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THEORETICAL AND METHODOLOGICAL FRAMEWORK OF SPATIAL DEVELOPMENT

Organization of Systemic Monitoring of the Macroregions' Development: Case Study of the Russian Arctic

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Abstract—In connection with targeted distinguishing of the territories expanding beyond the borders of one or more federal subjects as objects for state regulation, the concept of a macroregion is clarified. The specific features of a macroregion as a holistic object of statistical observation and monitoring are demonstrated using specific examples. Multiple regulatory acts governing the organization of state monitoring are analyzed. A case study of Russia's Arctic zone is used to discuss the tasks and substantiate recommendations for organization of systemic monitoring of the macroregions' current state and development.

Keywords: Russia's Arctic zone, macroregion, monitoring, statistical observation, strategic planning
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FORMULATION OF THE PROBLEM

The State Program for Socioeconomic Development of the Arctic Zone of the Russian Federation until 2020 poses the task of organizing systemic monitoring system and creating a separate object of statistical observation. Although such a problem has not been directly formulated for other macroregions (e.g., Siberia, the Far East, and the Baikal region), this does not reduce the relevance, public significance, and non-triviality of its solution. Underestimation of this in the public administration system and in the scientific community continues to exist even after the very concept of "macroregion" has established itself as the designation of one of the objects of strategic planning.

The evolution of organizing regional monitoring should be noted. The first methodological developments took place in the 1990s [2, 4, 5]. In the last 15 years, an original methodological approach to regional monitoring was developed by the Institute for Socioeconomic Development of Territories, Russian Academy of Sciences. This approach was used to study the levels of modernization in Russia's regions, the living conditions of the population, the state and quality of labor potential, the economic situation, the health and social well-being of the population, and the formation of small and medium-sized businesses [6][1].

[1] More detailed information on the monitoring results can be found on the pages of the journal *Economic and Social Changes: Facts, Trends, and Forecast* and on the website http://www.vscc.ac.ru/.

However, in regional statistics, and in the organization of regional monitoring, a particular Aristotelian postulate has been forgotten: the whole is irreducible to the sum of its parts and therefore has special properties. The discovery of this feature is a difficult methodological task. Probably, therefore, statistical research and monitoring of macroregions as integral territorial communities, where simultaneously and often multidirectionally a lot of sociopolitical, social, economic, and other processes take place, each of which can become an object of local monitoring, and the systemic integration of obtained data is required to reveal the links of these processes. The need for methods and technologies of macroregional statistical research and monitoring is increasing, since not only scientific, but also economic and managerial interests increasingly go beyond the boundaries of a specific federal subject. It should be borne in mind that when studying and fixing the characteristics of the same spatial objects, statistics and monitoring are not identical, neither cognitively nor methodologically. According to I.P. Farman, "In contrast to statistics and sociological surveys, monitoring is not only a collection of ascertaining data, it also has the feature that because of its focus on monitoring a process, it is more effective, directly related to identifying new opportunities and ensuring the conditions for their implementation; it is also even related to strategies. After all, the "power of fact" and the data obtained make it possible to move away from a static picture of ideas, play a constructive role, and implement a new goal-oriented action. This

is the real result and ultimate goal of monitoring. In monitoring, it is important not only to reveal what is, but also to know what should be. The distinction between fact and norm is the main characteristic of monitoring. Fact must comply with strictly defined criteria and standards, which are used for evaluation and specially developed for this purpose. Their application in research requires conducting comparative analysis of the actual situation with existing ... regulations and standards [8]." However, despite these and other differences in statistics and monitoring, there are far more semantic similarities and direct informational crossovers.

In this regard, this article attempts to provide a systemic understanding of the essence and organizational and methodological aspects of statistical research and monitoring of the macroregions' territories. To illustrate this, we provide a case study of the Arctic macroregion. Based on the proposed clarified interpretation of the basic concept of macroregion, we successively analyze the specific character of the macroregion as an integral object of statistical observation and monitoring, the state statistics system, problems of isolating Russia's Arctic zone as a separate object of statistical observation, the regulatory bases for organization of monitoring, the practice of organizing problem-objective monitoring, and the ways for organizing systemic monitoring in Russia's Arctic zone. In conclusion, we formulate general guidelines for the organization of statistical and monitoring work on the macroregional level.

MACROREGION AS A SPECIAL OBJECT OF STATISTICAL OBSERVATION AND MONITORING

Until recently, the concept of macroregion had no regulatory certainty. In scientific publications and political rhetoric, it is most often designated a superregional (if the region is a federal subject) territory, understood as the result of economic zoning from the Soviet period. The allocation of such categories was based on the notion of common features of economic specialization typical of vast territories; this specialization underlies the formation of territorial industrial complexes, interregional economic interactions, etc. In post-Soviet Russia, administrative and managerial motives dominate the formation of macroregions: on such bases, e.g., territorial structures of federal districts were created.

The statistics of the 2000s, without making either economic areas or federal districts, the subject of specially organized observations nevertheless began to allocate the latter in separate headings of standard descriptions, e.g., summing up in an elementary way the parameters of regions included in districts. The situation did not change after the federal law on strategic planning introduced the regulatory concept of macroregion, treating it as "part of the territory of the Russian Federation that includes the territories of two or more federal subjects, the socioeconomic conditions within which require the allocation of separate directions, priorities, goals, and objectives of social and economic development in the elaboration of strategic planning documents." It should be noted that this definition unjustifiably narrows the grounds on which macroregions are allocated, some general social and economic conditions. However, there are many grounds for such allocations, and apparently the interests of state administration should be considered the main one.

Therefore, we propose a more precise interpretation of the concept of macroregion, taking into account the practice of creating such spatial structures in Russia and other countries: *a macroregion is a part or several parts of a country's territory allocated to achieve a specific national goal (geopolitical, external economic, environmental, etc.) and that go beyond the boundaries of one administrative–territorial unit (federal subject, land, state, province, etc.) and is located on the territory of several administrative–territorial units.* In the proposed definition, targeted macroregion appointment is the most significant indication. It creates the possibility of establishing their configurations both as a total set of territories of several administrative–territorial units and as individual components of such units. This determines the specifics of the statistical description and monitoring of the situation in a macroregion.

The validity of this interpretation, which conceptually and in reality covers both the Non-Chernozem zone, the Baikal–Amur mainline, the Arctic zone, and a number of other territories, has been confirmed by analysis of the underlying causes and motivations for the formation of Russian macroregions. Let us cite as an example the space for the programmatic development of the Far East and the Baikal region. This vast area has been made into a special subject of state regulation in connection with the adoption of a special state program. The mentioned territory in the program is defined as a macroregion, and the goal of its formation as a subject of the state program is a radical change in the economic, demographic, and infrastructural situation in Russia's national and geopolitical interests. For this, both the use of traditional mechanisms for state regulation of territorial development and the formation of territories for advanced development are envisaged[2].

In the regulatory documents on this question, the problems of organizing statistical observations, monitoring, control, and analysis often converge. For example, in the above-mentioned program of socioeconomic development of Russia's Arctic zone, in the

[2] Here we should note the recently published book on economic problems of this macroregion [1], as well as two articles reflecting different views on the prospects for territories of advanced development [3, 7].

list of basic measures, the second measure is formulated as "the introduction of mechanisms for monitoring and comprehensive analysis of the state and prospects for the development of key economic directions in Russia's Arctic zone."[3] The expected results of this event should be "the allocation of Russia's Arctic zone into a separate object of statistical observation, the implementation of the possibilities of a unified state integrated statistical resource, and the increase in the efficiency of other state programs of the Russian Federation implemented in Russia's Arctic zone."

The main directions of the implementation of this measure are organizing the obtaining of complete, reliable, and timely official statistical information on social, economic, demographic, environmental, and other social processes; creating on the basis of departmental information resources a single state integrated statistical resource; and providing interested users of statistical information with rapid access to it. Implementation also includes monitoring of the results of a range of other state programs in Russia's Arctic zone in order to work out proposals for training human resources to improve the effectiveness of state policy carried out in the Arctic zone.[4]

The macroregion as a *specially* formed part of the country, which includes part of the spatial, economic, infrastructural, demographic, natural-resource, ecological, and ethnocultural potential of the country, regions, and municipalities; it is a specific object of statistical observation and monitoring. Their task should not only be mechanical summation of the traditionally used statistical and monitoring parameters, but first and foremost fixation of the parameters characterizing the goals of creating a macroregion, declared in the relevant government programs, resolutions of the Russian Federation Government, and other regulatory documents. At the same time, one more nontrivial task arises: to integrate and interpret the data of the numerous already existing statistical and monitoring systems necessary for characterizing the initial state and process of achieving the goals of formation of the macroregion.

ORGANIZATION OF MONITORING WITHIN THE CONTEXT OF GOVERNMENTAL SOLUTIONS ON STRATEGIC PLANNING

Federal Law on Strategic Planning no. 172-FZ (June 28, 2014) for the first time raised monitoring to the status of an obligatory component of state policy. The very first chapter of this law states that it regulates relations arising between participants in "forecasting, planning, and programming the social and economic development of the Russian Federation, federal subjects and municipalities, sectors of the economy and spheres of state and municipal management, as well as ensuring the national security of the Russian Federation," including in the issues of "*monitoring* (our italics) and control of the implementation of strategic planning documents." It also defines the essence of, first, monitoring and control of the implementation of the specified documents: these are "the participants' activities in strategic planning for comprehensive assessment of the progress and outcome of the implementation of strategic planning documents, as well as assessing the interaction of participants of strategic planning in respect of the principles of strategic planning and their implementation of the powers in the sphere of socioeconomic development of the Russian Federation and ensuring the national security of the Russian Federation." Secondly, the law defines the essence of strategic planning documents: "documented information developed, reviewed, and approved (affirmed) by the government authorities of the Russian Federation, state authorities of subjects, local governments, and other participants in strategic planning."

The spheres of authority for the organization of monitoring are divided into levels of power. According to Article 9 of law no. 172-FZ, the President of the Russian Federation *determines the procedure* for monitoring and controlling the implementation of strategic planning documents on issues under his jurisdiction[5]. Direct *execution* of monitoring and control over the implementation of strategic planning documents is entrusted to federal executive bodies, executive bodies of state power of federal subjects, as well as to local government bodies when it concerns issues under their jurisdiction. Article 14 of the law presupposes the existence of a special *information base* of monitoring in the form of a federal information system for collecting and processing the data necessary to support the adoption of managerial decisions in public administration based on apportioned information contained in federal, regional, and municipal information resources and systems, on official state statistics data, and on unencrypted information required for this. It is this system that should be used for information support of monitoring and control of the implementation of strategic planning documents, achieving socioeconomic development indicators, ensuring national security, and even monitoring the effectiveness of the participants in strategic planning.

[3] Note that monitoring is supposed to be organized in relation to *key areas of the economy* and its result is information about many other aspects of life in Russia's Arctic zone.

[4] It is also expected to "affect the indicators whose composition will be determined within the framework of the interdepartmental commission for the implementation of state policy in the Arctic zone of the Russian Federation after making Russia's Arctic zone into a separate object of statistical observation."

[5] So, in accordance with Article 18 of the law, the President of the Russian Federation determines "the procedure for monitoring the implementation of the national security strategy of the Russian Federation and the achievement of indicators of the state of national security of the Russian Federation."

We draw attention to the fact that the text of the law no. 172-FZ contains the stable combination of words "monitoring and control of the implementation of strategic planning documents." In this regard, it would be logical to assume that monitoring and control are related by the same functions, tasks, end use, and so on. In fact, this is not so, and Chapter 12 of the law distinguishes these evaluation processes. The objectives of monitoring are "to improve the effectiveness of the strategic planning system implemented on the basis of integrated assessment of the main socioeconomic and financial indicators contained in strategic planning documents, as well as to increase the effectiveness of the participants in strategic planning in achieving the planned indicators of socioeconomic development of the Russian Federation, federal subjects, and municipalities in specified terms and ensuring the national security of the Russian Federation." These objectives are then broken down into monitoring tasks:

(1) collection, systematization, and generalization of information about the socioeconomic development of the Russian Federation, federal subjects, and municipalities and ensuring the national security of the Russian Federation;

(2) assessment of the extent of achieving the planned objectives of socioeconomic development and ensuring the national security of the Russian Federation;

(3) evaluation of the performance and effectiveness of strategic planning documents developed in the framework of planning and programming economic sectors and spheres of state and municipal management;

(4) assessment of the impact of internal and external conditions on the planned and actual levels of achieving the socioeconomic development goals of the Russian Federation, federal subjects, and municipalities and ensuring the national security of the Russian Federation;

(5) assessment of compliance with planned and actual deadlines and results of implementing strategic planning documents and resources required for their implementation;

(6) assessment of the level of socioeconomic development of the Russian Federation, federal subjects, and municipalities and the state of the national security of the Russian Federation, carrying out the analysis, identifying possible risks and threats, and taking timely measures to prevent them;

(7) developing proposals to improve the effectiveness of the strategic planning system.

Each of the monitoring tasks listed in the law, if considered in essence and seriously, presupposes a huge amount of work requiring specially trained specialists and considerable material and financial resources (a typical example is Task 6, which is in fact commensurate with the scale of activity of the Russian Federation Government).

With reference to control of the implementation of strategic planning documents, the goal in the law no. 172-FZ is not indicated and the tasks are immediately named: "(1) collecting, systematizing, and summarizing information on the socioeconomic development of the Russian Federation, federal subjects, and municipalities; (2) assessing the quality of strategic planning documents developed within the framework of goal-setting, forecasting, planning, and programming; (3) assessing the effectiveness and efficiency of implementation of decisions taken in the strategic planning process; (4) assessing the achievement of the goals of the socioeconomic development of the Russian Federation; (5) assessing the impact of internal and external conditions for the planned and actual levels of achieving the goals of the socioeconomic development of the Russian Federation, and (6) developing proposals to improve the effectiveness of the strategic planning system." It is easy to see parallels with the monitoring tasks in many of the above positions. In this regard, it can be assumed that the developers of the law and those who approved it probably preferred a single organizational structure for monitoring and control[6].

PRACTICE OF ORGANIZATION OF PROBLEM- AND OBJECT-ORIENTED MONITORING AND TASKS OF ORGANIZATION OF SYSTEMIC MONITORING IN THE ARCTIC ZONE OF THE RUSSIAN FEDERATION

Today, many types of monitoring are carried out in Russia: state, departmental, and corporate monitoring—countrywide, in individual federal subjects, in municipalities, and in individual organizations. All of these types of monitoring are problem- or object-oriented: environmental, banking security, education, etc. In organizing monitoring at the macroregional level, including in Russia's Arctic zone, the experience of creating a number of state monitoring structures already covering Russian macroregions can be useful.

[6] The practical way out of all this enormous activity, unfortunately, is described in terms of "it seems" and "it is reflected." So, in accordance with Art. 12 of the law no. 172-FZ, all the information obtained when solving the problems of monitoring is *reflected* at the federal level: in the annual report of the Russian Government's performance, in the consolidated annual report on the implementation and on the evaluation of the efficiency of the RF government programs, and in reports on the implementation of the action plans of federal bodies of the executive authority; at the level of the federal subject: in the annual report of the highest official of the federal subject on the results of the activities of the highest executive body of state power in the region and in the consolidated annual report about the implementation and evaluation of the effectiveness of state programs in the region; at the municipal level: in similar annual reports of the local level.

The most representative example of state institutionalization of countrywide monitoring activities is the Federal Financial Monitoring Service (Rosfinmonitoring), whose activities are headed by the President of the Russian Federation (with his own administrative apparatus headed by a director)[7]. This service exercises its authority directly and/or through its territorial bodies in cooperation with other federal executive bodies, executive authorities of federal subjects, local self-government bodies, and public associations and organizations. The functions of financial monitoring are specific[8]; hence it is of great interest to consider the organization of collection, processing, and analysis of information on operations (transactions) with funds or other property subject to control in accordance with Russian law. For such control, information on operations (transactions) with funds or other property is constantly analyzed, including additional information on transactions by customers of organizations with cash or other property, as well as information about the flow of funds to accounts of customers of credit institutions[9]. In line with the subject of this article, it is particularly important for Rosfinmonitoring to create *a unified information system*, to formulate and maintain a federal database, and to ensure the procedural unity and coordinated functioning of information systems in the established field of activity.

In terms of practical use of monitoring in public administration, the organization of monitoring of law enforcement in accordance with the decree of the President of the Russian Federation is indicative[10]. The experience of its organization can be extremely useful for executing the tasks of socioeconomic development and ensuring the national security of Russia's Arctic zone. Monitoring of law enforcement[11] presupposes "integrated and planned activity carried out by federal executive bodies and state authorities of federal subjects within the scope of their authority to collect, summarize, analyze, and assess information to ensure acceptance (publication), amendment, or invalidation (cancellation) of regulatory legal acts of the President of the Russian Federation, the Russian Federation Government, federal executive bodies, other state bodies, state authorities of federal subjects, as well as municipal legal acts, in cases provided for by federal laws and acts, annual addresses, instructions of the President of the Russian Federation, the main activities of the Russian Federation Government for the relevant period, and programs for the socioeconomic development of the country." Meanwhile, federal executive bodies, other federal state bodies, and public authorities of federal subjects, when preparing proposals for a project of the monitoring plan, should take into account the recommendations of civil society institutions and the media for accepting (issuing), changing, or invalidating (cancelling) legislative and other regulatory legal acts received by the relevant body. The plan itself is annually approved by the Russian Federation Government, which submits reports on the results of monitoring to the President of the Russian Federation, who then may instruct state bodies and organizations, as well as officials, to implement the proposals contained in the report.

The state environmental monitoring has the widest coverage, which is of particular importance for assessing problematic situations in Russia's Arctic zone and for adjusting earlier decisions and adopting new ones. In accordance with Article 63 of the Federal Law On Environmental Protection,[12] this type of monitoring should be carried out "within a unified system of state ecological monitoring (state environmental monitoring) by federal executive bodies and state authorities of federal subjects... through the creation and support of operations of observational networks and information resources within the subsystems of this unified system." The objectives of the environmental monitoring system in the federal law are (1) regular monitoring of the state of the environment, including components of the natural environment, natural ecological systems, processes and phenomena occurring in them, and changes in the state of the environment; (2) storage and processing (generalization, systematization) of information on the state of the environment; (3) analysis of the information received in order to detect changes in the state of the environment in a timely manner under the impact of natural and/or anthropo-

[7] See Presidential Decree no. 808 of June 13, 2012, Issues of the Federal Service for Financial Monitoring and document approved by the same decree: Regulations on the Federal Service for Financial Monitoring (as amended on December 21, 2013, and January 20, 2015).

[8] In the Regulations on the Federal Service for Financial Monitoring, functions of this service include "counteraction against legalization (laundering) of criminal income and financing of terrorism, development of state policy and normative legal regulation in this sphere, coordination of relevant activities of other federal executive bodies, as well as functions of a national center for the assessment of threats to national security resulting from legalization of criminal income, financing terrorism, and proliferation of weapons of mass destruction and the development of measures to counter these threats" (http://base.garant.ru/70188802/#friends#ixzz40LUprMTA).

[9] Naturally, for the implementation of these functions, Rosfinmonitoring obtained the right to request and receive in the established order and free of charge all necessary documents, materials, and information.

[10] See Decree of the President of the Russian Federation of May 20, 2011, no. 657 On Monitoring of Law Enforcement in the Russian Federation (as amended on July 25, 2014 no. 529).

[11] See Statute on Monitoring of Law Enforcement in the Russian Federation, approved by Decree of the President of the Russian Federation of May 20, 2011 no. 657, On Monitoring of Law Enforcement (as amended on July 25, 2014 no. 529).

[12] See Federal Law on Environmental Protection no. 7-FZ of January 10, 2002; Federal Law no. 219-FZ of July 21, 2014 (as amended on December 29, 2015), On Amendments to the Federal Law on Environmental Protection and Certain Legislative Acts of the Russian Federation (as amended, valid starting from January 1, 2016).

genic factors, assessing and forecasting these changes; (4) provision of state authorities, local self-government bodies, legal entities, individual entrepreneurs, and citizens with information on the state of the environment.

To execute the above tasks, 13 independent subsystems have been additionally allocated in the system of state environmental monitoring by the federal law On Environmental Protection[13]: state monitoring of air; state monitoring of radiation in the Russian Federation; state monitoring of lands; state monitoring of fauna; state forest degradation monitoring; state monitoring of forest reproduction; state monitoring of subsoil resources; state monitoring of waterbodies; state monitoring of aquatic biological resources; state monitoring of inland sea waters and territorial seas of the Russian Federation; state monitoring of the exclusive economic zone of the Russian Federation; state monitoring of the continental shelf of the Russian Federation; and state monitoring of hunting resources and their habitats.

Each of these subsystems regulates the list and procedures for collecting relevant information, methods for its processing, formulating the results of the analysis, assessing deviations from the norm, and preparing recommendations for their correction. The substantive work of each subsystem is additionally regulated by a federal law, e.g., the Law on Subsoil Resources. The functioning of these state ecological monitoring subsystems ultimately reveals the state of all components of the natural resources of Russia's Arctic zone: air and water, objects of the animal world and forests, land and subsoil, the continental shelf, and everything within the maritime economic zone.

The most important institution of state environmental monitoring is the state data fund created and maintained by a federal executive authority authorized by the Russian Federation Government. This is an information system that collects, processes, and analyzes data; it also accumulates information contained in databases of the subsystems of the unified state environmental monitoring system, the results of industrial monitoring in the field of environmental protection and state environmental oversight, and state registration data for objects negatively impacting the environment.

As noted above, any monitoring is not only a statement but also a *comparison* of the observed situation with the characteristics of the previous, objectively similar, reference, etc. or situation fixed by regulation. An example is the standards of industrial environmental monitoring, approved and enforced by the Order of the Federal Agency for Technical Regulation and Metrology no. 708-st of July 9, 2014[14] and which implements the norms of the law On Environmental Protection. This monitoring covers "natural, technogenic, or natural and technogenic objects or parts thereof within which regular monitoring of the environment under a certain program is carried out to control its state and analyze the processes occurring therein for timely detection and prediction of changes and evaluation." Such standardized monitoring in conditions of dispersed and environmentally faulty subjects located and functioning in Russia's Arctic zone could and should become one of the mandatory components of systemic Arctic monitoring.

When organizing system monitoring in Russia's Arctic zone, it is necessary to take into account the availability of resource-efficient and effective *international and national monitoring activities* in the circumpolar Arctic. Among the institutes that carry out this activity, the best known are the Arctic Council (which implements a variety of programs to study the environment in the Arctic Ocean and its impact areas[15]), the OSPAR Commission[16] (the participating countries carry out coordinated Arctic monitoring programs with annual reports on the state of and change in the quality of the environment), the Helsinki Commission (which develops concepts and recommendations for protection of the environment in the Arctic and monitors their implementation by participating countries taking into account the requirements of national legislation), IOGP (the International Association of Oil and Gas Producers, which collects and summarizes information on the state of the environment in the Arctic and, based on this, develops guidelines for environmental monitoring and conservation activities by the members of the association themselves).

Not only are the results of the activities of these structures valuable for domestic practice, but also their organization and functioning, especially as regards the mandatory practical use of their recommendations. In 2014–2015, analytical reports on the content and practical capabilities of foreign Arctic monitoring structures were released by Deloitte, an international

[13]As amended in the mentioned Federal Law of March 12, 2014 no. 27-FZ.

[14]See: *Natsional'nyi standart Rossiiskoi Federatsii "Proizvodstvennyi ekologicheskii standart"* (National Standard of the Russian Federation "Production Environmental Standard"), Moscow: StandardInform, 2014, pp. 1–9. This standard used normative references to *GOST* (State Standard) *8.589-2001: State System for Ensuring Uniformity of Measurements. Control of Environmental Pollution. Metrological Support. Basic Provisions*; *GOST* (State Standard) *R 56062-2014: Industrial Environmental Control. General Provisions,* and *GOST* (State Standard) *R 56063-2014: Production Environmental Monitoring. Requirements for Industrial Environmental Monitoring Programs.*

[15]For example, monitoring on the Norwegian shelf is carried out in accordance with the Guidelines for the Development of Offshore Oil and Gas Fields approved by the Arctic Council. On its basis, in 2011, a regulatory document was published in Norway entitled Guidelines for Monitoring the Marine Environment, which detailed the necessary scope of monitoring, the list of controlled parameters, research methods, the principles for selecting the structure of the network of observation stations, and the sampling frequency.

[16]OS, Oslo; PAR, Paris.

consulting and auditing company that, along with PricewaterhouseCoopers, Ernst & Young, and KPMG, makes up the "big four" auditing companies[17]. Results of monitoring the state of the environment in the Arctic, production and infrastructure facilities, and public health under the impact of climate change should especially be noted. Recently, these problems have become the subject of hundreds of domestic and foreign studies and publications, from which, as an example, we have identified several of the most representative works of the last two decades.[18]

CONCLUSIONS

The specificity of organizing of complex monitoring of the state and development of macroregions is determined by their targeted orientation to informational and analytical support of the fulfillment of state tasks for the allocation of the macroregion as an object of state regulation. This requires not only the use of information capabilities of already ongoing state and other types of monitoring, but also the organization of obtaining new statistical data (including corporate) and additional monitoring. Of particular importance is identifying in the course of such integration the nature and strength of the links between the data of particular types of monitoring. Naturally, all this can be done only if there is a specially created and resource-rich monitoring system with broad powers.

As applied to the organization of statistical observation as a separate object and the organization of monitoring in Russia's Arctic zone, we have developed a number of proposals to the draft law On the Development of the Arctic Zone of the Russian Federation. They concern both the conceptual apparatus and concrete measures in this area and include the following provisions.

(1) State systemic monitoring of the state and development of Russia's Arctic zone (SMART) should be interpreted as a specially organized integrated and planned activity to collect, summarize, analyze, and assess information on the implementation of state decisions on the development of Russia's Arctic zone; to ensure national security in its territories; and to prepare on this basis relevant proposals to the Russian Federation Government, federal executive bodies, state authorities of federal subjects, and municipalities. SMART should be based on the consolidated databases of existing state and other monitoring systems, including international and foreign.

(2) The state status of SMART implies its organization and implementation by a specialized structural subdivision of an authorized federal executive body by consolidating the activities of existing and additionally organized observation networks and information subsystems.

(3) For this purpose, this executive authority will form the SMART State Data Foundation, a federal information system for the collection, processing, analysis, and storage of data contained in the databases of all information subsystems of SMART and manages its activities. The information of this fund should be provided for subsequent nonprofit use to authorities of all levels, legal entities, individual entrepreneurs, and citizens when planning and implementing economic and other activities.

(4) The information subsystems of SMART should be organized as independent units in the structure of existing national state information systems and include the following subsystems: monitoring of national security in Russia's Arctic zone; monitoring of the implementation of the State Program for Social and Economic Development of the Arctic Zone of the Russian Federation and other government decisions relevant to the development of this zone; law enforcement monitoring; and financial monitoring. In state environmental monitoring, the following information subsystems are needed for Russia's Arctic zone: air quality monitoring; radiation monitoring; land moni-

[17]See: Features of Environmental Monitoring on the Arctic Shelf. February 2015. http://www2.deloitte.com/content/dam/Deloitte/en/Documents/Operation/russian/en_deloitte_environmental_monitoring.pdf; International Practice of Environmental Monitoring in the Arctic shelf. November 2014. https://www2.deloitte.com/content/dam/Deloitte/en/Documents/Operation/russian/en_mejdynarodnaya-praktika-ecologicheskogo-monitoringa-shelf-arktiki.pdf.

[18]Anisimov, O.A. and Belolutskaya, M.A., Assessment of the impact of climate change and permafrost degradation on the infrastructure in the northern regions of Russia, *Meteorol. Gidrol.,* 2002, no. 6, pp. 15–22; Anisimov, O.A. and Lavrov, S.A., Global warming and permafrost thawing: The risk assessment for production facilities of the fuel and energy sector, *Tekhnol. TEK,* 2004, no. 3, pp. 78–83; *Vliyanie global'nykh klimaticheskikh izmenenii na zdorov'e naseleniya rossiiskoi Arktiki* (The Impact of Global Climate Change on the Health of the Population of the Russian Arctic), Revich, B.A., Moscow: United Nations Office in the Russian Federation, 2008; *Vozdeistvie izmeneniya klimata na rossiiskuyu Arktiku: Analiz i puti resheniya problemy* (Impact of Climate Change on the Russian Arctic: Analysis and Ways to Solve the Problem), Moscow, WWF Rossii, 2008; *Human Development Report 2007/2008. Fighting Climate Change: Human Solidarity in a Divided World,* UNDP, 2007; Porfiriev, B.N., *Priroda i ekonomika: Riski vzaimodeistviya (Ekologo-ekonomicheskie ocherki)* (Nature and Economy: Risks of Interaction (Ecological and Economic Essays)), Moscow: Ankil, 2011; Revich, B.A., Climate change alters human health in Russia, *Stud. Russ. Econ. Dev.,* 2008, vol. 19, no. 3, pp. —311–317; Anisimov, O.A., Vaughan, D.G., Callaghan, T.V., Furgal, C., Marchant, H., Prowse, T.D., Vilhjalssonand, H., and Walsh, J.E., 2007: Polar regions (Arctic and Antarctic), in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report on the Intergovernmental Panel on Climate Change,* Parry, M.L., Canziani, O.F., Palutikof, J.P., Van der Linden, P.J., and Hanson, C.E., Eds., Cambridge: Cambridge University Press, 2007, pp. 653–685; ACIA, *Impact of Warming Arctic: Arctic Climate, Impact Assessment,* Cambridge University Press, 2004; *Climate Change and Human Health: Risks and Responses,* McMichael, A.J. et al., Eds., Geneva: WHO, 2003; *Climate Change 2007: Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernment Panel of Climate Change,* Cambridge, 2007.

toring; wildlife monitoring; forest degradation monitoring; forest reproduction monitoring; subsoil monitoring; monitoring of waterbodies; monitoring of aquatic biological resources; monitoring of inland sea waters; monitoring of Russia's exclusive economic zone in the waters of Russia's Arctic zone; monitoring of the continental shelf; monitoring of hunting resources and their habitats.

(5) Each of the SMART subsystems should regulate the list and procedures for collecting relevant information and methods for processing, formulating the results of the analysis, evaluating deviations from the norm, and preparing recommendations for their correction. SMART should have mechanisms for integration of this information and interaction of the subsystems that accumulate it.

It seems that the given example of regulatory fixing of requirements for the organization of systemic monitoring of Russia's Arctic zone can be detailed and used in the development of macroregional structures for various special purposes.

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