



OUR UNDER  
COMMON CLIMATE  
FUTURE CHANGE

International Scientific Conference  
**ABSTRACT BOOK**

7-10 July 2015 • Paris, France

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This Abstract book is based on a compilation of all abstracts selected for oral and poster presentations, as of 15 May 2015.

Due to the inability of some authors to attend, some of those works will therefore not be presented during the conference.



# OUR UNDER COMMON CLIMATE FUTURE CHANGE

## Welcome to the Conference

### Welcome to Paris, welcome to 'Our Common Future under Climate Change'!

On behalf of the High Level Board, the Organizing Committee and the Scientific Committee, it is our pleasure to welcome you to Paris to the largest forum for the scientific community to come together ahead of COP21, hosted by France in December 2015 ("Paris Climat 2015").

Building on the results of the IPCC 5th Assessment Report (AR5), this four-day conference will address key issues concerning climate change in the broader context of global change. It will offer an opportunity to discuss solutions for both mitigation and adaptation issues. The Conference also aims to contribute to a science-society dialogue, notably thanks to specific sessions with stakeholders during the event and through nearly 80 accredited side events taking place all around the world from June 1st to July 15th.

When putting together this event over the past months, we were greatly encouraged by the huge interest from the global scientific community, with more than 400 parallel sessions and 2200 abstracts submitted, eventually leading to the organization of 140 parallel sessions.

Strong support was also received from many public French, European and international institutions and organizations, allowing us to invite many keynote speakers and fund the participation of more than 120 young researchers from developing countries. Let us warmly thank all those who made this possible.

The International Scientific Committee deserves warm thanks for designing plenary and large parallel sessions as well as supervising the call for contributions and the call for sessions, as well as the merging process of more than 400 parallel sessions into 140 parallel sessions. The Organizing Committee did its best to ensure that the overall organization for the conference was relevant to the objectives and scope. The High Level Board raised the funds, engaged the scientific community to contribute and accredited side events. The Conference Secretariat worked hard to make this event happening. The Communication Advisory Board was instrumental in launching and framing our communication activities on different media. We are very grateful to all.

We very much hope that you will enjoy your stay in Paris and benefit from exciting scientific interactions, contributing to the future scientific agenda. We also hope that the conference will facilitate, encourage and develop connections between scientists and stakeholders, allowing to draw new avenues in the research agenda engaging the scientific community to elaborate, assess and monitor solutions to tackle climate change together with other major global challenges, including sustainable development goals.

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7-10 JULY 2015 | PARIS, FRANCE

International Scientific Conference

ABSTRACT BOOK

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Conclusion & Perspectives: Revealing the impact on the health of urban dwellers in the city of Meknes quite heavy, the identification of air pollution's risky areas and age categories is a milestone in the establishment of a support system for decision-making of air quality monitoring, for local authorities of Meknes city.

**P-1121-05**

## Climate and risk of vector borne zoonotic disease emergence: examples of Rift Valley and West Nile fevers

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Vector borne diseases have a major impact on human and animal health, but also on society economy. Due to their transmission routes, zoonotic or not, these diseases are very sensitive to climatic changes. Actors, conditions and processes requested for disease transmission are part of a complex and dynamic system whose behavior, influenced by climate but also by other environmental and socio-economic components, drive potential for pathogen transmission and outbreak occurrence. We illustrate this complexity through two examples, ie Rift Valley and West Nile fevers.

Rift Valley fever (RVF) is one of the most important viral zoonoses in Africa. Transmitted by mosquitoes and direct contact, RVF affects both livestock and humans. Due to global changes, RVF also threatens Northern Africa and Southern Europe (Chevalier, Pépin et al. 2010). Depending on areas, the influence of climate may differ, ranging from determining to insignificant.

In Kenyan regions characterized by large depression areas called « Dambos » and a succession of dry and rainy seasons, RVF outbreaks occur every 5–10 years: a strong correlation was shown between outbreak occurrence and heavy rainfall events that favor both massive hatch and development of *Aedes mcintoshi* and *Culex* sp mosquitoes that are the main vectors of RVF in that region. Similarly, the Ferlo area located in Northern Senegal is characterized by a Sahelian climate and temporary ponds (small water bodies that are filled during the rainy season and then dry). But in this region, no correlation between outbreaks and extreme rainfall events has ever been demonstrated. However Soti et al (2012) showed that these outbreaks occurred when the abundance of the two main mosquito vectors in this region, namely, *Culex poicilipes* and *Aedes vexans arabiensis*, was higher than average: these abundances are directly linked to specific rainfall rhythms now well described (Soti, Tran et al. 2012). Nevertheless, herd management, herd renewal rates and nomadic herd movements that influence the immunologic coverage of herds, are probably also involved. These variables will have to be incorporated in existing models to refine them and allow for an accurate surveillance and prediction of outbreaks. In other countries that recently experienced RVF outbreaks, such as Madagascar or South Africa, heavy climatic perturbation could not be incriminated in RVF occurrence (Anyamba, Lintlichum et al. 2010). In Egypt and Yemen, the role of socio-economic factors, along with climatic factors, was found to be determinant in RVF emergence and outbreak severity (Abdo-Salem, Tran et al. 2011; Xiao, Beier et al. 2015).

Also transmitted by mosquitoes, mostly from *Culex* genus, West Nile fever (WNV) is caused by a Flavivirus. Reservoir hosts are wild birds, mostly passerines. Human and horses are dead-end hosts. Introduced in New-World in 1999, the virus spread throughout the USA in few years. It is now endemic and transmitted till South of Argentina. Between 1999 and 2010, nearly 1.8 million people were infected; more than 12 000 neurological cases were recorded, from which 1308 were fatal (Kilpatrick 2011). In Europe, the virus has been recorded in the Mediterranean Basin since the sixties without any human or animal health consequences. However, the incidence of human and equine neurological cases suddenly increased, in particular since 2010. Two recent studies showed that an above normal temperature during the preceding months of outbreaks was strongly linked to this occurrence: this high temperature increases the vector competency of mosquitoes and provokes a increase of the mosquito population densities (Tran, Sudre et al. 2014).

Ecological disruptions induced by climatic variations, but

also by landscape transformation by human or socio-economical disturbances, are the main component of disease emergence. The understanding of mechanisms and conditions that underlie these processes is part of the major challenges that scientist and health policy makers will have to face in the coming years.

**P-1121-06**

## Low cost portable sensors for measuring traffic related air pollution in tunnel

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Air quality monitoring in tunnel has relied traditionally on static measurement stations. However these are expensive methods to capture pollution heterogeneities and identify pollution hotspots. In recent years, the development of portable sensing technology has attracted considerable interest because of the possibility to reduce operating cost of air pollution monitoring.

Despite this, they are few examples in the published literature of pollution measurement using portable sensors in tunnel. In this work, low cost portable sensors are used to measure traffic related air pollution in tunnel within the framework of the research operation "SERRES". The objective of this research operation is to produce recommendations and solutions to limit the impact of road traffic on the environment. Within this research operation, low cost pollution portable sensors are characterized and air pollution measurement are correlated with the traffic data of the tunnel.

The present project was divided into four phases. Phase one was the characterization of the portable pollution sensors. A full set of preliminary tests was realised in laboratory to evaluate the portable sensor reliability and to analyze its performances in terms of accuracy, autonomy and memory capacity. Based on this preliminary tests, two sensors were chosen for their performances: Obsv' Air sensor and Cairsens sensor. Phase two, the portable sensors were fixed to a static SIREDO measurement station close to a road. The two sensors were installed for 24 hours. The traffic data recorded by the SIREDO station were used to analyze the link between traffic condition and air pollution. A correlation between the road traffic condition and the evolution of the air pollution was verified. Phase three was the selection and the instrumentation of a tunnel. The Guy Môquet tunnel was selected as an experimentation site because it had the following characteristics: easy instrumentation, simple access and close to a static measurement station (SIREDO). The tunnel is located in the Val-de-Marne district of south-east Paris. An instrumentation was realized inside the tunnel in collaboration with the Ile de France territorial division unit in charge of air quality. It involved placing and instrumentating four pollution portable sensors inside the tunnel. In phase four, experimental measurements were conducted and studied. A spatiotemporal analysis was made. The measures given by the portable sensors were compared to the results given by the static measurement station. A link between pollutant concentrations and road traffic condition was demonstrated.

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**P-1121-07**

## Seasonal pattern of the associations between daily mortality and PM10 in Korea and Japan

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Background/Aims: Many studies have shown that particulate air pollution exposures are associated with increased mortality. However, only a few studies in Asian countries have examined the modification effects by seasons on air pollution-mortality associations. The aim