TECHNOLOGICAL IMPLEMENTATION PLAN

Description of project

EC PROGRAMME:	**EESD**
PROJECT TITLE:	European and north atlantic daily to multidecadal climate variability
ACRONYM:	**EMULATE**
PROGRAMME TYPE:	5th FWP
CONTRACT NUMBER:	EVK2-CT-2002-00161
PROJECT WEB SITE (if any):	http://www.cru.uea.ac.uk/projects/emulate/
START DATE:	01 Nov 2002
END DATE:	28 Feb 2006
COORDINATOR DETAILS:	**Name:** Philip Jones **Organisation:** Climatic Research Unit, University of East Anglia **Address:** Watton Road, NR4 7TJ Norwich, UK **Telephone:** +44 1603 592090 **E-mail:** p.jones@uea.ac.uk

PARTNERS NAME:
STOCKHOLM UNIVERSITET, Gustaf LINDENCRONA **SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE,** Paul MASON **UNIVERSITY OF BERNE,** Urs WUERGLER **COMMISSARIAT A L'ENERGIE ATOMIQUE,** Francois GOUNAND **CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE,** Jean-Paul CARESSA **GOETEBORG UNIVERSITY,** Margareta AHLQWIST **UNIVERSITAT ROVIRA I VIRGILI,** Lluis AROLA-FERRER **UNIVERSITAET AUGSBURG,** Alois ZIMMERMANN

Commission Officer Name:	Riccardo Casale

Executive summary

Original research objectives
EMULATE proposes to create daily gridded fields of mean-sea-level pressure (MSLP) over the extratropical North Atlantic and Europe (25 degrees North to 70 degrees North; 70 degrees West to 50 degrees East on a 5 degrees by 5 degrees grid spacing), 1850 to date. The data will be used to develop time series of characteristic atmospheric circulation patterns for each season, sampled on sub-monthly time scales. Variations and trends in these patterns will be related to those evident in large-scale sea surface temperatures (SSTs) and other possible oceanic fluctuations including those of the thermohaline circulation, with the aid of atmosphere only and coupled atmosphere and ocean models. Variations in the incidence of extremes of

temperature and precipitation across Europe will be related to fluctuations and trends in the atmospheric circulation patterns on daily to multi-decadal timescales and, for temperature, to SST and possible anthropogenic factors.

Expected deliverables

EMULATE has 17 Deliverables. The Project has four principal objectives with Deliverables being associated with each one (however, not all Deliverables are associated with only one objective). Outside of the principal objectives are the needs to have a Project website (D1) and to produce a Final Report (D17). The principal objectives are (along with their most closely associated Deliverables): Create daily gridded MSLP fields from 1850 (D2-D4). Derive a set of characteristic atmospheric circulation patterns and study their variations and trends for each season (D5, D6, D10). Relate variations and trends in atmospheric circulation and associated surface climate variability over Europe to sea surface temperature patterns, particularly from the North Atlantic (D7, D8, D11, D12, D13). Relate variations and trends in atmospheric circulation patterns to prominent extremes in temperature and precipitation (D9, D14, D15, D16).

Project's actual outcome

All of the 17 scheduled Deliverables have been completed and are available directly or indirectly (in the form of reports and/or datasets) via the EMULATE website. A listing of all Deliverables indicates what can be accessed: D1 - Project website. D2 - Daily pressure data for additional 40 stations for 1850-1880. D3 - Daily gridded fields of MSLP over the extra-tropical Atlantic and Europe. D4 - Daily fields of MSLP made available to wider community via the web site. D5 - Fields defining leading atmospheric circulation patterns for 2-month and 3-month seasons. D6 - Database of daily pattern amplitudes since 1850. D7 - Assessment of the variability of the observed North Atlantic and European atmospheric circulation for the last 150 years, in relation to SST patterns. D8 - Gridded database of drought index for Europe. D9 - Time series of selected 'extremes' indices, based on temperature and precipitation, of value to society at a set of homogeneous daily stations covering Europe. D10 - Assessments of trends in pattern amplitudes and in the incidence of amplitude extremes. D11 - Assessment of the time-varying influence of SST and atmospheric circulation on European surface temperature and precipitation patterns. D12 - Results of model experiments to determine if the observed relationships in D7 and D11 are reproduced or can be better resolved using the longer time scales of the coupled model experiments, and an initial study of mechanisms and potential predictability. D12 - Results of model experiments to determine if the observed relationships in D7 and D11 are reproduced or can be better resolved using the longer time scales of the coupled model experiments, and an initial study of mechanisms and potential predictability. D13 - Assessment of the relative influence of external forcing factors (natural and human) and internal variability and their seasonal differences. D14 - Assessments of changes in such extremes since the late nineteenth century. D15 - Assessments of the influence of atmospheric circulation variations on the incidence of extremes. D16 - Assessment of the likelihood of any anthropogenic influence on extremes. D17 - Final technical report to EU. In addition to the Deliverables, various studies have synthesized aspects of the Deliverable outputs and some conclusions have been drawn regarding the mechanisms between the influences on atmospheric cuirculation, atmospheric circulation and climatic extremes in Europe.

Broad dissemination and use intentions for the expected outputs

Primary dissemination mechanisms include: Scientific publications in peer-reviewed journals. Presentations at scientific conferences/meetings held in Europe and North America. The availability of Deliverables via public web pages - (includes data sets and reports). Several of the Deliverables significantly extend the previously available datasets relating to atmospheric circulation and extreme climatic events in Europe. In addition, the knowledge-base regarding connections between climate forcing, atmospheric circulation and extreme weather/climate has been extended. For example: The EMSLP daily gridded dataset holds daily atmospheric pressure data for the period 1850-2003 and has a spatial resolution of 5x5 degrees. This, along with the (EMSLP) derived series of circulation types, provides a useful resource for those studying Atlantic/European atmospheric circulation since 1850. The EMULATE daily database of long daily temperature and precipitation series is the most comprehensive yet compiled and it (along with the derived extreme index series) gives useful insights into the trends in European climate during the 20th Century. Further insights have been gained into the links between Atlantic sea surface temperatures and how these can be associated with atmospheric circulation and extreme weather/climate in Europe. Sophisticated climate models have been

used in this work and some aspects are helping towards the separation of anthropogenic and natural components of observed changes in European Climate. The increased data provision and mechanistic insights through EMULATE work, will facilitate further research into how our climate system works and thus strengthen our predictive tools which should improve future economic and social status in Europe and further afield.

Overview of all your main project results

No.	Self-descriptive title of the result	Category A, B or C*	Partner(s) owning the result (s) (referring in particular to specific patents, copyrights, etc.) & involved in their further use
1	Project website (public)	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
2	Gridded daily MSLP database for the EMULATE geographical domain (extra-tropical North Atlantic and Europe) during the period 1850-2003	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
3	Measures of the strength, frequency and the temporal trends/extremes seen in leading atmospheric circulation patterns since 1850	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
4	Investigations into the interactions between SST patterns and atmospheric circulation and how these have affected temperature & precipitation patterns	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE

			UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
5	Gridded database of drought index for Europe	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
6	Time-series of extreme climate/weather indices based on daily weather records; trends and links to atmospheric circulation	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
7	Assessment of the relative influence of extrenal forcing factors (natural and anthropogenic) on climate/climate extremes	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia
8	EMULATE Final Report	A	STOCKHOLM UNIVERSITET SECRETARY OF STATE FOR DEFENCE - MINISTRY OF DEFENCE UNIVERSITY OF BERNE COMMISSARIAT A L'ENERGIE

			ATOMIQUE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE GOETEBORG UNIVERSITY UNIVERSITAT ROVIRA I VIRGILI UNIVERSITAET AUGSBURG Climatic Research Unit, University of East Anglia

*A: results usable outside the consortium / B: results usable within the consortium / C: non usable results

Quantified Data on the dissemination and use of the project results

Items about the dissemination and use of the project results (consolidated numbers)	Currently achieved quantity	Estimated future* quantity
Product innovations	0	0
Process innovations	0	0
New services (commercial)	0	0
New services (public)	0	0
New methods	6	2
Scientific breakthrought	1	0
Technical standards to which this project has contributed	0	0
EU regulations/directives to which this project has contributed	0	0
International regulations to which this project has contributed	0	0
PhDs generated by the project	0	2
Grantees/trainees including transnational exchange of personnel	0	0

** "Future" means expectations within the next 3 years following the end of the project*

Comment on European Interest

Community added value and contribution to EU policies

European dimension of the problem

Climate extremes incur great social and economic cost. The incidence of climate extremes is expected to increase under projected scenarios of global climate change. Improved mitigation/adaptation strategies rely on improved knowledge of the climate system. Europe has a long history of recording weather/climate and a great deal of expertise in climate studies. The EMULATE consortium has been able to produce, through European collaboration, improved (in both temporal and spatial resolution) climate datasets which have provided the raw data for in-depth studies of past variability and how this may be changing with time. The use of climate modelling has improved the knowledge relating to the interactions between Atlantic sea surface temperatures, atmospheric circulation and European climate extremes. It has also helped to further verify current modelling techniques and thus help towards the production of realistic future climate scenarios.

Contribution to developing S&T co-operation at international level. European added value

Increased knowledge about climate systems holds the prospect of climate predictions that would offer benefits on a global scale. Key peer-reviewed EMULATE-related publications, describing the techniques used and advertising the output, will/have appear(ed) in international publications. Cross links between Project members and international bodies (e.g. GCOS and CLIVAR) will/have already propagate(d) EMULATE outputs into the global scientific arena. The EU has played a key role in mobilising international efforts to address the issues of human induced global climate change. The collaborations and output achieved by EMULATE, help to maintain a critical mass of European climate science and thus our ability to combat dangerous climate change. For example, most EMULATE partners have good links with climate

modelling centres, the IPCC process, scientific societies and the media. In addition, MetO have direct contacts with UK government ministers and other UK policy makers.

Contribution to policy design or implementation
The EU has played a major role in successive protocols (Rio de Janeiro and Kyoto) designed to stabilise carbon dioxide emissions towards the limitation of global climate change. Whilst domestic action, on a country-by-country basis is essential, so is Community action. The more that we know about the mechanisms and extent of climate change, the more effective the measures towards reduction, mitigation and adaptation can be. The EMULATE focus on past climatic variability, trends in extremes of temperature and precipitation and links with forcings, both natural and unnatural, will help in the assessment of the degree and measurable effects of climate change already evident and those predicted for the future. This information will help to guide future Community policy with respect to key sectors including energy, environment, agriculture and water.

Contribution to Community social objectives

Improving the quality of life in the Community:
The social, environmental and economic effects of climate/weather extremes can be very damaging. An increased ability to be able to forecast, for example, seasonal climate (whether or not further perturbed by a shift in global climate), would have enormous benefits. Some of the EMULATE outputs offer, for example, the prospect of enhanced seasonal forecasts of temperature and precipitation, based on antecedent circulation patterns and established relationships with Atlantic sea-surface temperatures and other forcings. Given the enhanced risk of damaging climate extremes, under future climate change scenarios, EMULATE outputs and follow-up outputs should help planners and policy makers to minimise the negative effects of undesirable climate change. EMULATE will help future society to preserve/enhance the quality of environment, maintain the availability of natural resources and reduce the health risks from climate extremes.

Provision of appropriate incentives for monitoring and creating jobs in the Community (including use and development of skills):
EMULATE has/will not directly increase employment in the EC. It has enhanced the skills of those working in climate research who have had connections with the Project and thus strengthened the whole climate research sector. This, in turn, could lead to a better public understanding of the threats from climate change and an acceptance of the measures taken to minimise them. Thus, some jobs may be created in the adaptation and mitigation sectors.

Supporting sustainable development, preserving and/or enhancing the environment (including use/conservation of resources):
The increased science-based understanding of the controlling factors on European and global climate, through Projects like EMULATE, should facilitate the production of improved future climate scenarios. Several of EMULATE's outputs will, directly or indirectly, help present and future researchers make more robust conclusions about the trends/mechanisms seen in climate/climate extremes and their causation. The improved scenarios will become the tools of policy makers and thus promote measures to make future development more sustainable and less demanding on the environment. For example, if improved scenarios show, beyond reasonable doubt, that parts of Europe will become drier, water conservation measures will become a priority for policy makers.

Expected project impact (to be filled in by the project coordinator)

EU Policy Goals	I SCALE OF EXPECTED IMPACT OVER THE NEXT 10 YEARS -1 0 1 2 3	II other	
		Not applicable to project	Project Impacttoo difficult to estimate
1. Improved sustainable economic	0		

development and growth, competitiveness		√	
2. Improved employment	0	√	
3. Improved quality of life and health and safety	0		√
4. Improved education	0	√	
5. Improved preservation and enhancement of the environment	1		
6. Improved scientific and technological quality	2		
7. Regulatory and legislative environment	1		
8. Other	0		

1. Economic development and growth, competitiveness	**Scale of Expected Impacts over the next 10 years (2)**	
	By Project End -1 0 1 2 3	**After Project End** -1 0 1 2 3
a) Increased Turnover for project participants - national markets		
b) Increased Turnover for project participants - international markets		
c) Increased Productivity for project participants		
d) Reduced costs for project participants		
e) Improved output quality/high technology content		

2. Employment	**Scale of Expected Impacts over the next 10 years (2)**	
	By Project End -1 0 1 2 3	**After Project End** -1 0 1 2 3
a) Safeguarding of jobs		
b) Net employment growth in projects participants staff		
c) Net employment growth in customer and supply chains		
d) Net employment growth in the European economy at large		

3. Quality of Life and health and safety	**Scale of Expected Impacts over the next 10 years (2)**	
	By Project End -1 0 1 2 3	**After Project End** -1 0 1 2 3
a) Improved health care		
b) Improved food, nutrition		
c) Improved safety (incl. consumers and workers safety)		
d) Improved quality of life for the elderly and disabled		
e) Improved life expectancy		
f) Improved working conditions		

g) Improved child care	
h) Improved mobility of persons	

4. Improved education	Scale of Expected Impacts over the next 10 years (2)	
	By Project End -1 0 1 2 3	After Project End -1 0 1 2 3
a) Improved learning processes including lifelong learning		
b) Development of new university curricula		

5. Preservation and enhancement of the environment	Scale of Expected Impacts over the next 10 years (2)	
	By Project End -1 0 1 2 3	After Project End -1 0 1 2 3
a) Improved prevention of emissions	0	1
b) Improved treatment of emissions	0	1
c) Improved preservation of natural resources and cultural heritage	0	0
d) Reduced energy consumption	0	1

6. S&T quality	Scale of Expected Impacts over the next 10 years (2)	
	By Project End -1 0 1 2 3	After Project End -1 0 1 2 3
a) Production of new knowledge	1	2
b) Safeguarding or development of expertise in a research area	2	2
c) Acceleration of RTD, transfer or uptake	1	2
d) Enhance skills of RTD staff	2	2
e) Transfer expertise/know-how/technology	2	2
f) Improved access to knowledge-based networks	0	0
g) Identifying appropriate partners and expertise	3	2
h) Develop international S&T co-operation	1	2
i) Increased gender equality	0	0

7. Regulatory and legislative environment	Scale of Expected Impacts over the next 10 years (2)	
	By Project End -1 0 1 2 3	After Project End -1 0 1 2 3
a) Contribution to EU policy formulation	0	1
Contribution to EU policy implementation	0	1

8. Other (please specify)	Scale of Expected Impacts over the next 10 years (2)	
	By Project End -1 0 1 2 3	After Project End -1 0 1 2 3

Description of Results

No.	Title
1	Project website (public)

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Sciences, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

The public website has sections relating to: the Project description, Project results (including meetings and annual reports) and potentially useful links. The Project description categories are: Project summary, scientific objectives, description of work and a list of participating institutes. The Project Deliverables (titles) are linked to the actual product (dataset and/or report) wherever conditions of use (public or internal) permit. The annual reports are also linked and these give a chronology of the progress towards the different results. The links section allows connection to other similar/complementary websites/datasets. In addition to the above, there is a section of the website that is protected by password and this has been used by Project participants to transfer information that is not destined or yet sufficiently complete for public access. The website will be updated so long as it still has a useful function for the dissemination of information that is directly related to EMULATE.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
Public web site	http://www.cru.uea.ac.uk/projects/emulate	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate	Pre-existing know-how Tick a box and give the corresponding details(reference

							numbers, etc) if appropriate
	Current				Foreseen	Tick	Details
	Tick	NoP[1)]	NoI[2)]	Details	Tick		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	**Actual current quantity**	**Estimated (or future) quantity**
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	0	0
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	1
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	

MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
2	Gridded daily MSLP database for the EMULATE geographical domain (extra-tropical North Atlantic and Europe) during the period 1850-2003

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

A primary EMULATE objective was the creation of a daily gridded database of mean sea-level pressure (EMSLP), which covered the EMULATE geographical domain for the period 1850-2003. A prerequisite to its creation was the collection of additional SLP data for different parts of the geographical domain such that the input (observed) data for the entire gridded database had sufficient spatial density throughout the period 1850-2003. This entailed the merging of different data files, including those holding marine observations. Considerable effort went into the location, digitizing and subsequent quality control of additional land-station data and merging processes. A total of 86 land-station MSLP series went into the final gridding process. All of these station series can be accessed via the EMULATE public website. Each station series has two versions - its uncorrected and corrected versions. That is the original series and the final series that had gone through all QC and homogenization processes. The final product, a 5x5 degree gridded database, was made available to Project members before it could be made more publicly availably via the website. At this point, with the product in its final form, further time was required to produce a relevant peer-reviewed paper which documents the all work done and acknowledges the large-scale of European collaboration that went into the effort. The paper now complements the database and both are available from the public web pages. EMSLP is the most complete resource of its kind (in terms of length and spatial resolution) yet produced for the North Atlantic/European region. It will be used by climate researchers and others who may have an interest in the atmospheric circulation during all or parts of the period since 1850. It will be particularly useful to those whose interest is in the range of natural variability seen in atmospheric circulation and/or the detection of climate change signals.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
Data and reference	http://www.cru.uea.ac.uk/projects/emulate/ (this links to http://www.hadobs.org/)	Public
Journal paper	Ansell et al., 2006, Journal of Climate (in press).	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate					Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate	
	Current				Foreseen	Tick	Details
	Tick	NoP[1)]	NoI[2)]	Details	Tick		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	Actual current quantity	Estimated (or future) quantity
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	1	1
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	1
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
3	Measures of the strength, frequency and the temporal trends/extremes seen in leading atmospheric circulation patterns since 1850

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

The creation of the EMSLP daily gridded database was the prerequisite for an extensive study of prominent circulation patterns. Much effort went into the methods of selection of the patterns used and the means of measuring the strength of pattern on a daily basis. Daily results have also been aggregated to a seasonal level. The data files, along with information relating to the methods used, are available via the EMULATE website. Further work has used the (above) circulation index output and looked at trends in pattern amplitudes and the incidence of amplitude extremes. This output is also available via the EMULATE website. Some further work has looked for associations between the variability of pattern occurrence and the occurrence of climate/weather extremes - including European drought. The datasets produced by this work (along with some analyses) provide a considerable asset to climate scientists and others who have an interest in the evolution, duration and trends in (atmospheric) circulation behaviour since 1850. The products are very convenient for research, in conjunction with other climate/climate-related phenomena, into how/why these other phenomena may have varied since 1850. Of particular note here would be the links between atmospheric circulation and extreme climate/weather phenomena, past, present and future.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)
Deliverables D5, D6 and D10 as data files and report material	http://www.cru.uea.ac.uk/projects/emulate/emslp3_pattern_classification/ems [THIS WILL NEED UPDATING]
Journal paper	Philipp et al., 2006, Journal of Climate (submitted).
Journal paper	Jacobeit et al., 2006, Hydrological Sciences Journal (submitted).
Proceedings	Philipp et al., 2005, Proceedings of COST733.
Journal paper	Beck et al., 2006, International Journal of Climatology.

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate					Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate	
	Current				Foreseen	Tick	Details
	Tick	NoP[1)]	NoI[2)]	Details	Tick		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	Actual current quantity	Estimated (or future) quantity
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	2	1
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	1
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
4	Investigations into the interactions between SST patterns and atmospheric circulation and how these have affected temperature & precipitation patterns

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

EMULATE has prompted and enabled more in-depth research into the links and feedbacks between North Atlantic sea-surface temperatures (SSTs) and extratropical atmospheric variability. The availability of the EMSLP database and the atmospheric circulation indices, produced within EMULATE, have provided useful inputs to this effort. Any new knowledge gained into the links between SSTs and European climate (via atmospheric circulation) offers the prospects of more skilful methods of climate forecasting. The report produced (Deliverable D7) is linked to EMULATE web pages. Relationships between North Atlantic SSTs, atmospheric variability and surface climate may display non-stationarity. In addition, it is known that it is not just the North Atlantic SSTs that have a major bearing on European climate - it is necessary to have a more global perspective. To look at these important additional dimensions of complexity the time variations in the climatic effects (as observed in European surface temperature and precipitation), of the interaction between SSTs and atmospheric circulation, have been assessed by various means. Climate model output has been used for a part of this work, with model runs being made specifically for EMULATE. A specific focus here was whether or not the climate model could elucidate further the findings of D7 and D11. The reports produced (Deliverables D11 and D12) are linked to EMULATE web pages. The prospects for skilful climate/seasonal weather prediction, in the short, medium and long terms, are enhanced by this type of research. Indeed, a 2005/6 winter-temperature forecast for Europe (which was supported by EMULATE WP3 modelling studies) correctly forecast the coldest winter for a decade. Great socio-economic gains are likely with accurate climate/weather prediction. This ability transfers to future climate modelling skill and thus the ability to produce future climate scenarios for mitigation and adaptation purposes - in the face of significant climate change.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS 272 GLOBAL CHANGE: CLIMATE CHANGE

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)
Deliverable D7 - report material	http://www.cru.uea.ac.uk/projects/emulate/DAVID_FEREDAY_D7_REPORTV3.
Deliverable D11	http://www.cru.uea.ac.uk/projects/emulate/EMULATE_D11.pdf

- report material	
Deliverable D12 - report material	http://www.cru.uea.ac.uk/projects/emulate/EMULATE_D12.pdf
Journal paper	Della-Marta et al., 2006, Climate Dynamics (submitted).
Journal paper	Folland, C.K., 2005, International Journal of Climatology.
Journal paper	Knight et al., 2005, Geophysical Research Letters.
Journal paper	Knight et al., 2006, Geophysical Research Letters (submitted).

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	**KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate**					**Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate**	
	Current				**Foreseen**	**Tick**	**Details**
	Tick	**NoP[1)]**	**NoI[2)]**	**Details**	**Tick**		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	**Actual current quantity**	**Estimated (or future) quantity**
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the		

implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	4	1
publications addressing general public (e.g. CD-ROMs, WEB sites)	3	1
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
5	Gridded database of drought index for Europe

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

The gridded database of drought index for Europe provides an effective measure of soil-moisture/drought status, at a spatial resolution of 0.5 x 0.5 degrees, for the period 1901-2002. The use of the self-calibrating Palmer Drought Severity Index (scPDSI) technique produces an index which is comparable across all of the climatic zones of Europe. Thus it is possible to compare the degree of drought between, for example, the regions that do not normally experience growth-limiting (growing season) soil-moisture status and those regions that always experience this phenomenon. Growing season soil-moisture status reflects the antecedent/current conditions of temperature and precipitation and is also a function of soil types and vegetative cover. It is a controlling factor with respect to plant growth and crop yield. Its prediction, using established relationships with atmospheric circulation indices, would offer the prospects of improved crop-yield prediction models. Some preliminary work has been done in the establishment of relationships between scPDSI and antecedent atmospheric circulation indices. This forms a part of the report for Deliverable D11. The full database of drought index for Europe is linked to the EMULATE website (Deliverable D8).

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
Report Deliverable (D11)	http://www.cru.uea.ac.uk/projects/emulate/TO BE ADDED	Public
Journal paper	van der Schrier et al., 2006, Journal of Climate (in press).	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate	Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if

						appropriate	
	Current				**Foreseen**	**Tick**	**Details**
	Tick	**NoP[1)]**	**NoI[2)]**	**Details**	**Tick**		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	**Actual current quantity**	**Estimated (or future) quantity**
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	1	0
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	1
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	

MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
6	Time-series of extreme climate/weather indices based on daily weather records; trends and links to atmospheric circulation

CONTACT PERSON FOR THIS RESULT

Name	
Position	
Organisation	
Address	,
Telephone	
Fax	
E-mail	
URL	
Specific Result URL	

SUMMARY

A database for around 200 stations with long daily temperature and precipitation records was assembled for the EMULATE geographical domain, through the collaboration of a large number of European institutions and individuals. Considerable effort went into the quality control and homogenization checks required before the extreme weather/climate index series were computed. A total of 64 different indices (derived from daily precipitation and temperature series - "useful to society") were produced for two- and three-month seasons. The full suite if index series are, with a small number of exceptions, available for download from the EMULATE public website (Deliverable D9). The actual daily temperature and precipitation series which form the basis of the extreme index series are not publicly available via the website due to a number of confidentiality agreements; though many of the series are in the public domain. A journal paper has been produced which describes the production of the extremes database. It also reports on the analyses of trends in the extreme series, both over the whole EMULATE region and six sub-regions, during the period 1901-2000 (see Deliverable D14). In addition, there has been some research into links between the extreme index series and modes of atmospheric circulation (primarily the North Atlantic Oscillation at the present time). The report on this work is available (Deliverable D15) from the EMULATE website. The databases (of station data and extreme indices) produced are the largest (with regard to station numbers/density and series duration) yet produced for the European region. This permits the most detailed overview of trends in extreme series produced for Europe and puts recent trends into the context of those experienced since the 19th Century. This is very useful for climate scientists and other analysts who seek to measure and attribute the effects of climate change and for those predicting the effects of future climate change. Planners and policy makers urgently require this kind of information for mitigation and adaptation strategies.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
Data and references - Deliverable D9	http://www.cru.uea.ac.uk/projects/emulate/public/	Public
Journal paper	Moberg et al., 2006, Journal of Geophysical Research-	Public

	Atmospheres (in press).	
Journal paper	Jacobeit et al., 2006, Hydrological Sciences Journal (submitted).	Public
Journal paper	Della-Marta et al., 2006, Climate Dynamics (submitted).	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	**KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate**					**Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate**	
	Current				**Foreseen**	**Tick**	**Details**
	Tick	**NoP[1)]**	**NoI[2)]**	**Details**	**Tick**		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	
Other:	

Quantified data about the result

Items (about the results)	**Actual current quantity**	**Estimated (or future) quantity**
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0

Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	1	1
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	0
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
7	Assessment of the relative influence of extrenal forcing factors (natural and anthropogenic) on climate/climate extremes

CONTACT PERSON FOR THIS RESULT

Name	Philip Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

It is necessary to put the recent dramatic trends seen in temperature, precipitation and other climate extremes, over much of the globe - including Europe, into a context of natural variability. External natural forcings produce shifts in climate from short to long time-scales. The possible effects of anthropogenic forcings can only be assessed and predicted if they can be disaggregated from the combined effects of natural and unnatural climate forcings. Climate modelling is the preferred tool for this disaggregation process and climate model ensembles (with different levels of natural and unnatural forcing) have been used by EMULATE for an investigation into the relative influences of the different forcings. Analyses have been performed and a report produced (Deliverable D13) which is available via EMULATE web pages. Further analyses have involved the comparison of modelled and observed extreme series for those parts of the EMULATE region which have observed series. This work has sought to test the effects of anthropogenic forcing on climate extremes. Report material for this (Deliverable D16) is also available via EMULATE web pages. In addition, the climate model output data are available for further research purposes. Journal papers (also available from the EMULATE website) describe the processes and analyses. This type of work is essential for the attribution of the causes and effects of climate change. It is particularly important to be able to measure the anthropogenic signal and thus produce realistic future scenarios for policy makers and planners to prepare appropriate mitigation and adaptation strategies. It is probable that there will be further analyses of the climate model output which is available to the research community through EMULATE.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
Deliverable D13 - report material	http://www.cru.uea.ac.uk/projects/emulate/TO BE ADDED	Public
Deliverable D16 - report material	http://www.cru.uea.ac.uk/projects/emulate/TO BE ADDED	Public
Journal paper	Knight et al., 2006, Geophysical Research Letters (submitted).	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate					Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate	
	Current				Foreseen	Tick	Details
	Tick	NoP[1)]	NoI[2)]	Details	Tick		
Patent applied for							
Patent granted							
Patent search carried out							
Registered design							
Trademark applications							
Copyrights							
Secret know-how							
Other - please specify:							

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	Actual current quantity	Estimated (or future) quantity
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	3	2
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	0
publications addressing decision takers / public authorities / etc.	0	0

Visibility for the general public	YES

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

No.	Title
8	EMULATE Final Report

CONTACT PERSON FOR THIS RESULT

Name	philjones Jones
Position	Head of Unit
Organisation	Climatic Research Unit
Address	School of Environmental Science, University of East Anglia NR4 7TJ, Norwich UK
Telephone	+44 1603 592090
Fax	+44 1603 507784
E-mail	p.jones@uea.ac.uk
URL	http://www.cru.uea.ac.uk/
Specific Result URL	http:/www.cru.uea.ac.uk/projects/emulate

SUMMARY

The EMULATE Final Report consists of six sections. Sections 1-3 cover the documentation of activities of the final reporting period (Nov. 2004-Feb. 2006). Management, itemised progress and an executive summary are included. Section 4 (this section), is the overall T.I.P. and focuses on the Project results and their dissemination. Section 5 is the executive summary of the overall achievements and is designed to inform all interested parties about the outcome of the Project. Section 6 provides detailed material on the final scientific achievements and this includes dissemination and exploitation of results. All non-confidential Final Report material will be publicly available via the EMULATE website.

SUBJECT DESCRIPTORS CODES
174 EARTH SCIENCES FOR CLIMATE RESEARCH 272 GLOBAL CHANGE: CLIMATE CHANGE 269 GEOPHYSICS, PHYSICAL OCEANOGRAPHY, METEOROLOGY, GEOCHEMISTRY, TECTONICS

DOCUMENTATION AND INFORMATION ON THE RESULT

Documentation type	Details (Title, ref. number, general description, language)	Status: PU=Public CO=Confidential
EMULATE Final Report	http://www.cru.uea.ac.uk/projects/emulate/	Public

INTELLECTUAL PROPERTY RIGHTS

Type of IPR	KNOWLEDGE: Tick a box and give the corresponding details (reference numbers, etc) if appropriate					Pre-existing know-how Tick a box and give the corresponding details(reference numbers, etc) if appropriate	
	Current				Foreseen	Tick	Details
	Tick	NoP[1)]	NoI[2)]	Details	Tick		
Patent applied for							
Patent granted							
Patent search							

carried out						
Registered design						
Trademark applications						
Copyrights						
Secret know-how						
Other - please specify:						

1) Number of **P**riority (national) applications/patents
2) Number of **I**nternationally extended applications/patents

MARKET APPLICATION SECTORS

Market application sectors
73 Research and development

CURRENT STAGE OF DEVELOPMENT

Current stage of development	Scientific and/or Technical knowledge (Basic research)
Other:	

Quantified data about the result

Items (about the results)	**Actual current quantity**	**Estimated (or future) quantity**
Time to application / market (in months from the end of the research project)	0	0
Number of (public or private) entities potentially involved in the implementation of the result:	0	0
of which: number of SMEs:	0	0
of which: number of entities in third countries (outside EU):	0	0
Targeted user audience: of reachable people	0	0
S&T publications (referenced publications only)	0	0
publications addressing general public (e.g. CD-ROMs, WEB sites)	1	0
publications addressing decision takers / public authorities / etc.	0	0
Visibility for the general public	YES	

Further collaboration, dissemination and use of the result

COLLABORATIONS SOUGHT

R&D	Further research or development		**FIN**	Financial support	
LIC	Licence agreement		**VC**	Venture capital/spin-off funding	
MAN	Manufacturing agreement		**PPP**	Private-public partnership	
MKT	Marketing agreement		**INFO**	Information exchange/training	
JV	Establish a joint enterprise or partnership		**CONS**	Available for consultancy	
Other	(please specify)				
Details:					

POTENTIAL OFFERED FOR FURTHER DISSEMINATION AND USE

PROFILE OF ADDITIONAL PARTNER(S) FOR FURTHER DISSEMINATION AND USE

Exploitation plans

CONFIDENTIAL

I am the Co-ordinator of the above project, and confirm on behalf of the contracted Partners the information contained in this Technological Implementation Plan, and I authorise its public dissemination.

Signature: **Name:**

Date: **Organisation:**

close