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An Update on the Global Prediction of Thermohydrogravidynamic Principle Concerning the Strongest Intensifications of the Seismotectonic Processes: Special Reference to California

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Abstract

The prediction on the established thermo-hydro-gravidynamic principle concerning the strongest intensifications of the seismotectonic and climatic processes in California (since 9 August 2017 and before 3 March 2018) was determined by the maximal combined planetary and solar integral energy gravitational influence on the internal rigid core of the Earth and on the Earth as a whole. This demonstrates that the global prediction on thermohydrogravidynamic principle (used for the planets and the Sun) could be considered as the significant practical contribution to environmental science. It is related with the possibility for predicting (in advance) the modern strongest regional intensifications of the seismotectonic and climatic processes of the Earth subjected to the energetic cosmic (planetary, solar and lunar) gravitational influences.

Introduction:

The long-term predictions of the devastating earthquakes (Gutenberg, 1927; Richter, 1958; Simonenko, 2007, 2009, 2012, 2013, 2014a,b) and related climatic processes (Gutenberg, 1927; Simonenko, 2009, 2012) of the Earth are the notable alerts for mankind (Simonenko, 2014a, 2014b). The strongest 9.0-magnitude earthquake of Tohoku, 2011 was already considered as the predicted range 2010-2011 (1927+83-1923+88) for the next consecutively strong Japanese earthquake near the Tokyo region" (Simonenko, 2009). The evidence of the cosmic energy gravitational genesis of the forthcoming intensifications of the global seismotectonic, volcanic, climatic and magnetic activities since 2016 AD were already alerted (Simonenko, 2015).

Based on the established global prediction thermo-hydrogravidynamic principle based on the thermo-hydrogravidynamic theory (Simonenko, 2012, 2014b) and on the analysis of dynamic (as per U.S. Geological Survey) earthquakes (occurred in California since 2004 and before 2016), it was predicted in advance concerning the strongest intensifications of the seismotectonic and climatic processes in California (since 9 Aug. 2017 and before 3 Mar., 2018) determined by the maximal (near 7 Nov., 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 & Jupiter) and the Sun due to the gravitational interactions of the Sun with Jupiter Saturn, Uranus and Neptune (Simonenko, 2017).

By analyzing the dynamism of (as per U.S. Geological Survey) earthquakes occurred in California (since Aug. 9, 2017 and before Nov. 27, 2017), the partial prediction of the thermohydrogravidynamic theory concerning the different forthcoming ranges (characterized by the corresponding calculated probabilities) of the strongest intensifications of the seismotectonic and climatic processes for the same was also pre-estimated. The aim of this article is to present the total dynamism analysis of the earthquakes occurred in California (since 9 Aug. 2017 and before 3 Mar. 2018) and review the relevant predictions (Simonenko, 2017) of the thermohydrogravidynamic theory concerning the strongest intensifications of the seismotectonic processes in California for the same time.

The generalized gormulation of the first law of thermodynamics and the global prediction on thermohydrogravidynamic principles:

Based on the general equation of continuum movement (Gyarmati, 1970), the classical differential formulation (de Groot & Mazur, 1962) of the first law of thermodynamics for the one-component micro differential continuum element with no chemical reactions, the classical decomposition for the pressure tensor, the viscous-stress tensor and the symmetric stress tensor, the generalized differential

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formulation of the first law of thermodynamics was derived (Simonenko, 2007, 2009, 2012, 2013, 2014a,b). The general formulation is founded for individual finite continuum region τ considered in a Galilean frame of reference with respect to a Cartesian coordinate system K (Fig.-1). Along with the classical terms (Gibbs, 1873; Landau & Lifshitz, 1976), the general formula contains the established infinitesimal combined (cosmic & terrestrial) non-stationary energy gravitational influence

$$dG=dt \iiint_{\tau} \frac{\partial \psi}{\partial t} \rho dV \qquad (1)$$

on the continuum region τ during the time interval dt . The relation (1) 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 .

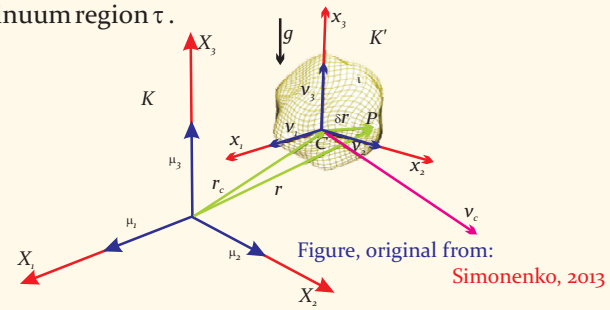

Figure-1: Cartesian coordinate system K of a Galilean frame of reference and an individual finite continuum region τ subjected to the non-stationary combined (cosmic & terrestrial) Newtonian gravitation field and non-potential terrestrial stress forces

Based on the relation (1) (used for the internal rigid core of the Earth), it was formulated (Simonenko, 2012, 2014b, 2017). The thermo-hygro-gravidynamic processes are subjected to the combined cosmic energy gravitational influence of the planets of the Solar System, the Sun (owing to the gravitational interaction of the Sun with the outer large planets) and the Moon. The global prediction thermo -hydro-gravidynamic principles (determining the maximal temporal intensifications near the time moments $t=t^*(\tau_{cr})$ & $t=t_*(\tau_{cr})$ and respectively, of the thermohydro-gravidynamic processes) are related with the maximal and minimal combined cosmic integral energy gravitational influences on the internal rigid core of the Earth. The global prediction on thermohydrogravidynamic principles takes into account combined cosmic integral energy gravitational influences on the considered internal rigid core (of the Earth) of the planets of the Solar System, the Sun (owing to the gravitational interaction of the Sun with the outer large planets) and the Moon. The global prediction thermohydrogravidynamic principles are formulated (Simonenko, 2012, 2014b, 2017) for the internal rigid core (of the Earth) characterized by the mass density $\rho_{c,r}$=12800kg.m^{-3}(Alboussière *et al.*, 2010). The maximal temporal intensifications are determined by the temporal maximal and minimal combined cosmic integral energy gravitational influences (respectively, for the time moments $t=t^*(\tau_{cr})$ & $t=t_*(\tau_{cr})$) on the considered internal rigid core (of the Earth) of the planets of the Solar System, the Sun and the Moon.

Total validity concerning the predicted strongest intensifications of the seismo-tectonic processes in California in 2017 & 2018:

The forthcoming ranges of the active forthcoming intensifications of the natural (seismotectonic and climatic) processes in California since 9 Aug. 2017 and before 3 Mar. 2018 was already predicted (Simonenko, 2017). Based on the global prediction thermohydrogravidynamic principle used for the real planetary configurations of the Earth and the planets of the Solar System, it was calculated (Simonenko, 2017) the numerical time moment $t=(\tau_{cr},2017)=2017.85$ (related to the maximal in 2017 combined planetary and solar integral energy gravitational influence on the internal rigid core of the Earth). The time moment $t=(\tau_{cr},2017)=2017.85$ corresponds approximately to 7 Nov. 2017. Previously, based on the global prediction thermohydrogravidynamic principle used for the range (2004, 2016), it was calculated (Simonenko, 2016a, 2016b) the dates corresponding to the different local maximal combined planetary and solar integral energy gravitational influences on the internal rigid core of the Earth (for the real planetary configurations during the range 2004 - 2016). Simonenko, (2017) analyzed the previous significant earthquakes occurred in California near the calculated dates corresponding to the maximal combined planetary and solar integral energy gravitational influences on the Earth for 2004, 2005 , ..., 2016, correspondingly (as per U.S. Geological Survey). The simple approximate relations (Simonenko, 2017) are used for calculation of the dates t_c (given in yr in the presented Table-1 below) of the considered dynamic (as per U.S. Geological Survey) earthquakes and for calculation of the corresponding differences $\triangle=|t_e-t^*(\tau_{cr},\ 2017)|$ given in days in the presented Tables 1, 2 below.

Considering the range (2004 – 2016) and analyzing the previous year-wise dynamic earthquakes occurred in California near the calculated dates corresponding to the maximal (in 2004 to 2016) combined planetary and solar integral energy gravitational influences on the internal rigid core of Earth, it was calculated (on 9 Aug. 2017). The different probabilities of the forthcoming strongest (in California) earthquakes (and related (Gutenberg, 1927; Simonenko, 2009, 2012, 2013, 2014a,b) strongest (in 2017 & 2018) climatic processes) since 9 Aug. 2017 & before 3 Mar. 2018) during the corresponding calculated time ranges (Simonenko, 2017).

Table-1 includes the previous (Simonenko, 2017)

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Table 1: Total dynamic earthquakes analysis occurred in California on dates t_e near the calculated date $t^*(\tau_{cr}, 2017)=2017.85$)

Magnitude M, Region	Date t_e of earthquake, in yr	Coordinate	$\triangle = \lvert t_e - t^*(\tau_{cr}, 2017) \rvert$ in days
M=5.8, 175 km W of Ferndale, California	January 25, 2018 = 2018.068446	40.456°N, 126.333°W	79.78 days after the date[@]
M=4.0, 12 km NE of Trabuco Canyon, CA	January 25, 2018 = 2018.068446	33.741°N, 117.491°W	79.78 days after the date[@]
M=4.4, 2 km SE of Berkeley, CA	January 4, 2018 = 2018.010951	37.855°N, 122.257°W	58.78 days after the date[@]
M=3.9, 8 km ENE of Alum Rock, CA	December 27, 2017=2017. 990587	37.397°N, 121.747°W	51.34 days after the date[@]
M=4.0, 14 km NE of Julian, CA	December 7, 2017= 2017.9358309	33.148°N, 116.479°W	31.34 days after the date[@]
M=4.6, 22 km NE of Gonzales, California	November 13, 2017=2017.868925	36.631°N, 121.244°W	6.91 days after the date[@]
M=4.3, 32 km SW of Lompoc, CA	October 26, 2017= 2017.821184	34.421°N, 120.679°W	10.52 days before the date[@]
M=4.1, 14 km ESE of Alum Rock, California	October 10, 2017=2017.77737	37.314°N, 121.672°W	26.52 days before the date[@]
M=3.6, 5 km NW of Westwood, CA	September 19, 2017= 2017.71868	34.087°N, 118.476°W	47.96 days before the date[@]

[@] $t^*(\tau_{cr}, 2017)$

partial combined analysis for 2017 (from Aug. 9, 2017 to Oct. 22, 2017) and the new additional analysis (from Nov. 27, 2017 to Mar. 3, 2018) of the dynamic earthquakes occurred in California on dates t_e near the calculated date $t^*(\tau_{cr}, 2017)=2017.85$ (as per U.S. Geological Survey) corresponding to the maximal (in 2017) combined planetary and solar integral energy gravitational influence on the internal rigid core of the Earth. Considering (on Nov. 27, 2017 based on the part of Table 1 below Nov. 13, 2017) the dynamic earthquakes in California (as per U.S. Geological Survey) from Aug. 9, 2017 to Nov. 27, 2017, it was obvious that the date (Nov. 13, 2017) of the 4.6-magnitude earthquake (which struck 22 km NE of Gonzales, California near 6.91 days after the date $t^*(\tau_{cr}, 2017)=2017.85$) belongs to the predicted range (9 Aug. ÷ 29 Nov., 2017) characterized by the probability Pr = 0.6923 of the strongest (in California for 2017) earthquakes and related (Gutenberg, 1927; Simonenko, 2009, 2012, 2013, 2014a,b) strongest climatic processes near the calculated numerical time moment. The obtained minimal difference of 6.91 days (Table-1) demonstrated the practical applicability of the global prediction thermohydrogravidynamic principle (Simonenko, 2012, 2014b) for the reasonable prediction of the seismotectonic activity in California for 2017 near the calculated (Simonenko, 2007) date of the maximal (in 2017) combined planetary and solar integral energy gravitational influence on the internal rigid Earth core.

Considering the devastation from California's most destructive wildfire it is evident, the convincing evidence of the practical applicability of the global prediction thermohydrogravidynamic principle for the reasonable prediction (Simonenko, 2017) of the strongest intensifications of the closely related seismotectonic and climatic processes in California (Gutenberg, 1927; Simonenko, 2009, 2012, 2013, 2014a, 2014b) determined by the maximal (in 2017 near the calculated date $t^*(\tau_{cr}, 2017)=2017.85$) combined planetary and solar integral energy gravitational influence on the internal rigid Earth core. Considering (on Mar. 23, 2019 based on Table-1) the additional (from Oct 22, 2017 to Mar. 3, 2018) dynamic earthquakes in California, it is obvious that the date (Dec. 7, 2017) of the 4.0-magnitude earthquake (which struck 14 km NE of Julian, CA near 31.34 days after the date $t^*(\tau_{cr}, 2017)=2017.85$) belongs to the predicted (Simonenko, 2017) range (9 Aug. ÷ 8 Dec., 2017) characterized by the probability Pr=0.7692 of the strongest (in California for 2017) earthquakes and related strongest climatic processes near the numerical time moment $t^*(\tau_{cr}, 2017)=2017.85$. It is the first additional unquestionable fact confirming the total validity of the global prediction thermo-hydrogravidynamic principle concerning the strongest intensifications of the seismotectonic processes in California since 9 August, 2017 and before 3 Mar. 2018 (Simonenko, 2017). It is obvious (on Mar., 23, 2019; Table-1) that the date (Dec., 27, 2017) of the 3.9-magnitude earthquake (which struck 8 km ENE of Alum Rock, CA near 51.34 days after the date $t^*(\tau_{cr}, 2017)=2017.85$) belongs to the predicted (Simonenko, 2017) range (9 Aug. 2017 ÷ 9 Jan. 2018) characterized by the probability Pr = 0.8461 of the strongest (in California for 2017 & 2018) earthquakes and related strongest climatic processes near the numerical time moment $t^*(\tau_{cr}, 2017)=2017.85$. It is obvious (based on Table 1) that the date (Jan. 4, 2018) of the 4.4-magnitude earthquake (which struck 2 km SE of Berkeley, CA near 58.78 days after the date $t^*(\tau_{cr}, 2017)=2017.85$) belongs to the predicted (Simonenko, 2017) range (9 Aug. 2017 ÷ 9 Jan. 2018) characterized by the probability Pr = 0.8461. It is obvious (based on Table-1) that the date (Jan. 25, 2018) of the 4.0-magnitude and 5.8-magnitude (strongest in California for 2017 and 2018 as per U.S. Geological Survey) earthquakes (which struck 12 km NE of Trabuco Canyon, CA and 175 km W of Ferndale, California, respectively, near 58.78 days after the date $t^*(\tau_{cr}, 2017)=2017.85$) belongs to the predicted (Simonenko, 2017) range (9 Aug. 2017 ÷ 3 Mar. 2018) characterized by the probability Pr = 0.99 of the strongest (in California for 2017 & 2018) earthquakes and related strongest climatic processes near the numerical time moment $t^*(\tau_{cr}, 2017)=2017.85$. The considered second, third, fourth and fifth additional unquestionable facts confirm the total validity of the global prediction τηερμοηψδρογραϖιδψναμιχ principle concerning the strongest intensifications of the seismotectonic processes

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Table 2: Total dynamic earthquakes analysis (characterized by the magnitude M≥7.5) occurred in California since 1900 and before 28 April, 2019

Magnitude M, Region	Date t_e of earthquake, in yr	Coordinate	$\triangle = \lvert t_e - t^*(\tau_{cr}, 1906/1952) \rvert$ in days
M=7.9, San Pablo Bay, California	April 18, 1906 = 1906.299281	37.750°N, 122.550°W	36.78 days before the date $t^*(\tau_{cr}, 1906)$
M=7.5, 6 km WNW of Grapevine, CA	July 21, 1952 = 1952.557494	34.958°N, 118.998°W	87.96 days after the date $t^*(\tau_{cr}, 1952)$

in California since 9 Aug., 2017 and before 3 Mar., 2018 (Simonenko, 2017).

To demonstrate additionally the validity of the global prediction thermohydrogravidynamic principle concerning the strongest intensifications of the seismotectonic processes in California, let us consider the strongest earthquakes (characterized by the magnitude as per U.S. Geological Survey) in California since 1900 and before 28 Apr. 2019. Table-2 includes the analysis of the strongest earthquakes (characterized by the magnitude M≥7.5 as per U.S. Geological Survey) occurred in California since 1900 & before 28 Apr. 2019.

The strongest earthquakes in California were realized on dates t_e near the calculated dates $t^*(\tau_{cr}, 1906)$=1906.4 and $t^*(\tau_{cr}, 1952)$=1952.31666666 corresponding to the maximal combined planetary and solar integral energy gravitational influences on the internal rigid core of the Earth during 1906 & 1952, respectively. These facts confirm additionally the validity of the global prediction thermohydrogravidynamic principle explaining the strongest intensifications of the seismotectonic processes in California on April 18, 1906 and on July 21, 1952.

Conclusion:

In this update, the established generalized differential formulation of the first law of thermodynamics and the related established (Simonenko, 2012, 2014b) global prediction on thermohydrogravidynamic principles determining the maximal temporal intensifications of the global and regional natural (seismotectonic, volcanic, climatic and magnetic) processes of the Earth has already discussed (Simonenko, 2007, 2012, 2014a,b). The final analysis of the prediction (Simonenko, 2017) made on August 9, 2017 (based on the global prediction thermohydrogravidynamic principle taken into account the non-stationary gravitational field of the planets and the Sun) has also discussed. The prediction (Simonenko, 2017) was based also on the analysis of the previous dynamic (as per U.S. Geological Survey) earthquakes occurred since 2004 and before 2016 in California. It was proved the confirmed total validity of the prediction (Simonenko, 2017) concerning the strongest intensifications of the seismotectonic processes in California (since 9 Aug. 2017 & before 3 Mar. 2018) determined by the maximal (near 7 Nov. 2017) combined planetary and solar integral energy gravitational influence on the internal rigid core of the Earth. It was shown in Table-1, the unquestionable fact that the date (Jan. 25, 2018) of the (strongest in California for 2017 and 2018 as per U.S. Geological Survey) 5.8-magnitude earthquake belongs to the predicted (Simonenko, 2017) range (9 Aug. 2017 ÷ 3 Mar. 2018) characterized by the probability Pr = 0.99 of the strongest (in California for 2017 & 2018) earthquakes and related strongest climatic processes. The consideration of the strongest earthquakes (characterized by the magnitudes M≥ 7.5 as per U.S. Geological Survey) in California (since 1900 & before 28 Apr. 2019) has confirmed additionally the validity of the global prediction thermohydrogravidynamic principle. The principle has explained (see Table-2) the strongest intensifications of the seismotectonic processes in California on Apr. 18, 1906 & on Jul. 21, 1952. It was shown that the application of the global prediction thermohydrogravidynamic principle is the scientific way to predict (in advance) the modern strongest intensifications of the seismotectonic and climatic processes in California subjected to the energetic cosmic (planetary & solar) gravitational influences.

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