

08-13**THE ERZINCAN 1939 EARTHQUAKE - A SAMPLE OF THE MULTIDISASTER EVENT****BOYKO RANGUELOV¹ and ARND BERNAERTS²**¹ Geophysical Institute, Sofia 1113, Bulgaria,

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² Bordesholmer Str.14a, Hamburg 22143, Germany*A bad thing never came alone***Introduction**

The famous Erzincan earthquake (M~8.0) on 26 December 1939 generated many effects - surface ruptures, landslides, microseismic intensities up to 11 degree, tsunami in the Black see, as well as big destruction and many human deaths (more than 30-40 000). There are very clear descriptions from this time (mainly by the newspapers) about the anomalous behaviour of the meteorological weather in the epicentral area - extremely low temperatures, very large snowfalls, freeze winds, big storms. All these events make very difficult all rescue operations. During the following days, very large rains occurred to the south and south east and generated very big flooding and mudflows to the southern, eastern and south eastern parts of Turkey. These negative meteorological events add more than several thousands deaths and many injured accompanied by destruction of the buildings and expected summer harvest.

Hypothesis

Our hypothesis follows the general possible explanations of the observed negative events: bad, very sensitive meteorological conditions, (the lowest air pressure as a probable influence for the earthquake generation), the strong earthquake itself, generation of tsunami in the Black sea, very probable influence of the mixed sea water to the weather conditions, storms observed on the coast followed by cold air invasion, followed by the snowfalls and freezing weather. Than to the south, generation of the big rainfalls followed by the floodings and mudflows. The interconnection between all these events brings many tragedies, bad economical consequences and human deaths. To check this hypothesis is very difficult and the problems are under discussion. But the observed events provide the opportunity to discuss and to try to obtain more reliable information about this very destructive event.

Chronology

The reports from this time extracted mainly from the newspapers show very clear the picture of the development of the weather conditions, earthquake consequences and their influence on the environment and the people. The anomalous low temperatures have been reported prior the earthquake all over the southeast Europe and Turkey.

The cold weather started on 9-10th Dec.1939. On the south coast of the Black sea strong storms have been reported. Some boats are disconnected and crashed near the Bulgaria coast. The temperatures dramatically fall down. The strong snowfalls started. On 24th Dec - 20 degrees C have been reported in Northeast Bulgaria. The Danube River freezes. A boat with about 60 people crashed. On 26th night, the quake occurred. Recorded on all world seismological stations. Observed intensities have been described up to 10-11-12 degree. Many coseismic effects as liquefaction, triggered landslides, rockfalls and surface ruptures (right lateral) have been reported. A tsunami effect has been observed near Fatsa bay. Many Russian stations recorded the generated tsunami.. The earthquake has been followed by many meteorological effects. Low air pressure and temperatures have been measured and mapped on the English meteocharts. Strong windstorms closed almost all Turkish Black sea ports. Heavy snowfalls started the same night. On 28th Dec. the recorded low temperatures have been reported in Erzindzan - 30 degree C . A lot of strong aftershocks have been felt during the next days. The first aids train has been snowed under 2 meters near Sivas. After the large snowfall, the freeze weather covered the whole destructed area. To the south and southeast the snow has been transformed in heavy rainfalls and thunderstorms. Something very unusual during this time of the year. As a result of about 58 hours rainfall near Bursa, the heavy floods have been reported on 5th January 1940, as well in Ismir. The same has been reported in Diarbakur and surroundings.

Consequences

On the attached scheme (fig. 1.) the consequences for the deaths, injured and homeless people are presented, as well the locations of all observed negative events, as they have been reported by the newspapers - local and international. After the season the low outcrops and harvests have been reported for the affected regions. The whole development of the negative processes has been presented on the flow chart.

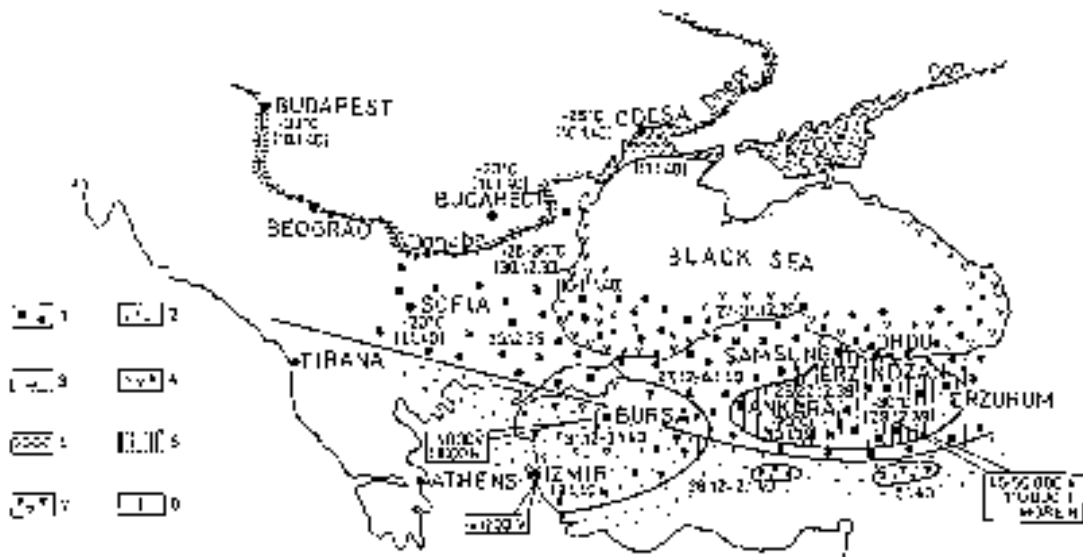


Fig. 1. Observed and reported events: 1 - Heavy snowfalls; 2 - Heavy rainfalls; 3 - Tsunami manifestations; 4 - Windstorms over the Black Sea; 5 - Freezing waters of the rivers and the seas; 6 - Area strongly affected by the earthquake with destructions and human deaths; 7 - Heavy flooded areas; 8 - Local thunderstorms. In the quadrangles approximate number of victims (V), injured (I) and homeless (H) are presented.

FLOW CHART OF THE DISASTERS AND CONSECUTIVE EVENTS

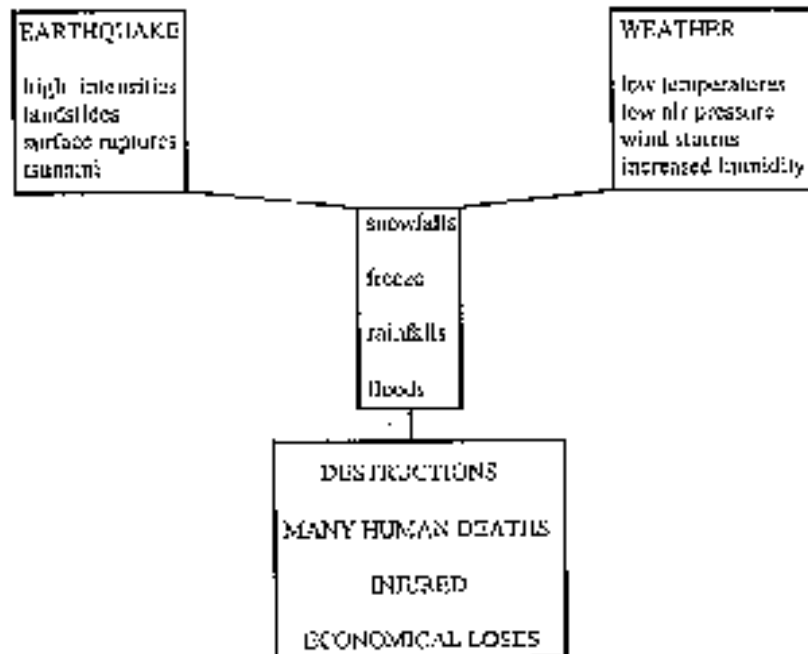


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