



# COLLOQUIUM

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Vakgroep: Technische Stromingsleer

In het kader van zijn doctoraalopdracht zal

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een voordracht houden getiteld:

## **Diurnal Cycle of Trace-Gases in Atmosphere over Beijing during August-September 2007**

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### **Summary:**

In the framework of the international project "Air quality Monitoring and Forecasting In China" (AMFIC) an air quality forecast system of Eastern China is in development. This system was online at the site of KNMI during the Olympic Games in 2008.

Chimere is a chemical transport model used for this purpose. It has meteorological forecasts and emissions as inputs and calculates through advection and chemical reactions of 44 species their temporal and spatial concentrations in a computational domain.

When the model output of Chimere is compared to in situ measurements of pollutants in Beijing, it shows that the predicted nocturnal concentrations of pollutants are systematically too high. The objective of the present research is to find the cause of this discrepancy.

To achieve this goal several sensitivity studies of parameters in the model have been conducted. This showed that the discrepancy is due to the incorrect representation of the atmospheric boundary layer height. This is due to the absence of the so-called urban heat island effect in Chimere. The urban heat island is the phenomenon of the urban region being warmer than its rural surroundings. This effect is strongest at night and increases vertical mixing and results in a higher nocturnal atmospheric boundary layer. It is shown that incorporating this effect in the Chimere model leads to a better representation of the nocturnal concentrations.

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