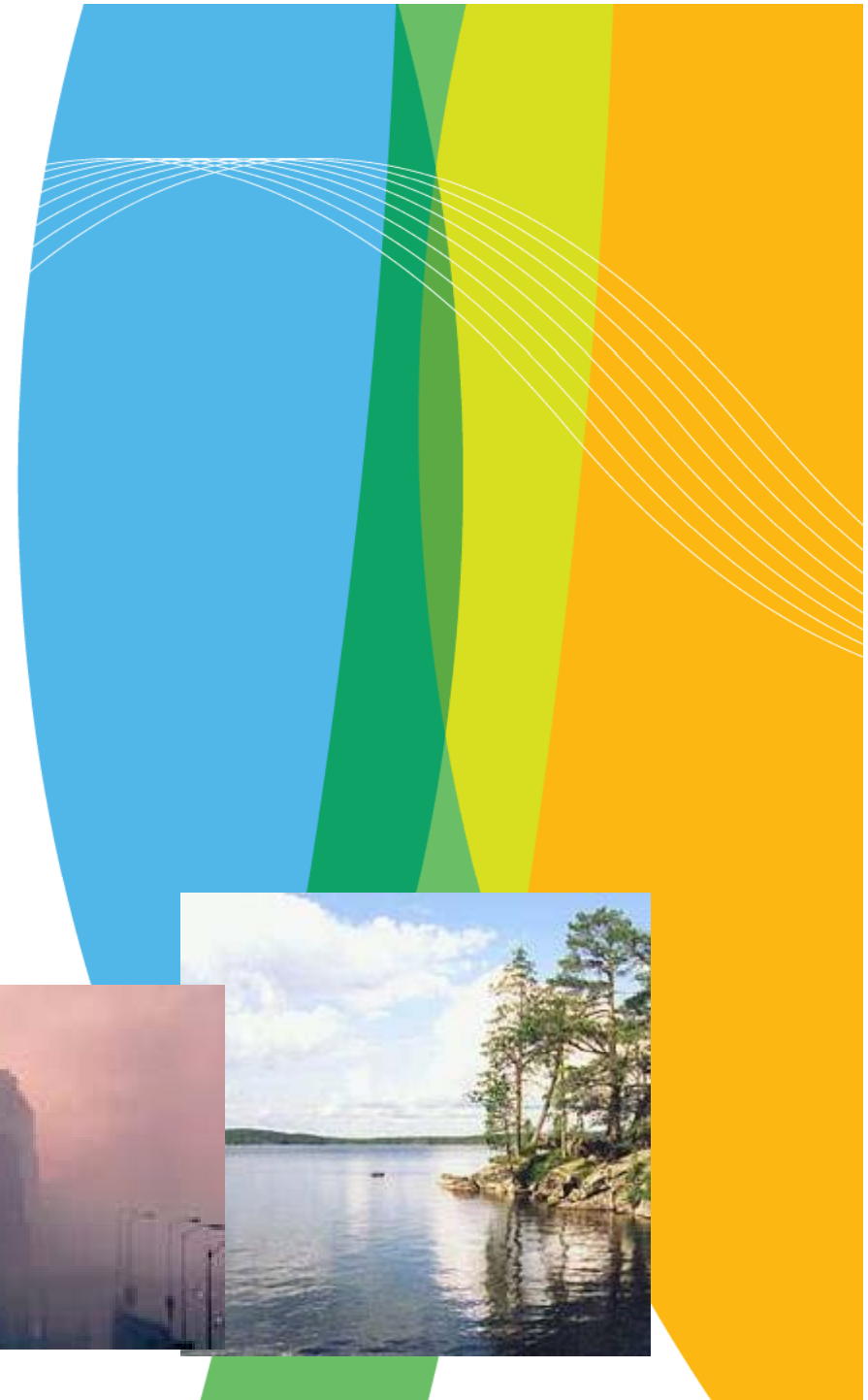
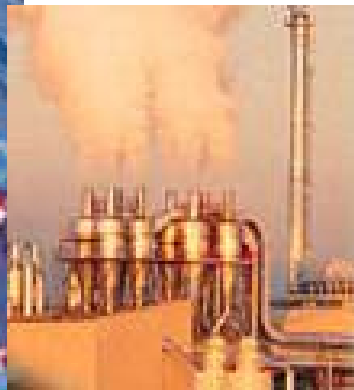




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METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE

Air quality research

27 August 2007





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Dynamicum 2005

Joint building of Finnish Meteorological Institute (FMI) and Finnish Institute of Marine Research (FIMR)

- Previously, 450 persons working in the Helsinki area at FMI were located at five addresses; currently all of them work at Dynamicum
- Regionally at FMI, there is environmental research at Kuopio, and satellite application facility at Sodankylä





The Kumpula campus

- There are almost 1000 scientists working at the Kumpula campus on atmospheric, space and geophysical research
- The campus houses the Departments of the Faculty of Science of the University of Helsinki, as well as FMI and FIMR (Physics, Chemistry, Mathematics and Statistics, Computer Science, Geology and Geography)
- The campus offers facilities for 6,000 students and 1,000 teachers.



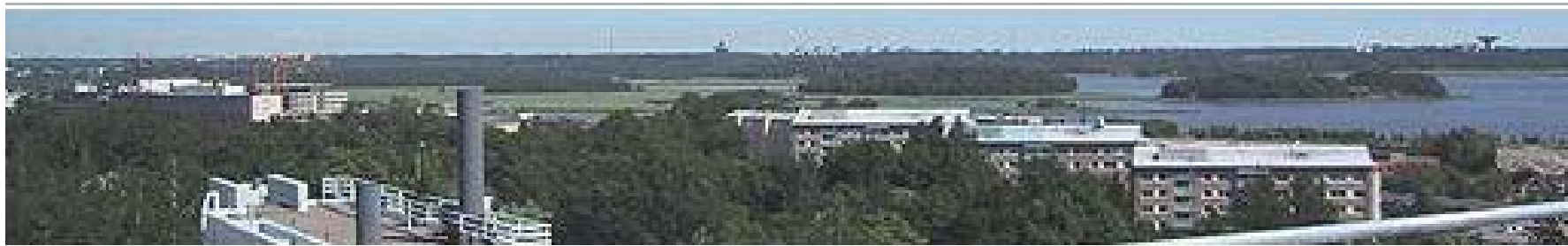


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New opportunities for FMI

- Collaboration with the University of Helsinki: e.g., joint professorships, Centres of Excellence, projects
- Collaboration with companies, e.g., Vaisala
- Enhanced internal collaboration





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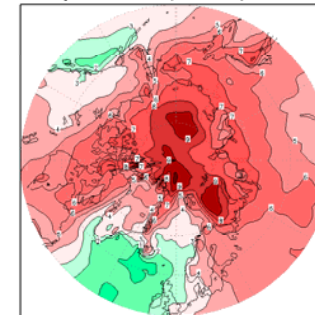


Research and Development at the Finnish Meteorological Institute

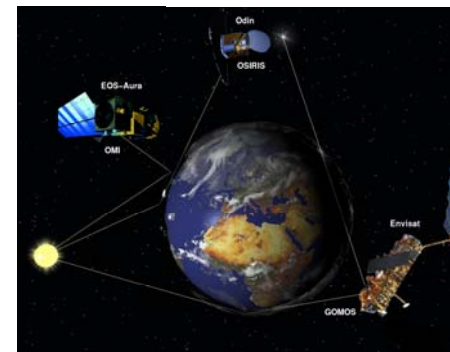
- Climate and global change (40 scientists)
- Meteorological research (40)
- Air quality (60)
- Earth observation (40)
- Space research (40)
- Arctic research centre (15)
- Kuopio research unit (12)



Change in mean temperature by the 2080s

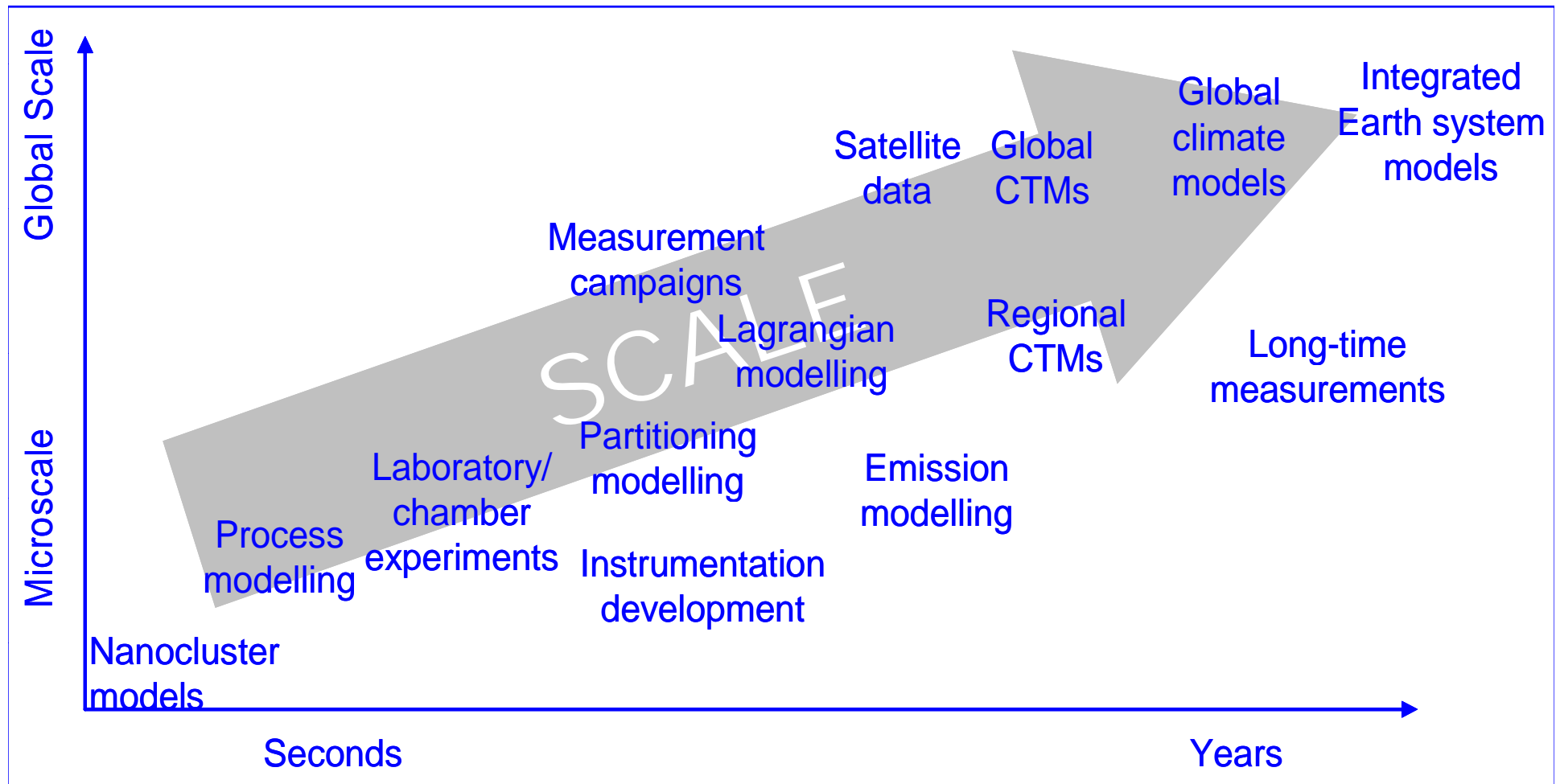


Unit: °C Model run: HADCM3_A2





Integration of models and observations having different spatial and temporal scales





Air quality research

Jaakko Kukkonen
Jussi Paatero



Aerosol research
Risto Hillamo



Atmospheric dispersion modelling
Ari Karppinen



Laboratory of air chemistry
Hannele Hakola



Measurement technology research
Jari Waldén



Air quality information services
Virpi Tarvainen





Aerosol research



Dispersion modelling



Measurement technology



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Laboratory of Air Chemistry



Air Quality Information Unit



The vision of Air Quality Research Programme (AQP)

Cutting-edge expertise on air quality, and regarding the effects of air pollution on the health of population, climate change and the environment.

Main tasks

- air chemistry and physics, on various scales
- the development of measurement and analysis techniques, and atmospheric models
 - the surveillance of air quality
 - expertise required by the national and international authorities

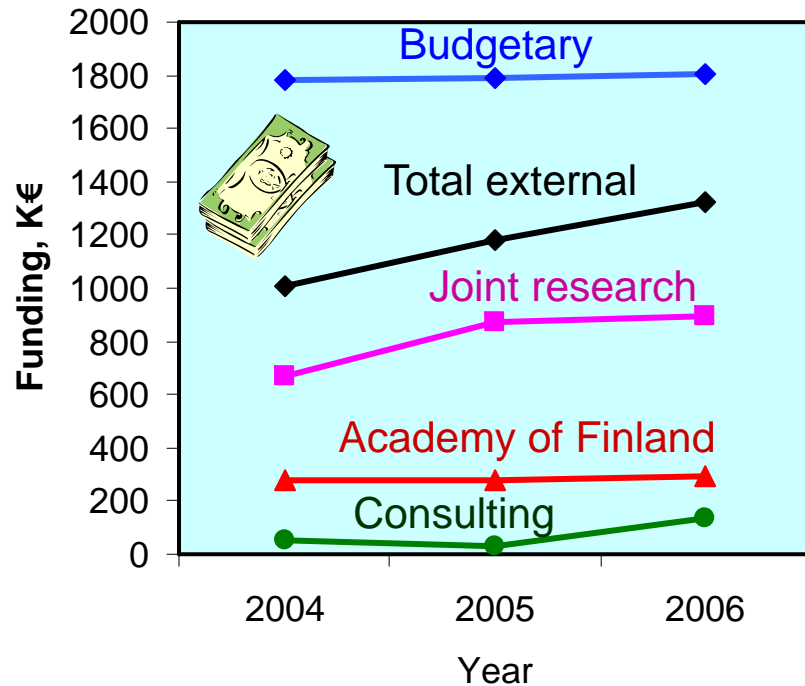


The AQP conducts internationally competitive level research especially in:

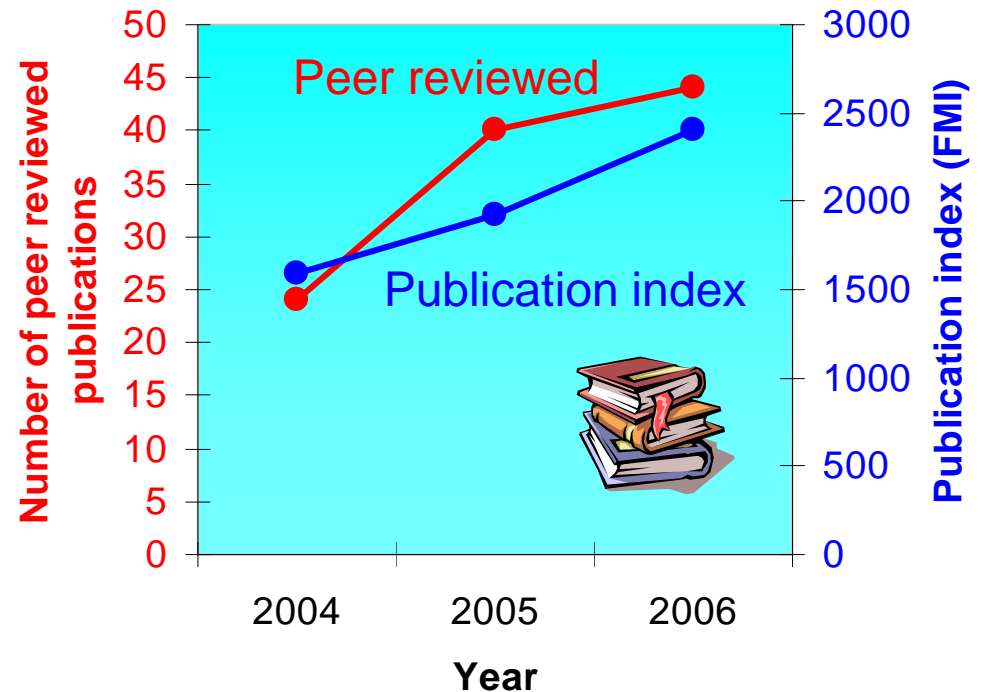
- (i) the development and application of urban, regional and continental scale atmospheric **dispersion models**, especially for evaluating the concentrations of primary and secondary **particulate matter**,
- (ii) the introduction and development of **techniques for measuring the chemical composition and optical properties of aerosols**, in particular regarding carbonaceous compounds,
- (iii) biogenic emissions and concentrations of **volatile organic compounds** both in background and urban areas, and
- (iv) the application of **satellite observations in air quality research**.



Funding of AQP



Publications of the AQP



Total external funding (= Joint research + Academy of Finland + Consulting), peer reviewed publications and publication index have continuously increased.



“European Centre of Atmospheric and Earth Sciences”

- 1. Centre of Excellence of the Academy of Finland “Physics, Chemistry and Biology of Atmospheric Composition and Climate Change”,** in collaboration with University of Helsinki and University of Kuopio.
- 2. Nordic Centre** for Studies of Ecosystem Carbon Exchange and its Interactions with the Climate System (NECC), in collaboration with Nordic groups.
- 3. Research Unit on Biosphere-Aerosol-Cloud-Climate Interactions (NCoE),** in collaboration with Nordic groups.
- 4. European Network of Excellence “Atmospheric Composition Change” (ACCENT),** in collaboration with several European groups.



Terra, MOD14, day 2000071 (03/11/2000), Collection 004

Select a region you want zoom in:

Note: If you can not drag a box on the image, please enter the coordinates in the text boxes. The image size is 900x450 (upper left: 0,0; lower right: 900,450).

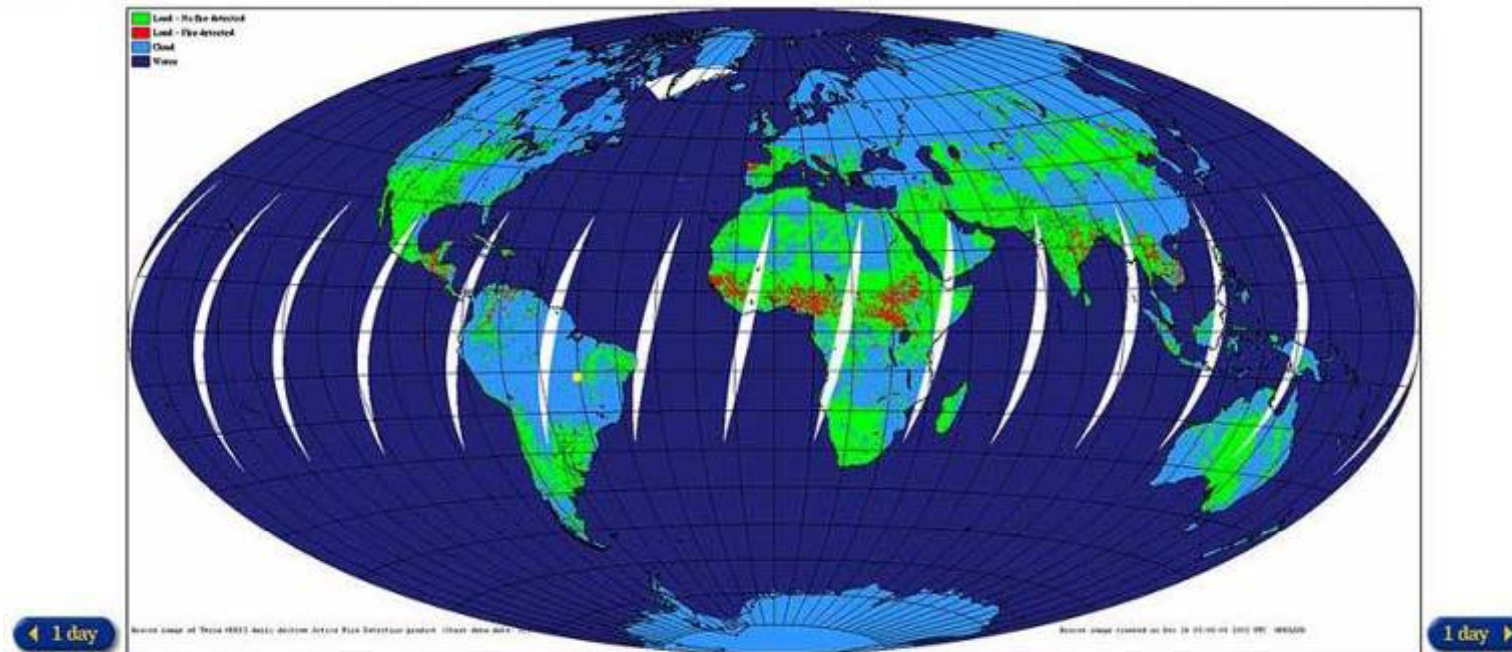


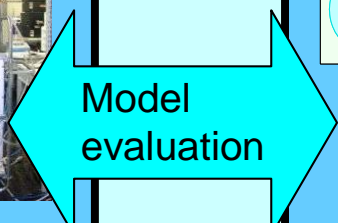
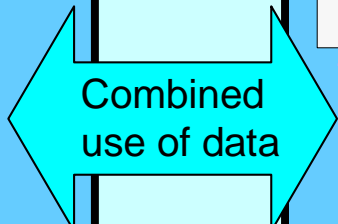
Fig. Wild fires detected by the MODIS satellite instrument (red = fire detected).



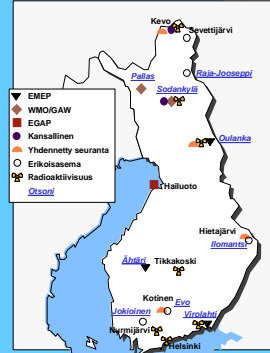
Earth observation of wildfires: Fire spread and plume dispersion



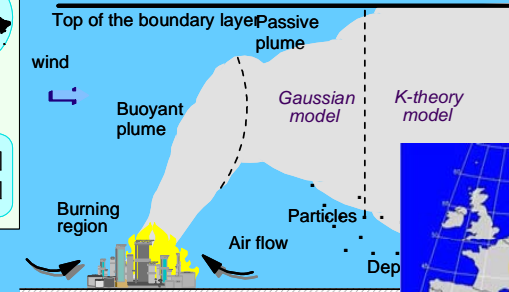
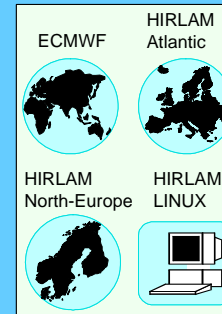
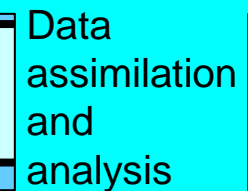
Controlled forest burning experiment



Ilmanlaadun seuranta-asemat 2003



Ground-based observations of fire plumes at selected stations and in the TROICA campaign



Modelling of fire spread, plume rise, atmospheric dispersion and source apportionment