# Russian atomospheric environment and research strategy

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## Abstract

Scientific evidence indicates that air pollutions in cities are causing significant damage to health, increasing mortality, shortening life expectancy and affecting the healthy development of children. In accordance with the Constitution of the Russian Federation everybody has a right to a favorable environment. For constitutional rights of Russian citizen's realization the Federal Law on Environmental Protection has been adopted. According to this law the subjects of environmental protection against pollution, depletion, degradation, damage, destruction and other negative effects resulting from economic and another activity are the "the atmospheric air, the atmosphere ozone layer and the outer space adjacent to the Earth". The Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) is an official Russian body responsible for ambient air quality monitoring.

The air quality monitoring network in Russia covers 691 stations in 258 towns; among those, Roshydromet performs regular monitoring at 624 stations in 227 towns. Three main air quality indices are used to assess air pollution: an air pollution index (API), a standard index (SI) and maximum exceeding recurrence (MER) over maximum permissible concentration (MPC).
Pollution levels are considered to be

- increased at API = 5 – 6, SI<5, MER<20%,
- high at API = 7 – 13, SI = 5 – 10, MER = 20 – 50% and
- extremely high at API = 14-…, SI>10, MER>50%.

Air quality is determined on the basis of the highest index.

In 201 towns (corresponding to 78% of towns with monitoring), the average annual concentration of at least one pollutant exceeds 1 MPC. The population of these towns is 65,4 million. Air quality assessment in Russia is based upon maximum permissible long-term and short-term concentrations, which has been defined by the Ministry of Health for more than 500 substances.

Russian academy of Sciences (RAS) is the most powerful and recognized research organization which unites 454 institutions. Study of atmosphere is the field of research of high priority for RAS and 45 institutions fulfill now about 100 research projects of atmosphere study.

Roshydromet besides monitoring of environment is carrying out scientific program. Twenty research institutes have been founded by Roshydromet. Very often institutes of RAS and Roshydromet carry out joint project on atmosphere study, funded by Federal budget.
The main subjects in atmospheric research in Russia are as next:

- studying and forecasting hydrometeorological and heliogeophysical processes in an atmosphere - estimation of the changes of a climate;
- research in Arctic region and Antarctic continent;
- studying ozone layer of the Earth;
- making an estimation forecast of scales and consequences of pollution of an environment;
- development of devices and systems for an monitoring network;
- development of technologies of the collecting, processing and storage of the information.