

# Croatian Meteorological and Hydrological Service, main building, Grič 3, Zagreb, after 5.5 M Earthquake on 5:24 UTC 22<sup>nd</sup> March 2020

Photos by: Stjepan Ivatek Šahdan, Zvonimir Jakopović, Tanja Renko, other photos provided by Mario Krešić



## The earthquake

At 6:24 in the morning local time (5:24 UTC) on 22<sup>nd</sup> March 2020 a 5.5 M earthquake hit the city of Zagreb followed by numerous aftershocks. (Earthquake Richter scale is logarithmic, so 6M releases 10 times more energy than 5M.)

The main DHMZ building got seriously damaged, it was labelled unsafe and beyond repair, the entry is forbidden for safety reasons. Many other structures in the city suffered the same fate.

Photos on the left: Drone photos of the building, north wing (a), centre wing (b), south wing (c), view of the building from west (d) and south wing from the south (e).  
Author: drone operator and Mario Krešić.

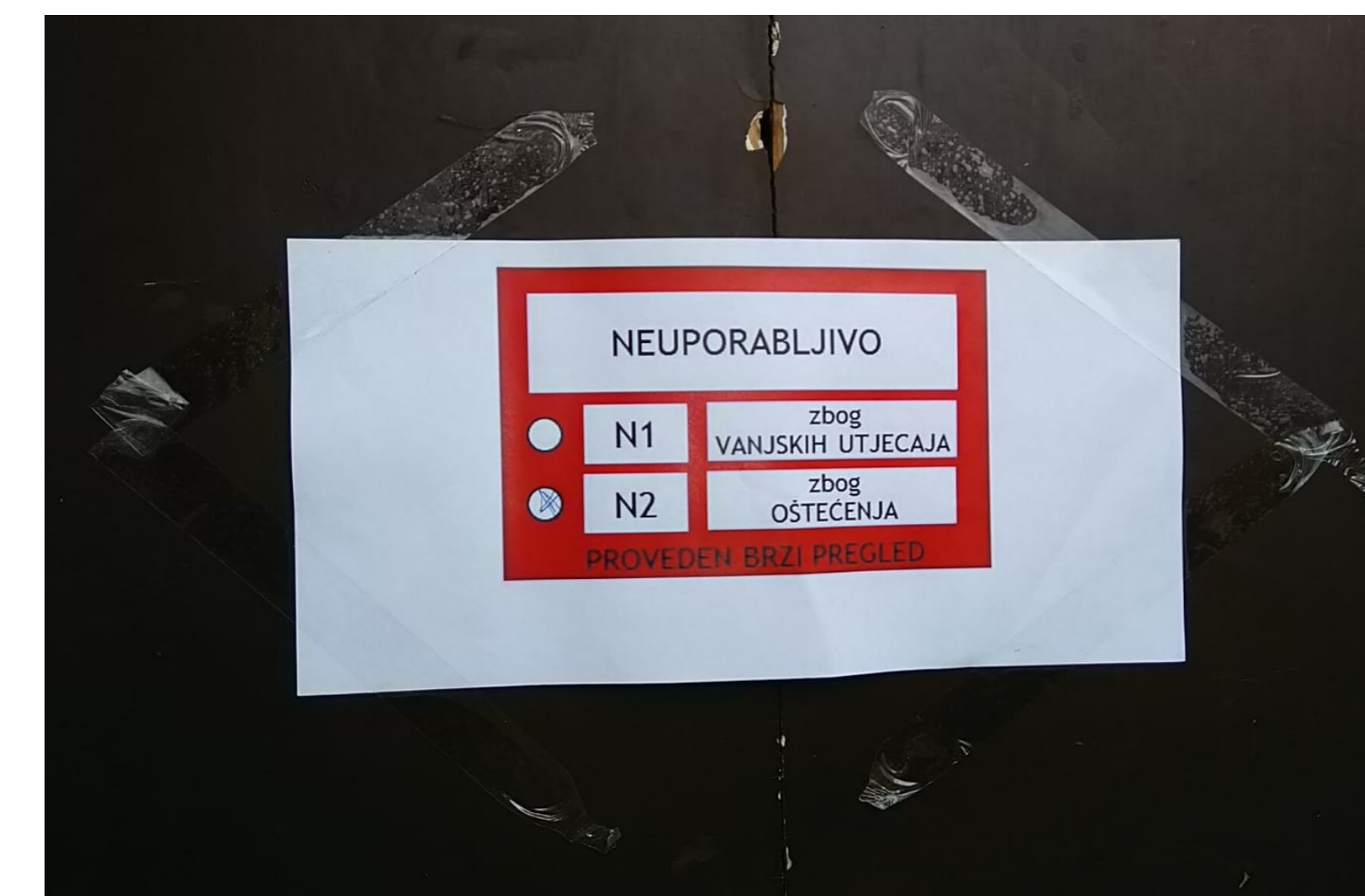


## The building

The main building is several centuries old (different parts have been built and added at different times). It survived the 6.3 M earthquake in 1880 as well as numerous later earthquakes, three wars and about seven different countries. It hosted uninterrupted meteorological observations and measurements since 1<sup>st</sup> Dec 1861 as well as the Geophysics Institute that measured earthquakes that enabled Andrija Mohorovičić to discover that Earth is not homogeneous, but composed of layers (the crust and the mantle) in 1910. Due to the damage to the building, the observations are suspended while the automatic station sends data although damaged. Authors: Tanja Renko (outside), Stjepan Ivatek-Šahdan, Zvonimir Jakopović, Mario Krešić (inside)



Citizen Response	Date & Time UTC	Latitude degrees	Longitude degrees	Depth km	Mag[+]	Region name
57	2020-03-29 07:00:07.5	42.73 N	18.02 E	2	2.8	CROATIA
849	2020-03-29 02:19:32.2	45.83 N	16.03 E	4	1.5	CROATIA
282	2020-03-28 12:48:56.9	45.87 N	16.16 E	1	1.5	CROATIA
264	2020-03-27 15:41:20.6	45.90 N	15.99 E	2	1.4	CROATIA
359	2020-03-27 02:37:43.4	44.16 N	15.33 E	6	3.4	CROATIA
347	2020-03-26 08:38:52.2	45.83 N	16.09 E	1	1.8	CROATIA
701	2020-03-26 06:12:27.0	45.88 N	16.03 E	4	1.9	CROATIA
372	2020-03-26 00:17:54.5	45.90 N	15.99 E	26	1.8	CROATIA
1344	2020-03-24 19:53:49.6	45.88 N	15.98 E	5	3.2	CROATIA
1971	2020-03-23 19:49:54.8	45.85 N	15.72 E	10	3.2	CROATIA
1627	2020-03-23 10:12:53.2	45.85 N	15.96 E	10	3.7	CROATIA
726	2020-03-23 02:00:30.0	45.88 N	16.02 E	7	3.0	CROATIA
409	2020-03-22 18:00:20.5	45.83 N	15.98 E	2	2.9	CROATIA
321	2020-03-22 15:15:13.3	45.78 N	15.99 E	2	2.8	CROATIA
72	2020-03-22 09:11:57.0	45.87 N	16.05 E	4	3.3	CROATIA
14	2020-03-22 08:10:26.9	45.87 N	15.95 E	2	3.0	CROATIA
37	2020-03-22 08:04:01.5	45.87 N	15.98 E	7	3.1	CROATIA
71	2020-03-22 06:41:05.6	45.89 N	16.02 E	2	3.7	CROATIA
410	2020-03-22 06:01:20.5	45.87 N	16.00 E	10	5.0	CROATIA
1940	2020-03-22 05:24:02.8	45.87 N	16.02 E	10	5.4	CROATIA



## Earthquake data from EMSC-CSEM

The website (above) and the phone application (left) list numerous aftershocks after the initial earthquake. The data in these figures is preliminary, the final strength of the initial shock was estimated at 5.5 on the Richter scale. The epicentre was in one of the Zagreb suburbs on the northeast. As a consequence of the earthquake, Medvednica mountain moved for 2.5 cm. There were more than a hundred aftershocks of more than 1.3M during the first week after the first shake. Most of them could be felt by the citizens of Zagreb. (Two quakes in the table above were not in Zagreb, but near Zadar and Dubrovnik).

Photos on the right side show damage inside the building. Although we were lucky and the building is still standing, it is structurally unstable.

