



Kazan Golovkinsky Stratigraphic Meeting

2020



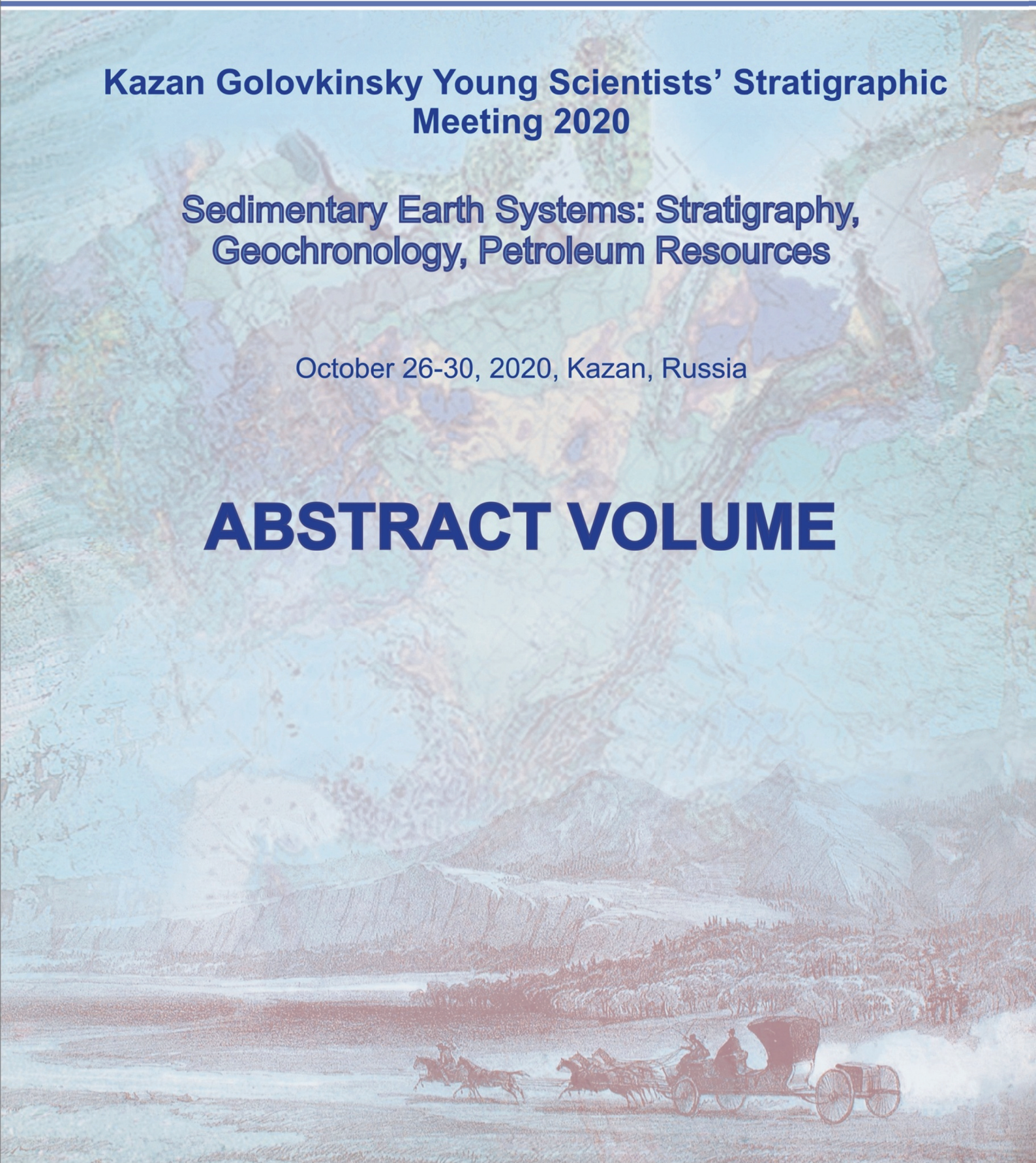
Kazan Federal University
Institute of Geology and Petroleum Technologies

Kazan Golovkinsky Young Scientists' Stratigraphic Meeting 2020

Sedimentary Earth Systems: Stratigraphy,
Geochronology, Petroleum Resources

October 26-30, 2020, Kazan, Russia

ABSTRACT VOLUME





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Abstract Volume

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Danis K. Nurgaliev

Scientific editor:
Vladimir V. Silantiev;
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Международная конференция посвящена проблемам планетарных систем, стратиграфическим событиям, эволюции биоты, седиментационным бассейнам и полезным ископаемым.

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International Stratigraphic Meeting is dedicated Earth systems, stratigraphic events, biotic evolution, sedimentary basins and resources.

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TEPHRA Database for the Eastern European Plain

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Tephra is fragmental material produced by a volcanic eruption (Thorarinsson, 1950). During the eruption, tephra particles settle from an eruptive cloud mantling the landscape and forming an isochron, which directly links various sedimentary successions and permits their synchronization. In distal areas, low-concentration tephra particles may not form visible layers and are referred to as cryptotephra (Lowe and Hunt, 2001). Extensive data on the composition and ages of different tephra were compiled into regional and global databases (RESET tephra database, Tephabase). The territory of Central and Western Europe, for example, is covered with hundreds of well-studied tephra and cryptotephra sites. However, tephra sites in Russia are poorly represented in these databases although ~100 sites exhibiting visible tephra layers have been identified within the European Russia by the late 1900s (e.g., Karlov, 1957; Tsekhovskiy et al., 1998). These Russian-language works are scattered throughout old journals and abstract volumes and thus are virtually not available to the international tephrochronological community.

To fill this gap, we started a database of tephra sites in the East European Plain, the Caucasus, and Transcaucasia based on published works and our own data. We verified some of the earlier described tephra and analyzed them with the help of spot analyses including electron microprobe and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS). Our database currently includes 184 tephra sites mostly located in the southern part of the East European Plain, the Caucasus, and Transcaucasia: Azerbaijan (30 sites), Kharkiv, Sumy, Donetsk, and Lugansk regions of Ukraine (in total 23 sites), Voronezh and Belgorod regions (22), Kerch and the Taman Peninsula (18), Stavropol Territory (12), the Kabardino-Balkarian and Karachay-Cherkess Republics (11). Single sites are noted in the NW and NE European plain.

According to the published data, tephra are dominated by silicic varieties (trachytic – 33 sites, rhyolite - 26, rhyodacite – 7, and andesite-dacite – 25). Most of the trachytic tephra likely belong to the Campanian Ignimbrite (CI) eruption from the Phlegraean Fields Caldera, Italy, dated at $39,280 \pm 110$ yr BP (Melekestsev et al., 1984; Pyle et al., 2006). Single-shard geochemical analyses are available only for Kostenki (Voronezh region) (Pyle et al., 2006), Roksolany (Odesa region, Ukraine) (Wulf et al., 2016), Lake Bolshoye Shchuchye (Yamalo-Nenets Autonomous District) and Lake Yamozero (Republic of Komi) (Haflidason et al., 2018), Medvedevskoe and Pastorskoe lakes (Leningrad Region) (Wastegard et al., 2000), Lake Vodoprovodnoe (Karelia) (Vahrameeva et al., 2020). Further research will make it possible to add and refine the history of volcanic eruptions in the adjacent territories, as well as to carry out correlations between the sites. This work will significantly refine the chronological framework of individual paleogeographic events and synchronize them with global paleoclimatic archives.

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