

CURRENT STATE OF THE PROBLEM OF RESEARCH OF DANGEROUS NATURAL PROCESSES IN THE EASTERN CAUCASUS

A.L. DROZDOV^{1,2}

¹ FSBSE «Federal scientific center
«Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences»
Center of Geographical Researches
360010, KBR, Nalchik, 2 Balkarova str.
E-mail: cgrkbncran@bk.ru

² Federal State Budgetary Educational Institution of Higher Education
«Kabardino-Balkarian State University named after H.M. Berbekov»
360000, KBR, Nalchik, 173 Chernyshevsky str.
E-mail: yka@kbsu.ru

The work is devoted to solving one of the problems of integrated monitoring of natural hazards (avalanches, mudflows, landslides, taluses, floods, etc.), carried out at the Geographic Research Center of KBSC RAS in the study area since 2011, namely: the task of assessing the exploration level of the territory on the research problem. To determine the natural hazards of the territory, such an assessment is necessary. On the one hand, this is the identification of the degree of knowledge of the territory susceptibility both for individual kinds of processes and those in the complex. On the other hand, it is the identification of the degree of influence of hazardous processes both on the landscape components and on the landscape as a whole. This formulation of the problem will make it possible to carry out zoning of the territory according to the degree of knowledge and identify unresolved issues for regions with varying degrees of knowledge. On the basis of zoning according to the degree of knowledge it will be possible to develop a scientifically grounded Program for monitoring hazardous processes with a complex of field work on those types of hazardous processes that are insufficiently studied in this region. When assessing the level of knowledge, the methodology developed by the Center's staff is used. This technique was tested earlier during field research in the Western and Central Caucasus. The article presents the main bibliographic sources for the study area for the period from 2001. The analysis of the level of knowledge is presented both for individual administrative entities (republics), and for individual types of hazardous processes. Moreover, the article presents the literature on endogenous processes, the impact of which often leads to the activation of the exogenous processes themselves. In general, it can be said that the study area is extremely unevenly studied both as an area and the type of hazardous processes. Therefore, in order to obtain correct assessments of natural hazards, further research is needed.

Keywords: hazardous exogenous processes, monitoring, knowledge, exposure of the territory to hazardous natural processes.

REFERENCES

1. Kyul E.V., Korchagina E.A., Borisova N.A., Dzhappuev D.R., Khutuev A.M. *Issledovanie i chislennaya integralnaya ocenka na osnove GIS-tekhnologij podverzhennosti opasnym ekzogenny`m processam geosistem Central`nogo Kavkaza* [Research and numerical integrated assessment based on GIS technologies of the vulnerability of geosystems of the Central Caucasus to dangerous exogenous processes] / *Otchet po NIR ot 01.01.2015 goda* (AAA-A16-116020350226-4). [Scientific Research report dated 01.01.2015]. Nalchik, 2018. 178 p.
2. *Geoekologicheskie issledovaniya na territorii Kabardino-Balkarskoy Respubliki za period s 2012 po 2018 gody* [Geoecological studies in the territory of the Kabardino-Balkarian Republic for the period from 2012 to 2018]. Volum 1. *Prostranstvennyye zakonomernosti obrazovaniya opasnykh ekzogennykh protsessov* [Spatial patterns of the formation of dangerous exogenous processes] // *Pod obshhej red. Kyul` E.V.* Nalchik: Izd-vo KBNC RAN/under the editorship of Kyul E.V., KBSC RAS Publishing House/, 2019. 170 p.
3. Kyul E.V. *Otsenka podverzhennosti territoriy Respubliki Ingushetiya i Chechenskoy Respubliki opasnym prirodnyim protsessam* [Assessment of the vulnerability of the territories of

the Republic of Ingushetia and the Chechen Republic to dangerous natural processes] // Grozny natural science bulletin. Vol. 5. № 2 (20). 2020. Pp. 30–41. DOI:10.25744/genb.2020.20.2.004

4. *Kadastr selevoy opasnosti Yuga evropeyskoy chasti Rossii* [Cadastre of mudflow hazard in the South of the European part of Russia] / N.V. Kondrat'eva, A.Kh. Adzhiev, M.Yu. Bekkiev, M.M. Gedueva (Gyaurgieva) et al. Nal'chik: Izd-vo «Pechatnyy dvor» / Nalchik, "Pechatnyy dvor" [Publishing House], 2015. 148 p.

5. Sergeeva G.A., Andreeva E.S., Adamyan V.L. *Usloviya formirovaniya selevykh potokov Respubliki Ingushetiya (Vostochniy Kavkaz)* [Conditions for the formation of mudflows in the Republic of Ingushetia (Eastern Caucasus)] // *Uspekhi sovremennogo estestvoznaniya* [Successes of modern natural science]. 2020. N. 4. Pp. 151–156. URL: <https://natural-sciences.ru/ru/article/view?id=37378>

6. Gakaev R.A. *Otsenka porazhennosti territorii Chechenskoj Respubliki opolznevymi protsessami* [Assessment of the impact of the landslide processes on the territory of the Chechen Republic] // *Problemy snizheniya prirodnykh opasnostey i riskov* [Problems of reducing natural hazards and risks]. M.: RUDN, 2009. V. 1. Pp. 139–143.

7. Mazhiev Kh.N., Bataev D.K.-S., Salgiriev R.R., Mazhiev K.Kh., Mazhieva A.Kh. *Proyavlenie opolznevnykh protsessov v gornom rayone Chechenskoj Respubliki* [Manifestation of landslide processes in the mountainous region of the Chechen Republic] // *Materialy Mezhdunarodnogo simpoziuma, posvyashchennogo 20-letiyu sozdaniya FGBU nauki Kabardino-Balkarskogo nauchnogo tsentra RAN «Ustoychivoe razvitie: problemy, kontseptsii, modeli»* [Materials of the International Symposium dedicated to the 20th anniversary of the establishment of the Federal State Budgetary Institution of Science Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences "Sustainable Development: Problems, Concepts, Models"]. 2013. Pp. 166–170.

8. Komarov A.Yu., Seliverstov Yu.G., Glazovskaya T.G., Turchaninova A.S. *Krupnomasshtabnaya otsenka kollektivnogo i individual'nogo lavinnogo riska na primere gornolyzhnogo kompleksa Veduchi (Chechenskaya Respublika)* [Large-scale assessment of collective and individual avalanche risk using the example of the Veduchi ski resort (Chechen Republic)] / *V sbornike statey: Snezhnye laviny, seli i otsenka riska* [In the collection of articles: Snow avalanches, mudflows and risk assessment]. M., 2014. Pp. 56–59.

9. Gagaeva Z.Sh. *Landshaftnaya struktura i melkomasshtabnoe landshaftnoe kartografirovaniye territorii Chechenskoj Respubliki na osnove distantsionnoy s"emki* [Landscape structure and small-scale landscape mapping of the territory of the Chechen Republic on the basis of remote sensing]: *avtoreferat dissertatsii ... kandidata geograficheskikh nauk* [thesis abstract of ... Candidate of Geographical Sciences]. M., 2004. 220 p.

10. Golovlev A.A. *Gornye landshafty Chechenskoj Respubliki i osobennosti ikh osvoeniya* [Mountain landscapes of the Chechen Republic and peculiarities of their development]: *dissertatsiya ... doktora geograficheskikh nauk* [dissertation ... Doctor of Geographical Sciences]. M., 2005. 241 p.

11. Zaurbekov Sh.Sh., Bekmurzaeva L.R. *O zakonmernostyakh izmeneniy gidrometeorologicheskikh kharakteristik Chechenskoj Respubliki v period s 1961 po 2006 gody* [On the patterns of changes in the hydrometeorological characteristics of the Chechen Republic in the period from 1961 to 2006] // *Estestv. i tekhn. nauki* [Natural and Technical Sciences.]. 2008. No. 2. Pp. 298–306.

12. Kerimov I.A., Gaysumov M.Ya. *Seysmichnost' i sovremennaya geodinamika territorii Chechenskoj Respubliki* [Seismicity and modern geodynamics of the territory of the Chechen Republic] // *II Vserossiyskaya nauchno-tekhnicheskaya konferentsiya «Sovremennye problemy geologii, geofiziki i geoekologii Severnogo Kavkaza»* [II All-Russian scientific and technical conference «Modern problems of geology, geophysics and geoecology of the North Caucasus»]. Grozny, 2012. Pp. 43–64.

13. Vagapova A.B. *Geologo-geomorfologicheskaya kharakteristika predgornnykh rayonov Chechenskoj Respubliki* [Geological and geomorphological characteristics of the foothill regions of the Chechen Republic] // *Materialy Vserossiyskoj konferentsii «Obrazovanie Rossii i aktual'nye voprosy sovremennoy nauki»* [Materials of the All-Russian conference "Education of Russia and topical issues of modern science"]. Penza, 2017. Pp. 51–56.

14. Shamurzaeva D.A., Korolev B.I., Novikov K.V. *Otsenka podverzhennosti opolznevomu protsessu gornoy chasti respubliki Dagestan, vypolnennaya na osnove kompleksnogo*

matematicheskogo apparata [Assessment of the susceptibility of the mountainous part of the Republic of Dagestan to the landslide process, carried out on the basis of a complex mathematical apparatus] // *Materialy III Natsional'nogo nauchnogo foruma «Narzan-2015»: aktual'nye problemy gidrosfery (diagnostika, prognoz, upravlenie, optimizatsiya i avtomatizatsiya)* [Materials of the III National Scientific Forum «Narzan-2015»: actual problems of the hydrosphere (diagnostics, forecast, control, optimization and automation)]. Kislovodsk, 2015. Pp. 270-280.

15. Shamurzaeva D.A. *Otsenka razvitiya opolzneвого protsessa na territorii Gornogo Dagestana* [Assessment of the development of the landslide process in the territory of Mountainous Dagestan]: *avtoreferat dis. ... kand. geologo-mineralogicheskikh nauk* [abstract of dis. ... Cand. geological and mineralogical sciences]. M., 2017. 25 p.

16. Vas'kov I.M., Cherkashin V.I., Yusupov A.R., Tamaeva M.R. *Opolzni-obvaly vysokikh energii, ikh vozmozhnoe vozdeystvie na vodokhranilishcha v gornykh dolinakh Vostochnogo Kavkaza* [High-energy collapse of earth-masses - landslides, their possible impact on reservoirs in the mountain valleys of the Eastern Caucasus] // *Ustoychivoe razvitie gornykh territoriy* [Sustainable Development of Mountain Territories]. 2018. No. 2 (T.10). Pp. 199–215.

17. Ovsyuchenko A.N., Rogozhin E.A., Lukashova R.N. *Andiyskie seysmodislokatsii v Dagestane: opyt distantsionnykh issledovaniy pri seysmotektonicheskom rayonirovanii Vostochnogo Kavkaza* [Andean seismic dislocations in Dagestan: the experience of remote sensing in seismotectonic zoning of the Eastern Caucasus] // *Geologiya i Geofizika Yuga Rossii* [Geology and Geophysics of the South of Russia]. 2012. № 3. Pp. 45–53.

18. Ponomareva N.L. *Seysmotektonika i seysmichnost' Yuzhnogo Dagestana. Aktivnye razlomy i ikh znachenie dlya otsenki seysmicheskoy opasnosti: sovremennoe sostoyanie problem* [Seismotectonics and seismicity of Southern Dagestan. Active faults and their importance for assessing seismic hazard: current state of the problem] // *Materialy XIX nauchno-prakticheskoy konferentsii s mezhdunarodnym uchastiem « Aktivnye razlomy i ikh znachenie dlya otsenki seysmicheskoy aktivnosti: sovremennoe sostoyanie problemy»* [Materials of the XIX scientific-practical conference with international participation “Active faults and their significance for assessing seismic activity: current state of the problem”]. Voronezh: Nauchnaya kniga, 2014.

19. Ataev Z.V. *Geograficheskie osobennosti formirovaniya i prostranstvennoy differentsiatsii prirodno-territorial'nykh kompleksov Gornogo Dagestana* [Geographic features of formation and spatial differentiation of natural-territorial complexes of Mountainous Dagestan] // *Vestnik Voronezhskogo gosudarstvennogo universiteta. Seriya geografiya i geoekologiya* [Bulletin of the Voronezh State University. Geography and Geoecology Series]. 2004. No. 1. Pp. 35–39.

20. Abdulaev K.A. *Landshafty Gornogo Dagestana i ikh sovremennoe sostoyanie* [Landscapes of Gorny Dagestan and their current state]: *avtoreferat dis. ... kand. geograficheskikh nauk* [abstract of dis. ... Cand. Geographical Sciences]. Stavropol', 2008. 25 p.

21. Abdulaev K.A., Ataev Z.V., Bratkov V.V. *Sovremennye landshafty Gornogo Dagestana* [Modern landscapes of Mountainous Dagestan]. Makhachkala: DGPU, 2011. 115 p.

22. Bratkov V.V., Ataev Z.V., Alsabekova A.A., Sulumov S.Kh. *Eroziionnoe raschlenenie rel'efa severo-vostochnogo Kavkaza kak faktor rekreatsionnogo osvoeniya territorii* [Erosional dissection of the relief of the northeastern Caucasus as a factor of recreational development of the territory] // *Izvestiya Dagestanskogo gosudarstvennogo pedagogicheskogo universiteta. Estestvennye i tochnye nauki* [Bulletin of the Dagestan State Pedagogical University. Natural and exact sciences]. 2011. No. 4. Pp. 99–103.

23. Ataev Z.V., Bratkov V.V., Abdulaev K.A., Gadzhibekov M.I. *Landshafty Natsional'nogo parka "Samurskiy"* [Landscapes of the “Samursky” National Park] // *Izvestiya Dagestanskogo gosudarstvennogo pedagogicheskogo universiteta. Estestvennye i tochnye nauki* [News of the Dagestan State Pedagogical University. Natural and exact sciences]. 2020. Vol. 14. No. 3. Pp. 64–81.

24. Ataev Z.V. *Verkhnee Dyul'tychayskoe ozero – samoe krupnoe ozero v Vysokogornom Dagestane* [Upper Dyul'tychayskoye Lake - the largest lake in High-Mountain Dagestan] // *Monitoring. Nauka i tekhnologii* [Monitoring. Science and technology]. 2020. No. 1 (43). Pp. 17–19. DOI: 10.25714/ MNT.2020.43.002

25. Muzhaidov A.K., Ataev Z.V. *Problemy ekonomicheskogo razvitiya munitsipal'nykh obrazovaniy gornoy zony Respubliki Dagestan* [Problems of economic development of municipalities

of the mountainous zone of the Republic of Dagestan] // *Ekonomika i predprinimatel'stvo* [Economy and Entrepreneurship]. 2020. No. 4 (117). Pp. 559-561. DOI:10.34925/EIP.2020.117.4.120

Information about author:

Drozdov Anton Leonidovich, trainee-researcher, Center of geographical researches of Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences, 3rd year student of Kabardino-Balkarian State University, Institute of Informatics, Electronics and Robotics, specialty "Electronics and Nanoelectronics".

360010, KBR, Nalchik, 2 Balkarov street.

E-mail: cgrkbncran@bk.ru