

# Implementation of Male' Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia

# MALDIVES

**10th Intergovernmental Meeting** 

19 – 21 August, 2008

# National Implementing Agency (NIA)

Department of Meteorology is functioning independently under the Ministry of Environment, Energy and Water

MAL

- Department of Meteorology (DoM) has been assigned to monitor the Air Pollution in the Maldives since 1 June 2005
- DoM is the National Implementing Agency (NIA) for Male' Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia
- Atmospheric Brown Cloud (ABC) Project is managed by the Department.

### **Functions of the Department of Meteorology**



--- L

**MALDIVES** 

# **Institutional Arrangements**



MALDIVI

# **Monitoring Activities**

- Continuous monitoring of sulphur dioxide (SO2) and nitrogen dioxide (NO2) carried out using passive samplers
- □ Started monitoring ozone (03) in May 2007

MALDIV

- Collection of rain water for chemical analysis
- Chemical analysis of rain water is carried out by MISU, Stockholm University, from June 2005
- □ Corrosion site established in 23 January 2008
- Start measurement of pH and EC at Hanimaadhoo and Gan this year.

# Hanimaadhoo Island



2.01

MALDIVES

### Wet Only Collector & Passive Sampler



MALDIV

►Wet only collector is operational, since June 2005

DATA analyzed by MISU



- Continuous monitoring of NO<sub>2</sub> and SO<sub>2</sub> carried out during the period. O<sub>3</sub> sampling started in May 2007
- Exposed filters are send to IVL, received DATA

# **Corrosion Monitoring**

- Corrosion rack at Hanimaadhoo was mounted on 23 January 2008
- Exposed metals are iron, Zinc, Copper, Painted steel and Limestone

MALDIV

Passive samplers exposed are Nitrogen dioxide (NO<sub>2</sub>), Sulphur dioxide (SO<sub>2</sub>), Ozone (O<sub>3</sub>), Nitric acid (HNO<sub>3</sub>), and Cylindrical Teflon particulate measurements

# **CORROSION RACK**



# Nitrogen dioxide



MA

### Sulphur dioxide



MA



# Monthly average of SO<sub>2</sub> & NO<sub>2</sub>



MALDI

# Annual average of SO<sub>2</sub> and NO<sub>2</sub>



MAT

Department of Meteorology Maldives

### Monthly pH level over Hanimaadhoo



MALDIVE

### Monthly rainfall for Hanimaadhoo 2005 - 2007



MALDIVES

# **Challenges and Difficulties**

- Establishing networks between hospitals, within the country to avoid repetition of reported cases.
- Monitoring is not done at power house stacks
- No emission monitoring is done for vehicles, except visible smoke for a very specific period
- Lack of Human resources in the field of Atmospheric Chemistry

### **Challenges and Difficulties**

- No arrangement for in-house repair and maintenance of Equipments used for Air Pollution Monitoring is made due to lack specialized training in the field
- Availability of technical and financial support to conduct local studies on air pollution
- Building emission monitoring capacity of the stakeholders

MALDIV

# **Plan for next 3 years**

# Monitoring plan

MALDIVE

- Existing station (start monitoring PM10 & TSPM)
- Start taking measurements of pH & EC from 3 new locations
- Installation of 3 automatic air quality monitoring stations (if funds available, one each year, starting form 2009)



# **Plan for next 3 years**

- Rain water samples would be collected in 3 meteorological stations in the future.
- Analysis of the rain water from the new sites would be done by the National Health Laboratory, Maldives
- Emission inventory would be done in 2009 and plan to start modeling work in 2011
- Formulation of an emission standard for new and old vehicles



# **Plan for next 3 years**

- Conduct awareness programs for students, public, government agencies and NGOs
- Plan for impact assessment including capacity of the expert institution
  - Health impact assessment in 2010
  - Crops impact assessment in 2009
  - Corrosion impact assessment in 2010
  - Acidification impact assessment in 2011

# Thank You