological Archive - standard format for historical marine weather observations
Net CDF	3	Climate community data standard
CSV	?	Generic spreadsheet standard
Dublin Core	-	The metadata will be stored in a Dublin Core compliant format
TIFF	?	A standard preservation format for digital images
JPEG		A standard format for the web presentation of images

9. Technical Development

9.1 Digitisation processes and equipment

All digitisation standards will conform to MINERVA guidelines. The logbooks from exploration ships (ADM 55) are currently in microfilm format and were filmed by the TNA using black and white 35 mm cameras (Gratek Guardian and Gratek 2's). The films will be digitally scanned using a Wicks and Wilson Roll Scanner RS325 which can scan in either bi-tonal at 300 dpi or greyscale at 200 dpi. Examples of images in greyscale and bi-tonal were supplied for comparison and it was decided that, with regard to fidelity to the original and readability, images in greyscale at 200 Dpi format were preferred. The final format will be JPEG but all the master images will be using TIFF as standard.

Logs from this series that not only contain valuable climatological material but also offer data of wider scientific importance and possess an historical significance will be selected and imaged in colour at 300 dpi using TNA P45 digital cameras.

Those logbooks from series ADM 51, 52 and 53 (Captains, Masters and ships),identified as containing particularly valuable climatological data, will be imaged using TNA P45 digital cameras. As with the ADM55 logs, experimentation of imaging in bi-tonal or greyscale will be carried out to determine the best quality resolution achievable within budget.

The derived data from colonial records and logbooks will be verified using established UK Met Office practices and subsequently included in the pre-existing BADC database. Whilst this suggests little 'technical (software) development' it is important that the project's output conform to accepted standards in the field and can contribute to the existing databases without problems of comparability and conformity.

On the other hand the project will develop the now accepted methods and practices created by some of the team members (under the CLIWOC project[2]) for the processing and preparation of logbook data.

9.2 Digitisation workflow

We will be following the guidelines set out by TASI (Technical Advisory Service for Images) with respect to the digitisation process. These will include preparation of an inventory in an MS Excel spreadsheet of logbooks to be imaged. We will follow agreed conventions on file structure and file naming. QA procedures will be created to ensure the output file is named for the correct original object, that the image includes all the information in the original, that it conforms to agreed file standards, and that the information recorded about the image accurately represents the technical image information. We will also follow agreed metadata standards as set out by BADC and ensure that all master digital images are archived in a number of locations such as institutional networked PC's and external hard drive.

9.3 Cataloguing and metadata

Detailed and structured descriptions of the digital images will adhere to Dublin-core standards as set out by BADC who are responsible for the storage of the data. The metadata will describe the whole collection as well as the component parts, including collection level descriptions for individual items

9.4 Storage, maintenance and preservation

Delivery of images scanned by TNA will be on external hard drive. These data will backed up on local hard drives at TNA and University of Sunderland. These data will subsequently be distributed to BADC for storage, preservation and dissemination.

[2] CLIWOC EU-funded project under FW5, see www.ucm/info/cliwoc

10. Intellectual Property Rights

IPR do not apply in this instance and the project's specifically stated objective is to provide free access to all products and outputs.

Project Resources

11. Project Partners

1. University of Sunderland: is the lead institution offering coordination and management of the project based on extensive experience in this area. www.sunderland.ac.uk
2. UK Met Office Hadley Centre: an internationally-recognised institution, will support the abstraction of colonial records and provide expertise in data management and interpretation.
   www.metoffice.gov.uk/research/hadleycentre
3. British Atmospheric Data Centre: supports database development, management and dissemination. Will also provide dissemination facilities for digital images.
   http://badc.nerc.ac.uk/home/index.html
4. The National Archives: although not formal partners, TNA have a long-standing association with the Hadley Centre and University of Sunderland. They provide the Royal Navy logbooks that constitute one of the two core archives of the project. http://www.nationalarchives.gov.uk

12. Project Management

The project management is led by the University of Sunderland with the active support of the two other partners (Met Office Hadley Centre and BADC). Meetings will be held every six weeks at which representatives of all three will be required to attend. The two staff employed by the project are also required to attend. In addition the team will coordinate with the major archive provider (TNA) through its nominated representative. Major decisions will be made at these meetings although other meetings may be called should the necessity arise. All meetings will be minuted and reported. Teams members are:

Team member	affiliation	responsibility	phone	e-mail
Dennis Wheeler	University of Sunderland	Project manager	0191 515 2233	dennis.wheeler@sunderland.ac.uk
Rob Allan	Met Office Hadley Centre	Local manager NMA abstraction	01392 886904	rob.allan@metoffice.gov.uk
Philip Brohan	Met Office Hadley Centre	Data quality and development	01392 884574	philip.brohan@metoffice.gov.uk
Martin Juckes	BADC	Database construction and management	01235 445124	m.n.juckes@rl.ac.uk
Catharine Ward	University of Sunderland	Logbook data abstraction, digitisation and imaging	0191 515 2233	catharinesi@aol.com

Gail Willets	University of Sunderland	Colonial record data abstraction and digitisation	01392 886904	gail.willets@googlemail.com

13. Programme Support

No specific report issues are apparent at this stage.

14. Budget

There are no changes to the project's budget as it was offered at submission.

Detailed Project Planning

15. Workpackages

See Appendix B

16. Evaluation Plan

Most evaluation is here of a formative nature, taking place during the life of the project at the conclusion of which the summative and reflective evaluation will take place and form the basis of the appropriate sections of the periodic and the final reports.

For the most part evaluation is concerned with the utility, ease of access and suitability of the outputs (images and data) for the scientific and, in one specific case, wider community. The relatively uncomplicated character of the two output categories renders evaluation at one and the same time simple, yet challenging. The simplicity of the methods of evaluation should not provide grounds for allowing them to become less than exacting.

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
3	Catalogue of Royal Navy logbooks with instrumental data	Are the catalogues complete?	Check against full TNA and NMA catalogues and conduct sample checks	Results of checks and trial runs of interrogations by the team.
6	Logbook images	Are they of suitable quality for purpose? Are they freely and widely available?	Check by inspection and consultation with specialist TNA staff.	Visual inspection and assessment. Website availability, usage and invited comment.
11	Database of climatic observations	Are the data of suitable quality? Do they meet the demands of the climatoligical community?	Internal quality control checks using Met Office standards.	Ability of data to recreate climatoligically realistic patterns. Assess levels of external use.

17. Quality Plan

Quality assurance procedures relate to two aspects of the project; the quality of the final datasets and the quality of the two categories of images – those for use by the wider academic and public sectors, and those designed more specifically to meet the needs of the climatic community.

Data quality will be assessed by use of well-established UK Met Office practices, indeed, the project would be ill-advised to adopt any other standards as such a line of departure would compromise the possibility of including these new data within existing sets (see section 8 above).

Expense forbids all source material from being imaged at the highest quality (>300 dpi and full colour). The latter specification is reserved for those logbooks which, whilst containing valuable climatological material also offers data of wider scientific importance and possess also an historical significance. For these reasons high-quality reproduction for a wide and general 'readership' is necessary. Most images, whilst also being publicly available would be used more commonly by climatologists with a need to consult the source material of the database entries. Legibility and clarity on high-quality but grey-tone images rather than high-resolution colour imaging would satisfy these demands and optimise the budget. The advice of the experts at TNA would be sought in respect of quality against cost in respect of both categories.

Output	**Catalogue of Royal Navy logbooks with instrumental data**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
3	accessibility	External user group tests	Reports from users	DW, CW	N/a
3	reliability	Internal & external user group tests	User group responses	DW, CW	N/a

Output	**Images of logbooks for use by climatologists**				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
6	Image clarity	Legibility check	Transcription error rates	DW, CW	N/a
6	Image content	data presence	Data coverage (spatio-temporal)	RA, PB	N/a
11	utility	Web log usage	Rate of usage	MJ	N/a

		data			

Output	Images of logbooks for use by the wider academic and public community				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
6	Image quality	dpi measures to common TNA standards	Match image against existing corresponding standards	CW, MJ & TNA staff	N/a
6	Image content	Assessment by internal and external panels	User group questionnaire responses	CW, MJ & TNA staff	N/a
11	accessibilit y	Web log usage data	Rate of usage and invited comments	CW, MJ & TNA staff	N/a

Output	Database of derived meteorological information				
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
11	Data quantity	Numerical check of spatio-termporal coverage	Degree to which spatio-temporal data gaps in existing databases are filled	DW, RA, PB	N/a
11	Data quality	Met Office standard procedures	Complinace with MO standards	DW, RA, PB	N/a
11	Data utility	Web log usage data	Rate of usage and invited comments	DW, RA, PB	N/a

Members of Project Team:

DW = Dennis Wheeler
RA = Rob Allan
CW = Catharine Ward
GW = Gail Willets
MJ = Martin Juckes
PB = Philip Brohan
TNA = The National Archives

18. Dissemination Plan

Dissemination is a key feature of this project and characterised by two strategies, those for images and those for derived data. The project team plan to make extensive use of web-based access in both cases but will also use more traditional publication-based outputs to promote its activities and findings. The project will conclude with a workshop to which a wide audience, ranging from the business world to young scientists will be invited. The budget includes for important financial support for the latter group's participation. Project members and associates in TNA have wide experience with

the media and will take advantage of those well-established links to ensure that the project is promoted widely and beyond the immediate climatological cohort.

Timing	Dissemination Activity	Audience	Purpose	Key Message
Month 6	Preliminary publications	World-wide	To promote and publicise project activities.	The nature of CORROL undertakings.
12	Project workshop	Invited participants	Education for young scientists and awareness-raising in the wider community.	To promote logbooks studies and their wider appreciation.
12	Project database (images and data)	World-wide	To provide unlimited access to new climate data	Free data availability.

19. Exit and Sustainability Plans

The project's conclusion by no means marks the end of its activities, indeed it might be regarded as the start. The managed legacy of logbook and record images and of the database will continue to provide an important resource and one to which later endeavours will be able to add. Both the images and the data will be hosted by well-established and, as far as can ever be determined, permanent institutions in the form of the BADC and TNA.

Project Outputs	Action for Take-up & Embedding	Action for Exit
Images of logbooks and related documents.	Inclusion of images in established in the BADC setting.	Image completion and quality control checks carried out.
Database	To be integrated into the BADC web-accessible databases.	Whole set of quality controlled data to be on the website of BADC
Publications	Preparation and submission of papers	Acceptance with independent pier review.

Project Outputs	Why Sustainable	Scenarios for Taking Forward	Issues to Address
Logbook images	Historical and scientific significance	Sustaining current position for siting these data and images.	Continued support of BADC and TNA
Logbook data	Growing need for climatic data	Developed integration into other major databases, e.g. ICOADS, thereby optimising the output through its integration into existing sources.	Cross-database integration and standardisation

Appendixes

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Appendix A. Project Budget

Directly Incurred Staff	**April 08 – March 09**	**April 09 – Sept 09**	**TOTAL £**
Post, Grade, No. Hours & % FTE RA, grade E, full-time, 1 FTE	£20248.5	£20248.5	40497
Assistant, part-time contract, 0.5 FTE	£11550.00	£nil	£11550.00
Etc.	£nil	£nil	£nil
Total Directly Incurred Staff (A)	**£31798.5**	**£20248.5**	**£52,047**
Non-Staff	**April 08 – March 09**	**April 09 – Sept 09**	**TOTAL £**
Travel and expenses	£3850.00	£3850.00	£7700.00
Hardware/software (laptop computer for RA)	£500.00	£nil	£500.00
Dissemination (publication costs and workshop)	£1000.00	£5000.00	£6000.00
Evaluation	£nil	£nil	£nil
Other (imaging costs)	£23155.00	£nil	£23155.00
Total Directly Incurred Non-Staff (B)	**£28505**	**£8850**	**£37355.00**
Directly Incurred Total (C) (A+B=C)	**£60303.5**	**£29098.5**	**£89402**
Directly Allocated	**April 08 – March 09**	**April 09 – Sept 09**	**TOTAL £**
Staff	£15047.95	£15,047.95	£30,095.91
Estates	£3633.45	£3633.25	£7,266.90
Other	£nil	£nil	£nil
Directly Allocated Total (D)	**£18,680.9**	**£18,680.9**	**£37,361.80**
Indirect Costs (E)	**£28,219.5**	**£28,219.5**	**£56,439**
Total Project Cost (C+D+E)	**£107,204.4**	**£75,999.4**	**£183,203.8**
Amount Requested from JISC	**£53,622.2**	**£37,999.7**	**£91,621.9**
Institutional Contributions	**£53,622.2**	**£37,999.7**	**£91,621.9**
Institutional Contributions (must equal at least 50%)	**JISC x 50%**	**Partners x 50%**	**Total 100%**

Appendix B. Workpackages

JISC WORK PACKAGES

WORKPACKAGES	Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1:	3	x	x	x	x	x	x																		
2:	9	x	x	x	x	x	x																		
3:	9	x	x	x	x	x	x	x	x	x	x	x	x												
4:	12	x	x	x	x	x	x	x	x	x	x	x	x												

Project start date: 1st October 2008

Project completion date: 30th September 2009

Duration: 12 months

				Milestone	Responsibility
YEAR 1					
WORKPACKAGE 1: **Objective:** Royal Navy logbooks: to identify all sources of instrumental data in TNA collection of RN logbooks, and to prepare images of all logbooks subsequently selected for digitisation. Colonial records: to identify instrumental recrods in colonial records.	1st Oct 2008	31st March 2009	Directory of RN logbooks with instrumental data and accompanying high-quality images	**Directory and images published.**	CW
WORKPACKAGE 2: **Objective:** Royal Navy logbooks: to digitise instrumental data in selected sub-samples of RN logbooks for database inclusion. Colonial records: to digitise instrumental records for a working database.	1st Oct 2008	31st March 2009	Preliminary data base of merged logbook and colonial records observations.	**Data digitised. Working database**	RA
WORKPACKAGE 3: **Objective:** To prepare a quality-controlled, freely-accessible database of climatological observations.	1st Oct 2008	30th Sept 2009	Quality-controlled freely available on-line database	**Database becomes accessible**	MJ
WORKPACKAGE 4: **Objective:** To manage and coordinate the project and disseminate its outputs.	1st Oct 2008	30th Sept 2009	Publications, reports, workshop	**Successful project completion, workshop and publications**	DW

Each work package is constituted of a number of key tasks that define their character. These can be summarised thus:

Work package number	Key tasks
1	1 the preparation of a complete catalogue of all Royal Navy logbooks held by the TNA that contain instrumental data. This will include 'standard' RN logbooks as well as those of the special collection from ships on voyages of discovery and exploration. This requires an exhaustive search of collections ADM51, 52, 53 and 55 (respectively captains', masters', ships' and special voyage collections). 2 The production of high-quality images of all logbooks from which data will be abstracted.
2	1 instrumental data abstracted only from the logbooks of ships on voyages of exploration and from vessels in the service of the RN Hydrographic Survey, these being of sufficient quantity and value to meet the project's objectives. The records from colonial documents will also be abstracted. Both sets will be gathered into a 'working database' for use only by the CORRAL team. These data will be verified and corrected or calibrated as necessary before being made publicly availble through the final web-based database (WP3). 2 images will be prepared of colonial record items of particular interest only. These will be made available through the BADC website.

3	1 a final database will be prepared based on the working version of WP2. This dataset will be publicy available through BADC and consist of verifed and checked data.
4	1 this WP is more wide-ranging but based on the management and dissemination of the project's development, outputs and findings. The individual components consist of: a. management reports and minutes b. publications on project methods and scientific findings in peer-reviewed articles c. a concluding workshop to which scientists, stakeholders and media representatives will be invited d. web-site maintainence and regular reports and 'news' item for dissemination to stakeholders and the wider public and media communities.

Members of Project Team:

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