



ILMATIETEEN LAITOS
METEOROLOGISKA INSTITUTET
FINNISH METEOROLOGICAL INSTITUTE



S Y K E



IIASA

Mitigation of Arctic warming by controlling European black carbon emissions (MACEB)



LIFE+ 09 *Environment Policy and Governance*

MACEB

Coordinating beneficiary;

Finnish Meteorological Institute (FMI)

Associate beneficiaries;

Finnish Environment Institute (SYKE)

International Institute for Applied System Analysis (IIASA)

University of Helsinki (UHEL)

Duration 2011-2013

Total budget ~1 650 000 eur





MACEB, OBJECTIVES

- 1) To demonstrate the approach to mitigate warming of Arctic climate by black carbon (BC) emissions reduction at mid latitudes, especially in Europe**
- 2) To assess the impact of the current air quality and climate relevant legislation in the northern hemisphere on BC emissions, their transport to the Arctic, and eventually Arctic warming and how it relates to warming by CO₂**
- 3) To transfer action procedures and experiences to various stakeholders (modelling community, national authorities) within EU by implementing a web portal to assess and mitigate BC emissions from most important source sectors, especially small-scale wood burning**





MEANS, overview

Actions and their short names

A1: Project management and monitoring (FMI, SYKE, IIASA, UHEL)

A2: **Surface monitoring** (FMI, UHEL)

A3: Processing of **emission modelling system** (SYKE, IIASA)

A4: Construction and demonstration of **integrated system** (FMI, SYKE, UHEL)

A5: Creating monthly averages **concentrations maps for BC in air and snow** (FMI, UHEL)

A6: Calculation of **BC radiative forcing** over the spring-summer period **in the Arctic** (FMI, UHEL)

A7: Assessment of **country contribution** and **BC emission mitigation options** (FMI, SYKE, IIASA)

A8: **Dissemination** (FMI, SYKE, UHEL, IIASA)

A9 : After Life+ communication plan





MEANS, overview

Develop a tool by which the climatic effects of reducing BC emissions from different economical sectors and areas can be evaluated.

Different scales of:

EMISSION MODELLING (GAINS, FRES)

CLIMATE MODELLING (ECHAM5-HAM, REMO)

MEASUREMENTS (BC, other aerosol properties, BC deposition experiment)

EMISSIONS (Base year 2005, Scenarios 2020 and 2030; CLE, MTRF, BCadd)

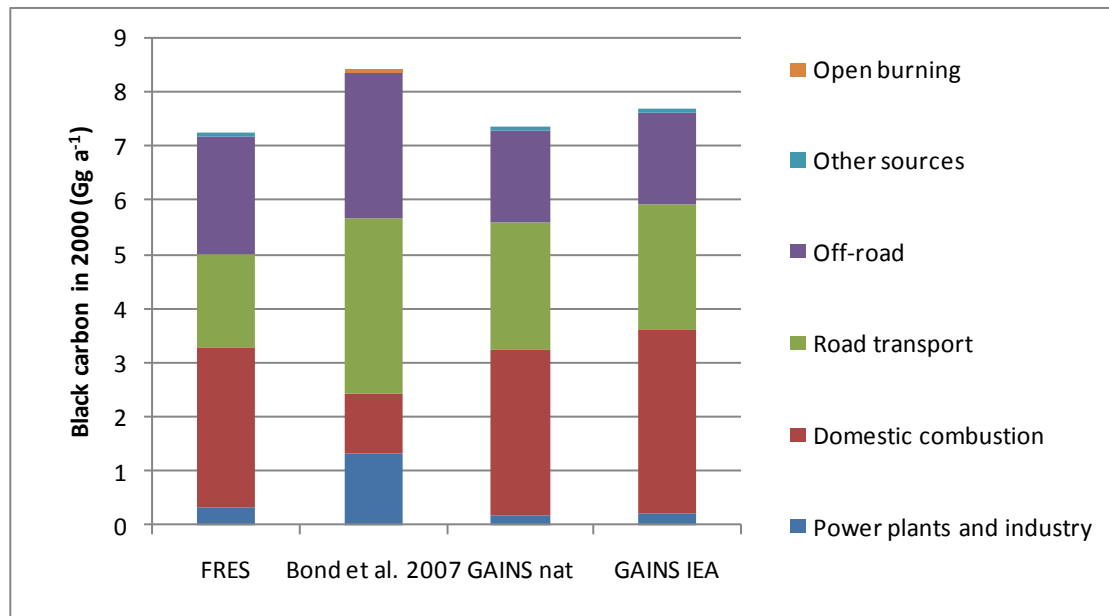
-> radiative forcing by BC and other aerosol components in the Arctic





MEANS, overview

- As a demonstration, more detailed quantification of further technological reduction potential will be made for Finland
- Finnish high-resolution modeling for validation
- Model comparisons to highlight differences and uncertainties



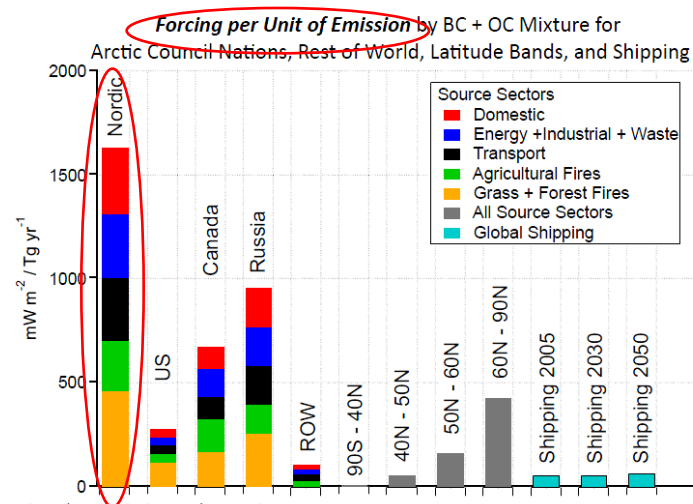
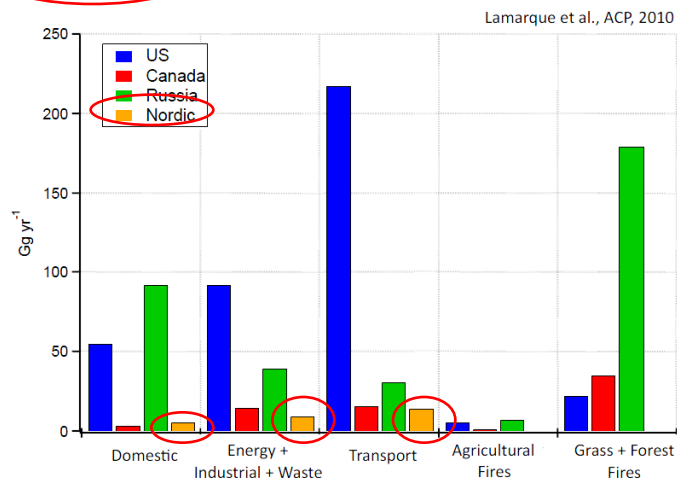
Finnish national BC emissions by key sectors for the base year 2000 as estimated by three research groups



MEANS, overview

- Importance of **Nordic countries** emissions in the Arctic

Emissions of BC by Sector and Region within the Arctic Council Nations



- Driven by proximity to the Arctic
 - Forcing due to shipping is normalized by global emissions so doesn't show true impact of Arctic-only emissions
 - Currently running the model with Arctic-only shipping emissions
- M. Flanner, NCAR & SNICAR Models



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Dissemination

- Web-portal
- general information about black carbon formation, emissions and climatic effects
- browser tool of project results
- existing information packages and links
- guidelines to design local actions to mitigate emissions

Climateguide.fi

- Released Dec 2011
- MACEB in climateguide: Spring 2013

Project partners

Climateguide.fi is developed co-operatively by Finnish Meteorological Institute, Finnish Environment Institute (SYKE) and Aalto University Centre for Urban and Regional Studies (YTK). Climateguide.fi is being created in a three year EU Life+ project (LIFE07 INF/FIN/000152 CCCRP).

The portal gathers diverse research based and practical climate change information into a more uniform format under one address.

Timetable

- **May 2010:** technical pilot with some of the contents featured
- **December 2010:** pilot with substantial part of the contents and functionalities released
- **August 2011:** Finnish language version (Ilmasto-opas.fi) released
- **September - December 2011:** regional and thematical workshops for local authorities
- **December 2011:** English (Climateguide.fi) and Swedish (Klimatguiden.fi) language versions released

Feel free to participate!

In order to secure the best possible outcome, all research institutions and expert organisations are welcome to participate in the content production.

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Community
Response Wizard

Maps, graphs
and data

Climate Change
Explained

A national portal
for diverse
climate change
information
launches in
September 2011.





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Thank You

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