



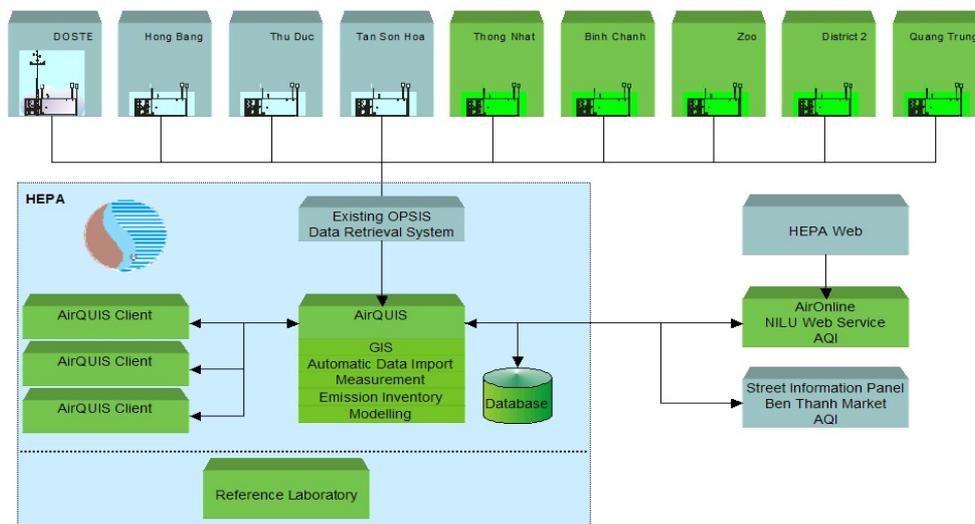
Department of Natural Resources and Environment (DONRE)  
Ho Chi Minh City



**NORAD**  
DIREKTORAT FOR UTVIKLINGSSAMARBEID  
NORWEGIAN AGENCY FOR DEVELOPMENT COOPERATION

## Ho Chi Minh City Environmental Improvement Project Air Quality Monitoring Component

# AirQUIS IT-solution in Ho Chi Minh City



Norwegian Institute for Air Research



Ho Chi Minh City  
Environmental Improvement Project  
Air Quality Monitoring Component

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## Introduction

This report is based on a presentation prepared for the Seminar: “HCMC Air Quality Monitoring and Management Programme”. This was a final seminar held at the end of the Ho Chi Minh City Improvement Project, Air Quality, Monitoring Component, Second part: Reference laboratory and Training. The project has been supported by Norwegian Agency for Development Cooperation (NORAD). The seminar was arranged by DONRE in Ho Chi Minh City (HCMC) on 23 November 2005.

The seminar presented a summary of the air quality monitoring and management programme, which has been developed, based on DANIDA and NORAD funds in Ho Chi Minh City.

## Presentation

This presentation consists of 2 sessions. These are Air Quality Management System (AirQUIS) and Using AirQUIS for data dissemination and information to the public.

### **Air Quality Management System (AirQUIS)**

- AirQUIS as Air Quality Management Software
- AirQUIS Software Platform
- AirQUIS Technical Concept in HCMC
- AirQUIS Modules

The integrated Air Quality Management (AQM) platform, AirQUIS, includes all elements needed to undertake assessment and planning of air quality. AirQUIS provides the basis for air quality management through an integrated tool for monitoring and emission inventorying, air quality modelling and assessment, enabling forecasting of future air quality and development of cost-effective abatement strategies.

All modules in AirQUIS are accessed by a user-friendly interface together with an advanced and dynamic Geographical Information System (GIS) platform.

A basis for the planning process is the dispersion models. Collection of emission data for the establishment of an emission inventory is an essential starting point. This work is presently being undertaken by HEPA in HCMC.

Based on defined abatement options and scenarios, cost-benefit analyses can be used to evaluate the best possible options to reduce the air pollution load seen from an economic point of view. The results of such analyses may again lead to the development of action plans.

The AirQUIS platform established at HEPA represents a basis for the An Air Quality Management and Planning System (AQMS). The system can be applied to develop action plans for air quality improvement in a cost-efficient manner.

## Using AirQUIS for data dissemination and information to the public

- Different methods for displaying air quality data to the public in HCMC
- Success factors for implemented IT-solution and services

The daily values of the Air Quality Index (AQI), which is being generated automatically by AirQUIS, are being transferred every day to the street panel information board near Binh Thanh marked in the city centre of HCMC.

NILU also supported HEPA in establishing an Internet presentation of air quality data online. Establishing of this web site was not a part of this project. However, HEPA asked assistance from NILU and the Air Quality portal is now available at [www.hepa.gov.vn](http://www.hepa.gov.vn). For more information about NILU as Air Quality Service Provider, please see [www.nilu.no](http://www.nilu.no).

## References

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## Presentation foils – Air Quality Management System

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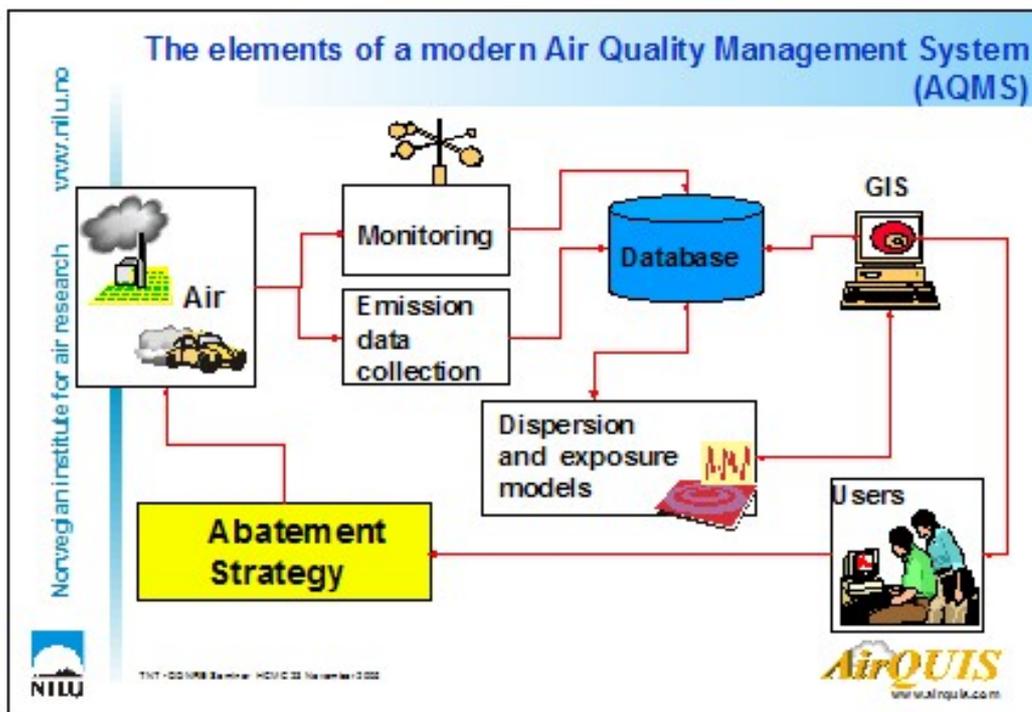
# Air Quality Management System

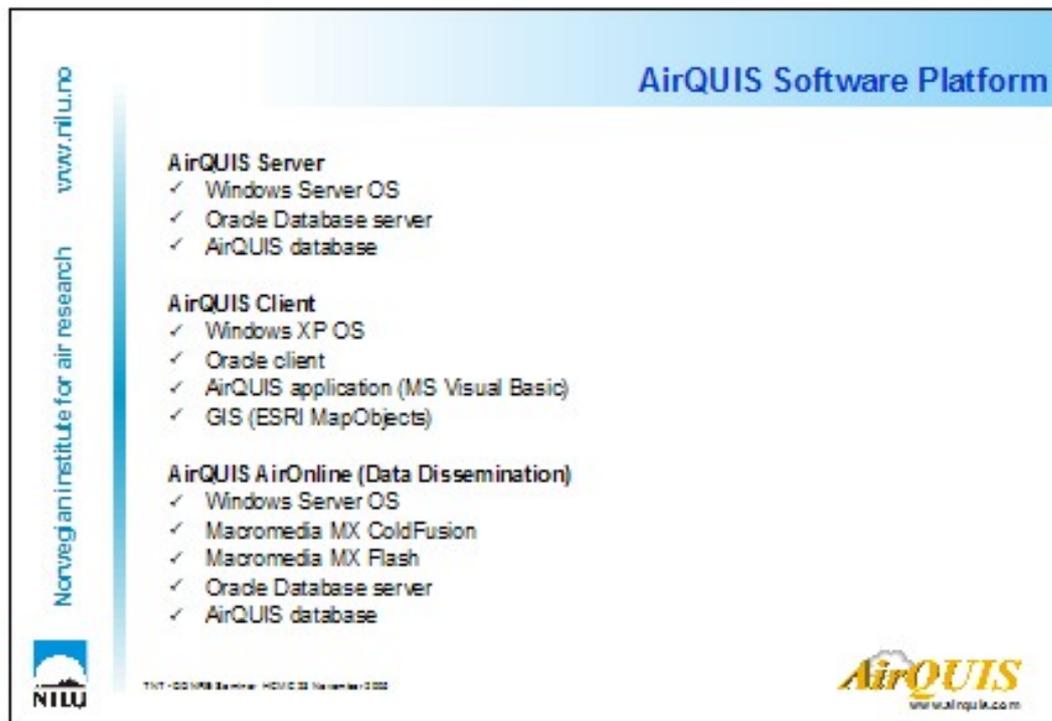
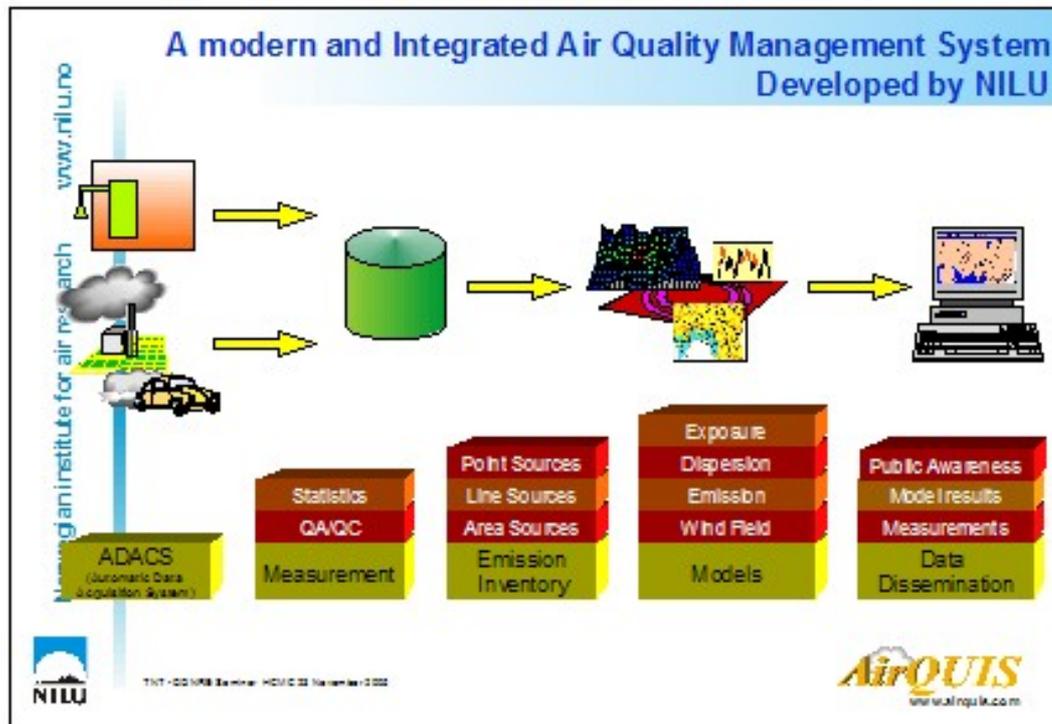
## AirQUIS

Presented by  
 Mr. Nguyen Thanh The  
 Norwegian Institute for Air Research (NILU)

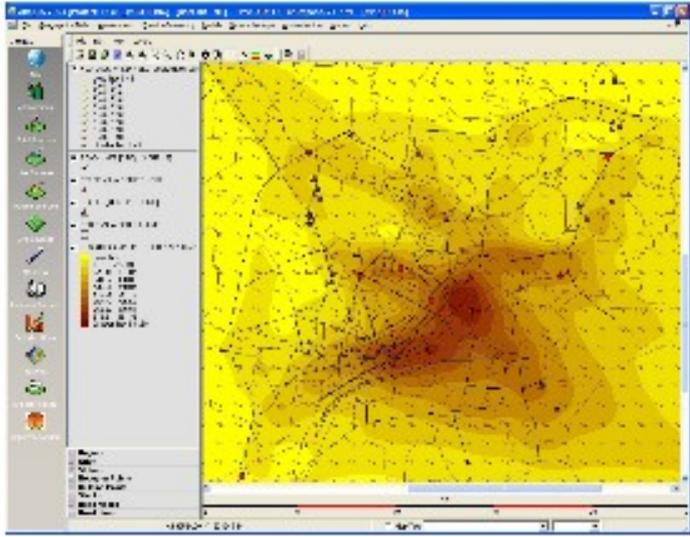



TNT - 02/08/2005 Seminar HCMC 02 November 2005





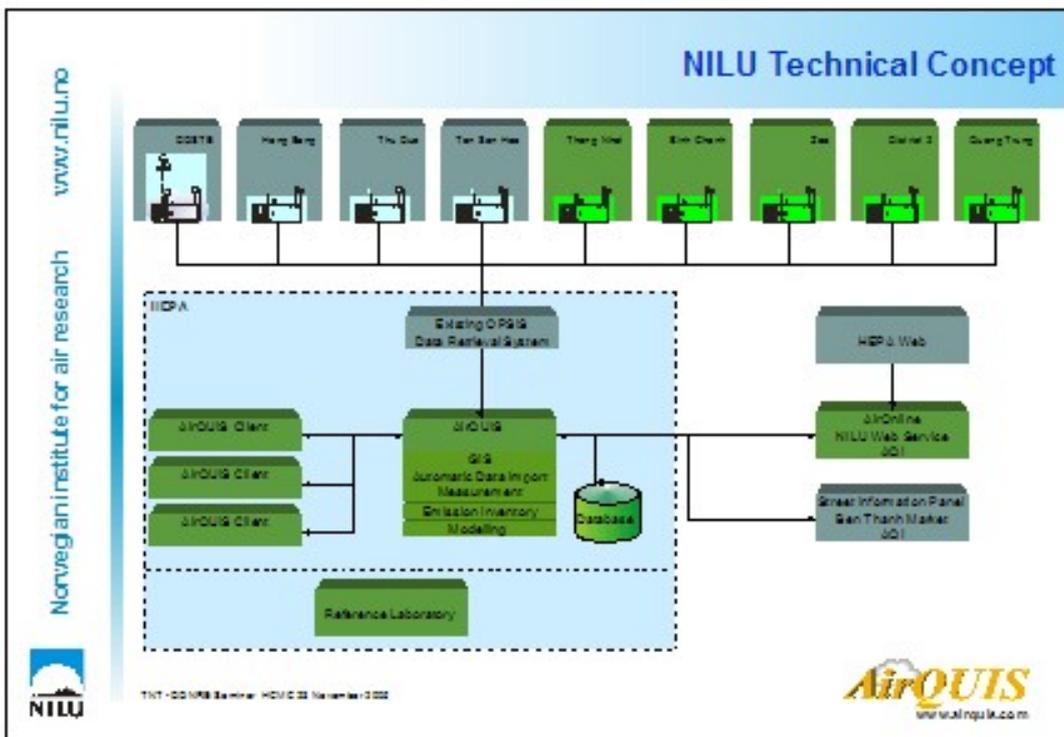
Norwegian institute for air research [www.nilu.no](http://www.nilu.no)



**AirQUIS  
in  
HCMC**

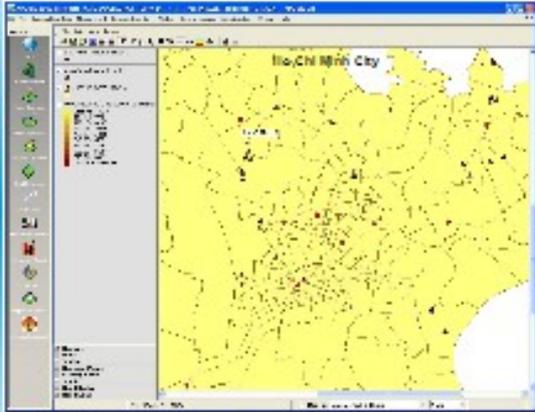


TNT - 00 NRE Bakke - HCMC 22 November 2005



**AirQUIS - GIS**

www.ntnu.no  
Norwegian institute for air research



- ✓ Geographical Information System (GIS) – Dynamic
- ✓ Import of GIS data by Excel Templates

**AirQUIS**  
www.airquis.no

NTN - OS NR8 Seminar HCMC 22. November 2005

**Data Retrieval**

www.ntnu.no  
Norwegian institute for air research



- ✓ OPSIS Data logger and Data Retrieval System by modem – Daily or when needed
- ✓ AirQUIS Automatic Data Import with Basic Quality Control Flag or Manual Import of measurement data by Excel Templates

**AirQUIS**  
www.airquis.no

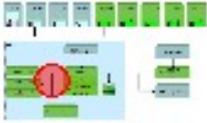
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## AirQUIS Measurement



- ✓ Automatic calculation of Air Quality Index (AQI)
- ✓ Final Quality Control of data
- ✓ Statistics
- ✓ Reports



TNT - CO/NO<sub>x</sub> Seminar - HCMC 22 November 2005



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## AirQUIS Emission Inventory



Establishment of Emission inventory

- ✓ Emission data from Point, Line and Area Sources
- ✓ Emission Factors

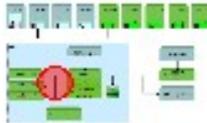
by Excel Templates



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**AirQUIS Modelling**



Perform Dispersion and Exposure Scenario Calculations based on

- ✓ Meteorological Data
- ✓ Measurement Data
- ✓ Emission Data
- ✓ Population Distribution

**AirQUIS**  
www.airquis.no

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www.nil.u.no

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**AirQUIS Data Dissemination - AirOnline**



Presentation of Air Quality Data using Internet Platform

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www.airquis.no

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[www.airquis.no](http://www.airquis.no)

# Presentation foils – Using AirQUIS for Data Dissemination

Norwegian institute for air research [www.nilu.no](http://www.nilu.no)

## Using AirQUIS for Data Dissemination

Presented by  
Mr. Nguyen Thanh The  
Norwegian Institute for Air Research (NILU)



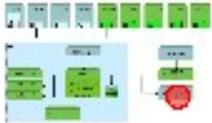


TNT - 02 NRE Bangkok, HCMC 02 November 2005

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## Street Information Panel





Daily AQI  
generated automatically on  
Ben Thanh Market  
Street Information Panel



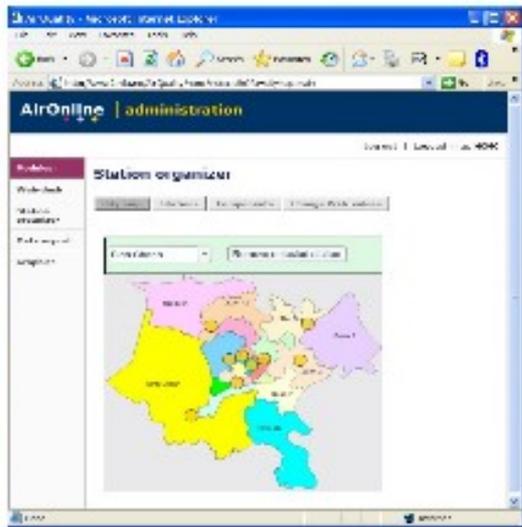
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### AirOnline (Light Version) NILU Web Service Provider



Dynamic Content Management System for Dissemination of Air Quality Information on Internet

(Measurement stations, Cities and Country)



TNT - CD 198 Seminar HCMC 22 November 2005

**NILU**

www.nil.u.no

Norwegian institute for air research

### HEPA Web Portal



www.hepa.gov.vn



TNT - CD 198 Seminar HCMC 22 November 2005

**NILU**

## AirOnline – Air Quality Index (AQI)

www.nilu.no

Norwegian institute for air research





- ✓ Automatic calculation of AQI from AirQUIS
- ✓ FTP of AQI from HEPA to NILU
- ✓ AQI available on Web



www.airquts.com

## Information about Measurement Station

www.nilu.no

Norwegian institute for air research





- ✓ Measurement stations on "Map"
- ✓ Detail Information about the HEPA measurement stations



www.airquts.com

Norwegian institute for air research [www.nilu.no](http://www.nilu.no)

## Sustainability of the Technological Solution

 TNT - 00 NR8 Seminar HCMC 03 November 2005 

Norwegian institute for air research [www.nilu.no](http://www.nilu.no)

## Success Factors



- State-of-the-art Products and Services
- High qualified research- and IT-services
- 30 years of unique competence from NILU
- Sustainable Solution

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www.nilu.no

Norwegian institute for air research

**AirQUIS Helpdesk**

- ✓ Assistance from NILU
- ✓ Telephone: +47 63 89 80 28
- ✓ E-mail: [airquis@nilu.no](mailto:airquis@nilu.no)

 TNT - OS NMB Seminar HCMC 22 November 2005

 www.airquis.no

www.nilu.no

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**AirQUIS Maintenance Agreement**

New versions of AirQUIS free of charge

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 www.airquis.no

www.ntnu.no

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**AirQUIS User Support Agreement**

User support of AirQUIS free of charge

 NTNU

TNT-02 NMR Seminar HCMC 28 November 2005

 **AirQUIS**  
www.airquis.com

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**AirQUIS Software Upgrade**

[www.airquis.com](http://www.airquis.com) - Service & Support

 NTNU

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www.airquis.com

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