- European Network on New Sensing Technologies for Air Pollution Control and Environmental Sustainability - *EuNetAir*
- COST Action TD1105
- WGs and MC Meeting at Rome, 4-6 December 2012
- Action Start date: 01/07/2012 - Action End date: 30/06/2016
- Partner's Logo

- Presenter's Name: prof. Dimiter Syrakov
- Function in the Action: **WG3.2 member**
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Scientific context and objectives in the Action

- **Background / Problem statement:**

  New sensing technologies such as cost-effective micro-sensors based on gas-sensitive nanomaterials is critical for improving the monitoring of ambient air in urban, rural or remote sites, in traffic on road network. This improvement is important for validation of dispersion models of air-pollutants and evaluation of exposure of population. The model verification and data assimilation techniques applications are expected to improve AQ modeling and Chemical Weather forecast.

- **Brief reminder of MoU objectives:**

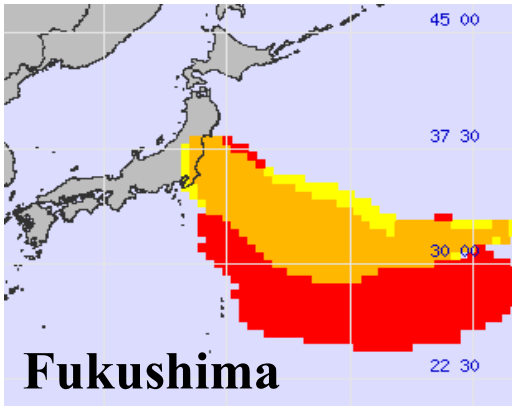
  To monitor real-world environmental conditions with experimental campaigns to assess composition of indoor air (buildings: house and office) and outdoor air (urban areas and industrial sites) and to investigate how such data can be utilized in air pollution modeling;

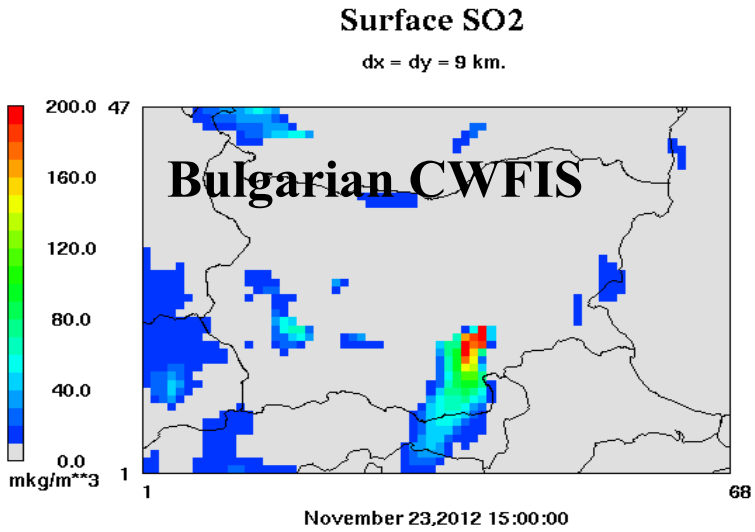
- **Involvement:**

  WG3.2: Air-quality modeling and chemical weather forecasting
  SIG4: Expert comments for the Revision of the Air Quality EU Directive

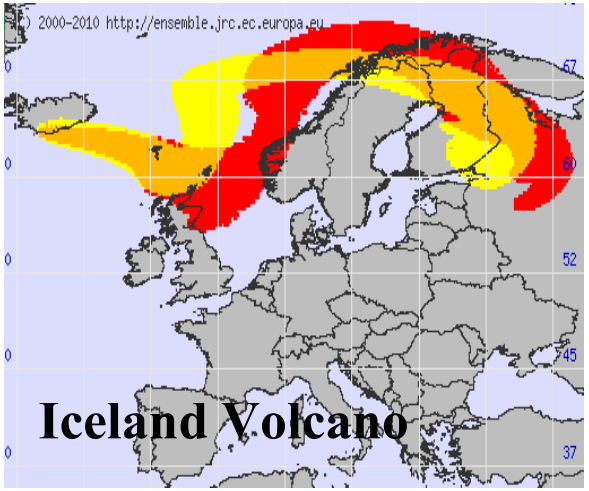
Current research activities of the Partner (1/2)

- **Current research topics at NIMH-BAS:**
  - Weather forecast
  - Remote sensing
  - Emergency response
  - Climate, ecology
  - Physics of the atmosphere
  - Hydrological cycle
  - Water management





- **EuNetAir related ongoing research topics:**
  - Creation and management of Early Warning System in Case of Nuclear Accident
  - Studding and modeling of the Atmospheric Boundary Layer
  - Chemical Weather Forecast – creation, managing, improvement validation of CWFSystems



Research Facilities available for the Partner (2/2)

- **Research Facilities:**

  The Nuclear Emergency Response and Chemical Weather Forecast group works mainly with computational facilities – computers, printers, plotters, scanners. All necessary data is provided by other parties – meteorological centers (including Bulgarian one), European structures like EEA, EMEP, TNO; American NCEP, US EPA; Bulgarian Ministry of Environment and Waters.

- **List the main facilities**
  - A 48-core cluster (Infiniband link)
  - Two 8-core workstations
  - Three 2-core workstations
  - Two powerful PCs
  - Printers, scanner, notebooks

Suggested Priorities for future research

- **Research directions as PRIORITIES:**

Development of a new version of Bulgarian CWF System for providing services to the authorities and to the community by applying:

- Increased number of key pollutants (O3, NO2, SO2, PM10, CO).
- Downscaling the forecast from 9km resolution over Bulgaria to 1km resolution over Sofia city area
- Calculating and presenting maps of Air Quality Index (AQI)
- Maps of Dominant pollutant in AQI (innovation)
- Adding proper Thermal Comfort Index (innovation)
- Upgrade of Bulgarian Nuclear Emergency Response System – increasing the number of nuclides and exposure dose calculations (innovation), web-presentation of animations of possible release from a number of European and Northern Hemisphere NPPs.