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Anthropogenic sources

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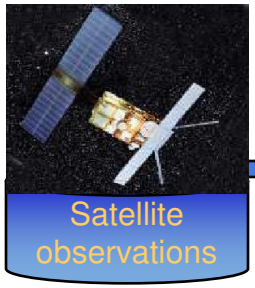
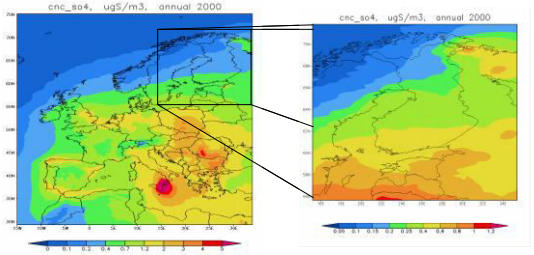
Content

- Inventories of anthropogenic sources
- System of Nomenclature of Air Pollutants
- Temporal variation of anthropogenic emission
- Other features of anthropogenic sources

FMI regional AQ assessment and forecasting platform





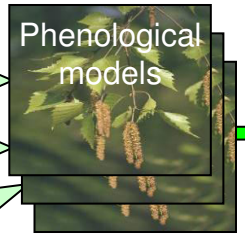
AQ products

http://silam.fmi.fi

Phenological observations

Aerobiological observations

Physiography, forest mapping



SILAM CTM model

EVALUATION: NRT model-measurement comparison

Online AQ monitoring

Aerobiological observations

CLRTAP/EMEP emission data

AROME

HIRLAM-MBE

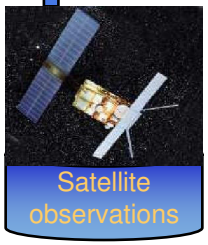
HIRLAM-RCR NWP model

WRF

TVM

Global boundary cond. + own simulations

Meteorological data: ECMWF



Inventories of anthropogenic sources

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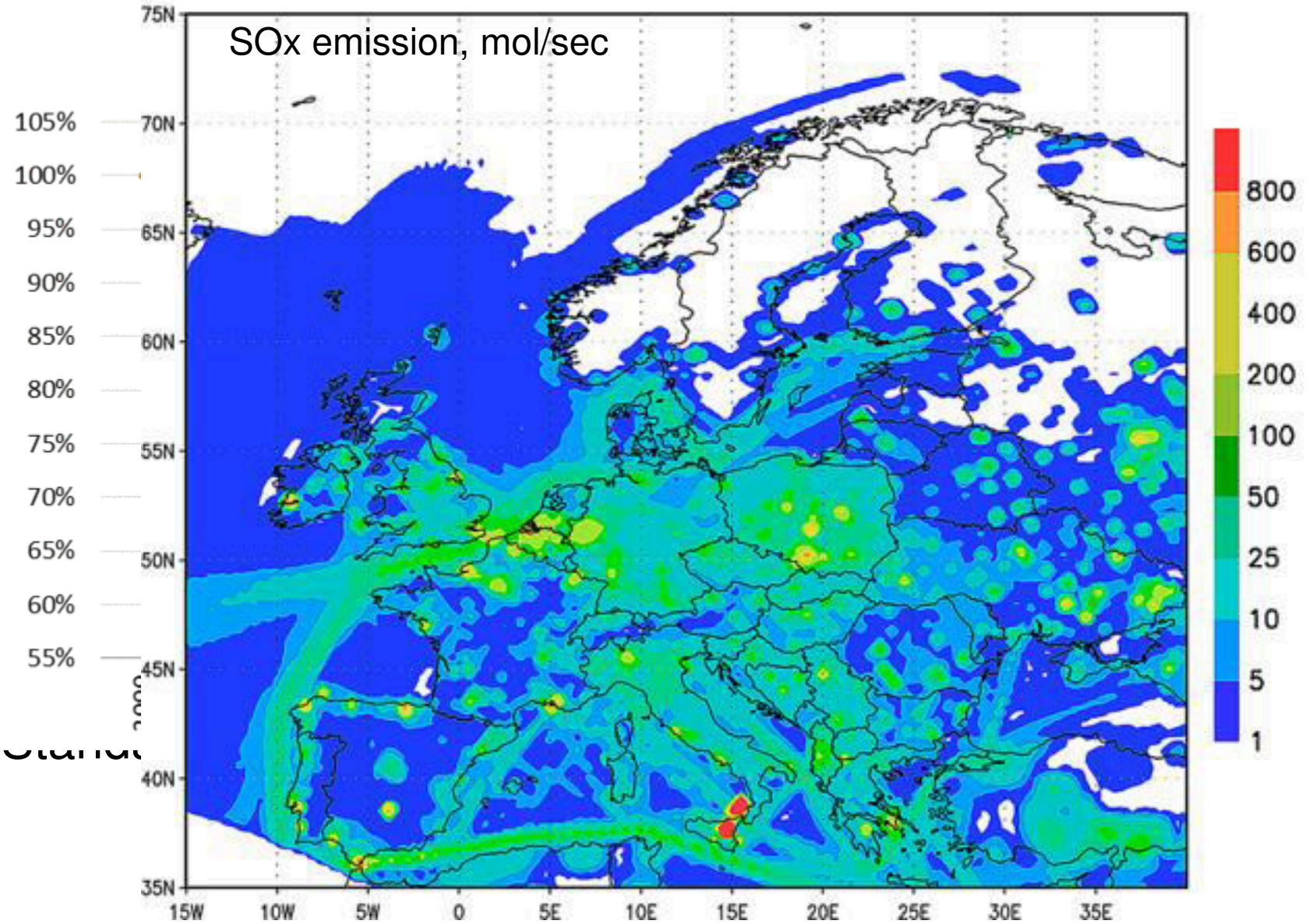
- Stand



SNAP: Selected Nomenclature of sources of Air Pollution

- Group 1: Combustion in energy and transformation industries
- Group 2: Non-industrial combustion plants
- Group 3: Combustion in manufacturing industry
- Group 4: Production processes
- Group 5: Extraction & distribution of fossil fuels and geothermal energy
- Group 6: Solvent and other product use
- Group 7: Road transport
- Group 8: Other mobile sources and machinery
- Group 9: Waste treatment and disposal
- Group 10: Agriculture
- Group 11: Other sources and sinks

Temporal variation of anthropogenic emission

- Three main cycles
  - seasonal
  - weekly
  - diurnal
- Possibly, trends (usually considered at multi-annual level)
  - effect of crisis
  - rapid development in Asia
- Emission modelling (hard to get annual total unbiased)
  - Temperature: needs for heating/cooling
  - Early / late season: agriculture works
  - Mitigation measures: poor AQ can trigger short-term emission reduction measures

Other features of anthropogenic sources

- Injection height
  - doable for point sources
  - result of averaging for area and line sources
  - can be made dynamic, i.e. dependent on meteorological conditions (SILAM: possible for point sources)
  - has to cover pre-dilution of released masses during one model time step
  - often taken higher than in reality: extra smoothing reduces the impact of emission errors