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Water cluster ensembles as interface to the structure of epicenter and the earthquake mechanism on the Jawa island (8° 73´ s. 112° 36´ e.)

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ABSTRACT

The long-range order (LRO) in underground water (North Germany) that was excited by gravitation was investigated in the period of August 13th to 14th, 2009. The average molecular mass of water clusters, the forms of the base water cluster $(H_2O)_{12}$ and of the Chaplin cluster $(H_2O)_{280}$, were found to correlate with a series of gravitation excitation which is connected with the earthquake on the Java island. It has been investigated how earthquakes at distance influence the general energy capacity of the water cluster ensembles. A mechanism describing generation and development of gravitation tensions in the epicenter on Java as the result of changed hydrogen bridges in water under the influence of impulse pressure up to 0.46 GPa has been suggested. Periodically changing water cluster forms prior to the earthquake and dominating collapsed clusters in the post seismic time were observed. A system of underground “boilers”- geysers (~ 25 pieces) in the epicenter under Java was concluded. These “boilers” are characterized by the whole mass of ~ $179 \cdot 10^6$ t of circulating water and steam (model of Soxhlet apparatus), those overheating cause destruction, explosion and finally the earthquake of a middle power. Furthermore, a structure model of the epicenter was given. Water erosion of “boilers” was suggested to be the reason for future earthquakes.

KEYWORDS

Water;
Clusters;
Epicenter;
Structure;
Earthquake;
Mechanism;
Jawa.

INTRODUCTION

The phenomenon that LRO in molecular mater reacts at distance on processes in earthquake zones was already earlier observed by the authors[1]. LRO in water at its cluster structure (Figure 1) was concluded to be a unique sensor for several events in the earth core especially for compression/extension processes, for temperature jumps, energy impulses and gravitation radiation from the epicenter[1]. The mentioned factors destabilize cluster ensembles in LRO.

In Figure 1, computer models for the simplest wa-

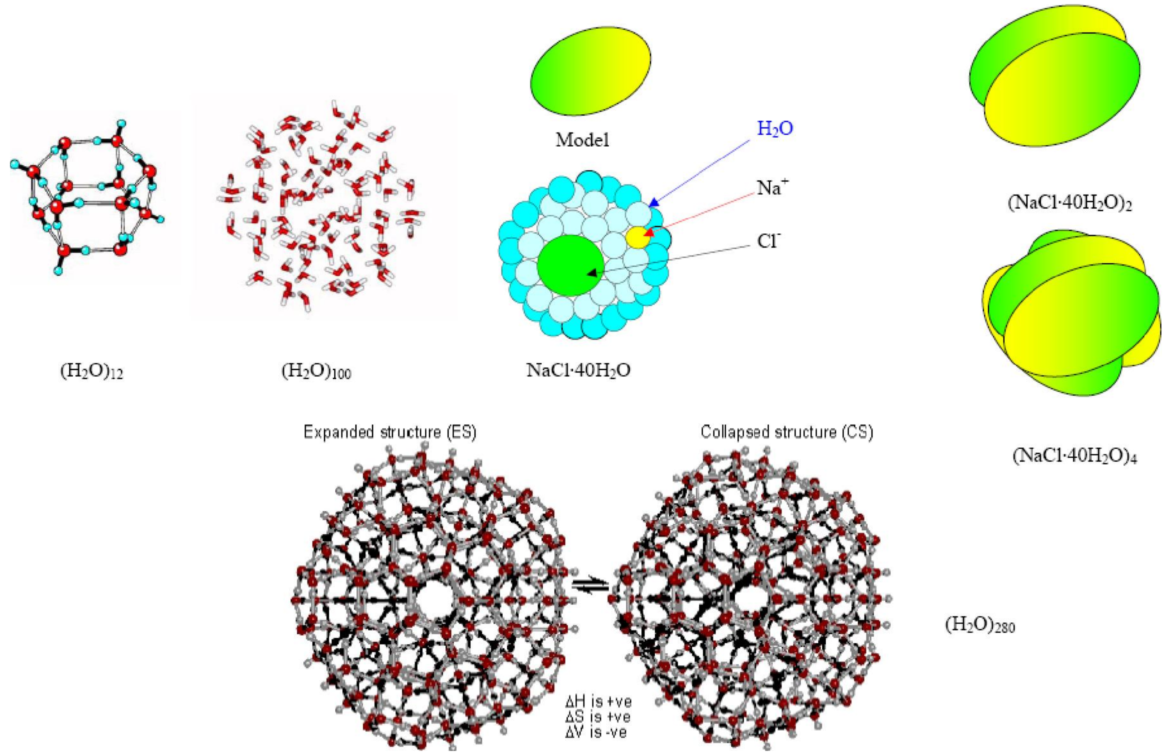

Figure 1 : Calculated water cluster models (with kind permission of the professors Chaplin (http://www.lsbu.ac.uk/water/index.html) and Lenz (Lenz et al, 2006) and solvated clusters of ion pairs, experimentally observed by the authors[4].

ter clusters, consisting of the base water cluster $(H_2O)_{11\pm1}$[2] are shown. The base water cluster belongs to an ensemble of dominating clusters which were formed enforced in white noises: $(H_2O)_{11\pm1}$, $(H_2O)_{100}$, $(H_2O)_{178}$, $(H_2O)_{280}$, $(H_2O)_{545}$, $(H_2O)_{903}$, $(H_2O)_{1351}$, $(H_2O)_{1601}$, $(H_2O)_{1889}$ etc.[3]. For a better understanding, the simplest solvated clusters of ion pairs are given, that can be applied for remote monitoring of processes in the earthquake epicenter too[1].

It was the aim of the present work to find in a long-time test the interlinkage between LRO in underground water and processes in earthquakes' zones.

MATERIAL AND METHODS

The test set-up for LRO in underground water as Scheme is shown in Figure 2.

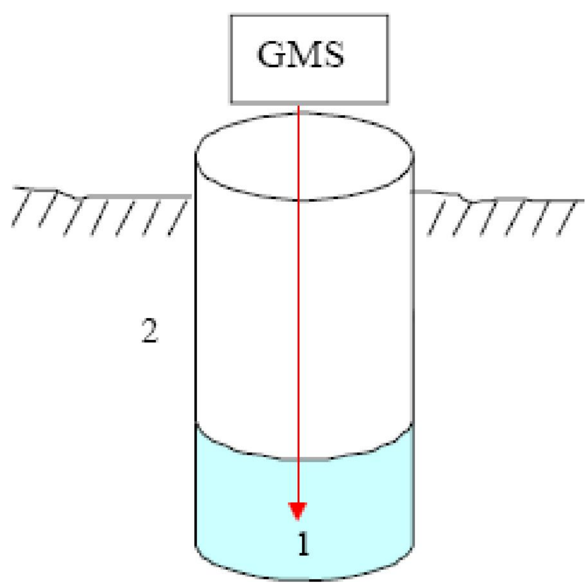

Figure 2 : Gravitation noise sampling by the Zubow gravitation mass spectrometer (GMS). 1 – GMS sensor in underground water, 2 – well of 3 m depth.

The LRO analysis was carried out according to the method described in[5, 6]. A cluster ensemble with a mass up to 3.3 million Dalton was investigated at 279 K under constant atmospheric pressure at a place with the geographical coordinates 53° 38´ n., 12° 35´ e. (North Germany). The water in the well was in a quiet condition. The principle of the gravitation mass spectroscopy (earlier called as flicker noise spectroscopy[3] is based on that the gravitation energy of nuclei clusters in molecular matter shall be analyzed[7]. Additional information to the GMS method is given in[8, 9] where the masses and oscillation frequencies of water clusters in underground water were calculated according to the Zubow equations using the Zubow constant $6.4\cdot10^{-15}$ N/m for water and for salt solutions. Data to earthquakes were taken from the homepage http://www.gfz-potsdam.de/news/recent/index.html.

RESULTS AND DISCUSSION

In Figure 3, there is given how the energy of water cluster ensembles changed during the experiment. The changing energy of a complete water cluster ensemble as well as some extreme data is shown. The curve deviation from the base line should be explained by gravitation energy drain from the water cluster ensemble in underground water to a more strong water cluster ensemble[9]. One of these extreme data was found to correlate with a signal from seismograph that registered the earthquake in Puerto Rico (9:45, 19° 25´ n., 65° 55´ e., in a depth of 18 and 50 km). This correlation is explained with that gravitation radiation spreads out with a super light velocity[3, 7, 9]. The other extreme signals cannot be described to earthquakes however they don't have to be ignored. They are an indication for strong processes in the hydrosphere that are connected with weakening of hydrogen bonds between water molecules. To this could belong for example, forced expansion of the hydrosphere under the influence of processes proceeding inside the Earth.

It has to be mentioned, that the signals from the epicenter spread out as seismic[1] as well as gravitation waves[3, 7] where in the present paper only the last ones shall be analyzed.

The deviation of the molecular mass of water cluster ensembles from the average value[1] seemed as more sensitively to earthquake influence it shall be analyzed in detail, therefore (Figure 4). Only the signals which differ around more than 30 % of the average value are shown in this Figure. As visible there are a number of signals that correlates with strong earthquakes whereas other ones correspond to weak earthquakes (Richter scale < 4.5) furthermore, some signals didn't indicate on earthquake. The group of signals that is marked with a horizontal bracket is connected to the development of events in the earthquake epicenter under the Java island (8° 73´ s., 112° 36´ e.) in a depth of 128 km at 13:05 (to seismograph at 13:31). Remember that during the whole observation the cluster kinds' number remained nearly unchanged (49 – 54) the energy necessary for the cluster ensemble destruction wasn't enough, therefore.

In the next, the group of signals marked with a bracket in Figure 4 shall be discussed in detail. If the signals reflect the processes in the earthquake epicenter, then a conclusion should be made with the dynamics of the cluster forms' changes, that depends on their interaction with the surroundings[1]. We assume that according to this work the signals reflect real earthquake processes in the water containing layer of the Earth core[10]. The appearance of expanded water clus-

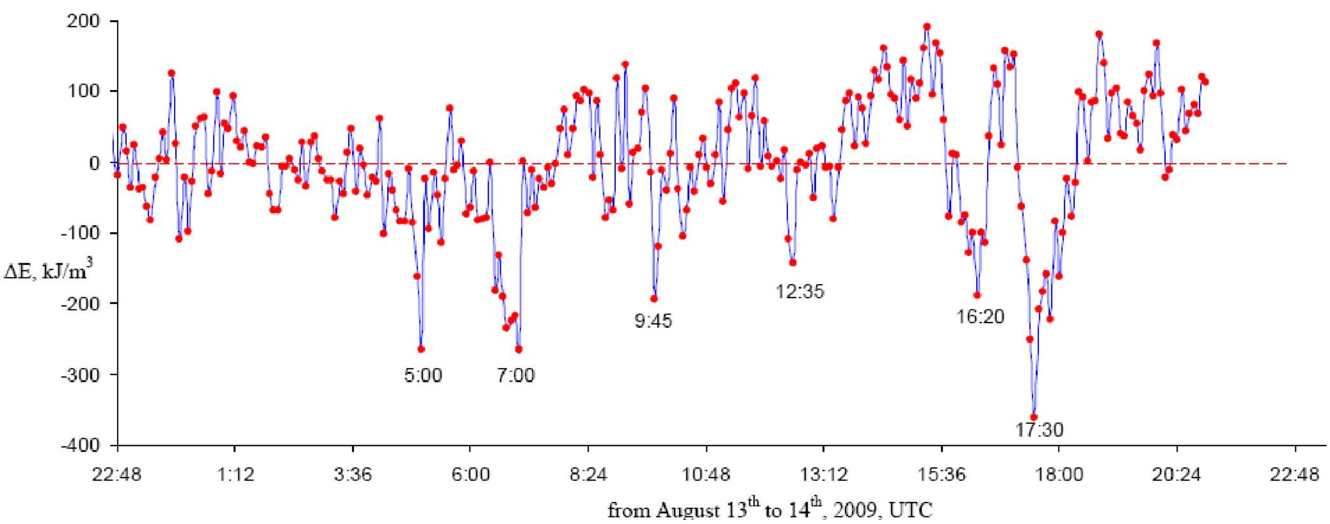

Figure 3 : Energy changes of water cluster ensembles in underground water from August 13th to 14th, 2009. The evaporation energy of water that is necessary for the complete destruction of all water clusters, was used (zero line as dotted line) for the spectra calibration. Each point is the middle of 4000 measurements with a reproducibility of not less than 95%.

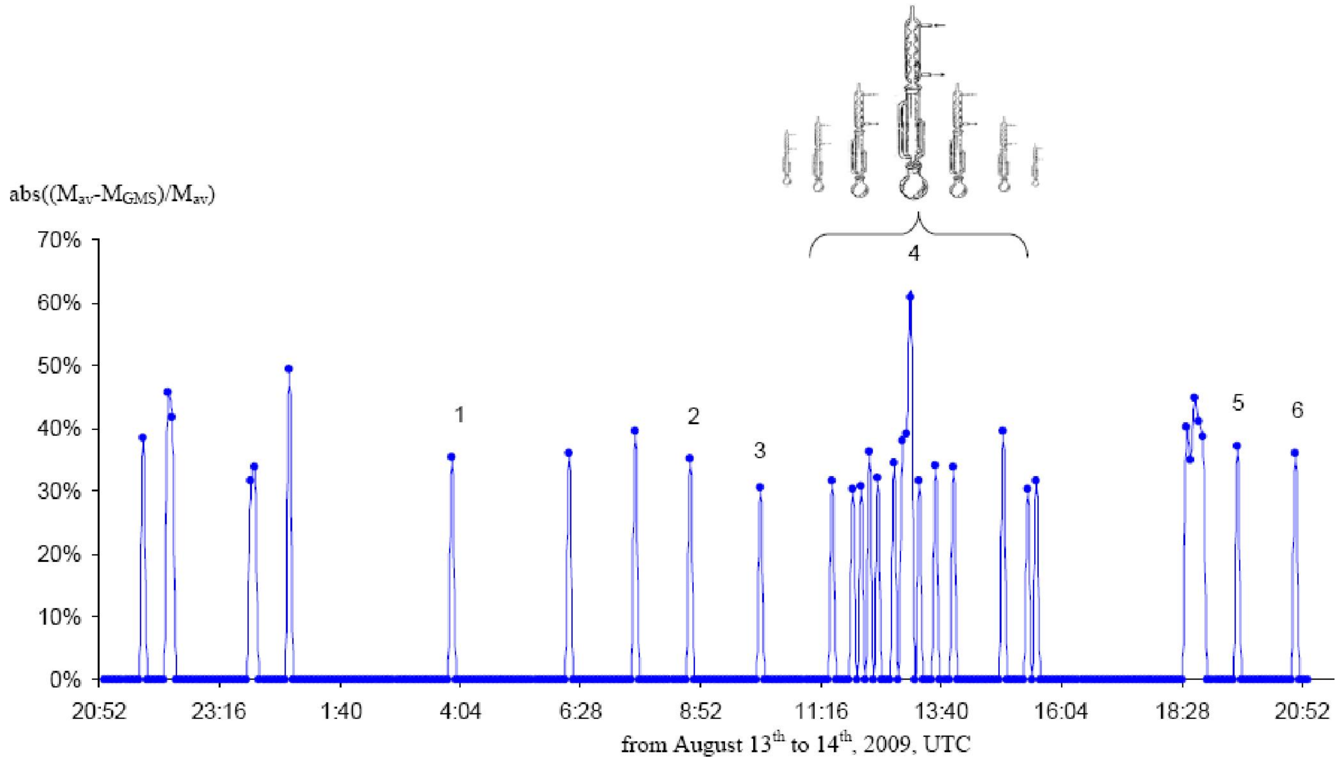

Figure 4 : Selected signals (abs((M_{av}-M_{GMS})/M_{av})), that deviate more than 30 % of the average mass of all water clusters (M_{av}) in an ensemble up to 2.3 million Dalton at the period from August 13th to 14th, 2009 for all test points. M_{GMS} –average clusters' mass in underground water to every test point of one minute[14]. Earthquakes in: 1 – Japan (Honshu, 4.6 Richter scale, RS); 2 – Vanuatu, 5.4 RS; 3 – Puerto Rico, 4.9 RS; 4 – Java, 4.7 RS; 5 – Andaman, India, 5.3 RS; 6 – Philippines, 5.1 RS.

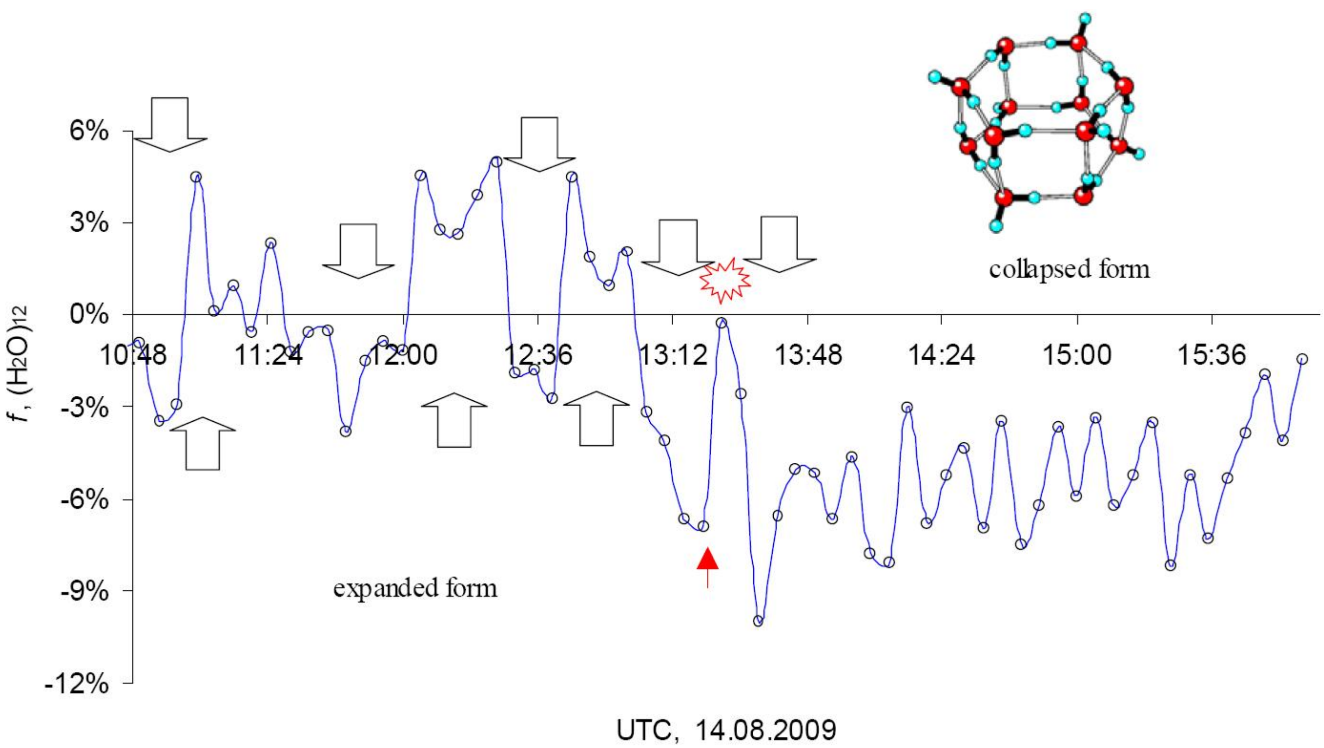

Figure 5 : Signal intensities of the base water cluster during the earthquake on the Java Island (Figure 4, points' group 4).

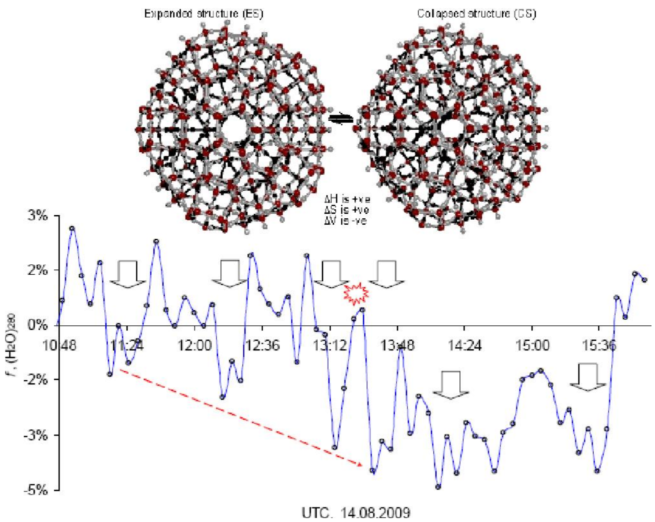

Figure 6 : Computer model for the Chaplin water cluster $(H_2O)_{280}$ and its signal intensities during the earthquake (marked with star) on the Java Island.

ters was ascribed to the destruction of water cluster ensembles in the earthquake epicenter whereas the appearance of collapsed ones characterize a decreased interaction with the surroundings accompanied with hydrogen bonds' formation inside the cluster, mainly. The water cluster form in the underground water was assumed to give an idea on the physical processes in the epicenter, therefore. The cluster behavior of this group was compared with that one of the base water cluster consisting of 12 molecules[2, 11] (Figure 5). As visible until the earthquake the base water cluster was observed to be in the expanded form, mainly, however it swings alternately to the collapsed form. At approaching to the earthquake event (designated with star) the frequencies of the pendulum (designated with broad arrows) increased. After the earthquake the cluster is in the collapsed form, only. This behavior of the clusters in the ensemble in underground water was characterized to reflect the remote influence of clusters' analogues from the epicenter[1, 3, 9] provoked by gravitation resonance between similar clusters[3, 7, 9, 13]. Until the earthquake, alternative compressing and expanding processes of rock formations in the epicenter were assumed to proceed in whose interspaces water infiltrated[13].

As shown in Figure 6 until the earthquake, the cluster $(H_2O)_{280}$ was mainly in the expanded form and at the after-earthquake time it changed to the collapsed one. However, after already 2 h the balance collapsed – expanded was shifted to the expanded form. The behavior of this cluster was found to be similarly to that one of the base water cluster it consists of[13], therefore.

In the next, the curves of the Figures 5 and 6 shall be compared. Until 13:00 the clusters changed differently. During the compression of $(H_2O)_{280}$ ($f < 0$) the base water cluster becomes more expanded ($f > 0$) and only directly before the earthquake (13:12) in both clusters dominate the collapsed forms, that are enriched with potential energy. Furthermore, there is visible that at approaching to the collapse (dotted line) the domination of collapsed forms amplified. In the rocks' pores, a mechanical compressing of these water clusters proceeds where this process is periodically (marked with arrows) and connected to relaxation processes of similar times. These quasi-periodic processes correlate with mathematical models developed for a periodic shear-heating mechanism for intermediate-depth earthquakes according to which temperatures can be increased up to 1673 K[11]. These local temperature raises influenced the water cluster ensembles, certainly.

As shown in Figure 7 the average molecular mass of clusters (M_{GMS}) in underground water was characterized by a distinct maximum before the earthquake. The ensembles of water clusters could run through several energy transformations inside the epicenter where M_{GMS} achieved the maximum at 13:05. To the authors this maximum has the potential to be used for the short-term forecast of earthquakes.

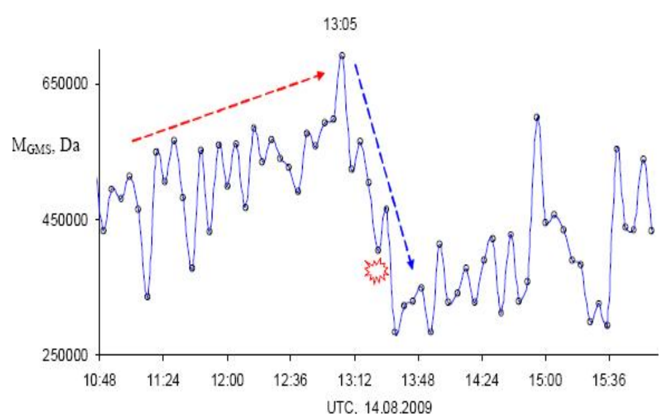

Figure 7 : The average molecular mass in a water cluster ensemble up to 2.3 million Dalton during the earthquake on the Java Island. The seismic maximum is ascribed with a star, the dotted lines show the trends of Ì$_{GMS}$ increasing and strong Ì$_{GMS}$ decline until the earthquake (Ì$_{GMS}$=Ó(|*f*|·*m*)), where Ó is the mathematical symbol for sum, *m* – cluster masses in Dalton.

15 minutes until the earthquake M_{GMS} almost doubled, explained with a fast gravitation radiation from the epicenter that excited the gravitation field of water clusters in the well, practically momentarily.

The forced change of the water cluster forms in the epicenter can be understood from the position of varied hydrogen bonds' lengths (intercluster hydrogen bonds, Figure 8, zigzag lines) leading to an other gravitation radiation[7]. The gravitation radiation changed enforced the potential energy of a cluster ensemble like an oscillator dimension. This leads to clusters' expansion or compression that is realized by the help of hydrogen bonds. Cluster compression has to be understood as the result of decreased hydrogen bonds' length through which the energy state of the protons in the hydrogen bonds shall be stronger influenced by oxygen atoms[7, 9] (Figure 8). Here the clusters were transferred into the collapsed forms that are enriched with potential energy. The compression was found to increase the dissolution velocities of the so-called "naked" protons[15] (H) connected with their fast reverse condensation from vacuum[7] (Figure 8), therefore. Through this the gravitation field in the epicenter gets more strained which was supported by the earlier observed gravitation radiation from earthquake epicenters[16]. The gravitation radiation of the compression zone causing green light (557.7 nm) in the atmosphere[17] was suggested to arise under the remote influence of the epicenter on "naked" protons in hydrogen bonds of expanded water clusters in the atmosphere.

In the following, the Figure 8 shall be discussed once again. At a constant number of cluster kinds in water and regarding to the Zubow equation[3] the sum of cluster masses in the equation $Ì_{GMS}=Ó(|f|\cdot m)$ shall be a constant value too, the strong increasing of $Ì_{GMS}$ can be described to *f* only, therefore. As we already know, the rise of the absolute sum Ó(|*f*|) is the result of clusters' individualization, reducing their interaction with surroundings and changing their conformations.

The hydrogen bonds' length changing is automatically connected with a changed water volume as well as

with modified hydrodynamic properties of the liquids that can be recorded by dilatometers[18], viscosimeters[19, 20] or the flicker noise spectrometer[1].

To evaluate the physicochemical characteristics in

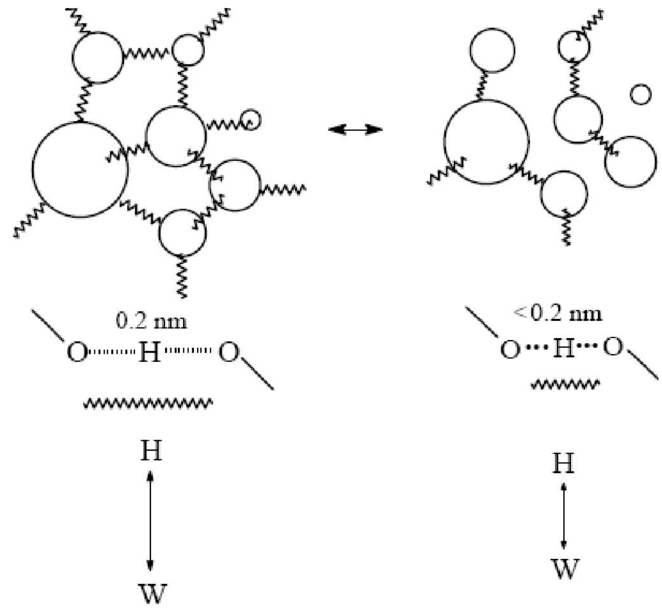

Figure 8 : Two states of protons in hydrogen bonds in water that oscillate between baryon mater (H) and physical vacuum (W)[7].

the earthquake epicenter in Java the data from the Figures 3, 5, 6, and 7 as well as the data of the remote cluster interaction[9, 21] were used.

Äf = k*·ln(*M*/*R*²)+*C

We start out from the above equation for the base water cluster $(H_2O)_{12}$, which connect the changed cluster signal intensities (Ä*f* = 7 %, Figure 5, marked with thin arrow) at the observation place (North Germany) with the water mass in epicenter (*M*, moles, 1 mol = 18 g) and the distance to the epicenter (*R*, m):

Ä*f* = 1.162·*M*/*R*²-0.0016

According to this equation the excited water mass in the epicenter in Java ($R \tilde{} 12.7\cdot10^6$, m, diameter of the Earth) was calculated to be about $179\cdot10^6$ t. To get an idea on the pressure developed in the epicenter a simple variant of water heating in a hydro layer until 1000 K[10] (shear-heating model, 1673 K[10] shall be discussed. The here developed pressure can be calculated with the help of the Mendeleev equation ($PV = nRT$, where $n = 179\cdot10^{12}/18 = 9.94\cdot10^{12}$ moles of water, R = 8.31 J/mol·Ê, $\grave{O}$ = 1000 Ê, $V = 179\cdot10^{12}$ cm^3). The pressure is about 0.46 GPa, which has to be seen as an effective value of the pressure in hot water in the epicenter and which is lower than the pressure developed by rocks' dehydration (2...9 GPa[22]. As visible from Figure 4 in the epicenter there is a variety of steam boilers (marked with a horizontal bracket). Concerning the earthquake on Java island at August 14^{th} 2009 it could be resulted by that one of 14 boilers was overheated and destroyed explosively (Figure 8, if only 10% of the gravitation noises are filtered out, then 20…25 boilers can be observed). At simultaneous heating-up of all boilers in the epicenter until the critical steam state the oldest and the most exhausted one shall be destroyed first.

The earthquake leads to a temporary post-seismic stabilization of the water cluster ensembles in the epicenter, at domination of collapsed clusters. The collapsed clusters are enriched with potential energy[6, 9, 13], that they obtained from the boiler explosion (Figures 5 and 6). However, the stabilization process is shortly and it is followed by rocks' erosion processes through condensed water from layers above the epicenter. In the next, this condensed water drips back into the boilers with regeneration of the beginning physicochemical state prior to the earthquake. The following boilers' ageing evokes an explosion again and hence a new earthquake. This permanently repeats (Figure 9, model of Soxhlet apparatus).

Let us return to the Figures 4, 5 and 6. The periodic repeating of maximums and minimums until the collapse could be seen as support for the geyser model namely the periodic pores' infiltration with water[12], then water heating up, the water steam release into the higher rocks' layers and finally steam condensation with the

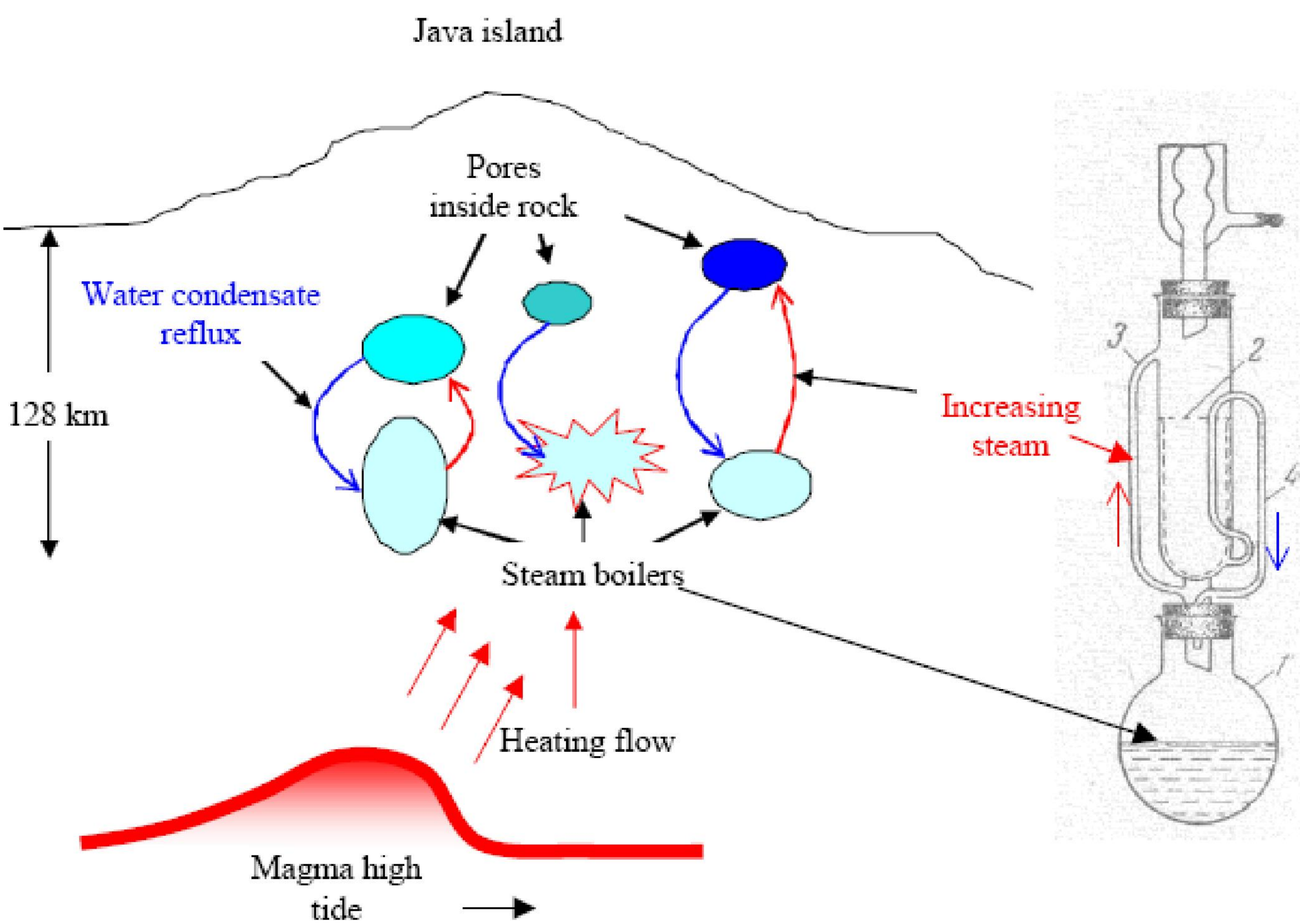

Figure 9. Model of underground periodic geysers consisting of three boilers that form the earthquake epicenters in Java. Water heating in boilers increased the pressure of steam accompanied with its release into the upper pores where the steam cooled down, condensed and returned back into the boilers. On the right side a scheme of the Soxhlet apparatus is shown, that is applied for the process modeling. 1 – liquid to be heated, 2 – condensate, 3 – steam flow tube, 4 – water condensate reflux. In the upper part the reverse condenser is partially shown (http://en.wikipedia.org/wiki/Soxhlet_extractor).

next water seeping back into the rock pores (boilers). Here the critical point is whether the rock walls of "boilers" can withstand the water steam pressure, and the earthquake breaks out if the walls don't withstand the pressure leading to explosion.

The Moon was observed to play an important role it creates a high tide in liquid magma that causes an additional heating of water inside the boilers. Although it is difficult to find a direct correlation between Moon influence and earthquake because of high magma viscosity and time needed for water heating in boilers.

Underground geysers in the epicenter are modeled as shown below (Figure 9).

A series of earthquakes that rocks the Java Island at October 30th, 2010 confirmed the suggested model. At this time the heating flow to the steam boilers was reinforced by the Moon that seems to cause a magma high tide to the upper layers of the earth core. This led to an overheating of the underground water connected with a destroying of the underground "Soxhlets' " stability.

The correlation between the earthquake in Java and the Moon constellation can be proved with the help of the computer program ZET9 (www.astrozet.net) however, under implication of the times need for the arrival of the magma high tide at the steam boilers and for water heating.

CONCLUSIONS

Strong earthquakes in Java were resulted by exploding underground "steam boilers" in the epicenters in a depth of 120…130 km.

The underground „steam boilers" were characterized by a specific distribution of at least 25 boilers.

The mechanism of water circulation under the Java Island is comparable with the Soxhlet principle.

The Moon could initiate strong explosions of steam boilers though it needs further investigations.

The Zubow gravitation spectrometer has the potential to be used for remote monitoring of earthquakes' epicenters, to get an idea about their structure. Furthermore, it should be possible to investigate the earthquake evolution and to develop a strategy for an early forecast.

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