



GLOBAL ATMOSPHERIC POLLUTION FORUM

Improving Cooperation and Harmonization of Good Practices between Regional Networks and undertaking Global Syntheses

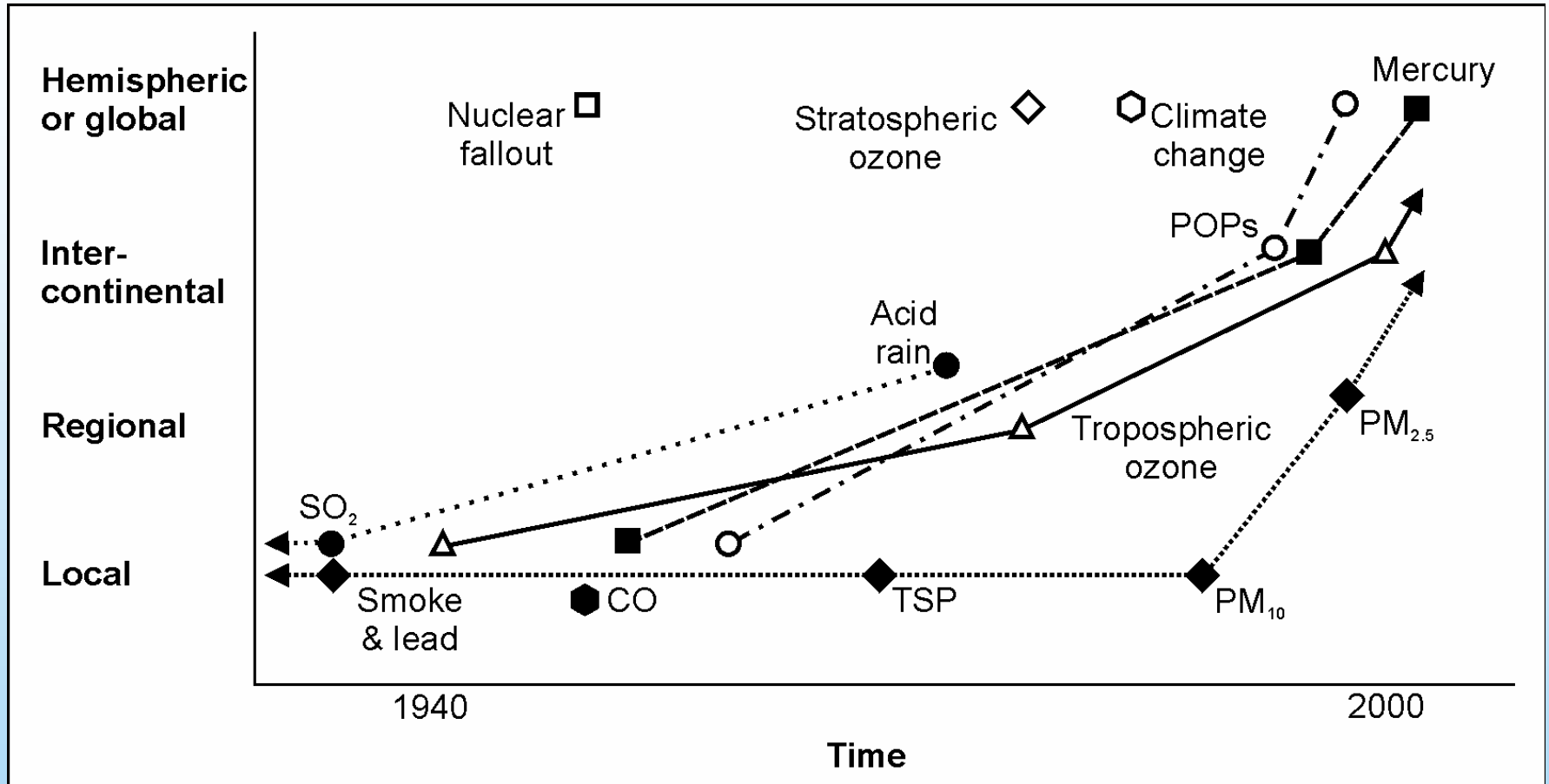
**Johan Kuylenstierna, Iyngara Mylvakanam, Richard
Mills and Jeff Clark**

Need for Global Cooperation on Air Pollution Control and Prevention

- **Health and environmental costs of air pollution are staggering, especially in developing countries**
- **Science showing pollution to be regional, hemispheric and global in nature as well as local**
- **Great deal of activity underway around the world at all scales; mostly uncoordinated**



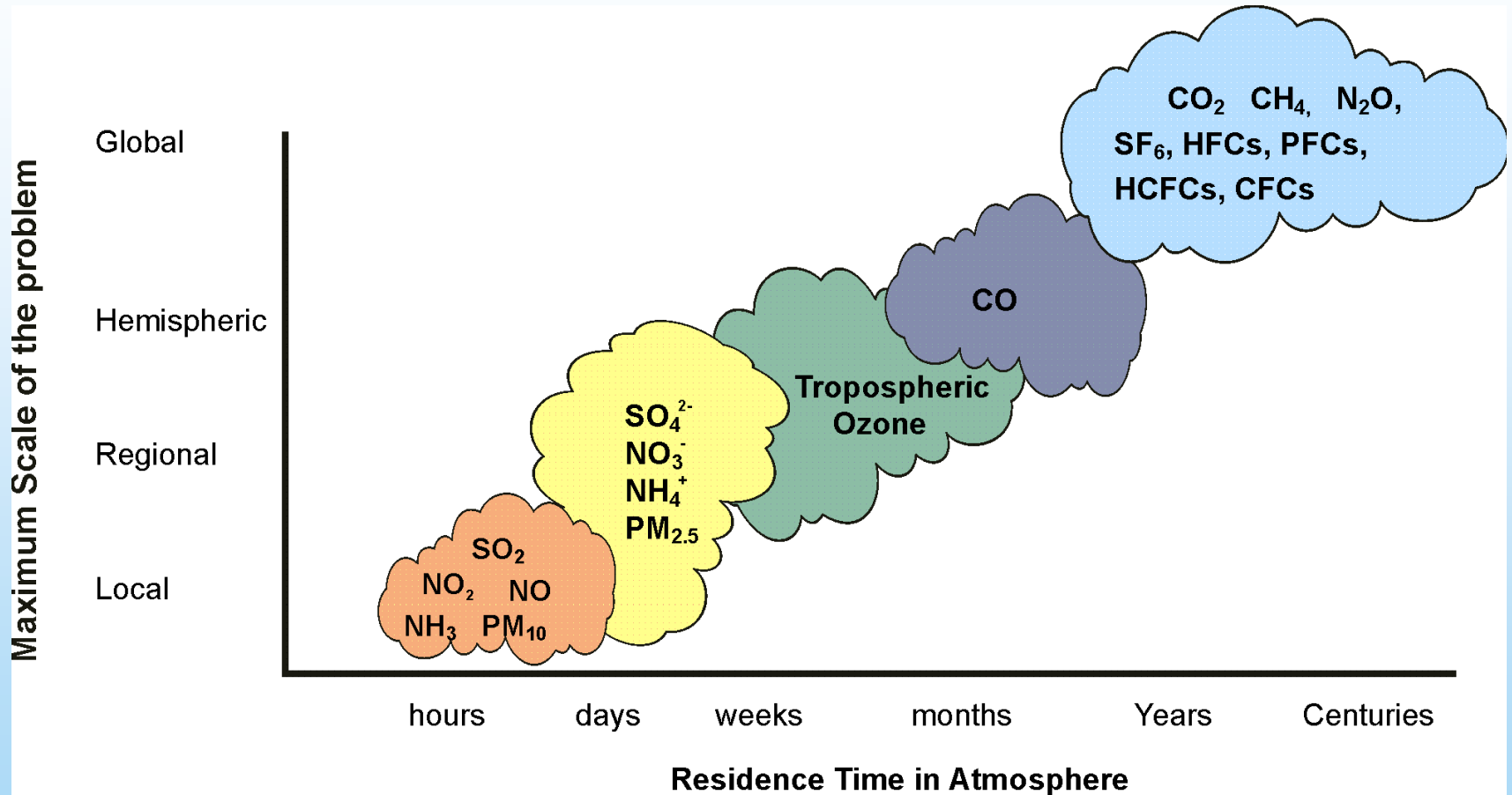
Emerging challenges: evolution of the perceived spatial scale of air pollution



Source: Keating *et al.*, 2004



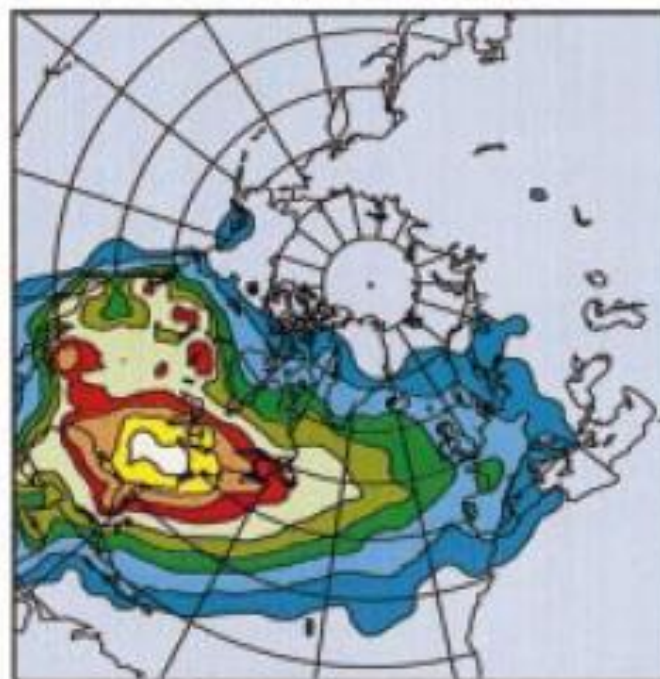
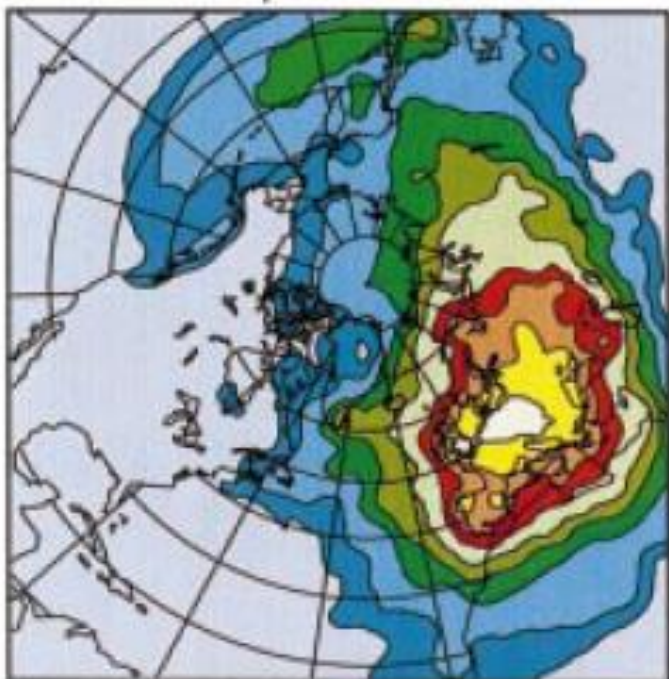
Air pollutants act at a range of scales



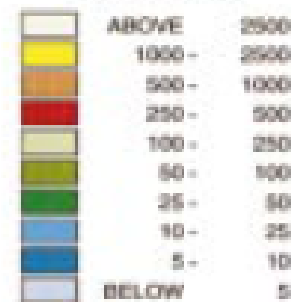
Continental-scale transport of man-made sulphur

European Sources

North American Sources



mg(S)/m³



Source: Tarrason & Iversen, 1998



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Regional haze problems are increasing around the globe

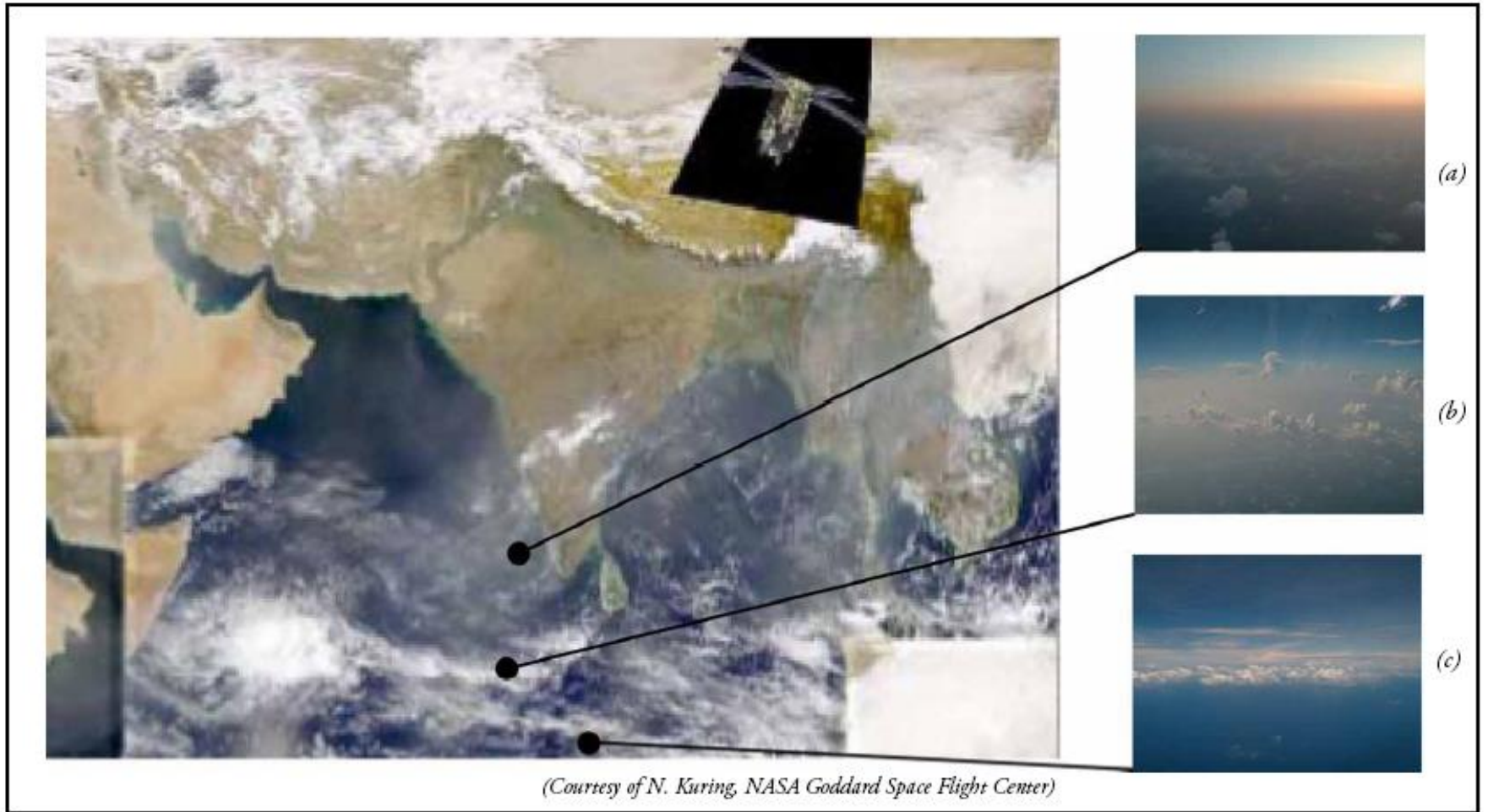
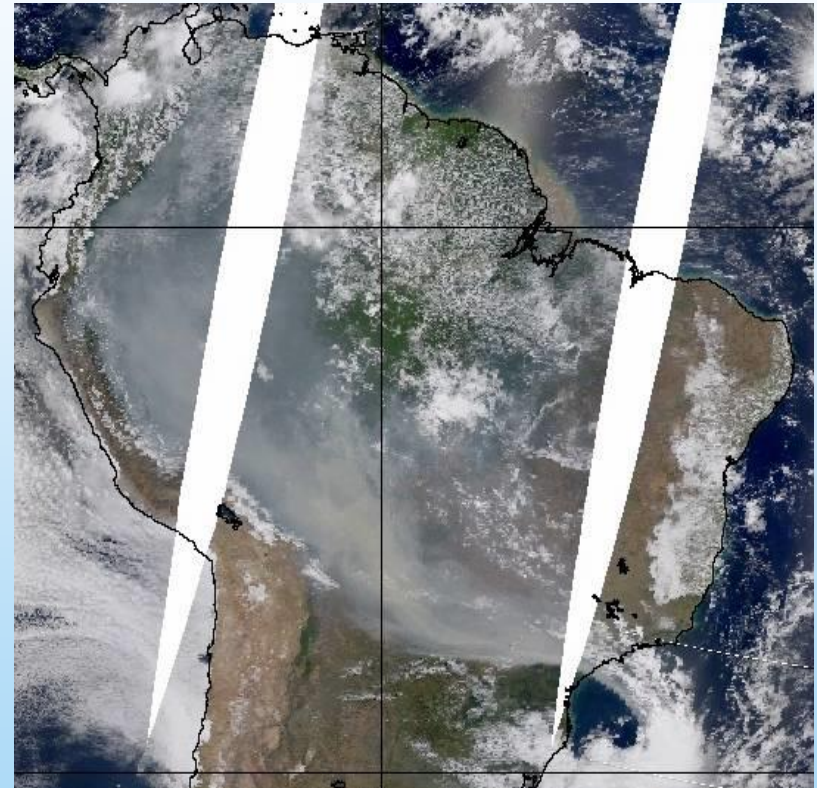
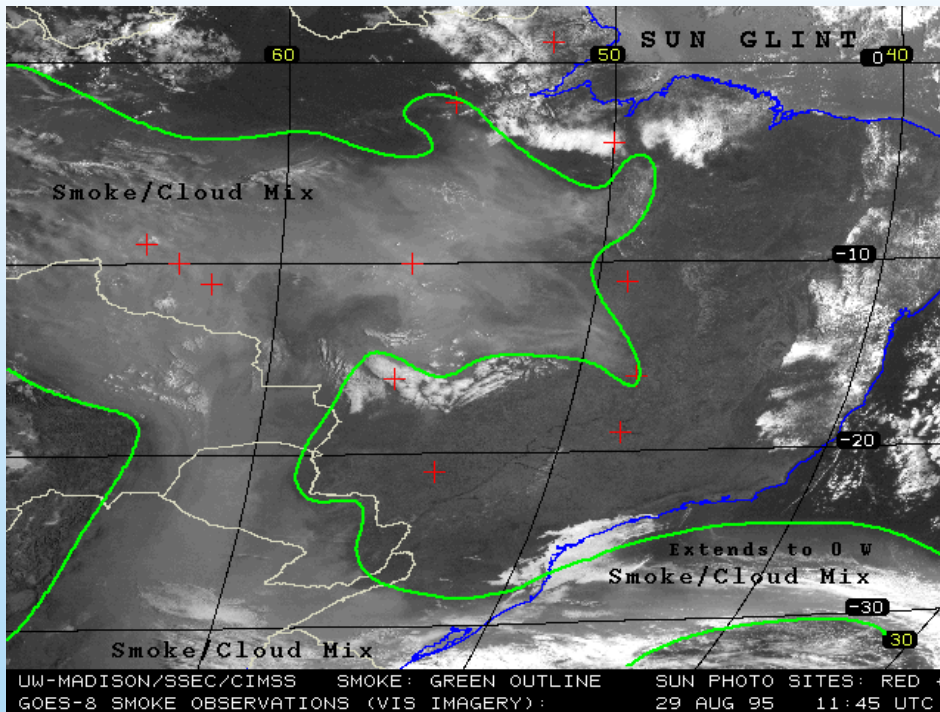


Figure A: Synoptic view of the Asian during INDOEX, top left, from the SEAWiFS satellite. The three photographs on the right taken from the C-130 research aircraft show images of (a) the dense haze in the Arabian Sea, (b) the trade cumuli embedded in the haze and (c) the pristine southern Indian Ocean.





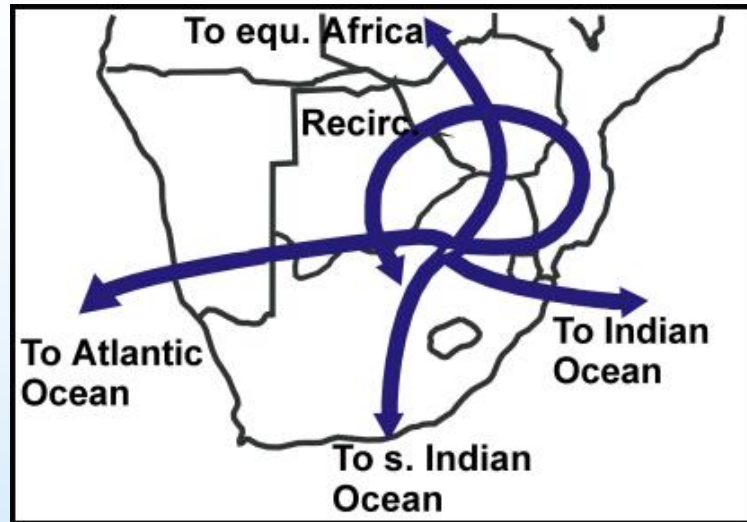
Large scale distribution of heavy smoke from biomass burning in Amazonia all over South America



The regional haze problem exists in southern Africa



ROS events involve regional, long-range transport of huge quantities of aerosols and trace gases emitted from uncontrolled, man-made bushfires.

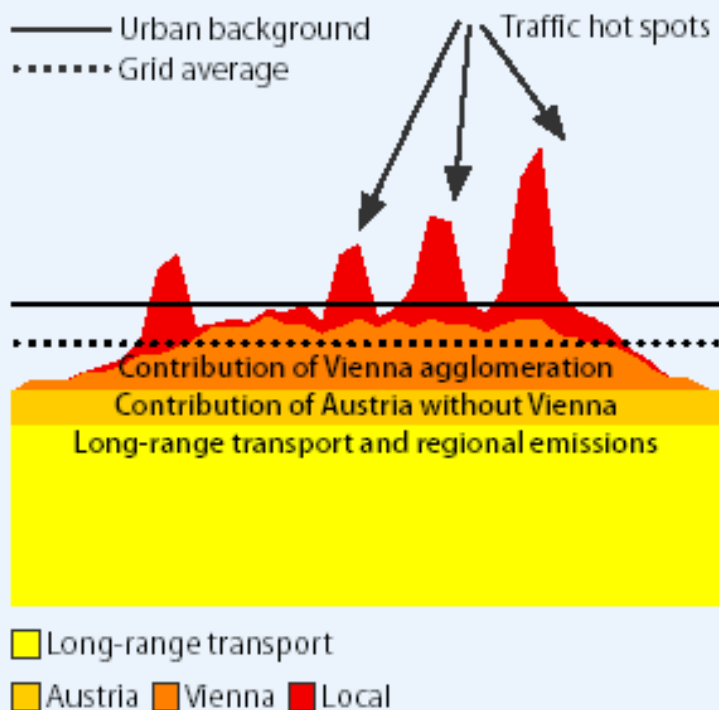


Southern African anticyclonic gyre — 5-year trajectory climatology displaying the main transport pathways of air out of the South African Highveld region.



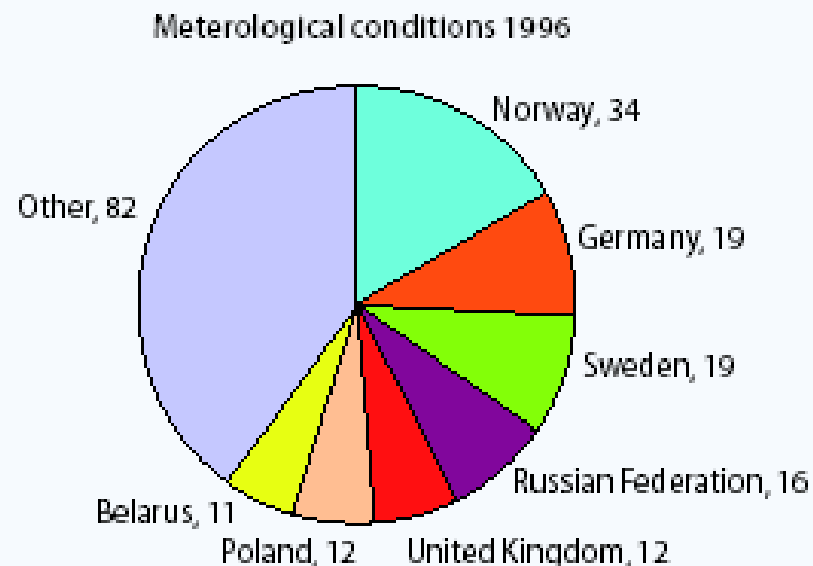
Long-range Atmospheric Transport of PM

Fig. 1.1. Schematic illustration of different PM₁₀ levels in different locations for Vienna



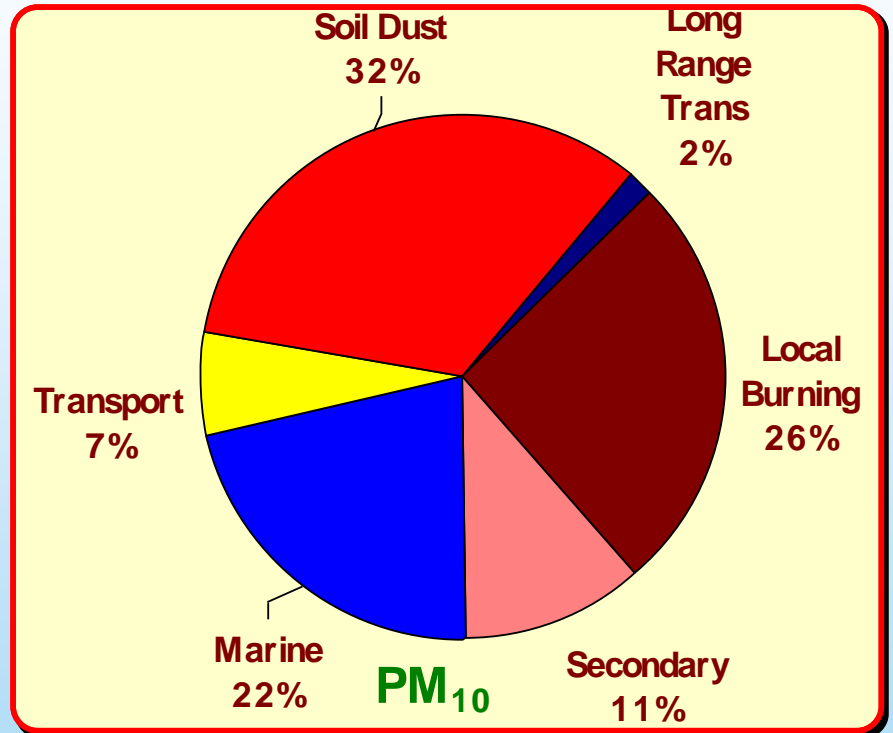
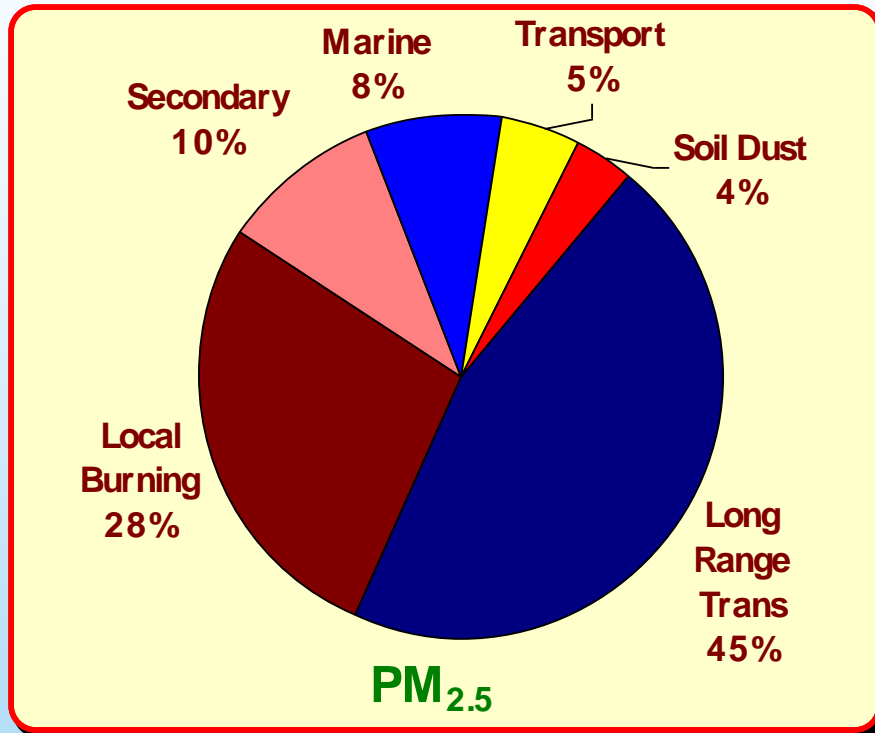
Note: The black line illustrates the city background used to estimate health effects. The dotted line provides the grid average that would be expected from a regional model, and includes all anthropogenic and nonanthropogenic sources of PM.

Contribution to PM_{2.5} Concentrations over Norway in 2010



Long range transport of PM in Asia

Source Apportionment Results for Hanoi, Vietnam



Role of the Global Atmospheric Pollution Forum

- 1. Support efforts of regional networks to tackle air pollution at the regional, hemispheric and global scales; and support development of new networks, where needed**
- 2. Promote sharing of experiences, collaboration and capacity building between regional networks**
- 3. Promote discussion on more effective frameworks to address regional, hemispheric or global air pollution**

Founding Partners

- United Nations Environment Programme (UNEP)
- UN Economic Commission for Europe/ Convention on Long-range Transboundary Air Pollution (UNECE/LRTAP)
- Clean Air Initiatives (CAI) in Africa, Asia and Latin America
- Air Pollution Information Network for Africa (APINA)
- The Inter-American Network for Atmospheric/Biospheric Studies (IANABIS)
- International Union of Air Pollution Prevention and Environmental Protection Associations (IUAPPA)
- Stockholm Environment Institute (SEI)

Secretariat provided by SEI and IUAPPA

Current Forum Programme:

Mitigating the Impacts of Air Pollution on Health, Economic Development and Environment in Developing Countries:

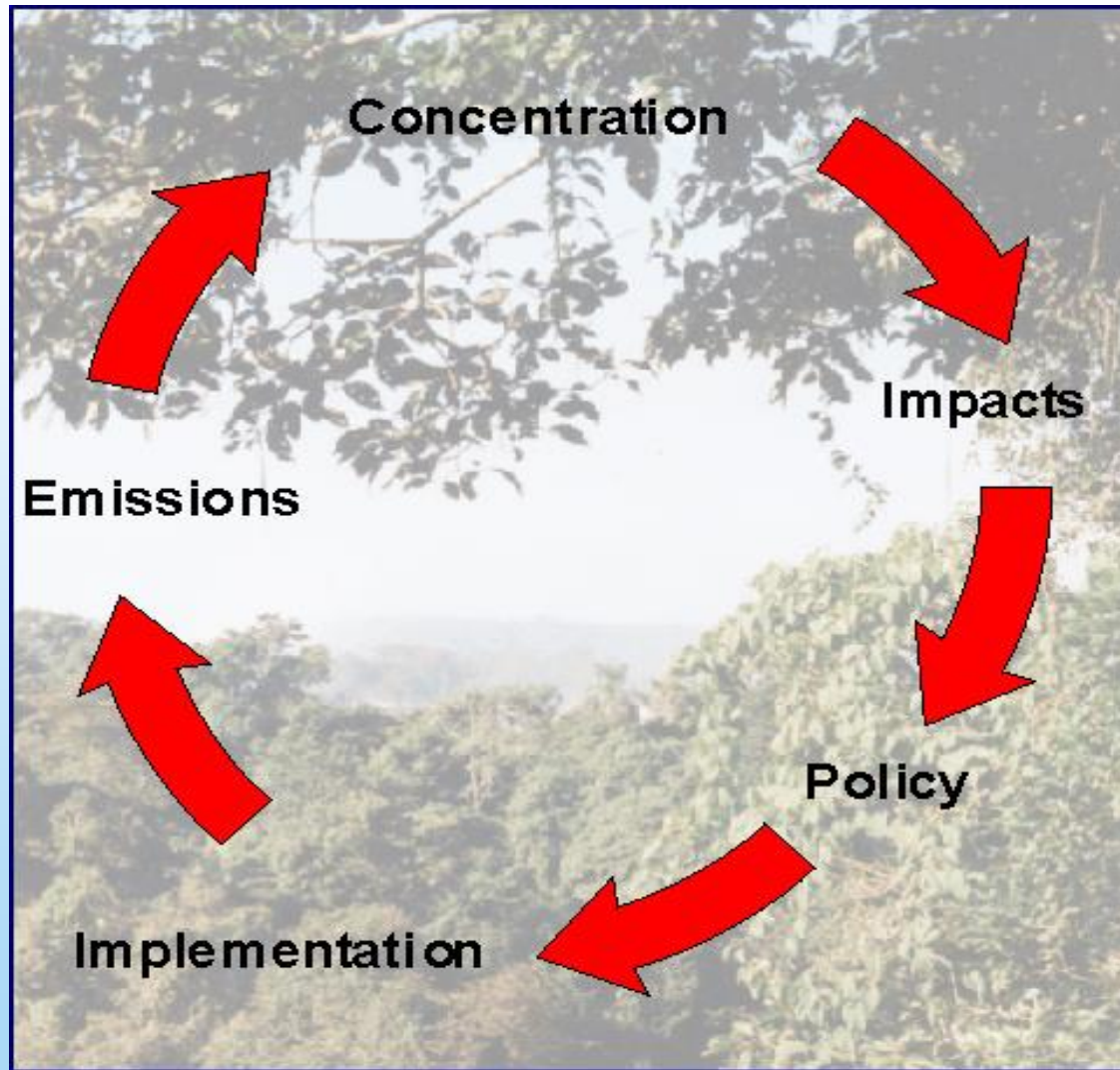
The Forum is focusing on three inter dependent areas:

1. **Strengthening regional air pollution networks around the world;**
2. **Encouraging the harmonization of technical systems and information and assessment processes between regional networks; and**
3. **Promoting consensus among regional groups on key challenges**

Promoting Intergovernmental Networks: Progress to Date

- **Supported work in Africa and development of Maputo Declaration**
- **Presenting proposal to Latin American ministers for intergovernmental air pollution forum**
- **Sharing experience and joint programmes between Malé Declaration and EANET**
- **Report and proposals to UNECE Environment for Europe conference on increasing assistance to developing countries on air pollution control**

Harmonized approaches will be secured to the technical aspects in the air pollution policy cycle



Approach to technical cooperation and harmonization

Development of technical manuals and guidelines that:

- Can be used in less developed regions while still being compatible with approaches around the globe
- Are peer-reviewed by key experts, globally
- Make the capacities and experience of the UNECE and other experienced regions more accessible to those where the activities and knowledge are less advanced
- Promote South-South linkages that allow different regions at the same stage of development to compare their approaches and solutions



First major Forum project : Emissions Inventory Manual for Developing Nations

Forum manual is a generalised version of the Malé an APINA emission inventory manuals. Any improvement in Forum manual feeds into Male and APINA

The Forum Manual is designed to be:

- **Relevant** - expertise from Asia, Africa, L America, as well as EMEP/CORINAIR & IPCC
- **Easy to use** – includes a simple, Excel spreadsheet-based workbook
- **Compatible** - with EMEP/CORINAIR, IPCC and USEPA approaches
- **A training tool** – e.g. includes a section on '*Principles of good practice in preparing inventories*'



The air pollutants included in the Forum emission inventory manual

- ❖ Sulphur dioxide (SO_2)
- ❖ Nitrogen oxides (NO_x)
- ❖ Particulate matter (PM_{10} and $\text{PM}_{2.5}$)
- ❖ Ammonia (NH_3)

The tropospheric ozone (O_3) precursors (in addition to NO_x):

- ❖ Carbon monoxide (CO)
- ❖ Non-methane volatile organic compounds (NMVOCs)

Implementation of approach

- ❖ Dissemination of Forum Manual to all member networks of the Global Atmospheric Pollution Forum (and others):
 - e.g. October 2006 HTAP workshop in Beijing, China
 - e.g. December 2006 BAQ Yogyakarta, Indonesia
- ❖ Forum Manual can be downloaded:
www.gapforum.org/projects.php
- ❖ Training within partner air pollution networks (e.g. Malé Declaration, APINA, EANET, CAI cities etc)
- ❖ Development of future programme to further improve and enhance the Manual and Workbook
- ❖ Implementing related projects (e.g. developing appropriate emission factors for non-OECD countries)

The Global Forum will expand the process used for emissions inventories to other technical areas:

- Air quality and deposition monitoring and modelling
- Health effects and PM
- Crops and ecosystems
- Corrosion of materials and cultural heritage
- Integrated assessment approaches
- Assessment of Air Pollution Prevention and Control Policies and their influence on Greenhouse Gas emissions



Forum manual on air quality and deposition monitoring

- Harmonised air quality monitoring practices for local- and regional-scale air pollution (rainfall, gases, PM) to inform all networks and provide material for upgrades and increasing harmonisation
- Monitoring alternatives: from cheap, simple technologies, through to more advanced to relatively sophisticated automated methods, with discussion of the requirements, advantages and disadvantages of each;
- Handbook of reliable methods of air quality monitoring for the range of air pollutants commonly monitored with detailed procedures and quality assurance steps, for nations with different levels of capacity and resources;



Forum Assessments and Guidelines for Investigation of Health Effects

1. *Assessment*

- Compile and disseminate current knowledge of health impacts globally related to PM concentrations

2. *Methodologies*

- Prepare a methodology handbook of simple and relatively inexpensive study designs successfully implemented in developing countries to show the impacts of air pollution
- Distribution of review and methodology handbook.

Forum Assessments and Guidelines for Investigation of Crop Impacts

The Forum is promoting APCEN - Air Pollution Crop Effects Network, to harmonise assessment techniques around the globe

APCEN will:

- Describe current “global state of knowledge” of air pollution/crop impacts
- Organise a Forum Multi-stakeholder Workshop on Air Pollution Crop Impacts in Asia in 2008 for Scientists and Policy makers
- Develop recommendations for future crop impact assessments
- Provide common methods for crop assessment studies
- Coordinate activities between regions to give added value

Corrosion of materials and cultural heritage

- CORNET- the international Corrosion Network: harmonise assessment techniques around the globe
- An overview document on the status of corrosion assessment around the world
- Manuals tailored to the needs and capacity of developing countries for: (i) materials exposure experiments; (ii) stock at risk assessment; (iii) economic assessments
- A CORNET meeting will be held to agree on manuals and methods and expand network to new regions



Consensus Building

- Outreach strategy in place involving newsletters, website, publications etc.
- Wider consensus building programme being developed on key policy and scientific issues
 - Global synthesis on AP and crops
 - Global synthesis on AP and corrosion
 - Global synthesis on AP and ecosystems
 - Interact with global assessment on AP and health
 - Possible pathways for inter-regional policy development
 - Global assessment of policy measures for AP

Potential Future Programmes

- Pursuing co-benefits of climate change and air pollution
- Supporting special initiatives on other long-range air pollution transport-related issues
 - Ozone and Crop Damage
 - PM and Health

For More Information...



Visit our website:

www.gapforum.org





Opportunities opened by the Forum for the Malé Declaration

- Linkage between regions – sharing experience
- Transfer and improvement of methodologies
- Integration of South Asian data in global syntheses
- Inclusion in discussions on measures to address global and hemispheric pollution





Key Questions for the Malé Declaration

Would concrete linkages for capacity building and sharing experience with LRTAP Convention and other networks, facilitated by Forum, be useful?





Key Questions for the Malé Declaration

What areas for cooperation are a priority?

e.g. Crops

Monitoring





Key Questions for the Malé Declaration

LRTAP thinks a major joint programme of the air pollution impact on crops would be very timely and LRTAP would welcome an approach from the Malé Declaration, via the Secretariat





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Thank you!

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Global Assessment of Air Pollution Prevention and Control Policies and their Potential Co-benefits Regarding Greenhouse Gas emissions

- Review the development and implementation of regional, national and urban air pollution strategies in different regions of the globe and co benefits in terms of GHG emissions;
- Workshop with key organizations/individuals representing each major region of the world will be held to assess the design for the study and develop consensus on the approach;
- Publication and dissemination of the report and summary through the Forum and its partners

