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**QWeCI**

**Quantifying Weather and Climate Impacts on Health in Developing Countries**

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# QWeCI

## Quantifying Weather and Climate Impacts on Health in Developing Countries

Newsletter

September 2012, No. 5

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### EDITORIAL

Dear Reader,

A very warm welcome to the fifth edition of the QWeCI Project newsletter!

We are grateful to all those who have contributed – whether in a big way or in a small way – to the completion of the project’s second periodic report. We are very thankful of your work.

In addition, we offer our sincere thanks to all those working on QWeCI Project as well as those who are associated with us. We look forward to our further productive collaboration!

All the management board looks forward to seeing you in Nairobi in October.

– The QWeCI Management Board

### Coordinator’s report

The project has now entered its final year and I have been pleased by the continued determination and collaboration I have seen across partner institutions. We have achieved much and the reports, deliverables and milestones that have been written have been to a high standard.

The second FP7 reporting period approaches its end and I’d like to thank all those involved, across the project, that have contributed to the report. The reporting has been mainly smooth and many institutions have had to overcome significant challenges. Well done all!

A number of project participants joined me at the 2012 AMMA Conference, held in Toulouse. The

meeting was very productive and all those who attended took a great deal from the conference. QWeCI was, similarly, well-represented at the EGU Meeting and, for those involved in our sister project, the second HEALTHY FUTURES annual meeting was a great success.

In the past six months, development has been made with the Liverpool Malaria Model (LMM) library, which is used by QWeCI's partner in Cologne in their internet-based, information system applications, and with the Disease Model Cradle (DMC) interface that allows the LMM to be run on standalone personal computers (both PCs and Macs) as demonstrated at two significant QWeCI organised workshops. A new malaria model has also been developed at ICTP – Vectri – with inputs from Cologne and there is a third malaria model now running at IC3 using data from Senegal. Field working groups had a successful second field season and some are within a third and final season. The modelling groups do not always realise the amount of work involved in the field programme and the time and effort needed for the detailed analyses of samples and what follows.

Since the appointment of Peris Roberts as Project Manager, the Project Office has taken on a new dynamic. Peris's financial background has been put to good use, particularly during the latest reporting period and partners are kept well-informed, which has been imperative at key times.

I look forward to seeing you all at the next QWeCI annual meeting which is to be held in Nairobi in

October. I'd like to offer my thanks to colleagues in ILRI who have been working tirelessly to ensure the meeting is a successful.

With best wishes,

Andy



## EGU General Assembly



For the first time, a climate and infectious disease session was accepted as part of the Climate: Past, Present, Future programme at the General Assembly of the European Geosciences Union (EGU) in April 2012.

The session focused on the interactions between climate and infectious disease incidence from monthly/seasonal to multi-decadal timescales. Contributions examined how climate anomalies and extremes influenced the distribution of infectious disease, both in tropical and extra-tropical regions. A wide range of methodologies were reported, including statistical and dynamical disease modelling approaches. In addition to using past and present observational climate data, studies that examine the potential of using state-of-the-art forecasting systems for developing health early warning systems, or climate scenario integrations to project future health risk, were welcomed.

Having been convened by Dr Rachel Lowe (IC3), the session was co-convened by three QWeCI Partners, Dr Adrian Tompkins (ICTP), Dr Volker Ermert (UOC) and Dr Andy Morse (UNILIV), as well as Prof David Taylor (Trinity College Dublin), the Coordinator of the HEALTHY FUTURES Project.

It brought together some excellent and very interesting research talks from the QWeCI and Healthy Futures



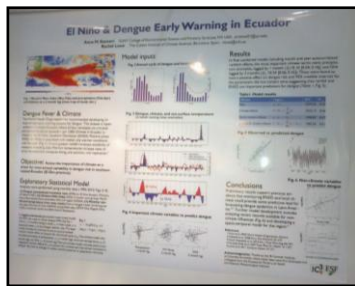
Dr Bernard Betts presenting Rift Valley Fever research in Kenya



projects. Quite an impressive number of participants attended, with several members of the audience from outside the projects.

The session was followed by an energetic poster session where many interesting discussions and ideas were exchanged.

Oral and poster presentations were submitted by nearly every institution working on the QWeCI Project. For further information, please click [here](#).



Poster presented by Dr Rachel Lowe

## HEALTHY FUTURES Meeting

The HEALTHY FUTURES Project held its third Partners' meeting at the MS–TCDC conference centre in Arusha, Tanzania, on 8<sup>th</sup> and 9<sup>th</sup> May 2012.

The meeting was well attended, with all participating institutions in the HEALTHY FUTURES project represented, many of whom are also involved in the QWeCI Project.

For more information about the HEALTHY FUTURES Project, click [here](#).



HEALTHY FUTURES Partners' Meeting – Arusha, Tanzania, May 2012

## AMMA Conference

The QWeCI Project was well represented at the 2012 AMMA Conference, held in Toulouse, France, 2<sup>nd</sup> – 6<sup>th</sup> July 2012.

The AMMA conference aims to: promote the work done in exploiting AMMA field data and models in terms of processes, predictability and climate change issues, and society-environment-climate interactions; introduce and enhance links with projects sharing common objectives with AMMA; to

present and discuss tools and product development for use by operational services; and to elaborate on the observational network integration responding to the societal needs and operational concerns of African institutions.

The themes of the conference included: Society, Environment and Climate Interactions; Predictability and Prediction of the West African Monsoon and its Impacts; and the West African Monsoon System.



AMMA Delegates – Toulouse, France, July 2012

## Participant Profiles

### Professor Sylvester K. Danuor

Kwame Nkrumah University of Science and Technology,  
Ghana



Professor Danuor is the coordinator of the KNUST QWeCI project in Ghana. He had his first degree (BSc) in Physics in 1982 from the Kwame Nkrumah University of

Science and Technology (KNUST), Kumasi, Ghana and was a Teaching Assistant and Assistant Lecturer in the Department of Physics from 1982 to 1985. He later studied Geophysics at the Institute of Meteorology and Geophysics of the University of Frankfurt, Germany, until 1992, during which time he took elective courses in Meteorology, Geology and Applied Physics, and left with a Diplom Geophysik (equivalent to MSc Geophysics). Before embarking on his studies, Professor Danuor took a six-month intensive German language course and produced all his coursework and thesis in German. The language course, as well as his studies, were funded through a scholarship from the German Academic Exchange Service (DAAD).

He returned to KNUST in 1992 and was appointed a Lecturer in the Department of Physics. Later, Professor Danuor completed his PhD as a joint project between KNUST and the Universities of Frankfurt, Kiel and Munich, throughout which he studied the geophysics and paleoclimatic significance of the Lake Bosumtwi meteorite impact crater near Kumasi in Ghana. The research work brought him into contact with climate variability and global climate change effects as evidenced in

the sediment records of Lake Bosumtwi. Obtaining his PhD in 2004, the research work encouraged him to join the African Monsoon Multidisciplinary Analysis (AMMA) project with KNUST as one of the partners in 2007. The focus of the KNUST AMMA project was on the study of the impact of climate variability on malaria prevalence and incidence in the forest belt of Ghana, with Kumasi as the pilot target area. The KNUST team gained a solid foundation in the research on climate and health, and the good experience from the AMMA project made it possible for the team to join the QWeCI project in 2010.

The focus of the KNUST QWeCI project is to assess the impact of climate variability on malaria prevalence and incidence in urban, peri-urban and rural settings in the forest belt of the Ashanti Region of Ghana.

Professor Danuor has been very active in leading the research and a lot of progress has been achieved in the work. The team has also held a number of meetings with stakeholders in the health sector of Ghana to inform them of the rationale of the project. The stakeholders find the research to be productive and have requested that the team brief them from time to time on the outcome of the results.

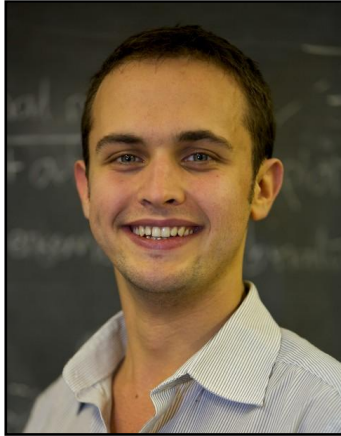
Professor S. K. Danuor is currently the Head of the Department of Physics at KNUST, which runs two undergraduate programmes: BSc (Physics) and BSc (Meteorology and Climate Science).

*QWeCI is supported by a host of research students who all make an essential contribution to the work of the project. In order to spotlight their remarkable contribution, we have profiled one of the project's research students, David MacLeod.*

## David MacLeod

University of Liverpool,  
United Kingdom

Dave MacLeod is in the final year of his PhD, under the supervision of the Project Coordinator, Dr Andy Morse, looking at uncertainties in the prediction of climate-driven disease risk. During his PhD Dave has contributed to QWeCI with his work with seasonal and decadal climate models, and with the Liverpool Malaria Model.



Dave is – at heart – a physicist, gaining his MPhys in 2008 after studying for three years at the University of Exeter and one at the University of Sydney. He followed this with an MSc in Climate Modelling at the University of Reading and then moved to the University of Liverpool to start his PhD in 2009.

During his PhD, Dave has considered the uncertainty in climate forecasts. He has worked with seasonal climate models developed at the ECWMF, the UK Meteorological Office and those produced as part of the ENSEMBLES and DEMETER projects, and his focus of study is how uncertainties in these forecasts propagate to impact models. He is also interested in the best way this imperfect climate information can be used, in order to aid humanitarian planning and decision making. In addition, he has spent time analysing the multi-model decadal hindcasts from ENSEMBLES, resulting in a paper (MacLeod *et al.*, in review).



David MacLeod with team at the final of NERC Environmental Young Entrepreneurs Scheme 2011

Dave also took part in the NERC-run Young Entrepreneurs Scheme in 2011, in which teams of postgraduate students created fictional companies, presenting business plans to teams of venture capitalists. Dave acted as the Managing Director of his team, who collectively won their heat, advancing to the final in London and finally finishing in 3<sup>rd</sup> place.

In early 2013 Dave plans to submit his PhD thesis – the forecast for thereafter is uncertain!

## Spotlight: The Disease Database

In the past year, further development has taken place of a unique database, the ENHanCED Infectious Diseases (EID2) database, which contains information on the pathogens of humans and animals and the vector species which carry them, including spatial information on where they occur, and detail on potential climate drivers for them, all linked to evidence from within the scientific literature.

As a part of QWeCI, researchers are in the process of using semi-automated literature searches to look for evidence of potential climate drivers of pathogens and their vectors, for a list of Africa diseases including Malaria, Rift Valley Fever and the tick-borne diseases Theileriosis, Babesiosis, Anaplasmosis, Tick-bite fever and Cowdriosis. The results will combine with an introduction and methodology section to create a report on the effects of climate upon some of the highest impact climate-driven diseases of Africa.

Climate components have also been built into the EID2 and modelling of pathogen presence according to rainfall and temperature climate variables can now be undertaken within the database. The EID2 is available in a web-based format and is publically accessible, serving as a portal for disease incidence data, and allowing interrogators to look at information in the context of the evidence available within the literature about both disease or pathogen spatial distribution and information on their climate drivers.

## Decoding Science, Reducing Risk



In the last newsletter, we reported that the Humanitarian Futures Programme had produced a short film (available in English and Wolof) on science–humanitarian policy dialogue from their recent exchange work in Senegal.

The HFP has recently produced another short film, connected to many of the projects associated with QWeCI.

Emma Visman, the Futures Group Manager, who is known to many of us involved in the HFP said, 'This film highlights the imbalance of substantial investment in research into climate science but minimal investment in making science useful'. Emma has pioneered an exchange initiative involving climate scientists and policy and development experts in the humanitarian sector.



Emma Visman,  
Kings College, London, UK



The video can be accessed from the [Humanitarian Futures Programme](#)

## FP7 Reporting Update

The Project Office would like to extend our most sincere thanks to all partners, researchers and administrators for their support thus far.

The quality of the Reports, Deliverables and Milestones have been exceptionally high.

The final periodic report and all Form Cs are due to be submitted on **30<sup>th</sup> September 2012**.

Partners that have not yet submitted their Form Cs are reminded to treat this with the utmost urgency in order to allow us to submit our FP7 Report on time.

Thank you all for your continued support.

## Scholarship for Project Secretary

The QWeCI Project Secretary, Andrew McCaldon, has recently been awarded two highly competitive scholarships to study his PhD in politics at the University of Liverpool.

Having just completed his Master's degree, Andrew has been awarded a North West Doctoral Training College full scholarship (funded by the Economic and Social Research Council of the United Kingdom) and the John Lennon Memorial Scholarship by the University of Liverpool.

His PhD studies the Orange Order in Northern Ireland and, conveniently, the Department of Politics is in the same building as the QWeCI Project Office.

Andrew joined the project in 2010 and covered as Project Manager during the summer of 2011. Andrew begins his doctorate in October 2012 and looks forward to continuing to support the project whilst he studies.

## Congratulations!

**Congratulations to Adrian!** On Thursday 26<sup>th</sup> July, the QWeCI Project was thrilled to hear of the safe arrival of Emma Kathryn Tompkins.

We wish Dr Adrian Tompkins of ICTP and his partner many, many congratulations!

**Congratulations to Jacques–Andre!** In June 2012, Dr Jacques–Andre Ndione (CSE) defended his thesis and was awarded his Habilitation.

Habilitation is the highest academic qualification an individual can achieve by their own pursuit in many European university systems.

Many congratulations Dr Ndione!

## Recent Publications

- Du, H., Doblas–Reyes, F. J., García–Serrano, J., Guemas, V., Soufflet, Y. & Wouters, B., ‘Sensitivity of decadal predictions to the initial atmospheric and oceanic perturbations’, *Climate Dynamics* (2012) [available [here](#)]
- García–Serrano, J., Doblas–Reyes, F. J. & Coelho, C. A. S., ‘Understanding Atlantic multi-decadal variability predictions skill’, *Geophysical Research Letters* (2012) [available [here](#)]
- García–Serrano, J. & Doblas–Reyes, F. J., ‘On the assessment of near–surface global temperature and North Atlantic multi-decadal variability in the ENSEMBLES decadal hindcast’, *Climate Dynamics* (2012) [available [here](#)]
- Guemas, V., Corti, S., García–Serrano, J., Doblas–Reyes, F. J., Balmaseda, M. & Magnusson, L., ‘The Indian Ocean: the region of highest skill worldwide in decadal climate prediction’, *Journal of Climate* (2012) [available [here](#)]

- Komen, K., Olwoch, J. M., Botal, J. & Adebayo, A., ‘Using Auto Regressive Distributed Lag-bounds test and spatial-temporal approaches to examine the influence of temperature and rainfall on malaria in Limpopo Province, South Africa’, *Malaria Journal* (pending, 2012)
- Tay, S. C. K., Danuor, S. K., Mensah, D. C., Acheampong, G., Abruquah, H. H., Morse, A. P., Caminade, C., Badu K., Tompkins, A. M. & Hassan, H. A., ‘Climate variability and Malaria incidence in peri–urban, urban and rural communities around Kumasi, Ghana: a case study at three health facilities; Emena, Atonsu and Akropong’, *International Journal of Parasitology Research* (2012) [available [here](#)]
- Tompkins, A. M., & Ermert, V., ‘A regional–scale, high resolution dynamical malaria model that accounts for population density, climate and surface hydrology’, *Malaria Journal* (pending, 2012)
- Van Oldenborgh, G.J., Doblas–Reyes, F. J., Wouters, B. & Hazeleger, W., ‘Decadal prediction skill in a multi-model ensemble’, *Climate Dynamics*, Vol. 38 (2012) Pp. 1263–1280 [available [here](#)]

In addition, whilst not directly related to the QWeCI Project, readers may be interested in a recent publication by a QWeCI Researcher – Dr Rachel Lowe – on the development early warning system for climate–sensitive disease risk in Southern Brazil:

- Lowe, R., Bailey, T. C., Stephenson, D. B., Jupp, T. E., Graham, R. J., Barcellos, C. & Carvalho, M. S., ‘The development of an early warning system for climate–sensitive disease risk with a focus on dengue epidemics in Southeast Brazil’, *Statistics in Medicine* (2012) [available [here](#)]



## Future events

- **Third Annual QWeCI Meeting – Nairobi, Kenya**

**23<sup>rd</sup> – 25<sup>th</sup> October 2012**

Partners in ILRI will be hosting the next annual QWeCI meeting.

Day 1 – Tuesday 23<sup>rd</sup> October 2012

- Introductions
- Work Package Presentations
- Cluster Meetings

Day 2 – Wednesday 24<sup>th</sup> October 2012

- Cluster meetings Report Back
- QWeCI Project Reporting
- Management Board Meeting

Day 3 – Thursday 25<sup>th</sup> October 2012

- Scientific Presentations
- External Speakers

Our previous annual meetings have been excellent opportunities for collaboration and are imperative to our successes and achievements in the QWeCI Project.

To join us at the meeting and contribute to this important collaborative process, please contact Sarah Nyongesa ([S.Nyongesa@cgiar.org](mailto:S.Nyongesa@cgiar.org)).

- **Fourth Annual East Africa Health & Scientific Conference – Kigali, Rwanda**

**27<sup>th</sup> – 29<sup>th</sup> March 2013**

QWeCI and Health Futures will, jointly, be hosting a symposium during the conference.

Abstracts required by the end of October 2012. Please contact the project office for more information.

## Contacts

### Project Office

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The QWeCI Project Office is open Tuesday mornings, Wednesdays, Thursdays and Fridays. Please feel free to get in touch whenever you have a query or question.

### Coordination

The Coordinator and Principal Investigator of QWeCI is Dr Andy Morse, Reader at the University of Liverpool, ([A.P.Morse@liverpool.ac.uk](mailto:A.P.Morse@liverpool.ac.uk)) with Dr Adrian Tompkins acting as Deputy Coordinator at the International Centre for Theoretical Physics, Trieste ([tompkins@ictp.it](mailto:tompkins@ictp.it)).

### Publications

The Project Office would be grateful if partners and researchers could send details of any publications (printed and forthcoming) that have been published as part of the QWeCI Project.

Please use the following wording when acknowledging QWeCI funding in your publications:

*This study was funded by the EU project QWeCI (Quantifying Weather and Climate Impacts on health in developing countries; funded by the European Commission's Seventh Framework Research Programme under the grant agreement 243964)*

## Further Information

### Keep up to date

Please visit the QWeCI website for project details, partner information, and regular updates:

<http://www.liv.ac.uk/qweci>

### Our Friends

Please see below the pages of related projects:

[www.HealthyFutures.eu](http://www.HealthyFutures.eu)

[www.liv.ac.uk/ENHanCE](http://www.liv.ac.uk/ENHanCE)

[www.BaobabHealth.org](http://www.BaobabHealth.org)

### DMC now downloadable

The Disease Cradle Model, including the Liverpool Malaria Model, can now be downloaded [here](#).

### Photo Acknowledgements

Andy Heath

Sylvester Danuor

David MacLeod

Jacques–Andre Ndione

Rachel Lowe

HEALTHY FUTURES Project

Météo-France

Christophe Ciais

Humanitarian Futures Programme