WORKSHOP:

IMPROVING BLACK CARBON EMISSION ESTIMATES & ABATEMENT

13th-14th May 2015

Recent Russian BC Emissions Inventory : case of the Russian Arctic

IRINA MOROZOVA

Head of Department for modelling transboundary air pollution and accounting of national emissions,

sriatm@yandex.ru

JULIA IGNATEVA **NATALIA GOLOVINA** **NATALIA KRAPIVKO**

scientific researchers

SRI ATMOSPHERE

Scientific Research Institute for atmospheric air protection
Saint Petersburg,
Russia

Milan 2015

ARCTIC ENVIRONMENT MINISTERS MEETING

Jukkasjärvi, Sweden, 5-6 February, 2013

Ministers emphasized the importance of emission inventories for black carbon to identify emission trends and mitigation opportunities. They concurred that each Arctic State should periodically produce national emission inventories for black carbon in line with the guidelines that are to be agreed upon under the Convention on Long Range Transboundary Air Pollution (CLRTAP). Inventories should be submitted to CLRTAP and shared within the Arctic Council, with the ambition to have submissions starting from February 15 2015.

Arctic Zone of the Russian Federation

1 – Murmansk region, 2 – Arkhangelsk region territories – City of Arkhangelsk, Mezensk municipal area, Novaya Zemlya, Town of Novodvinsk, Onezh municipal area, Primorsk municipal area, Severodvinsk, 3 – Nenets Autonomous District, 4 – Town of Vokruta municipal area (Komi Republic), 5 – Yamal-Nenets Autonomous District, 6 – Krasnoyarskiy krai territories – Town of Norilsk, Taimyr Dolgan-Nenets municipal area, Turukhansk district, 7 - the Republic of Sakha (Yakutia) territories - Allaikhovsky Ulus (district) Anabar national (Dolgan-Evenk) Ulus (district), Bulunsky Ulus (District), Nizhnekolymsky district, Ust-Yansky Ulus (district), 8 – Chukotka Autonomous District

Input data for inventory

YEAR 2013

Russian Bureau of statistics official data:

- fuel use for production of goods and services
- Soot emissions per economic activity

Russian Forestry Agency data:

- forest burnt down on the territory of the Russian Arctic Zone

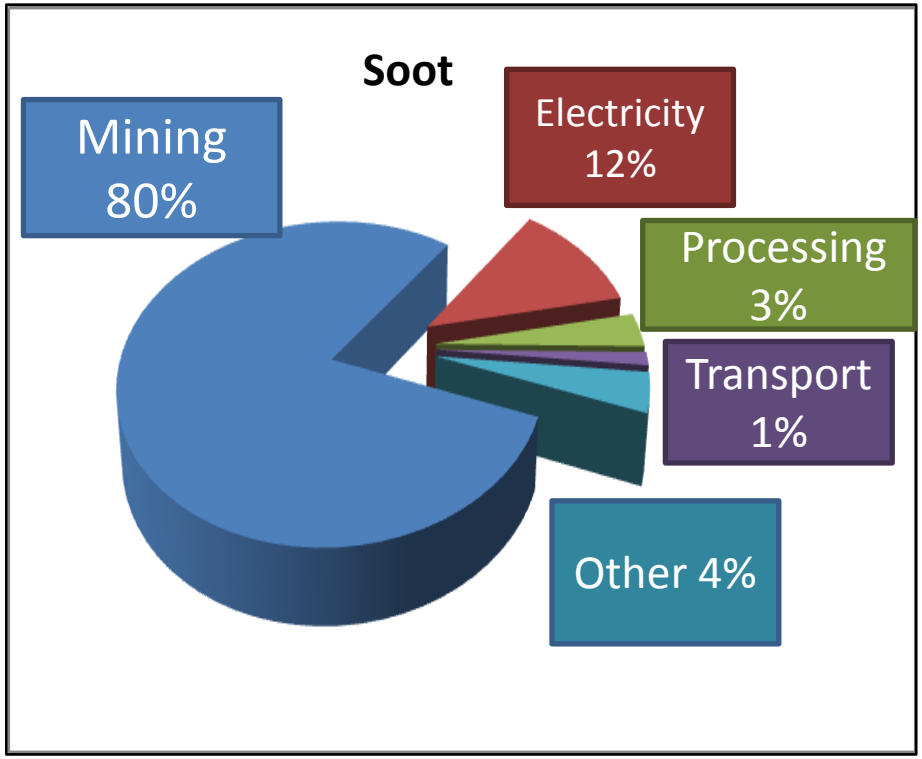
Russian Nature Supervision Agency (Rosprirodnadzor) data:

- Soot emissions from road transport by type of vehicle

Soot emissions from stationary sources in the Russian Arctic Zone

= 24235 t

Contributions by sectors



2013

19324.5 t	Mining operations
2872.1 t	Production, transmission and distribution of electricity, gas, steam and hot water
836.5 t	Processing industry
324.5 t	Transport and communication
877.9 t	Other types of economic activities

Soot emissions from transport in the Russian Arctic Zone

2013

Location	Soot, t
Murmansk region	100
Nenets Autonomous District	10
Chukotka Autonomous District	10
Yamal-Nenets Autonomous District	200
Town of Norilsk	18
Town of Vorkuta	6
City of Arkhangelsk	30
Town of Severodvinsk	10
Town of Novodvinsk	2
Total	386

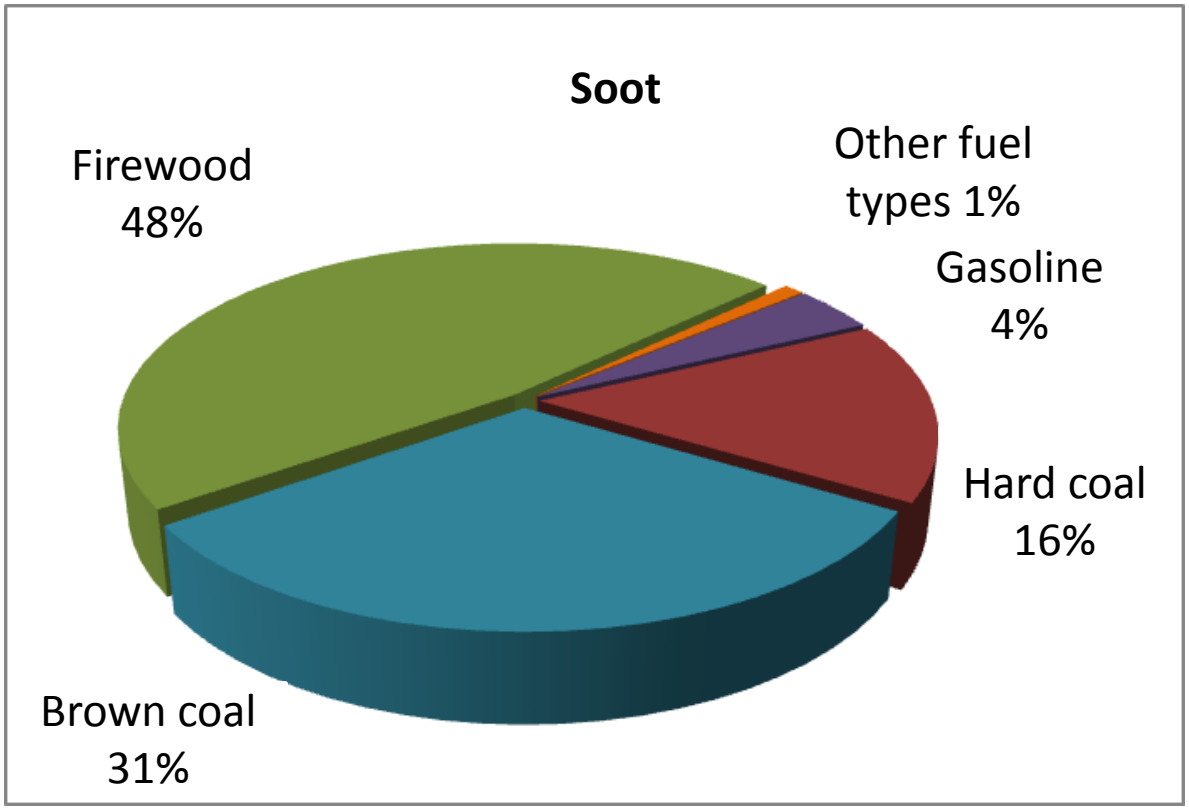
The contribution of mobile sources of this region in total emissions of soot in the Russian Arctic is about 0.2%

BC emissions assessment from residential fuel combustion in the Russian Arctic Zone

in 2013

Fuel			$PM_{2.5}$, t	BC, t
Type	Units	Use		
Gasoline	t	360693	30	2.5
Diesel	t	114794	9	0.8
Heavy oil	T	126.494	0.01	0.001
Natural gas	thousand m^3	6312.118	0.26	0.014
Associated gas	thousand m^3	10045.46	0.41	0.022
Liquefied gas	T	23754.62	1	0.1
Hard coal	T	18865.66	154	9.9
Brown coal	T	54899.65	313	20
Firewood	density m^3	54498.91	301	30.1
Other oil fuel	t o e	12.46385	0.0007	0.00006
TOTAL			**808.7**	**63.4**

Contributions of different fuels in soot emissions from residential fuel combustion in the Russian Arctic Zone



2013

BC emissions come from:

- ✓ Firewood burning – 30 t;
- ✓ Coal burning - 30 t;
- ✓ Gasoline burning – 2.5 t

BC emissions from forest fires in the Russian Arctic Zone

= 3146 t

in 2013

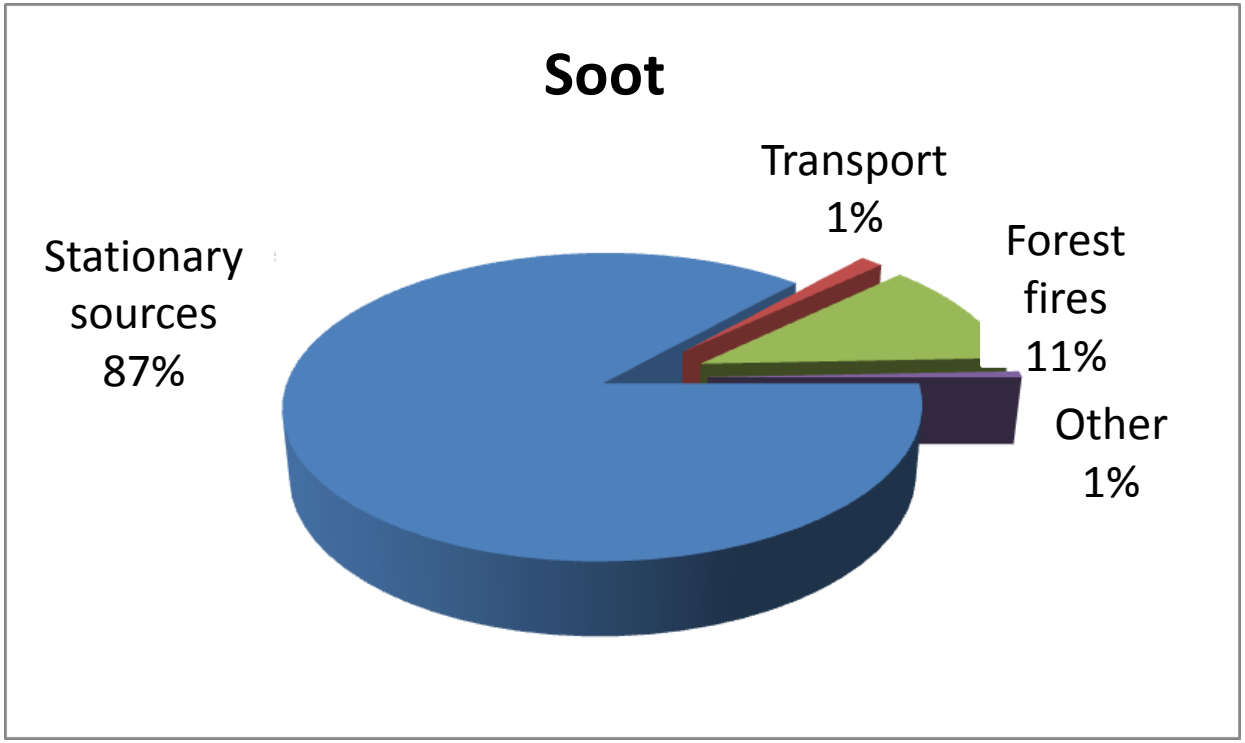
Input data	
Locations	**Forest burned , m^3**
Murmansk region	15962.9
Nenets Autonomous District	0
Chukotka Autonomous District	13198.8
Yamal-Nenets Autonomous District	3940471
Town of Vorkuta municipal area	0
Republic of Sakha	0
Krasnoyarsk krai	0
Arkhangelsk region	
City of Arkhangelsk	0
Mezensk municipal area	0
Novaya Zemlya municipal area	0
Town of Novodvinsk	0
Onezh municipal area	114
Primorsk municipal area	2295.6
Town of Severodvinsk	66.3
TOTAL	**3972108.6**

Total BC emissions in the Russian Arctic Zone

in 2013

= 27929 t

Contribution of various categories into total emissions of BC



*"Other" category includes emissions from: NFR14 1A4bi - Residential: Stationary – **63.4** t,*

*NFR14 1A4ciii – Agriculture/Forestry/Fishing: National fishing – **100** t*


Thank you
for attention!