



Science

**THE PREDICTION OF THE THERMOHYDROGRAVIDYNAMIC
THEORY CONCERNING THE STRONGEST INTENSIFICATIONS OF
THE GLOBAL NATURAL PROCESSES OF THE EARTH SINCE 18 JULY,
2017 AND BEFORE 26 FEBRUARY, 2018**

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Abstract

The article presents (on 21 August, 2017) the prediction of the established global prediction thermohydrogravidynamic principle (of the developed thermohydrogravidynamic theory containing the cosmic geophysics and the cosmic seismology based on the author's generalization of the first law of thermodynamics for non-stationary cosmic gravitation) concerning the strongest intensifications (since 18 July, 2017 and before 26 February, 2018) of the global seismotectonic, volcanic, climatic and magnetic processes of the Earth determined by the maximal (near 7 November, 2017) combined integral energy gravitational influence on the internal rigid core of the Earth (and on the Earth as a whole) of the planets (Mercury, Venus, Mars and Jupiter) and the Sun due to the gravitational interactions of the Sun with Jupiter Saturn, Uranus and Neptune. The prediction is based on the established global prediction thermohydrogravidynamic principle (used for the considered real planetary configurations of the Earth and the planets of the Solar System during the range 2004–2017) and on the statistical analysis of the previous strongest earthquakes occurred near the calculated dates of the local maximal combined planetary and solar integral energy gravitational influences (during the range 2004–2016) on the internal rigid core of the Earth.

Keywords: Thermohydrogravidynamic Theory; Cosmic Seismology; Cosmic Gravitation; Seismotectonic; Volcanic and Climatic Disasters.

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1. Introduction

The predictions of the strongest seismotectonic [1-4], volcanic [4, 5], climatic [4, 6, 7] and geomagnetic [8-13] processes of the Earth are the urgent problems [14-16] for humankind before

the founded [15, 16] increased intensifications (during the ranges 2020÷2026, 2037.38÷2043.38 and 2055÷2064) of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes [15, 16] of the Earth. We expanded the thermohydrogravidynamic theory [2-4, 7, 13-17] of the global natural processes of the Earth to the thermohydrogravidynamic theory [13, 15] of the controlled thermonuclear reactions [13, 18-20] related [13] with the problem [8-12] of the geomagnetic reversals. In this article, we present (to the International Journal of Research - GRANTHAALAYAH) the prognosticating deductions of the thermohydrogravidynamic theory [2-4, 7, 13-17] of the global natural processes concerning the different forthcoming ranges (characterized by the calculated probabilities) of the strongest intensifications of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth since 18 July, 2017 and before 26 February, 2018.

In Section 2 we present the established generalized formulations (1) and (5) of the first law of thermodynamics [2-4, 7, 13-17, 21] for the symmetric stress tensor \mathbf{T} [22] and the established [15, 16, 23] global prediction thermohydrogravidynamic principles (8) and (9) determining the maximal temporal intensifications of the global and regional natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth related with the maximal and minimal combined cosmic integral energy gravitational influences ((8) and (9), respectively, for the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$) on the considered internal rigid core $\tau_{c,r}$ (of the Earth) subjected to the combined cosmic integral energy gravitational influence of the planets of the Solar System, the Moon and the Sun (owing to the gravitational interaction of the Sun with the outer large planets).

In Section 3 we present the previous confirmed prediction [23] (based on the global prediction thermohydrogravidynamic principle (8)) concerning the past strongest intensifications of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth (in 2016 since 1 September, 2016 and before 26 January, 2017) determined by the maximal (for the time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$, which corresponds approximately to 6 October, 2016) combined planetary and solar integral energy gravitational influences on the internal rigid core $\tau_{c,r}$ of the Earth. In Section 3 we present also the new prediction (based on the global prediction thermohydrogravidynamic principle (8)) concerning the strongest intensifications of the global natural (sesmotectonic, volcanic, climatic and magnetic) processes of the Earth (since 18 July, 2017 and before 26 February, 2018) determined by the maximal (for the time moment $t^*(\tau_{c,r}, 2017) = 2017.85$, which corresponds approximately to 7 November, 2017) combined planetary and solar integral energy gravitational influences on the internal rigid core $\tau_{c,r}$ of the Earth.

In Section 4 we present the confirmed [23] validity of the established [15, 16, 23] global prediction thermohydrogravidynamic principle (8) (of the thermohydrogravidynamic theory [2-4, 7, 13-17, 21, 23]) concerning the predicted strongest intensifications of the global natural (sesmotectonic and climatic) processes of the Earth in 2016 since 1 September, 2016 and before 26 January, 2017. In Section 4 we present (on 31 August, 2017 during the date of the second submission of the corrected article for publication to the International Journal of Research – GRANTHAALAYAH) the existing (for 31 August, 2017) facts and evidences confirming the

validity of the established [15, 16, 23] global prediction thermohydrogravidynamic principle (8) (of the thermohydrogravidynamic theory [2-4, 7, 13-17, 21, 23]) concerning the second subrange of the strongest (in 2017) intensifications of the global natural (seismotectonic, volcanic and climatic) processes of the Earth since 18 July, 2017 and before 26 February, 2018.

In Section 5 we present the conclusions.

2. Methodology

Based on the general equation of continuum movement [22], the classical differential formulation [24] of the first law of thermodynamics for the one-component macrodifferential continuum element, the decomposition $\mathbf{P} = p\delta + \mathbf{\Pi}$ [24] for the pressure tensor \mathbf{P} [22], the viscous-stress tensor $\mathbf{\Pi}$ [24] and the symmetric stress tensor $\mathbf{T} = -\mathbf{P}$ [22] (δ is the Kronecker delta-tensor, p is the thermodynamic pressure), we derived [2-4, 7, 13-17, 23, 25] the generalized differential formulation of the first law of thermodynamics (for individual finite continuum region τ considered in a Galilean frame of reference with respect to a Cartesian coordinate system K shown on Fig. 1):

$$dU_{\tau} + dK_{\tau} + d\mathcal{P}_{\tau} = \delta Q + \delta A_{np,\partial\tau} + dG, \quad (1)$$

where δQ is the classical [22, 24, 26, 27] infinitesimal change of heat across the continuum boundary surface $\partial\tau$ of the continuum region τ , dU_{τ} is the classical [22, 24, 26, 27] infinitesimal change of the internal thermal energy U_{τ} , dK_{τ} is the established [2-4, 7, 13-17, 23] infinitesimal increment of the macroscopic kinetic energy K_{τ} [21, 28] of the continuum region τ , $d\mathcal{P}_{\tau}$ is the established [2-4, 7, 13-17, 23] infinitesimal increment of the gravitational potential energy \mathcal{P}_{τ} determined by the potential Ψ of the combined (cosmic and terrestrial) non-stationary gravity field, $\delta A_{np,\partial\tau}$ is the generalized [2-4, 7, 14, 21] infinitesimal work done by non-potential terrestrial stress forces acting on the continuum boundary surface $\partial\tau$ of the continuum region τ ,

$$dG = dt \iiint_{\tau} \frac{\partial\psi}{\partial t} \rho dV \quad (2)$$

is the established [2-4, 7, 13-17, 23] infinitesimal combined (cosmic and terrestrial) non-stationary energy gravitational influence on the continuum region τ during the infinitesimal time interval dt . The relation (2) for dG takes into account the partial derivative $\partial\psi/\partial t$ of the potential ψ of the combined (cosmic and terrestrial) non-stationary gravitational field, the local mass density ρ of the differential volume dV in the continuum region τ .

The generalized differential formulation (1) of the first law of thermodynamics and the relation (2) result to the following relation:

$$dG = dt \iiint_{\tau} \frac{\partial\psi}{\partial t} \rho dV = -dt \iint_{\partial\tau} (\mathbf{J}_g \cdot \mathbf{n}) d\Omega_n, \quad (3)$$

which is the theoretical foundation [3, 4, 15, 16, 23] of the power \mathbf{J}_g of the gravitational energy (of the detected [1] non-relativistic classical “gravitational” waves [3, 4, 15, 16] generated from

the focal regions of earthquakes) across the surface element $d\Omega_n$ determined by the external normal unit vector \mathbf{n} . This theoretical foundation is based on the relation [3, 4, 15-17, 23] for the divergence $\text{div} \mathbf{J}_g$:

$$\text{div} \mathbf{J}_g = -\rho \frac{\partial \psi}{\partial t} . \tag{4}$$

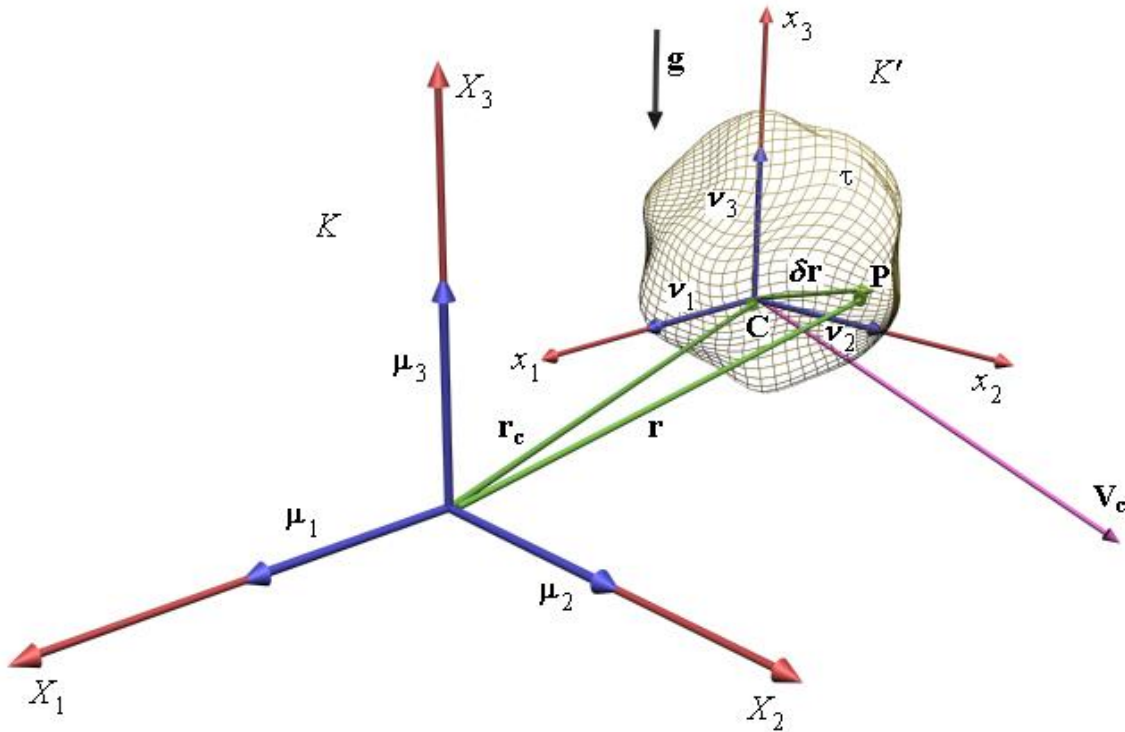


Figure 1: Cartesian coordinate system K of a Galilean frame of reference and an individual finite continuum region τ subjected to the non-stationary Newtonian gravitation field, non-potential terrestrial stress forces and non-stationary electromagnetic field

To solve the problem [8-12, 23, 25] of the geomagnetic reversals, we established the generalized differential formulation of the first law of thermodynamics [13, 17, 23]

$$dU_\tau + dK_\tau + d\pi_\tau + dE_{e,m,\tau} = \delta Q_{e,m} + \delta Q + \delta A_{np,\partial\tau} + \delta \Phi_{e,m} + dG \tag{5}$$

extending the established generalized formulation (1) of the first law of thermodynamics by taking into account (along with the classical terms δQ and dU_τ [22, 24, 26, 27] and the established [2-4, 7, 14-16] terms dK_τ , $d\pi_\tau$, $\delta A_{np,\partial\tau}$ and dG) the additional terms [13, 15, 17, 23]: the differential change $dE_{e,m,\tau}$ of electromagnetic energy $E_{e,m,\tau}$ inside the individual continuum region τ (considered in the Galilean frame of reference), the differential energy flux $\delta \Phi_{e,m}$ of the electromagnetic energy exchanged across the boundary surface $\partial\tau$ (of the

individual continuum region τ), and the differential heating $\delta Q_{e,m}$ due to the differential work of electrodynamic forces and due to the dissipated electromagnetic waves.

Taking into account the general relation (2) (represented in the generalized differential formulations (1) and (5) of the first law of thermodynamics) for the infinitesimal gravitational energy influence dG , we obtained [16, 23] the following relation for the combined differential cosmic non-stationary energy gravitational influence $dG(\tau_{c,r})$ (during the infinitesimal time interval dt) of the Solar System (the planets, the Moon and the Sun) on the internal rigid core $\tau_{c,r}$ of the Earth:

$$dG(\tau_{c,r}) = dt \iiint_{\tau_{c,r}} \frac{\partial \psi_{\text{comb}}}{\partial t} \rho_{c,r} dV, \quad (6)$$

where $\rho_{c,r} = 12800 \text{ kg} \cdot \text{m}^{-3}$ [29] is the mass density of the internal rigid core $\tau_{c,r}$, $\partial \psi_{\text{comb}} / \partial t \equiv \partial \psi_{\text{comb}}(\tau_{c,r}, t) / \partial t$ is the partial derivative (of the combined cosmic gravitational potential $\psi_{\text{comb}} \equiv \psi_{\text{comb}}(\tau_{c,r}, t)$ in the internal rigid core $\tau_{c,r}$ of the Earth) approximated as follows [15, 16, 23]

$$\psi_{\text{comb}}(\tau_{c,r}, t) = \psi_{3\text{MOON}}(C_3, t) + \sum_{i=1, i \neq 3}^9 \psi_{3i}(C_3, t) + \sum_{j=5}^8 \psi_{3j}^S(C_3, t). \quad (7)$$

Here $\psi_{3\text{MOON}}(C_3, t)$ is the gravitational potential [2, 7, 30] created by the Moon at the mass center C_3 of the Earth; $\psi_{3i}(C_3, t)$ is the gravitational potential [2, 7, 14, 30] created by the planet τ_i at the mass center C_3 of the Earth; $\psi_{3j}^S(C_3, t)$ is the gravitational potential [15, 16] created by the Sun (due to the outer large planet τ_j) at the mass center C_3 of the Earth.

We established [15, 16, 23, 31] that the combined differential cosmic energy gravitational influence per unit time and per unit volume $dG(\tau_{c,r}) / (dtV(\tau_{c,r}))$ (on the internal rigid core $\tau_{c,r}$ of the Earth) has the maximal absolute value for the internal rigid core $\tau_{c,r}$ of the Earth (from all interior of the Earth) since the mass density $\rho_{c,r} = 12800 \text{ kg} \cdot \text{m}^{-3}$ [29] (of the internal rigid core $\tau_{c,r}$) has the maximal value and the partial derivative $\partial \psi_{\text{comb}} / \partial t$ is nearly constant value in the Earth [7, 23, 30, 31]. Taking into account this fact, we concluded [16, 23, 31] about the maximal intensity of the thermohydrogravidynamic processes [15, 16, 23, 31] in the internal rigid core $\tau_{c,r}$ of the Earth (and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth) with respect to others regions of the Earth.

Based on the generalized formulation (1) of the first law of thermodynamics (used for the internal rigid core $\tau_{c,r}$ of the Earth), we formulated [15, 16, 23, 31] the global prediction thermohydrogravidynamic principles determining the maximal temporal intensifications of the established [15, 16, 23, 31] thermohydrogravidynamic processes (in the internal rigid core $\tau_{c,r}$

and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth considered as a whole) subjected to the combined cosmic energy gravitational influence of the planets of the Solar System, the Moon and the Sun (owing to the gravitational interaction of the Sun with the outer large planets). We concluded [15, 16, 23, 31] (based on the generalized formulation (1) of the first law of thermodynamics used for the internal rigid core $\tau_{c,r}$ of the Earth) that the maximal intensifications of the established thermohydrogravodynamic processes are related with the corresponding maximal intensifications of the global and regional natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth.

The rigorous global prediction thermohydrogravodynamic principles (determining the maximal temporal intensifications near the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$, respectively, of the thermohydrogravodynamic processes in the internal rigid core $\tau_{c,r}$ and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth) are formulated as follows [15, 16, 23, 31]:

$$\Delta G(\tau_{c,r}, t^*(\tau_{c,r})) = \max_t \int_{t_0}^t dt' \iiint_{\tau_{c,r}} \frac{\partial \Psi_{comb}}{\partial t'} \rho_{c,r} dV - \text{local maximum for time moment } t^*(\tau_{c,r}), \quad (8)$$

and

$$\Delta G(\tau_{c,r}, t_*(\tau_{c,r})) = \min_t \int_{t_0}^t dt' \iiint_{\tau_{c,r}} \frac{\partial \Psi_{comb}}{\partial t'} \rho_{c,r} dV - \text{local minimum for time moment } t_*(\tau_{c,r}). \quad (9)$$

The global prediction thermohydrogravodynamic principles (8) and (9) define the maximal and minimal combined cosmic integral energy gravitational influences ((8) and (9), respectively, for the time moments $t = t^*(\tau_{c,r})$ and $t = t_*(\tau_{c,r})$) on the considered internal rigid core $\tau_{c,r}$ (of the Earth) subjected to the combined cosmic integral energy gravitational influence of the planets of the Solar System, the Moon and the Sun (owing to the gravitational interaction of the Sun with the outer large planets).

3. Findings

To predict in advance (on 31 August, 2016 [23, 31]) the forthcoming ranges (since 1 September, 2016) of the next active forthcoming intensifications of the global natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth in 2016, we used [23, 31] the established [15, 16] global prediction thermohydrogravodynamic principle (8) determining the maximal temporal intensification near the time moments $t = t^*(\tau_{c,r})$ of the thermohydrogravodynamic processes [15, 16] in the internal rigid core $\tau_{c,r}$ and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth. We used [23, 31] the principle (8) to obtain (for the considered real planetary configurations of the Earth and the planets of the Solar System) the numerical time moment

$$t^*(\tau_{c,r}, 2016) = 2016.7666, \quad (10)$$

corresponding to the maximal (in 2016) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth (τ_3). Based on the global

prediction thermohydrogravodynamic principle (8) and considering the real planetary configurations of the Earth and the planets of the Solar System for 2016, we obtained (in advance [31]) the numerical time moment (related with the maximal combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth in 2016) (10), which corresponds approximately to 6 October, 2016. Based on the global prediction thermohydrogravodynamic principle (8) used for the range (2004 ÷ 2015), we calculated [23, 31] the dates $t^*(\tau_{c,r}, (2004+m))$ ($m = 0, 1, \dots, 11$) corresponding to the different local maxima (8) of the combined planetary and solar integral energy gravitational influences (for the real planetary configurations during the range (2004 ÷ 2015)) on the internal rigid core $\tau_{c,r}$ of the Earth.

Considering the range (2004 ÷ 2015) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t^*(\tau_{c,r}, (2004+m))$, $m = 0, 1, \dots, 11$), we calculated [23, 31] the probability

$$\Pr \{t_{e,max,2016} \in (19 \text{ September} \div 23 \text{ October}, 2016)\} = 0.416 \quad (11)$$

of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes in 2016) near the calculated numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ during the forthcoming range [23, 31]:

$$(19 \text{ September} \div 23 \text{ October}, 2016). \quad (12)$$

Considering the range (2004 ÷ 2015) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t^*(\tau_{c,r}, (2004+m))$, $m = 0, 1, \dots, 11$), we calculated [23, 31] the probability

$$\Pr \{t_{e,max,2016} \in (1 \text{ September} \div 10 \text{ November}, 2016)\} = 0.75 \quad (13)$$

of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes of the Earth in 2016) near the calculated numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ [23, 31] during the forthcoming range [23, 31]:

$$(1 \text{ September} \div 10 \text{ November}, 2016). \quad (14)$$

Considering (on 7 November, 2016 [23]) the range (2004 ÷ 2015) and analyzing (during the first correction of the article [23] published on 26 January, 2017) the previous strongest earthquakes (occurred near the calculated dates $t^*(\tau_{c,r}, (2004+m))$, $m = 0, 1, \dots, 11$), we calculated (on 7 November, 2016 [23]) the following probabilities [23]

$$\Pr \{t_{e,max,2016} \in (10 \text{ August} \div 30 \text{ November}, 2016)\} = 0.833, \quad (15)$$

$$\Pr \{t_{e,max,2016} \in (28 \text{ June}, 2016 \div 13 \text{ January}, 2017)\} = 0.916, \quad (16)$$

$$\Pr \{t_{e,max,2016} \in (15 \text{ June}, 2016 \div 26 \text{ January}, 2017)\} = 0.99 \quad (17)$$

of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes in 2016 and in the beginning of 2017) near the numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ [23, 31] during the calculated (on 7 November, 2016 [23]) following ranges:

(10 August ÷ 30 November, 2016), (18)

(28 June, 2016 ÷ 13 January, 2017), (19)

(15 June, 2016 ÷ 26 January, 2017). (20)

To predict in advance (on 10 April, 2017 [33]) the forthcoming ranges of the next active forthcoming intensifications of the global natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth in 2017 since 18 July, 2017 and before 26 February, 2018, we used the established [15, 16, 23, 31] global prediction thermohydrogravidynamic principle (8) determining the maximal temporal intensification near the time moment $t = t^*(\tau_{c,r})$ of the thermohydrogravidynamic processes [16] in the internal rigid core $\tau_{c,r}$ and in the boundary region τ_{rf} between the internal rigid core $\tau_{c,r}$ and the fluid core $\tau_{c,f}$ of the Earth. We used the principle (8) to obtain (for the considered real planetary configurations of the Earth and the planets of the Solar System) the numerical time moment $t^*(\tau_{c,r}, 2017)$ corresponding to the maximal (in 2017) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth (τ_3). Based on the global prediction thermohydrogravidynamic principle (8) and considering the real planetary configurations of the Earth and the planets of the Solar System for 2017, we obtained (on 10 April, 2017 [33]) the numerical time moment (related with the maximal (in 2017) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth):

$$t^*(\tau_{c,r}, 2017) = 2017.85, \quad (21)$$

which corresponds approximately to 7 November, 2017. Based on the global prediction thermohydrogravidynamic principle (8) used for the range (2004 ÷ 2016), we calculated [23, 31] the dates $t^*(\tau_{c,r}, (2004+m))$ ($m = 0, 1, \dots, 12$) corresponding to the different local maxima (8) of the combined planetary and solar integral energy gravitational influences (for the real planetary configurations during the range (2004 ÷ 2016)) on the Earth.

Considering the range (2004 ÷ 2016) and analyzing the previous strongest earthquakes (occurred near the calculated dates $t^*(\tau_{c,r}, (2004+m))$, $m = 0, 1, \dots, 12$), we calculated (on 10 April, 2017 [33]) the following probabilities

$$\Pr \{t_{e,max,2017} \in (5 \text{ November} \div 9 \text{ November}, 2017)\} = 0.077, \quad (22)$$

$$\Pr \{t_{e,max,2017} \in (4 \text{ November} \div 10 \text{ November}, 2017)\} = 0.154, \quad (23)$$

$$\Pr \{t_{e,max,2017} \in (3 \text{ November} \div 11 \text{ November}, 2017)\} = 0.23, \quad (24)$$

$$\Pr \{t_{e,max,2017} \in (29 \text{ October} \div 17 \text{ November}, 2017)\} = 0.307, \quad (25)$$

$$\Pr \{t_{e,max,2017} \in (22 \text{ October} \div 23 \text{ November}, 2017)\} = 0.384, \quad (26)$$

$$\Pr \{t_{e,max,2017} \in (13 \text{ October} \div 1 \text{ December}, 2017)\} = 0.461, \quad (27)$$

$$\Pr \{t_{e,max,2017} \in (12 \text{ October} \div 2 \text{ December}, 2017)\} = 0.538, \quad (28)$$

$$\Pr \{t_{e,max,2017} \in (6 \text{ October} \div 8 \text{ December}, 2017)\} = 0.692, \quad (29)$$

$$\Pr \{t_{e,max,2017-2018} \in (12 \text{ September}, 2017 \div 1 \text{ January}, 2018)\} = 0.769, \quad (30)$$

$$\Pr \{t_{e,\max,2017-2018} \in (1 \text{ August, } 2017 \div 12 \text{ February, } 2018)\} = 0.846, \quad (31)$$

$$\Pr \{t_{e,\max,2017-2018} \in (22 \text{ July, } 2017 \div 22 \text{ February, } 2018)\} = 0.923, \quad (32)$$

$$\Pr \{t_{e,\max,2017-2018} \in (18 \text{ July, } 2017 \div 26 \text{ February, } 2018)\} = 0.99 \quad (33)$$

of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes in 2017 since 18 July, 2017 and before 26 February, 2018) near the numerical time moment $t^*(\tau_{c,r}, 2017) = 2017.85$ corresponding approximately to 7 November, 2017) during the calculated (on 10 April, 2017 [33]) following ranges:

$$(5 \text{ November} \div 9 \text{ November, } 2017), \quad (34)$$

$$(4 \text{ November} \div 10 \text{ November, } 2017), \quad (35)$$

$$(3 \text{ November} \div 11 \text{ November, } 2017), \quad (36)$$

$$(29 \text{ October} \div 17 \text{ November, } 2017), \quad (37)$$

$$(22 \text{ October} \div 23 \text{ November, } 2017), \quad (38)$$

$$(13 \text{ October} \div 1 \text{ December, } 2017), \quad (39)$$

$$(12 \text{ October} \div 2 \text{ December, } 2017), \quad (40)$$

$$(6 \text{ October} \div 8 \text{ December, } 2017), \quad (41)$$

$$(12 \text{ September, } 2017 \div 1 \text{ January, } 2018), \quad (42)$$

$$(1 \text{ August, } 2017 \div 12 \text{ February, } 2018), \quad (43)$$

$$(22 \text{ July, } 2017 \div 22 \text{ February, } 2018), \quad (44)$$

$$(18 \text{ July, } 2017 \div 26 \text{ February, } 2018). \quad (45)$$

It means that the dates $t_{e,\max,2017}$ and $t_{e,\max,2017-2018}$ of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes of the Earth determined by the maximal (in 2017) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth near the numerical time moment $t^*(\tau_{c,r}, 2017) = 2017.85$ corresponding approximately to 7 November, 2017) will occur in the ranges (34), (35), (36), (37), (38), (39), (40), (41), (42), (43), (44) and (45) characterized by the probabilities (22), (23), (24), (25), (26), (27), (28), (29), (30), (31), (32) and (33), correspondingly.

These ranges (34) - (45) and the corresponding probabilities (22) - (33) were founded exceptionally (by eliminating the analysis of the strongest global climatic activity of the Earth during the range (2004 ÷ 2016)) based on the combined analysis of the dates of the previous strongest earthquakes occurred during the range (2004 ÷ 2016) near the calculated dates $t^*(\tau_{c,r}, (2004 + m))$ ($m = 0, 1, \dots, 12$) corresponding to the different local maxima (8) of the combined planetary and solar integral energy gravitational influences (related with the real planetary configurations during the range (2004 ÷ 2017)) on the internal rigid core $\tau_{c,r}$ of the Earth τ_3 and on the Earth τ_3 as a whole.

4. Discussions

Let us discuss (in the beginning) the confirmed validity of the prediction (given by the calculated [23, 31] probabilities (11), (13), (15), (16) and (17)) of the thermohydrogravidynamic theory (based on the established [15, 16] global prediction thermohydrogravidynamic principle (8)) concerning the strongest intensifications of the global natural processes of the Earth in 2016 since 1 September, 2016 and before 26 January, 2017. Considering the Fig. 2 (demonstrating the magnitudes *M* and the dates (in yr) of the significant earthquakes (before 9 December, 2016) according to the U.S. Geological Survey) in 2016, we saw (on 18 December, 2016, during the second correction of the article [23]) that the predicted (in advance, on 7 November, 2016 during the first correction of the article [23]) range (10 August ÷ 30 November, 2016) (of the probable strongest intensifications of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016) contains the date (13 November, 2016 marked by symbol B on Fig. 2) of the strongest 7.8-magnitude (according to the U.S. Geological Survey) earthquake, which struck central New Zealand (near the city of Christchurch in the South Island) confirming the validity of the predicted range (10 August ÷ 30 November, 2016) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.833$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016.

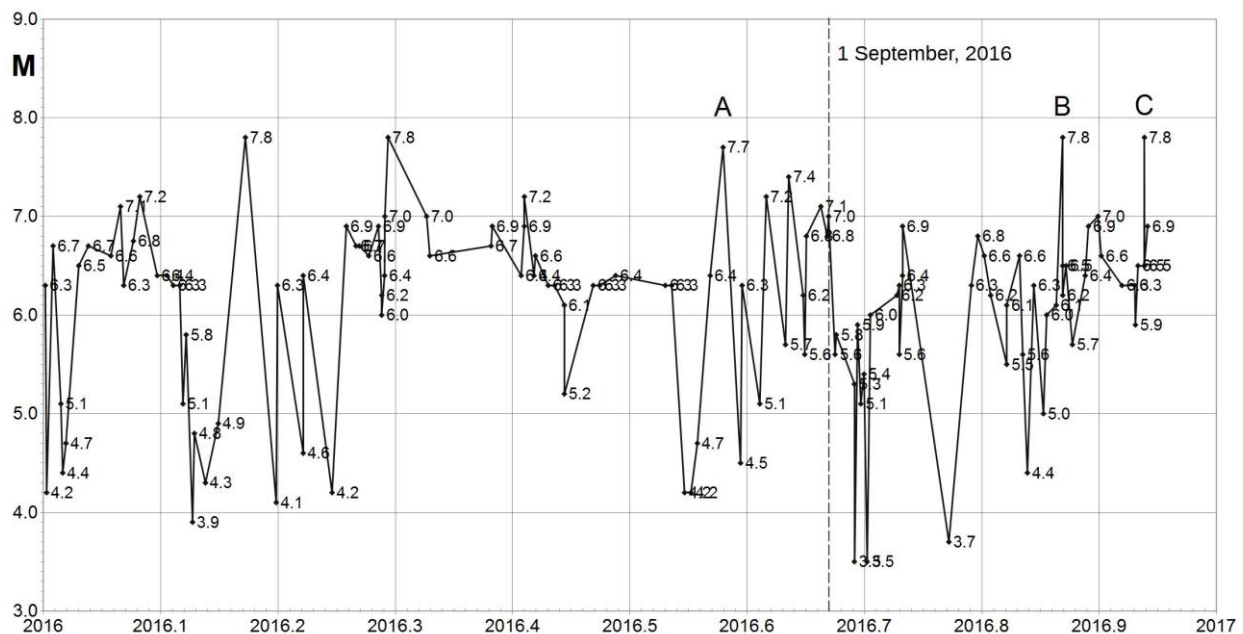


Figure 2: The magnitudes *M* and the dates (in yr) of the significant earthquakes (according to the U.S. Geological Survey) in 2016 before 9 December, 2016 [23]

We saw (on 18 December, 2016, during the second correction of the article [23]) that the predicted (in advance, on 7 November, 2016 during the first correction of the article [23]) range (28 June, 2016 ÷ 13 January, 2017) (of the probable strongest intensifications of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016) contains (along with the strongest 7.8-magnitude earthquake occurred on 13 November, 2016) the date (8

December, 2016 marked by symbol C on Fig. 2) of the strongest 7.8-magnitude (according to the U.S. Geological Survey) earthquake, which struck near the Solomon Islands confirming the validity of the predicted range (28 June, 2016 ÷ 13 January, 2017) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.916$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016. We saw (on 18 December, 2016, during the second correction of the article [23]) also that the predicted range (28 June, 2016 ÷ 13 January, 2017) contains the date (29 July, 2016 marked by symbol A on Fig. 2) of the strongest 7.7-magnitude (according to the U.S. Geological Survey) earthquake occurred before 1 September, 2016.

Analyzing (on 7 November, 2016, during the first correction of the article [23]) the climatic activity of the Earth in 2016, we concluded [23] that Hurricane Matthew produced the strongest devastating climatic (meteorological) activity during the predicted (in advance [31], on 31 August, 2016) range (19 September ÷ 23 October, 2016) of the probable strongest (in 2016 since 1 September, 2016) intensification (characterized by the probability $Pr=0.416$) of the global climatic (meteorological) activity of the Earth in 2016. According to the U.S. National Hurricane Center, Matthew was (on 30 September, 2016) the most powerful devastating hurricane in the Atlantic since the last Category 5 hurricane Felix observed in the Atlantic on September 2007. According to the U.S. National Hurricane Center, “Matthew's top sustained winds have risen from 115 mph (185 kph) to 125 mph (205 mph) in just a few hours early Thursday (on 6 October, 2016) as the storm continues to batter the central Bahamas” [34].

We pointed out [23] the first unquestionable fact that the date of 6 October, 2016 (when “Hurricane Matthew has gained new muscle over the Bahamas” [34]) is in the perfect agreement with the calculated (in advance [31], on 31 August, 2016) numerical time moment $t^*(\tau_{c,r}, 2016)=2016.7666$ (corresponding approximately to 6 October, 2016) of the maximal (in 2016) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth (and on the Earth as a whole). We pointed out [23] that the probability of this perfect agreement (considered as casual coincidence) is approximated by the obvious numerical value $(1/365) \cdot (1/365)$, which is very small number confirming that this perfect agreement is not a casual coincidence. We concluded [23] that this perfect agreement may be considered as the convincing evidence of the validity of the established [15, 16, 31] global prediction thermohydrodynamic principle (8) concerning the maximal intensifications of the global and regional climatic activities of the Earth. We concluded [23] that this perfect agreement may be considered also as the convincing evidence of the cosmic (combined planetary and solar) energy gravitational genesis of the global and regional climatic (meteorological) activities of the Earth related with strong hurricanes.

We pointed out [23] the second unquestionable fact that the strongest (in 2016 since 1 September and before 7 November, 2016) climatic (meteorological) activity of the Earth (related with hurricane Matthew) corresponds perfectly to the predicted (in advance [31], on 31 August, 2016) range (19 September ÷ 23 October, 2016) (based on the analysis of the previous strongest earthquakes during the range (2004 ÷ 2015)) of the of probable strongest (in 2016 since 1 September, 2016) intensification (characterized by the probability $Pr=0.416$) of the global climatic (meteorological) activity of the Earth. We considered [23] this second unquestionable

fact as the convincing evidence of the Gutenberg's [35] idea that the seismic activity of the Earth is closely related with the climatic (meteorological) activity of the Earth.

We pointed out [23] the third unquestionable fact (which confirms the Gutenberg's [35] idea about the global seismic-climatic relation) that the powerful 6.5-magnitude (according to the Japan Meteorological Agency) earthquake (occurred on 23 September, 2016 southeast of Tokyo) and the powerful 6.6-magnitude earthquake (occurred on 21 October, 2016 in Tottori, a prefecture in western Japan about 430 miles west of Tokyo) were realized during the predicted (in advance [31], on 31 August, 2016) range (19 September ÷ 23 October, 2016) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.416$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016.

We pointed out [23] the fourth unquestionable fact that the powerful 6.6-magnitude (according to the U.S. Geological Survey) earthquake (which is the strongest Italian devastating earthquake in nearly 40 years) rocked central Italy (near the Umbrian town of Norcia) on 30 October, 2016 confirming the validity of the predicted (in advance [31], on 31 August, 2016) range (1 September ÷ 10 November, 2016) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.75$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016.

Analyzing (on 18 December, 2016, during the second correction of the article [23]) the seismotectonic activity of the Earth in 2016 since 1 September, 2016 (by considering the significant earthquakes according to the U.S. Geological Survey), we pointed out [23] the fifth unquestionable fact that the powerful 7.8-magnitude (according to the U.S. Geological Survey) earthquake struck central New Zealand (near the city of Christchurch in the South Island) on 13 November, 2016 confirming the validity of the predicted (in advance, on 7 November, 2016 during the first correction of the article [23]) range (10 August ÷ 30 November, 2016) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.833$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016. We pointed out [23] that the date (13 November, 2016) of the powerful 7.8-magnitude earthquake occurred near the Full Moon (on 14 November, 2016) confirming the validity of the established [15, 36] significance of the Moon as the predominant cosmic trigger mechanism of the prepared earthquakes.

Analyzing (on 18 December, 2016, during the second correction of the article [23]) the seismotectonic activity of the Earth in 2016 since 1 September, 2016 (by considering the significant earthquakes according to the U.S. Geological Survey), we pointed out [23] the sixth unquestionable fact that the powerful 7.8-magnitude (according to the U.S. Geological Survey) earthquake struck near the Solomon Islands on 8 December, 2016 confirming the validity of the predicted (in advance, on 7 November, 2016 during the first correction of the article [23]) range (28 June, 2016 ÷ 13 January, 2017) of the probable strongest intensifications (characterized by the corresponding probability $Pr=0.916$) of the global seismotectonic and climatic processes of the Earth in 2016 since 1 September, 2016. We pointed out [23] (on 18 December, 2016 [23]) that the strongest 7.8-magnitude (according to the U.S. Geological Survey) earthquakes (occurred on 13 November, 2016 and on 8 December, 2016) confirmed the validity of the established [15, 16] global prediction thermohydrogravodynamic principle (8) concerning the

earthquakes (characterized by the magnitudes $M \geq 7.0$) in the range from 31 January, 2017 to 10 April, 2017.

We can discuss (on 31 August, 2017 during the date of the second submission of the corrected article for publication to the International Journal of Research – GRANTHAALAYAH) the confirmed validity of the prediction (made on 10 April, 2017 [33]) given by the calculated probabilities (33), (32) and (31)) of the thermohydrogravidynamic theory (based on the established [15, 16] global prediction thermohydrogravidynamic principle (8)) concerning the strongest intensifications of the global natural (seismotectonic, volcanic and climatic) processes of the Earth since 18 July, 2017 and before 26 February, 2018. Considering (on 31 August, 2017) the significant earthquakes (according to the U.S. Geological Survey) in 2017 before 31 August, 2017, we have the unquestionable fact that the date (17 July, 2017, 23:34:13 UTC) of the strongest 7.8-magnitude (strongest in 2017 before 31 August, 2017 according to the U.S. Geological Survey) earthquake (which struck Russia's Kamchatka Peninsula 198 km ESE of Nikol'skoye according to the U.S. Geological Survey) belongs practically (with the error of 26 minutes) to the predicted (on 10 April, 2017 [33]) range (45) characterized by the probability (33). We have the unquestionable fact that "on Wednesday, the University of Utah Seismograph Stations (UUSS) had recorded 1,284 events, the largest being magnitude 4.4" ([37] published on July 20, 2017), that is the period of the Yellowstone supervolcano intensification (on Wednesday, July 19, 2017) belongs to the predicted (on 10 April, 2017 [33]) range (45) characterized by the probability (33). We have the unquestionable fact that "the flooding has paralysed Gujarat" ([38] published on July 31, 2017), that is the period of the Indian severe monsoon floods (especially in Gujarat) belongs to the predicted (on 10 April, 2017 [33]) range (44) characterized by the probability (32). We have the unquestionable fact that "typhoon Noru dumped heavy rain on Japan Tuesday as it moved back out to sea, causing flooding and property damage while the number of injured reportedly rose to 51" ([39] published on August 8, 2017), that is the period of the typhoon Noru belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31). We have the unquestionable fact that "more than 800 people have been killed and 24 million affected following widespread floods across south Asia" ([40] published on August 22, 2017), that is the period of the widespread floods across south Asia belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31). We have the unquestionable fact that "damaging hurricane Harvey settles in over southeast Texas" ([41] published on August 27, 2017), that is the period of the damaging hurricane Harvey belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31).

5. Conclusions

We have presented in Section 2 (Methodology) the established [2-4, 7, 13-17, 21, 23, 25, 30-32, 36] generalized formulations (1) and (5) of the first law of thermodynamics and the established [15, 16, 23, 31] global prediction thermohydrogravidynamic principles (8) and (9) (of the cosmic seismology [15, 16, 23, 31]) determining the maximal temporal intensifications of the global and regional natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth. The generalization (1) of the first law of thermodynamics [2-4, 7, 13-17, 21, 23, 25, 31-32] is founded for the individual finite continuum region τ (considered in the Galilean frame of reference) subjected to the cosmic and terrestrial non-stationary Newtonian gravitational field and non-potential terrestrial stress forces characterized by the symmetric stress tensor \mathbf{T} [22].

The expanded [13, 17] generalized formulation (5) of the first law of thermodynamics is founded for the individual finite continuum region τ (considered in the Galilean frame of reference) subjected to the cosmic and terrestrial non-stationary Newtonian gravitational field, non-potential terrestrial stress forces and non-stationary electromagnetic field. The established [15, 16, 23, 31] global prediction thermohydrogravodynamic principles (8) and (9) (determining (in the frame of the cosmic seismology [15, 16, 23, 31]) the maximal temporal intensifications of the global natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth) are founded for the considered internal rigid core $\tau_{c,r}$ of the Earth subjected to the combined integral energy gravitational influence of the planets (Mercury, Venus, Mars and Jupiter), the Moon and the Sun due to the gravitational interactions of the Sun with Jupiter Saturn, Uranus and Neptune.

We have considered in Section 3 (Findings) the maximal combined planetary and solar integral energy gravitational influences ((8) for the time moments $t^*(\tau_{c,r}, 2016) = 2016.7666$ and $t^*(\tau_{c,r}, 2017) = 2017.85$, respectively) on the considered internal rigid core $\tau_{c,r}$ of the Earth for 2016 and 2017, respectively. We have presented in Section 3 (Findings) the prognostication [23, 31] based on the global prediction thermohydrogravodynamic principle (8) (of the thermohydrogravodynamic theory [2-4, 7, 13-17, 21, 23, 25, 30-32, 36]) concerning the strongest intensifications of the global natural (seismotectonic and climatic) processes of the Earth in 2016 (since 1 September, 2016 and before 26 January, 2017) near the calculated (in advance [31], on 31 August, 2016) numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ corresponding approximately to 6 October, 2016. We have presented (on 21 August, 2017) in Section 3 (Findings) the prognostication deductions (made on 10 April, 2017 [33]) based on the global prediction thermohydrogravodynamic principle (8) concerning the strongest intensifications of the global natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth determined by the maximal (for the time moment $t^*(\tau_{c,r}, 2017) = 2017.85$, which corresponds approximately to 7 November, 2017) combined planetary and solar integral energy gravitational influences on the internal rigid core $\tau_{c,r}$ of the Earth. The numerical time moment $t^*(\tau_{c,r}, 2017) = 2017.85$ (corresponding approximately to 7 November, 2017) is obtained based on the established [15, 16, 23, 31] global prediction thermohydrogravodynamic principle (8) used for the real planetary configurations of the Earth and the planets of the Solar System. The founded numerical time moment $t^*(\tau_{c,r}, 2017) = 2017.85$ is related with the maximal (for 2017) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth and on the Earth as a whole. We have presented Section 3 (Findings) the founded (on 10 April, 2017 [33]) ranges (34), (35), (36), (37), (38), (39), (40), (41), (42), (43), (44) and (45) of the dates $t_{e,max,2017}$ and $t_{e,max,2017-2018}$ of the forthcoming strongest earthquakes (and related [4, 7, 13-17, 25, 32] strongest volcanic, climatic and magnetic processes of the Earth determined by the maximal (in 2017) combined planetary and solar integral energy gravitational influence (8) on the internal rigid core $\tau_{c,r}$ of the Earth near the numerical time moment $t^*(\tau_{c,r}, 2017) = 2017.85$ corresponding approximately to 7 November, 2017) characterized by

the probabilities (22), (23), (24), (25), (26), (27), (28), (29), (30), (31), (32) and (33), correspondingly.

We have presented in Section 4 (Discussions) the confirmed [23] validity of the prognostication [23, 31] based on the global prediction thermohydrogravidynamic principle (8) (of the thermohydrogravidynamic theory [2-4, 7, 13-17, 21, 23, 25, 30-32, 36]) concerning the strongest intensifications of the global natural (seismotectonic and climatic) processes of the Earth in 2016 (since 1 September, 2016 and before 26 January, 2017) near the calculated (in advance [31], on 31 August, 2016) numerical time moment $t^*(\tau_{c,r}, 2016) = 2016.7666$ corresponding approximately to 6 October, 2016.

Considering (on 31 August, 2017) the significant earthquakes (according to the U.S. Geological Survey) in 2017 before 31 August, 2017, we have established the unquestionable fact that the date (17 July, 2017, 23:34:13 UTC) of the strongest 7.8-magnitude (strongest in 2017 before 31 August, 2017 according to the U.S. Geological Survey) earthquake (which struck Russia's Kamchatka Peninsula) belongs practically (with the error of 26 minutes) to the predicted (on 10 April, 2017 [33]) range (45) characterized by the probability (33). We have presented the evidence [37] (published on July 20, 2017) that "on Wednesday, the University of Utah Seismograph Stations (UUSS) had recorded 1,284 events, the largest being magnitude 4.4", that is the period of the Yellowstone supervolcano intensification (on Wednesday, July 19, 2017) belongs to the predicted (on 10 April, 2017 [33]) range (45) characterized by the probability (33). We have presented the evidence [38] (published on July 31, 2017) that "the flooding has paralysed Gujarat" [38], that is the period of the Indian severe monsoon floods (especially in Gujarat) belongs to the predicted (on 10 April, 2017 [33]) range (44) characterized by the probability (32). We have presented the evidence [39] (published on August 8, 2017) that "typhoon Noru dumped heavy rain on Japan Tuesday as it moved back out to sea, causing flooding and property damage while the number of injured reportedly rose to 51" [39], that is the period of the typhoon Noru belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31). We have presented the evidence [40] (published on August 22, 2017) that "more than 800 people have been killed and 24 million affected following widespread floods across south Asia" [40], that is the period of the widespread floods across south Asia belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31). We have presented the evidence [41] (published on August 27, 2017) that "damaging hurricane Harvey settles in over southeast Texas" [41], that is the period of the damaging hurricane Harvey belongs to the predicted (on 10 April, 2017 [33]) range (43) characterized by the probability (31). The considered above facts and evidences confirm the validity of the established [15, 16, 31] global prediction thermohydrogravidynamic principle (8) (of the thermohydrogravidynamic theory [2-4, 7, 13-17, 21, 23, 25, 30-32, 36]) concerning the second subrange of the strongest (in 2017) intensifications of the global natural (seismotectonic, volcanic and climatic) processes of the Earth since 18 July, 2017 and before 26 February, 2018 [33]. The author suggests the reasonable applications of the published findings (that is the founded forthcoming ranges (34), (35), (36), (37), (38), (39), (40), (41) and (42) characterized by the probabilities (22), (23), (24), (25), (26), (27), (28), (29) and (30), correspondingly, of the strongest intensifications of the global natural processes of the Earth) for the governments of the world-wide states to diminish (in advance) the devastating effects of the forthcoming natural catastrophic processes of the Earth.

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