

The Gagatli swarm of weak earthquakes – seismo activity manifestation of the Andean fault

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Abstract The swarm of more than a hundred weak earthquakes, the bulk of which occurred in the second decade of January 2019, was recorded at the end of 2018 and at the beginning of 2019 in the area of the western borders of the Dagestan salient. Refinement of the position of the epicenters of the swarm events by the method of double differences showed their compact location to the northeast of the village Gagatli on the eastern latitudinal branch of the Andean fault, known for left-lateral strike-slip and normal fault kinematics. According to the results of the study of the fault plane solutions of the five most strong earthquakes in the swarm, the type of movement was established - a left-lateral strike-slip and normal component, which allowed the investigated activation to be attributed to the discharge of accumulated stresses in the eastern part of the Andean fault. A characteristic feature of the recordings of these events by the nearest stations located in the territory of Dagestan and Chechnya was the similarity of the wave pattern, established when they correlated in different frequency bands (1-2 Hz, 1-3 Hz, 1-5 Hz). The correlation matrix of the records of 19 events filtered in the 1-3 Hz band was used to construct cluster analysis dendrograms showing different correlation of the events of the swarm and other earthquakes of Dagestan at a similar distance.

Keywords earthquake swarm, focal mechanism, left-lateral strike-slip, Dagestan salient, Andean fault.

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