World Journal of Engineering Research and Technology
WJERT
www.wjert.org
SJIF Impact Factor: 5.218

IF THIS HAPPENS – CAN WE SURVIVE?

Prof. Branislav R. Tanasic*

National University Sabac, Serbia Koste Abrasevic 15000 Sabac.

Article Received on 20/12/2017 **Article Revised on 10/01/2018** **Article Accepted on 31/01/2018**

***Corresponding Author**
Prof. Branislav R. Tanasic
National University Sabac, Serbia Koste Abrasevic 15000 Sabac.

ABSTRACT

Planet Earth is a highly dynamic, marked by numerous events. Meteorologists present the data, that the planet every day gets hit more than eight million times by lightning strike. Often electrical discharge of assorted be fatal or can cause a forest fire that spread to enormous proportions. Understanding of plate tectonics explains the earthquakes, although the doctrine is still unable to provide data where and when it can get to the next attack? For years, the accumulated energy is released in the moment and caused incalculable damage scale. Material destruction and many victims may cause the devastating power of the volcano eruption, probably a terrifying display of natural forces, which can extremely affect the vast expanses of the entire surface of the planet. Life on the planet is constantly endangered by anthropogenic effects. War conflicts, then terrorism- monster of the modern era, achieved through a well-functioning individuals and organized groups - religious, political fanatics unable to because of their goals everyday life of an ordinary man into a nightmare. Excessive pollution of air and water, have launched a chain reaction - we are witnessing the current climate change and the consequences that these changes cause, but are we aware of how the situation is bad, even tough our planet giving a warning almost daily? How these changes will affect the living world, primarily on plants, as the first link in the production food? One of the main challenges in the XXIth century will be focused on building awareness of environmental security and increase efforts to reduce the pollution of water, air and soil.

KEYWORDS: Polution, atmosphere, climate-change, eruption, catastrophes.

1. Foreword

Living conditions on the planet have changed throughout history. Some changes were running slowly, giving the chance to the living world to adapt to new living terms, or change the location. Occasionally, the conditions for the living world have changed almost instantly with catastrophic consequences for the environment and life. For example, one of the global drastic changes in living conditions is the Ice Age. Serbian mathematician and geophysicist Milankovic, calculate the temperature at different points on the surface of Earth at different times of the year. His initial calculations, published in *Théorie mathématique des phénomènes thermiques produits par la radiation solaire*, (Milutin Milankovic, 1920; *Mathematical Theory of Thermal PhenomenaCaused by Solar Radiation*), gave results that were roughly in line with empirical data concerning early 20th-century temperatures, and they thus immediately attracted the attention of meteorologists. In an attempt to explain the appearance of the Ice Age on Earth, Milankovic extended his longhand calculations hundreds of thousands of years into the past to assess the effect of known regular changes in three astronomical parameters: the obliquity (tilt) of Earth's axis of rotation, the precession (wobblelike movement) of the rotation axis, and the eccentricity (a measure of the elliptical shape) of Earth's orbit around the Sun. Those three parameters govern the amount of solar radiation (insolation) that strikes Earth's surface at different latitudes in different seasons. Because they operate on different timescales, the parameters affect climate by interacting in a manner that sometimes increases and sometimes decreases the insolation at a particular location (Mackdougall, 2017).

Milankovic's calculations were confirmed by numerous studies of the seventies of the twentieth century. High-resolution studies of deep-sea cores confirmed that glacial periods, as reflected in seawater temperatures, precisely follow Milankovic's predictions over roughly the past one million years. Those studies provided evidence for cyclical climate change in the past with periods of approximately 100,000, 41,000, and 23,000 years, coinciding with the astronomical cycles in eccentricity, axial tilt, and precession, respectively. The astronomically timed variations in solar radiation are now known as Milankovic`s cycles (Mackdougall, 2017).

The process of industrialization brings another potentially dangerous environmental factor onto the planetary scene. In addition to the natural influences on the conditions of life on earth, nowadays, with its activities a drastic and crucial face of the planet changes a man.

Dirty technologies, especially in the early stage of industrial development, pollute the environment. Excessive pollution of air and water, have launched a chain reaction. We are witnessing the current climate change and the consequences that these changes cause, but are we aware of how the situation is bad, even tough our planet giving a warning almost daily? How these changes will affect the living world, primarily on plants, as the first link in the production food? One of the main challenges in the XXIth century will be focused on building awareness of environmental security and increase efforts to reduce the pollution of water, air and soil.

This paper is an attempt to present potentially critical and dangerous situations around the planet and life on it Analyzing the basic state of vital resources, air and water, and natural phenomena that can drastically alter the face of the planet and living conditions, such as volcanoes, earthquakes or dangers from the universe. Beside this, it will be attempted to examine the impact of human activities on the global level, and the consequences of anthropological factors with the tragic consequences as a mistake in the management of industrial plants. How will these potential extreme crisis situations affect the flora and fauna, and the survival of the human population?

2. Air

Gaseous layer makes the atmosphere around the planet. The air is a mixture of gases, some of which represented the highest percentage of nitrogen - 78%, then 21% oxygen, with the remaining 1% consists of helium, xenon, krypton ... etc. (Zimmer, 2013), the massive burning of fossil fuels, especially coal during the Industrial Revolution, and today more oil and oil derivatives, the atmosphere is emitted huge amounts of carbon dioxide, sulfur oxides, soot, dust. On the other hand, so-called dirty technologies, primarily in the chemical industry give their full contribution to the pollution of the air we breathe. The consequences of air pollution are increasing the number of patients with respiratory problems, ozone depletion, an increasingly frequent occurrence of acid rain, leading to global warming - the greenhouse effect. Global warming melts the ice surface at the poles and glaciers, which reduces the ability to reflect sunlight - which in turn causes an increase in the average temperature of the planet. This is an additional trigger of this process, and all together results in disruption of highly complex and sensitive elements of the climate system. Uncontrolled deforestation generates the problem so that the process further accelerates global warming. Forests are the lungs of the planet, just for illustration: hectare poplar forest, a period full of vegetation,

absorbs 100 kg of sulfur - dioxide, lime forests same area, absorbed about 50 kg of sulfur, for a year in a state that binds approximately 15 tons of CO2, and releases about 1.5 tons of oxygen (Grabherr, Gottfried & Pauli, 1994: 369-448). Environmentalists estimate that if all pollution now passed, the planet would need at least another hundred years to bring the atmosphere in order, and to establish the ecological balance of the system. Kyoto Agreement, the international attempt to regulate greenhouse gas emissions, and the determination of specific quotas polluters, annually, for each country separately. The basic idea is that eruption of gasses responsible for the greenhouse effect, reduced by 5.2% compared to 1999. The base agreement is a protocol of the United Nations - the UNFCCC (United Nations Framework Convention on Climate Change), adopted in 1992 in Rio de Janeiro. The agreement reached in Kyoto allows for the possibility of buying quotas CO2 emissions from a country that is not approved to use its share of the pollution of the atmosphere. Global contribution to the Kyoto Protocol, the amount of emitted GHG (Green House Gases), shall be in accordance with national differences in industrial development, as well as opportunities for reducing emissions (Grubb 2004: 3-4). Furthermore, the Protocol provides that 37 industrialized countries and the EU, six basic gas emissions - contaminants, translates into the equivalent CO2 pollution (Grubb, 2003: 4).

Developed countries, in principle are big polluters, but also led the countries that are making efforts to reduce emissions. As reported by International Business Times, in an article dated 02 June 2014, the US EPA /Environmental Protection Agency/ requires an average reduction of CO2 emissions by 25% by 2020 and 30% by 2030. Applicable law prohibits the construction of new coal power plants, and the new law, the EPA is expected to put pressure on the existing power plants to install new technology that will enable the reduction of harmful emissions. Daniel J. Weiss, from the Center for American Progress, said that the implementation of the new law: "Contribute to the biggest achievement in reducing carbon pollution in the US ever" (Kreiter, 2014).

Together with the electromagnetic forces of the planet, atmosphere acts as a filter against harmful radiations from the Sun, preventing them from reaching the ground. The atmosphere also allows the Earth’s surface to reach a temperature that is suitable for the life of plants and animals. The air around the planet is the zone of the meteorological events (rain, snow, fog, wind etc.) which all together makes the climate.

The atmosphere tries to rebalance the temperature differences by moving masses of hot air from regions where there is an excess of heat towards colder regions. The movements of air masses that seek to rebalance the differences in temperature and pressure in the atmosphere give rise to winds, cyclones and anticyclones and to all those weather phenomena that make the atmosphere of our planet turbulent. When the maximum sustained winds of a tropical storm reach 74 miles per hour, it's called a hurricane. The *Saffir-Simpson Hurricane Wind Scale* is a 1 to 5 rating, or category, based on a hurricane's maximum sustained winds (National Ocean Service, 2018).

Hurricanes can dramatically alter the seaside landscape as well. After hurricane Harvey,(Harvey dumped 27 trillion gallons of water over Texas and Louisiana), Bren Haase, chief of planning and research at the Louisiana Coastal Protection and Restoration Authority in Baton Rouge say: "You can see, certainly, some dramatic and catastrophic changes in areas of our coast," Haase says. "But it's really the cumulative effect of numbers of storms over numbers of years that ultimately degrades the ecosystem." Storms are predicted to become more fearsome thanks to climate change, which will only exacerbate the problem (Baggaley, 2017).

As climate change continues, the frequency of intense storms is predicted to increase. More storms result in more opportunities for species invasions, posing a serious threat to the health of natural ecosystems in coastal areas. Many plants can die because the condition of a hurricane is very bad. This prediction supported Bhattarai and James Cronin, Louisiana State University: "A substantial change in the structure and functioning of coastal wetlands, one of the most productive ecosystems in the planet, by invasive species should be a major concern to everyone" says Bhattarai (Yeager, 2017).

There is some evidence that climate change is already having a measurable affect on the quality and quantity of food produced globally. Rising carbon dioxide concentrations – the main driver of climate change – could increase production of some crops, such as rice, soybean and wheat. However, the changing climate would affect the length and quality of the growing season and farmers could experience increasing damage to their crops, caused by a rising intensity of droughts, flooding or fires. The future course of global food production will depend on how well societies can adapt to such climatic changes, as well as the influence of other pressures, such as the competition for land from biofuel production (Ranger, 2018).

Finally, food production itself is a significant emitter of greenhouse gases, as well as a cause of environmental degradation in many parts of the world. Agriculture contributes about 15% of all emissions, on a par with transport. When land conversion and the wider food system are taken into account the total contribution of food may be as high as 30%. This means that to limit the long-run impacts of climate change, food production must become not only more resilient to climate but also more sustainable and low-carbon itself (Ranger, 2018).

True, scientists have long warned of the problems of global warming and climate change. Pimentel wrote in 1993 about the relationship between elevated temperature and lengthen insect reproductive season. That, in turn, will raise the total number of insects attacking a crop and subsequently increase crop losses(Pimentel, 1993). All effects accumulated contribute to the reduction of the total amount of food produced.

The Olympic Games are the most important sporting competition, the competition of global proportions. In 2008 he organized in Beijing, have brought the city and big problems. Enormous air pollution forced authorities to weeks before the start of the Games drastically reduce traffic in the city, in an attempt to improve air and to be more tolerable for the competitors. The strong wind from the north, instead of stifling the air cleared a little complicated the situation by bringing large amounts of desert sand! This additional problem produce the desert Gobi /Mongolian title, the Chinese call it Shamo / which is so expanded that now free to be closer to locating, like the desert near Beijing. The desert is expanding to the south, devouring every year about 3600 km2 of new space. In the capital of China, collapsed around 500 000 tons of sand each year, often reducing visibility to the point that the nearby skyscrapers barely discernible, interrupted air traffic, and people were forced to stay indoors (Global Greenhouse Warming, 2014).

Air is the only natural resource, fair and evenly distributed around the entire planet. How we will treat our atmosphere depends only on our own will and knowledge, we are the only creatures that can redefine the environment and living conditions, but the question is: what price humanity must pay?

3. Water

Water is the source of life and the necessity to maintain life. The initiator of the development, but it can be a limiting factor for progress. The average need for a healthy, adult human for drinking water is about 2.5 liters per day. It is estimated that today about 1.1 billion people

lack access to clean drinking water, while more than 2.5 billion people do not have secured a healthy sanitation. More than 5 million people die every year from diseases caused by poor, or unhealthy drinking water (Gleick, 1993: 13). UN Reports on water and forecasts are higher than black. Every day more than 5,000 dying children younger than 5 years of disease directly caused by polluted water. In the next 20 years, the average amount of drinking water will be decreased by one-third, compared to its current stock (World Resources Institute, 2014). What a paradox-continuously reducing the reserves of fresh water, with a predicted increase in global sea level due to melting glaciers and ice at the poles. Water covers about 70% of our planet's surface. But only 2.5% of the total quantities (about 35 million cubic kilometers), is usable for drinking, or less than 1% of drinking water is directly accessible to the people for use, which is about 0.007% of all water on earth! (Choudhury, 2015). Another problem is the uneven distribution of fresh water as well as its renewal through atmospheric precipitation.

Water knows no national boundaries. In the world, there are 276 rivers that flow through more state territory. About 46% of the planet's surface covered rivers that flow through two or more countries. From this, it follows that it is unusually important to the beneficiary countries of this natural resource to each other by mutual agreement regulating the level of consumption, and water conservation from a variety of pollution. More than 90% of wastewater in developing countries, flows directly into the river flows, without any pre-treatment and treatment. About 80% of all the water in the world is poured into rivers without any treatment! It seems that the awareness of the dangers of the lack of clean water is growing, as evidenced by the fact that in the period from 1820 to 2007. signed 450 agreements and contracts that solve the problems of exploitation of common waterways, dams, and lakes (UN World Water Day, 2013). A very important event, which can help in solving international problems and crises induced water shortage is ICWE - International Conference on Water and the Environment - Development, the conference held in Dublin (ICWE, 1992). On January 17, 2014. scientists from NASA satellites Grace retrieve data from troubling content regarding underground reserves of water in California. Hydrologist James Famigliotti with Irvine University, commenting on this "epic drought that has reserves of underground water drastically reduced," the report analyzing satellite, made with 400 km altitude says: "Groundwater is our strategic reserve. This is our support, and where you can get if you support disappeared"(Goldenberg, 2014). At the same time satellite Grace, confirmed by the emergence of increasing rainfall in the northern hemisphere,

but Famigliotti continues:" What we can see is the image that wet (rain) areas on earth become even wetter" (Goldenberg, 2014). During the last decade of pumping out underground water reserves by about 70% faster than in 1990. Satellite measurements show a loss of 54 km3 a year! Water consumption has doubled observing period since 1950. The importance and value of water in this century, it illustrates Brahma Chellaney and says: "Water in XXI century can easily become what oil meant for the twentieth century - a source of wealth and conflicts. If you compare the price of mineral water in a supermarket with the price of crude oil on the international market, the water is already the new oil"(Chellaney, 2013: 5).

So it is with consumption, one who has a lot of water that spent. A resident of the United States consumes daily about 300 liters of water, while for example, the average resident of Egypt spends the day with 22 liters of water. An interesting fact is that agriculture uses the lion's share of 90% of total water consumption, while industry and households account for only 5% of consumed water (Gleick, 1993: 13). The agricultural globaliy sector average consumes about 70% of the planet's accessible freshwater – more than twice that of industry (23%), and dwarfing municipal use about 8% (Clay, 2004: 105).

Agriculture is a major user of ground and surface water in the United States, accounting for approximately 80 percent of the Nation's consumptive water use and over 90 percent in many Western States. Agriculture is by far the largest consumer of the Earth’s available freshwater: 70% of “blue water” withdrawals from watercourses and groundwater are for agricultural usage, three times more than 50 years ago. By 2050, the global water demand of agriculture is estimated to increase by a further 19% due to irrigational needs (USDA, 2017).

The crisis caused by the lack of water can easily turn into a fight for water - armed conflict, and there were at the local level dozens!

4. Volcanoes

Nail Firth`s essay, which considers the fate of the Neanderthals, conveys some research findings and says: "It is possible that European Neanderthals deleted catastrophic volcanic eruption that occurred before about 40 000 years ago. A new study reveals that explosions of the volcano caused "volcanic winter" that devastated their entire population"(Firth, 2014). Head of the research team, archaeologist Golovanova Love with ANO Laboratory of Prehistory, adds:" For the first time we have identified evidence that the disappearance

Neanderthals from the Caucasus associated with volcanic eruptions over 40 000 years ago" (Vergano, 2010). Before about 74 000 years ago, Toba volcano exploded in one of the largest volcanic eruptions in the last 20 million years! It is estimated that at least 2800 km3 of volcanic material slipped into the air. As an improvement of work, one of the biggest explosions in recorded history was the eruption of the volcano Krakatau in 1883 and released the 12 km3 of magma (Saviano & Jones, 2007: 140). It is considered that the first two years after the Toba eruption, there was no difference between day and night. Huge amounts of dust, soot, sulfur dioxide /acid rain falling for years/ slip is in the air at 30 km altitude, blocking the sunlight. Temperatures plummet, even should the lede, uginića plants and animals were massive, and this has resulted in the murder of human population. Some estimates suggest that on the whole planet less than 10,000 people, mostly in the equatorial part of Africa (Ambrose, 1998: 623-651). Engvild newspaper for Agricultural and Forest Meteorology says that most of the plants died within a few weeks after the eruption. Larger plants are much more able to withstand, but it is slowly killing them and a lack of sunlight, the metabolic process of photosynthesis was abruptly interrupted by a fatal outcome was inevitable (Engvild, 2003: 127-131).

Brute force, released in a short time, able to make damage unforeseeable proportions. If today some of these volcanoes erupted suddenly /but there are real opportunities, especially can be dangerous super volcano in the USA - Yellowstone/ consequences would be unimaginably catastrophic. In addition to the physical damage, evident climate changes, what effect on us left eruption? To solve the problem of global humanity lack of food, even in these call normal conditions, a good part of the population of the planet is starving! In order to adapt to modern man arduous living conditions in general disarray, would solve wars redistribution of scarce resources in these apocalyptic terms?.

5. The dangers from space

On 9 March 1989, over six million people in Quebec were left without electricity. Interruption lasted for hours, many transformers and electrical lines basis were severely damaged, or burned extremely high voltage. What really happened and who was to blame for the resulting breakdown? The sun is a huge ball of hot plasma in which fusion is a process of providing energy. This process every second consumes about 600 t of hydrogen which transforms the 596 t of helium, and 4 tons, mass defect gets transformed into pure energy. This exothermic reaction is known as the proton-proton. The core of the light elements

hydrogen, (actually 4 cores, in conditions of very high pressure and temperature, have high energy sufficient for breaking the Coulon`s barrier), create a nest of helium with the release of large amounts of energy. The sun does not have a single magnetic field, it is formed in the forming region of the spot - a region with lower temperature, due to the interaction of differently oriented domains come up with powerful jets of plasma ejections, high-energy particles, during which broadcasting may take up to 1/6 of the total energy emitted by the sun every second. These casts are called solar flare, which is actually coronary mass ejection - sometimes the spray is directed toward our planet, causing the appearance of which is called the solar wind (The American Geophysical Union, 1997: 9-11).

Therefore, it is the first character to be strong casting, forming a sunspot. Astronomers have spotted some lows, or to form freckles average in periods of 11 years. How does Canada remain without electricity? The event took place in the solar cycle 22 *, when there was a strong coronal mass ejection /Coronal Mass Ejections/ X15 ** class a couple of days later the planet was hit by magnetic storms /Solar Wind/.

The first sign of the presence of highly ionized particles in the Earth's atmosphere did an attractive sunset, atmospheric phenomenon also known as the aurora borealis - the northern lights. Since the Earth is a natural electromagnet becomes part of the particles trapped in the magnetic field of the planet, and deployed along the magnetic field lines, are concentrated at the poles and make the optical phenomenon of spectacular sunsets, and sometimes visible from lower latitudes (The American Geophysical Union, 1997: 9-11). And it's the only nice thing we bring the solar wind, actually a magnetic storm, which broke through the earth's magnetic shield and wreaking havoc on electrical and radio connections. This is a very strong variable magnetic field magnetic induction causes an extremely high voltage power lines, transformers, and generators.

Planet Earth and the other planets of the solar system are constantly bombarded various missiles from space. Just for shorter time buckets used slightly stronger binoculars see the moon's surface, and the more you can see many traces of the attack. Isaac Asimov in his book The approach of a disaster is the fact: "On the Moon, there are about 30 000 craters whose diameters vary between one kilometer and even more than 200 kilometers - and each of them marked the racing collision with a piece of matter" (Asimov, 1981: 127- 136). Since the moon has no atmosphere, all these scars fossilize freely and remain mute witnesses of the events next million years, or until the current violent landscape does not change any other

attack. The largest crater on Earth as a meteorite impact incurred when actually the Ungava Lake in Canada, which is observed only aero - photography. The footage shows around lake 3.34 km in diameter, depth of about 300m, and about a hundred meters of surface and coast elevated in relation to the environment, which is to squeeze the material upon impact. Near the US city of Winslow, there Beringer crater with a diameter of 1.2 km and a depth of 180 m, with a raised rim of some 70 m, named after the man who found that this is caused by a meteorite impact - Daniel Moreau Berringer. The largest meteorite that is known is planted in the soil of Namibia, is considered to weigh about 66 tons! Estimated time of impact to approximately 50,000 years ago, and the question arises: what would be the consequences that this incident happens at the present time in a populated area?

Asteroids are bodies with generally safe, well-established paths, however, those with less weight more easily susceptible to disturbances and changes in established routes. And that is exactly what happened about 65 million years ago, and with a fatal outcome after the dinosaurs, and a good portion of other species on Earth. For scientists has long been a mystery of the sudden disappearance of dinosaurs from the face of the planet. Various theories were offered, but due to various deficiencies were quickly dismissed as insufficiently substantiated. Increasingly, as a hypothesis, there is a possibility of a large asteroid impact, but that impact is clear to leave a scar somewhere on the ground. During the exploration for * Solar Cycle 22 - to 22 year cycle from 1755 since it is recorded, mapped and counting sunspots 1989 maximum numbers of spot was a 158.5, and minimum observed is 8 spots.

** Solar flares - coronal mass ejection, classes: A, B, C, M and X, the division performed by the maximum during the energy of X-rays, each class is 10 times more powerful than the previous one. X-class 0, 0001 w/m2 oil, 1970 in the area of Mexico's Yucatan Peninsula, satellite imaging discovered the crater whose characteristics suggest that the impact created a massive body from space. Before about 65 million years ago the Earth was hit by an asteroid with a diameter of 10 km, has caused havoc, destroyed the dinosaurs and put the very existence of life on the edge shutdowns (WISE, 2011). It is estimated that the energy released by this shock is so great, straight to the sum of the energy of the atomic bomb dropped on Hiroshima, which should explode every second for a period of three years! The hot shock wave has reached a temperature of 17000 C and more than twice toured the globe. Then he formed a tsunami height of over 160 meters. Survivors are just a few forms in greater depths

of the sea and small animals burrowed into deep holes and caves. The mammals of the time were only the size of a field mouse. Inducer of this cosmic drama was Baptistina asteroid.*

Baptistina the asteroid came from deep space, even before 160 million years. He burst in Cooper's belt, struck a large asteroid smashed it on par fragments of which one traveled deep cosmos some 55 million years ago, hit the Moon,other hit the Earth about 40 million of years later! Discovering crater Silverprint- Kingdom, /which is about 60km in diameter/ then Boltysh-Ukraine Shiva India, all dating back to the roughly the same period, the theory is gaining weight because synergy effects of the asteroid impact more than sufficient for the damage. It should be noted that the program was launched by NASA, WISE - Wide Field Infrared Survey Explorer. Located measurement infrared light "Baptistina Family" asteroid belt in a Cooper, shorten weather shock Baptistine to 80 million years ago a coup fragment to Earth only 15 million years old! If this claim is substantiated with sufficient evidence and the scientific community accepts it as a fact, there is an extremely important question: whether it is 15 million years old enough to mammalian evolutionary shift, from a small mouse /the biggest mammal in the age of the dinosaur extinction/ over the next evolutionary step to modern man?

LITERATURE

1. American Geophysical Union, Geomagnetic Storms Can Threaten Electrical Power Grid, Earth in Space, 1997; 9(7): 9 – 11.
2. Ambrose Stanley H. Late Pleistocene human population bottlenecks, volcanic winter, and differentiation of modern humans, Journal of Human Evolution, 1998; 34: 623-651.
3. Asimov Isaak, Primicanje katastrofa, August Cesarec, Zagreb, 1981; 127-136.
4. Baggaley Kate, the entire ways hurricane can harm-and help-the ecosystems they hit, 2018.
5. Popular Science, Sept. 18, 2017. https://www.popsci.com/hurricane-harm-help-ecosystem retrieved, Jan. 22, 2018.
6. Biello David, What You Should and Shouldn’t Worry about after the Fukushima Nuclear Meltdowns, [online], 2014. http://www.scientificamerican.com/article/what-to-worry-about-after-fukushima-nuclear-disaster/ Retrieved: May 25, 2014.
7. Chaliand Gerard, The History of Terrorism: From Antiquity to Al Qaeda Berkeley: University of California Press, 2007; 68.

8. *Choudhury Debesh, Onli 1 percent of water is drinkable,[online], 2015. https://www.linkedin.com/pulse/only-1-percent-water-drinkable-debesh-choudhury Retrieved: May 10, 2015.
9. *Chellaney Brahma, Water, Peace and war – Confronting the global water crisis Rowman & Littlefield Publishers, Inc., 2013; 5.
10. Clay Jason, World Agriculture and the Environment – A commodity by commodityguide to impact and practices. Washington, Island Press, 2004
11. *Đarmati Šimon, Zagadjenje vazduha, Viša politehnička škola Beograda, Beograd, 2005.
12. *EBRD, Šteta od poplava u Srbiji 1,5 do dve milijarde, [online], 2014. http://www.pressonline.rs/info/srbija/313596/evrospka-banka-steta-od-poplava-u-srbiji-15-do-dvemilijarde.html, Retrieved: May 01, 2014.
13. *Encyclopedia Britanica, Tokyo-Yokohama earthquake of 1923, [online], 2015. ttp://www.britannica.chom/EBchecked/topic/1421140/Tokyo-Yokohama-earthquake-of-192, Retrieved: June 16, 2014.
14. Encyclopedia Britanica, Ancash Earthquake of 1970, [online], 2015. https://www.britannica.com/event/Ancash-earthquake-of-1970, Retrieved: June 16, 2014.
15. Engvild Kjeld C. A review of the risks of sudden global cooling and its effects onagriculture, Agricultural and Forest Meteorology, 2003; 115: 127-1.
16. Eckerman Ingrid, Chemical Industry and Public Health — Bhopal as an example Göteborg, Sweden: Nordic School of Public Health, 2001; (24).
17. *English Richard, Irish Freedom, Pan Books, 2007; 179.
18. Frith John, The History of Plague – Part 1. The Three Great Pandemics, Journal of Military and Veteran's Health, 2011; 20: 2: 11.
19. Glossery of Meteorology, Cyclonic circulation, American Meteorological Society, June 2000.
20. Gleick Peter H. Water in Crisis: A Guide to the World`s Freshwater Resources, Oxford University Press, 1993; 13.
21. Global Greenhouse Warming, Gobi Desert, [online], 2014. http://www.global-greenhouse-warming.com/gobidesert.html, Retrieved: June 03, 2014.
22. Grabherr G. Gottfried M. & Pauli H. Climate effects on mauntian plants, Nature, 1994; 369 – 448.
23. GREENPEACE, Fukushima Nuclar Disaster, [online], 2014.
24. http://www.greenpeace.org/international/en/campaigns/nuclear/safety/accidents/Fukushima-nuclear, Retrieved: June 02, 2014.

25. Grubb M. The Economics of the Kyoto Protocol, World Economics, 2003; 4(3).
26. Grubb M. Kyoto and the Future of International Climate Change Responses: Wrom Here to Where, International Review for Environmental Strategies, 2004; 5(1): 2004. Retrieved: June 02, 2014.
27. Goldenberg Suzanne, Why global water shortages pose threat of terror and war, [online], 2014.
28. http://www.theguardian.com/environment/2014/feb/09/global-water-shortages-threat-terror-war, Retrieved: May 26, 2014.
29. *Hoffman Bruce, In side terrorism, 2ed Columbia University Press, 2006; 34.
30. *ICWE, ICWE – International Conference on Water and the Enviroment – Development Issuesfor the 21st Century, januar. Dublin, Ireland, 2014; 26 – 31.
31. Kreiter Marcy, EPA To Release New Rule Limiting CO2 Emissions; 30 Percent Reduction Expected, [online], 2014.
32. 1592898?ft=3aj78&utm_content=tanasic@yahoo.com&utm_medium=Jun_02_2014_0629_1 Retrieved: June03, 2014.
33. Lawson C. Andrew and Perry Byerly, Harry Fielding Reid, National Academy of Sciences, 1951; 2.
34. *Macdougall Doug, Milutin Milankovitch-Serbian mathematician and geophysicist, Encyclopedia Britanica, 2017. [Online] www.britannica.com/biography/Milutin-Milankovitch, retrieved, 20. 12. 2017.
35. Makinen Gail, The Economic effects of 9/11: A Retrospective assesment, Congressional Research service, Library of Congress, 2011; 5.
36. *Manbach A. Cobbold, R. S. C. Development and application of piezoelectric materials for ultrasound generation and detection, Ultrasound, 2011; 19(4): 187.
37. Moldovan Snezana, POSLE „TAMARE“, NOVA KATASTROFA: Srbiji prete klizišta, naši stručnjaci nude pomoć! [online], 2014. http://www.nadlanu.com/pocetna/aktuelno/aktuelno/POSLE-TAMARE-NOVAKATASTROFA-Srbiji-prete-klizista-nasi-strucnjaci-nude-pomoc.a-235279.860.html Retreived: June 01, 2014.
38. National Ocean Service, What is a Hurricane? National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 2018. https://oceanservice.noaa.gov/facts/hurricane.html Retreived, Jan. 20, 2018
39. Oreskes Naomi, Plate Tectonics: An Insider's History of the Modern Theory Of The Eart, Westview Press, 2003; 23.

40. Ostin Becky, What are Plate Tectonics? [Online], 2014. http://www.livescience.com/37706-what-is-plate-tectonics.html, Retreived: June 25, 2014
41. Oxforddictioner, http://www.oxforddictionaries.com/definition/english/crisis, Retreived: May 24, 2014.
42. Pimentel David, Climate Changes and Food Supply, Applied Research and Public Policy, 1993; 8(4): 54-60.
43. Phillips Campbell, Earthquakes: the 10 biggest in history, [online], 2011.
44. http://www.australiangeographic.com.au/topics/science-environment/2011/03/earthquakes- the-10-biggest-in history, Retreived: June 08, 2014.
45. Ranger Nicola, How will climate change affect food production? Guardian, https, 2018. www.theguardian.com/environment/2012/sep/19/climate-change-affect-food-production Retreived, Jan. 22, 2018.
46. Ronan Gunaratra, Inside Al Qaeda: Global network of terror, Columbia University Press, 2002; 23-33.
47. Savino John and Marie D. Jones, Supervolcano: The catastrofic Event That Changed the Course of Human History: Could Yellowstone Be Next, Career Press, 2007; 140.
48. Tate Karl, How Japan's Earthquake Happened (Infographic)[online], 2011.
49. http://www.livescience.com/27773-how-japan-s-2011-earthquake-happened-infographic.html Retreived: May 08, 2014.
50. The World Bank, Renewable internal freshwater resources pre capita (cubic meters), [online], 2014.
51. http://data.worldbank.org/indicator/ER.H2O.INTR.PC, Retreived: May 25, 2014.
52. UN World Water Day, - International Year of Water Cooperation, [online], 2013. http://www.unwater.org/water-cooperation-2013/water-cooperation/facts-and-figures/en/Retreived: May 26, 2014.
54. *UNICEF, Floods in Serbia: a report from the field, [online], 2014. http://www.unicef.org/ceecis/media1644.html, Retreived: June 01, 2014.
55. US Congess, Congressional Record, Vol 148, Pt. 7, Maj 2002. to June 12, 2002. Government Printing Office, 2002; 9909.
56. United States Department of Agriculture - USDA, Irrigation and Water Use, 2017.
57. https://www.ers.usda.gov/topics/farm-practices-management/irrigation-water-use/ Retreived, Jan. 22, 2018.
58. USGS, The great 1906 San Francisko Earthquake, [online], 2014.

59. http://earthquake.usgs.gov/regional/nca/1906/18april/index.php, Retreived: June 10, 2014.
60. Vergano Dan, Volcanoes Wipe Out Neanderthals?, 2010. [online]http://content.usatoday.com/communities/sciencefair/post/2010/09/volcanoes-neanderthals-extinct/1#.WBX9DdIrIdU, Retreived: June 18, 2014.
61. WNA - World Nuclear Association, Sequence of Events Chernobyl Accident Appendix1, [online], 2012.
62. http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Appendices/Chernobyl-Accident-- Retreived: June 16, 2014.
63. World Resources Institute, Water: Maping, Mesauring and Mitigating Global Water Challenges, [online], 2014.
64. http://www.wri.org/our-work/topics/water Retreived: May 21, 2014.
65. WISE, (2011), http://www.nasa.gov/mission_pages/WISE/news/wise20110919.html, Retreived: June 29, 2014.
66. Zavod za hidrometeorologiju i seizmologiju, Kako se pokreću kontinenti i šta je to tektonika ploča? [Online], 2014.
67. http://www.seismo.co.me/questions/6.htm Retreived: June 14, 2014.
68. Yeager Ashley, How animals and Plants Weather Hurricanes, the Scientist, Octob. 06, 2017. https://www.the-scientist.com/?articles.view/articleNo/50578/title/How-Animals-and-Plants-Weather-Hurricanes/
69. Zimmer Carl, The Mystery of Earth`s Oxygen, [online], 2013.
70. The New York Times, October 3, http://www.nytimes.com/2013/10/03/science/earths-oxygen-a-mystery-easy-to-take-for-granted.html?_r=0, Retreived: June 01, 2014