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# DANGEROUS HYDROMETEOROLOGICAL PHENOMENA IN THE AZOV-BLACK SEA REGION

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### *Abstract*

The article presents preliminary results of a scientific study aimed at studying the relationship between dangerous natural phenomena and social processes in the vast Russian region of the Black Sea, the Azov Sea and the Caspian Sea. A joint analysis of hydrometeorological information and media at the Federal and regional levels based on a sample of natural hazards that occurred in the South of Russia for the period from 2012 to 2018. The source of hydrometeorological information was hydrometeorological observations at posts of the southern scientific center of RAS in Donskoy and Kagalnik, the results of mathematical modeling of hydrological processes, open databases of meteorological observations of VNIIGMI-IDC. The main sources of media for the sample were Internet publications of news agencies "TASS" and "Regnum", socio-political publication "Novaya Gazeta", some regional news – STRBC "Stavropol», etc. The question of the relationship between the events covered in the media and their ability to lead to political instability (protests, mass demonstrations, pickets, etc.). The list of dangerous hydrometeorological phenomena for the period under study, which were covered in the media of Federal importance, was revealed. There are also five cases that received the least attention not only in the Federal but also in the regional media. It is revealed that flooding in the coastal zone of the Black sea of the Krasnodar region leads to one of the largest and most resonant socio-economic consequences in Russia, but not all of them are sufficiently covered in open sources, including scientific publications.



**Keywords:** Natural hazards, Azov sea, Black sea, coastal areas, political instability.

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## 1. Introduction

The relevance of the topic of flood risk is due to the relatively high number of floods in Russia (40-70 per year). According to Roshydromet, floods in the country are subject to an area of about 500 thousand square kilometers, floods with disastrous consequences – 150 thousand square kilometers.

According to IA "TASS" (2017), the average annual damage as a result reaches 40 billion rubles, while in the basins of the don (mainly Upper don) and Kuban – 2.6 billion rubles and 2.1 billion rubles, respectively.

The total number of dangerous hydrological phenomena (floods, floods and mudflows) in the first decade of the XXI century in Russia increased 1.5 times compared to the last decade of the XX century. This may be due to a few factors: changes in regional climatic conditions; active development of socio-economic infrastructure, especially on the sea coasts, in the nearshore and nearshore areas; anthropogenic transformation (cutting, plowing, etc.) of coastal lands.

## 2. Problem Statement

Increasingly, the use of the word "disaster" in the media is being used to refer to any dangerous (sometimes adverse) phenomenon that has occurred. Although this term has a clear definition (Khayrullin, Borisenkov, Egorova, Obraztsova, & Antonova, 2008). The media widely covers the consequences of such "catastrophes", provides estimates of the number of victims, lost property, moral damage. Sometimes, against the background of such "catastrophes", resonant political events occur, which can be defined as manifestations of political instability. An example is the events that took place abroad. In 1970, the government of Pakistan reacted so weakly to the cyclones that hit the Eastern part of the country (which killed more than half a million people) that the actions of the authorities became a catalyst for the emergence of the people's Republic of Bangladesh. The earthquake in Managua in 1972 not only destroyed the capital of Nicaragua, but also discredited the regime of dictator A. Somosa (as cited in Goryushina, 2018). In domestic studies, this problem is given less attention.

## 3. Research Questions

In this regard, the question arises – whether all the events brightly covered in the media are so catastrophic and dangerous, capable of leading to political instability (protests, mass demonstrations, pickets, etc.) and, conversely, whether dangerous hydrometeorological phenomena were observed in the southern macroregion of Russia, which did not receive wide publicity for various reasons.

## 4. Purpose of the Study

This paper presents preliminary results of a joint analysis of hydrometeorological information and media at the Federal and regional levels on the basis of a sample of natural hazards (in particular, hydrometeorological nature: floods, floods and, consequently, flooding) that occurred in the South of Russia for the period from 2012 to 2018.

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## 5. Research Methods

The source of hydrometeorological information was hydrometeorological observations at the posts of the southern scientific center of RAS in Donskoy and Kagalnik, the results of mathematical modeling of hydrological processes (Yaitskaya, 2017), open databases of meteorological observations of VNIIGMI-IDC (meteo.ru).

The key media sources for a sample of steel of the Internet publication of the information Agency "TASS" and "Regnum", the socio-political newspaper "Novaya Gazeta", a separate news at the regional level – STRC "Stavropol", etc.

## 6. Findings

In total, during the study period, nine major cases of flooding in the southern macroregion can be noted, when the level values in the rivers approached and reached the values of "dangerous phenomenon", the wind reached 30 m/s and more in gusts, storm conditions were observed in the Black and Azov seas, the amount of precipitation was higher than the average annual norm several times.

The most devastating was the flooding of 6-7 July 2012, due To severe rains affected 10 villages (Krymsk, Gelendzhik, Novorossiysk, settlements Divnomorskoe, Nizhnebakansky, Neverdjayevskaya, and Kabardian). According to Federal media reports and emergency data, "171 people were killed. Affected by the disaster recognized by 53 thousand persons, from them 29 thousand completely lost property. 7.2 thousand houses were flooded, of which more than 1.6 thousand houses were destroyed. The disaster broke the system of energy, gas and water supply, road and rail traffic. The total damage from the disaster amounted to about 20 billion rubles. on July 9, 2012 was declared a day of mourning throughout the territory of the Russian Federation" (TASS, 2017, par. 11).

Another major case was the so-called "surge wave" resulting from the storm in the sea of Azov on September 24, 2014, accompanied by an increase in the water level at the mouth of the rivers. 31 settlements of Yeisk and Primorsko-Akhtarsky areas (Krasnodar Krai) suffered, more than 3 thousand houses with the population more than 7.5 thousand people are flooded. "One person was killed (he washed away in the sea), the forces of fire and rescue units of the Ministry of emergency situations evacuated about 1.5 thousand people. The total amount of damage (also affected the Rostov region) amounted to 1.1 billion rubles." (TASS, 2017, par. 8).

The events of June 25, 2015 led to the flooding of the Adler district (exit from the banks of the river Herot) and the village of Kudepsta Khosta district as a result of a leash in Sochi. The introduced emergency mode resulted in a long-hour power outage in the area. Important infrastructure facilities (airport in Adler, Adler railway station, a segment of the railway from Khosta to Adler) were in the flooding zone along with 2 thousand 23 houses and 98 municipal property. "One person was killed by electric shock. The Sochi administration estimated the total damage from the flood at 760 million rubles and established compensation for citizens whose housing was affected by flooding, in the amount of 10 to 100 thousand rubles (depending on the damage)" (TASS, 2017, par. 13).

The autumn flood as a result of heavy rains on October 24 and 25, 2018, led to significant damage in the Tuapse and Absheron districts of the Krasnodar territory, including Sochi itself. In six hours, 119

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mm of precipitation fell, which is more than twice the monthly norm. The disaster initially affected the Tuapse district – on October 24, an emergency regime was introduced. By the evening of the same day in the flood zone only in Tuapse district were more than 72 thousand people (REGNUM, 2018). According to Interfax, more than 1240 households were flooded in Tuapse district, 714 households in Absheron district (Torop, 2018).

31 long-distance passenger trains were detained. "The water was the train station Goith, psych, Tuapse. Between stations also flooded several runs: on the stretch of Greek-Tuapse washed mound length of 200 meters, and the station waterfall came down the mudflow" (Torop, 2018, par. 1). Collapsed bridge on the Federal highway A-147 Dzhubga-Sochi.

For a period of 36 hours, the supply of drinking water in Tuapse was stopped. The flood victims were six people.

In the context of this study, it is interesting to note that five cases have remained virtually unanswered in the media, namely:

August 21-22, 2012 – flooding in the Tuapse district of the Stavropol territory (it is known that the damage from this flood amounted to about one billion rubles (Stavropolye-TV, 2018)).

On March 23, 2013 – flooding as a result of the surge in Azov sea and Delta of the river don (Cherkesov, Shulga, Dyakov, & Stanichnaya, 2017).

September 24, 2013 – flooding within the MO of Sochi.

December 10, 2013 – flooding due to the storm of the Imereti lowland, which caused partial destruction of the Olympic embankment on the eve of the Winter Olympics 2014 in Sochi.

20 Nov 2015 – flooding in the Delta of the river don as a result of the surge.

It is worth noting that in the area of the Imereti lowland annually due to storm effects occur in varying degrees of destructive events. In addition to the possibility of retrospective analysis using hydrological mathematical models in the Internet environment, you can find evidence of eyewitnesses, but in Federal and even regional media, this information is often not replicated.

## 7. Conclusion

It is revealed that flooding in the coastal zone of the Black sea of the Krasnodar region leads to one of the largest and most resonant socio-economic consequences in Russia, but not all of them are sufficiently covered in open sources, including scientific publications. Since 2014, the Ministry of emergency situations has introduced the concept of a complex of meteorological phenomena (CMP) for the southern macroregion of the country, when a combination of dangerous natural phenomena occurs. The selection of possible cases of dangerous phenomena on the basic of hydrometeorological data allows to say that the largest number is characteristic of the Tuapse district of the Stavropol territory, particularly in the first decade of the XXI century. it also has the highest number of Kvaerner Masa-yards, giving rise to significant socio-economic consequences. So, according to the employee of the Moscow state University. M.V. Lomonosov Ph. D.V. Magritsky, the average economic risk of flooding on the rivers for this region can be equal to 13.2 million dollars and 2 victims. But in the scientific reference literature the occurrence of such events is not described.

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