



European Network on New Sensing Technologies for Air Pollution
Control and Environmental Sustainability - *EuNetAir*

COST Action TD1105

1ST TRAINING SCHOOL

Universitat de Barcelona, Spain, 13 - 15 June 2013

organized by UB, MIND-IN2UB - Dept. of Electronics and CSIC-IDAEA

Action Start date: 01/07/2012 - Action End date: 30/06/2016

Year 1: 2012 - 2013 (*Ongoing Action*)



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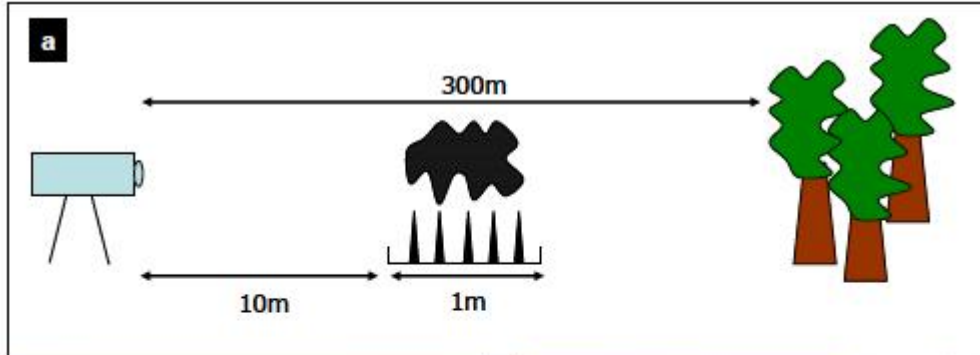
Ben-Gurion University of the Negev, Israel



Expertise related to the Action

- Optical Remote Sensing: **Thermal Infrared**
UV-VIS-SWIR
- Developed detection algorithms of toxic aerosol in the **Mid-IR**
- Developed retrieval algorithms of water vapor, Ozone, NO₂ in **UV-VIS-SWIR** spectral region
- Investigated pesticides aging in the atmosphere and SOA formation
- Performed dispersion modeling of pesticides in rural areas in Israel and their relation to health proxies
- Analyze regional pollution transport and atmospheric composition of NO₂, O₃, water vapor and aerosol

Current and past research activities (1/2)



Develop robust hyperspectral
Sunphotometry algorithms
(low uncertainty in vertical column determination)
High spatial and temporal resolution measurements

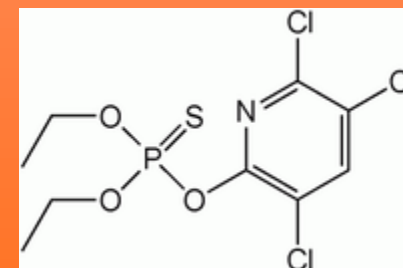
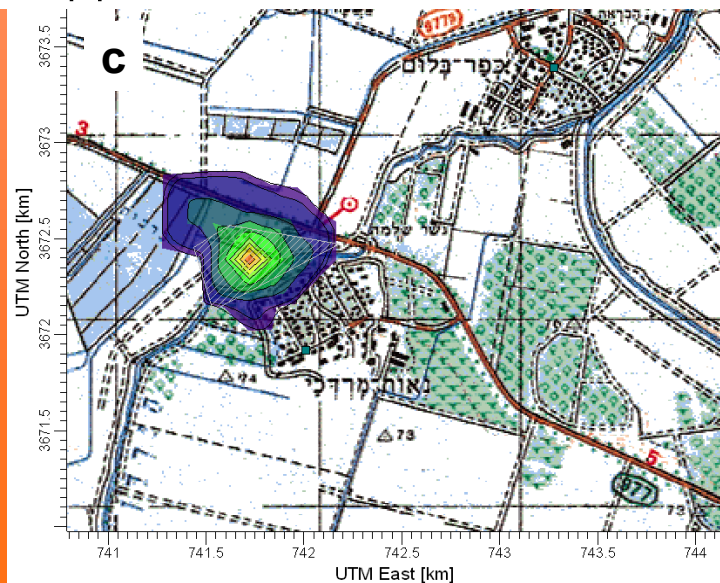
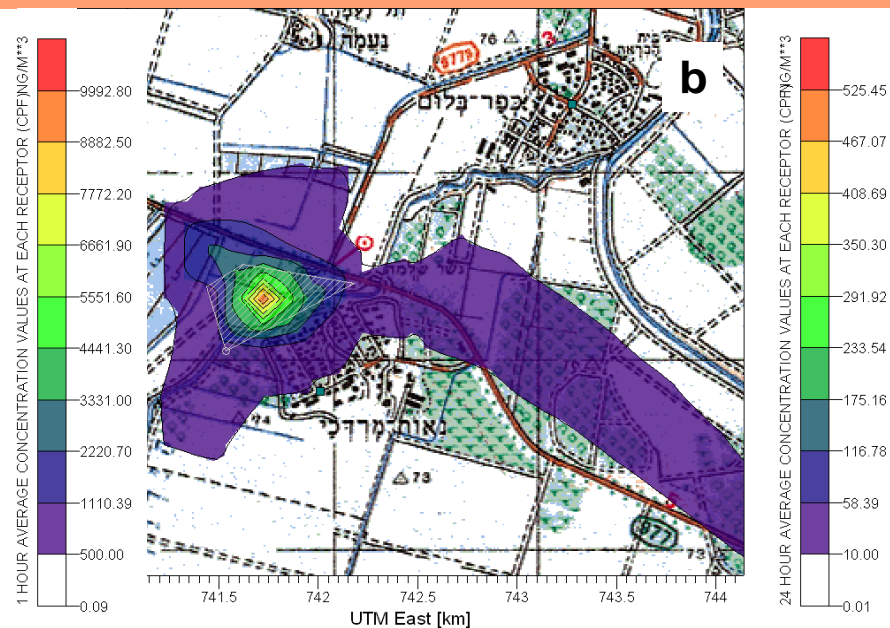
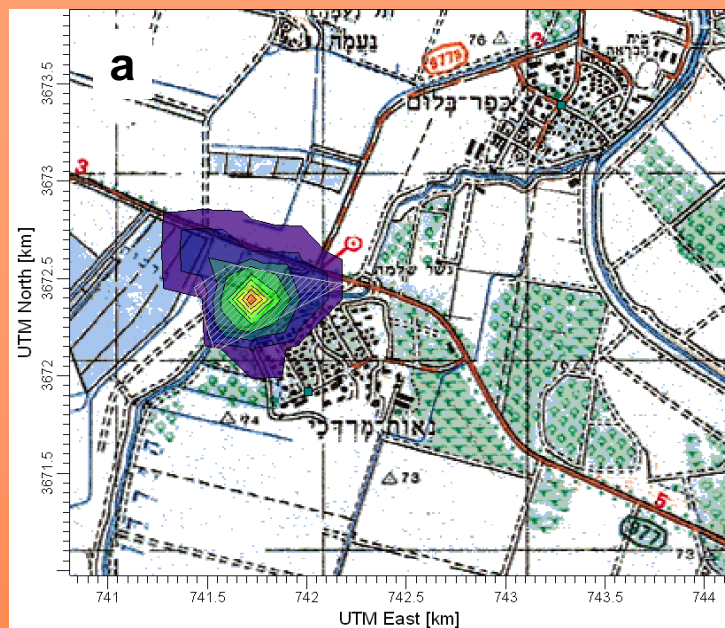
Develop detection
algorithms of toxic aerosol
in Thermal IR



Current research activities (2/2)

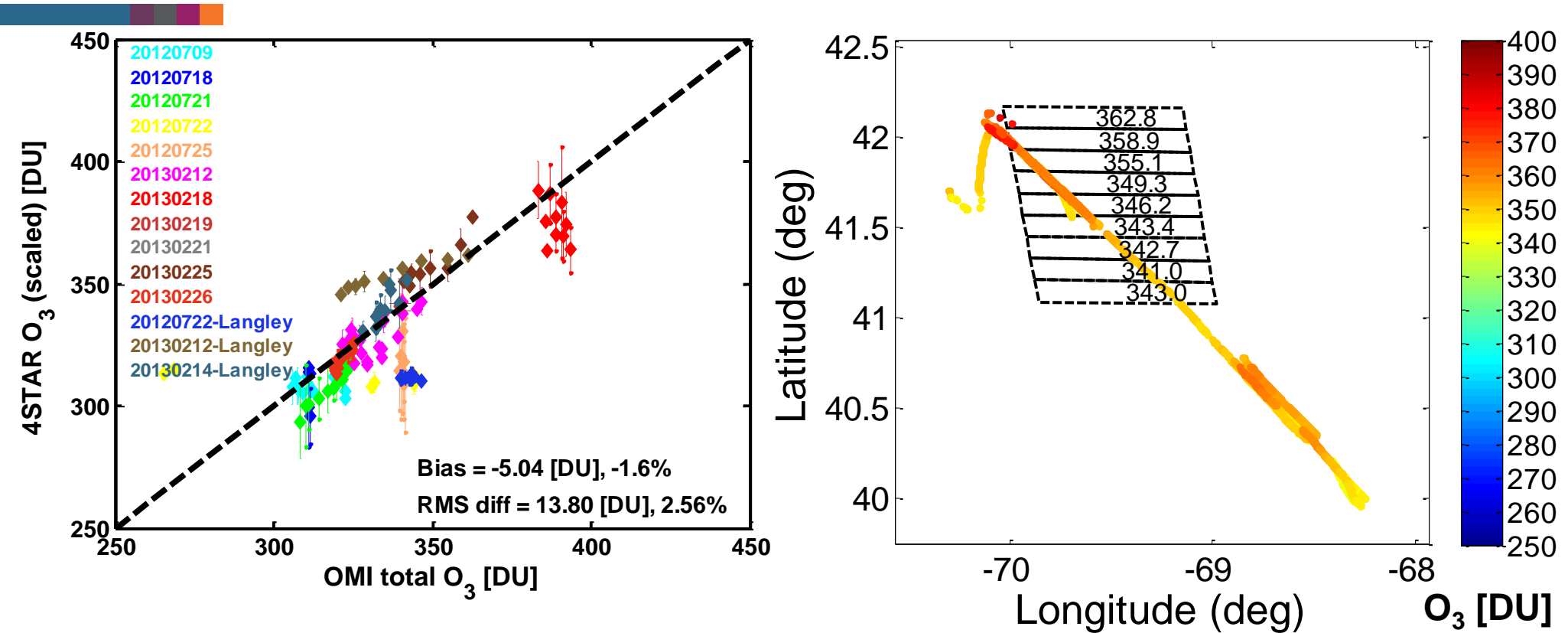
- **Ongoing research topics:**
- Developing retrieval algorithms of trace gas such as water vapor, ozone and NO₂ from hyperspectral airborne sunphotometry.
- Utilizing a vast array of airborne instruments, and trajectory analysis to investigate pollution outflow, Atmospheric composition and chemistry
- Dispersion modeling of toxic pesticides (OP's) in rural areas in Israel, linked with measurements and health proxies

Achieved **RESULTS** and future activities



CP

Achieved **RESULTS** and future activities



- **Capability of remote detection of elevated pollution layers**
- **Prospective:** Exploring miniaturized versions of spectrometers to fly on smaller airborne platforms (e.g. UAV).
- Extending spectral regions to cover CO₂/CH₄/N₂O

CONCLUSIONS

- **Pesticides dispersion modeling is an ongoing research.**
- **Results:** short-term high exposure is dominant
- **Open problems:** real-time monitoring to validate model, chemical processes
- **Hyperspectral sunphotometry measurements and algorithms:**
- **Results:** Robust, easy and quick measurement, low retrieval uncertainty
- **Open research:** extending spectral range to measure more atmospheric relevant gases, miniaturizing.