International Journal of Physics, 2019, Vol. 7, No. 4, 126-134
Available online at http://pubs.sciepub.com/ijp/7/4/3
Published by Science and Education Publishing
DOI:10.12691/ijp-7-4-3

Volcanic Tephras and Human Energy Losses Together: The Real Source of Climate Change

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Received October 14, 2019; Revised November 21, 2019; Accepted December 05, 2019

Abstract Global warming is real and anthropogenic. This is a fact. But the current consensus goes totally off track by blaming carbon, methane and water vapor. The real cause of global warming is the combination of losses of energy (heat and all other sources of radiation) with volcanic tephras and other materials in the high atmosphere. The tephras and other high altitude materials retain some of the energy lost from e.g. badly isolated buildings, motors, cattle, all non-renewables sources of electricity and energy - hence nuclear reactors which are a hidden contributor as they lose 70% of their thermal output in the environment before conversion into electricity – and some of the energy from the other sources of dissipation, from thermal radiation to EM waves and photons from lights especially with non-energy-efficient systems. This model allows to explain very closely the evolution of the Global Land Ocean Temperature Index provided for 1880 to today by the NASA Goddard Space Flight Center. The high significance of the tree cover to fight off global warming is once again underlined and other tracks are also offered. A mechanism of natural balance is then shown. Natural disasters destroy areas contributing too much to global warming. This is demonstrated in particular with nuclear reactors (but this is non-exhaustive, all other above-average sources of energy loss are affected). A solution for sustainable fission power for electricity is provided at the end.

Keywords: *global warming, climate change, energy efficiency, nuclear power, carbon storage, carbon dioxide, nuclear fission, volcanism, volcanic eruptions, natural disasters*

Cite This Article: Florent Pirot, "Volcanic Tephras and Human Energy Losses Together: The Real Source of Climate Change." *International Journal of Physics*, vol. 7, no. 4 (2019): 126-134. doi: 10.12691/ijp-7-4-3.

1. Introduction

How to explain the major discrepancies between carbon emissions trends and global temperatures over the periods 1880 to 1909 and 1945 to 1976?

It is well-known that very thin volcanic tephras behave like a gas (as noted in [1] "*small particles (<0,05 micrometers) act much like gases, and are efficiently transported to surfaces by Brownian diffusion*" and, to take an example according to that source, for particles of an already bigger size, 1 micrometer at solely 5 km elevation (in a mild volcanic eruption), with a density of 2000 kg / m^3, results in an atmospheric residency time of 220 days), and hence their residence time in the high atmosphere is much longer than for heavier nanoparticles. This "gas" is the main cause of global warming when it intercepts some of the human losses of energy, impeding natural dissipation in outer space. In general, beyond *heat*, all sources of loss of energy are to be included as all energy is kinetic. Energy in general. In general the tephra „gas" thickens clouds and these thicker clouds retain more of the energy from all sources of energy loss, from wi-fi to radiowaves, heat and all other sources of energy including radioactivity (see [2] for an example of why all sources of energy matter); to take an example, the lack of aerodynamism of many vehicles creates a *strong* "vibration" (winds...) which later converts into heat, as well (and the heat lost by the motor during conversion of e.g. the explosive impulse into movement as well of course) – to state more precisely, the increase in energy levels leads to further movement of the tephra gas in high altitude, keeping it afloat longer, and it intercepts a bigger share of human energy losses, reflecting them back to ground level ; there is in general a feedback effect as the energy spreading in the atmosphere due to the various sources of inefficiency, from the beaming of signals in the atmosphere instead of the use of wires, to lightpoles and other decorative lights beaming as well their photons all around including in the sky where they are useless, to the general agitation of the atmosphere because of trains, cars, planes, etc. especially when aerodynamism is bad, contributing to an increased duration of the tephra veil in the high atmosphere which in turn reduces dissipation in the outer space of the *radiative heat lost by motors, thermal electricity plants, badly isolated buildings, cattle etc*. It is a combination of all these losses of energy linked to human activity with the presence of volcanic tephras and other particles in the high atmosphere which disrupted the natural balance of climate and created the rapid rise of temperatures since 1909.

A list of major recent sources of materials in the high atmosphere is given. By selecting the min. VEI 5 volcanic eruptions (the VEI scale is logarithmic) the list is:

- Santa Maria, VEI 6 volcanic eruption, 1902
- Ksudach, VEI 5 volcanic eruption, 1907
- Tunguska event, 1908, estimated conventionally as equivalent to a 15 megatons bomb, impacting the ground and creating a large plume; it can be estimated to be equivalent to a VEI5 eruption in terms of tephras; the volume of 1 km3 also fits Lake Cheko, identified to be the area of the impact in [3].
- Novarupta, VEI 6 volcanic eruption, 1912, largest volcanic eruption of the 20th century estimated to 14 km3 of tephras in [4].
- Colima, VEI 5, 1913
- Cerro Azul, VEI 5+, 1932
- Kharimkotan, VEI 5, 1933
- Bezymianny VEI 5, 1955 - 1957
- Mount Agung 1963 VEI 5
- St Helens 1980, VEI 5 (1,3 km3 according to [5])
- El Chichon 1982, VEI 5
- Pinatubo 1991, VEI 6
- Mount Hudson 1991, VEI 5+ - 4,3 km3 according to [6]
- For the Eyjafjallajokull 2010 eruption the estimation is of 0,25 km3
- Puyehue-Cordon-Caulle, VEI 5, 2011

Atmospheric nuclear tests do not actually produce strong amounts of dust. They do not spray any ground matter in the high atmosphere (except in the few cases where the nuclear bomb is detonated at ground level which has been usually carefully avoided by the military authorities to limit fallout of activation products).

2. Analysis

Volcanic eruptions triggered cooldowns before the industrial era. The massive rate of industrialization changed everything and turned the tephra gas layers into the real greenhouse. Whereas on the short term the volcanic tephras create a barrier for the energy of the Sun, the fact that human sources of heat losses are superior to the solar energy means that the apparition of a tephra barrier becomes an overall source of warming instead of cooling down.

This precisely explains why :

1. there is a turning point circa 1909 with the beginning of the increase in global temperatures
2. why between 1945 and 1976 the global temperatures do not rise whereas there is a massive increase in industrial activity together with a strong rise in carbon emissions, as there is a very limited volcanic activity in that period.

The nanoparticulates from industrial activity do not get in the high atmosphere in the absence of a strong kinetic energy – they create local disturbances but not sustainable effects and, furthermore, their components are not as thick: silica and pumiceous materials typical of volcanic ash are not produced by industrial activity; this volcanic ash is able to capture energy, store it and give it back in ways impossible for e.g. water vapor, methane and carbon dioxide. These volcanic materials lead to a darker, brownish consistency of atmospheric clouds – an effect that was for instance obvious to the author in the French Riviera a few days after the most powerful Stromboli eruption in the last 20 years (early July 2019).

When there are limited amounts of volcanic tephras in the high atmosphere, energy losses from human activity simply radiate out in the outer space. Which is why the period 1945 to 1976, in particular, is not associated to an increase in average global land ocean temperatures.

A set of data for the global cloud cover for 1980 to 1995 is given in [7]. The paper suggests linkage with cosmic rays but also points out how difficult it is to give an explanation – the issue of volcanic eruptions is not addressed in that paper. The data provided actually shows, with a latency of 3 to 5 years, how volcanic eruptions increase cloud cover, with a first cloud maximum from 1986 to 1987 and another starting from 1993. The Pinatubo and Hudson eruptions are more powerful and happen the same year, hence the thickening of clouds is quicker.

Cloud cover data from Poland shows very clearly the link with volcanic eruptions. To quote the results in [8], "*In the next period, there is a gradual decrease in cloudiness to 59% up to year 1907. The period between 1908 and 1941 is characterized by a gradual increase in cloudiness to a maximum of 78%. In the following 20 years substantial cloudiness was maintained – more than 70% on average per year. Since 1961 the cloudiness kept decreasing to a minimum of 56% in 1982, and was followed by a slow increase. Data from the beginning of the 21st century indicate a trend of decreasing cloudiness.*" - the effects of the major volcanic eruptions and the crucial pivot years match exactly the dynamics underlined in the introduction : we can see the evolving intensities of volcanic eruptions in the world through the lens of cloudiness in the data recorded by the authors.

A wider set of data limited to the USA, but relying on 54 National Weather Stations and 101 military stations from 1949 to 2009, shows as well an average increase of the cloud cover of 0.31% (+/- 0.22%) per decade [9]. For the period 1980 to 1995 in this paper, the data is consistent with data in [7]. This progressive increase in itself correlates very well with global land ocean temperatures and, for instance, the first peak observed in [9] in 1957 is perfectly matched by the Bezymianny eruption happening not too far from the US, with the cloud certainly crossing directly the Pacific from West to East, undisrupted by land emissions of energies as it mostly passed above the ocean. The global set of data of [9] very well confirms the link between volcanic eruptions and global cloud cover and its contribution to global climate change.

And even more crucially, a set of data on ocean cloud cover [10] shows that the *total annual average daytime cloud cover anomaly* has been increasing from 1954 to 2008 even though the data has to be divided in two, with a peak in 1998 and a slight recession from 1998 to 2008 which nevertheless disappears if the focus is put on stratus clouds (in [10], the fourth figure provided by the authors, small point (f)) where the brutal and sustained increase since 1988 is evident (the stratus data peaks at the end of the graph for 2008); stratus clouds are the best associated with high altitude volcanic tephras and their increased latency in the high atmosphere due to more acute losses of human energy following increase in global GDP is here made obvious by the data. These stratus clouds which represent the most efficient, long-lasting veil slowing down the radiation of human losses of energy in outer space are the core explanation to recent trends in global warming.

The progressive acceleration of economic development, especially in the "Asian Tigers" and then in China, together with a stronger group of volcanic eruptions, has led to an acceleration in global warming in the 1980s.

A weaker activity in volcanic eruptions after the Pinatubo and Hudson eruptions has nevertheless come together with even-faster economic growth, and hence rapid climate change, fostered as well by the prevalence of the false belief that curbing carbon emissions can curb global warming contributing even more as strategies have focused on e.g. carbon storage and building of nuclear reactors. The amount of tephras in the atmosphere is not as high as what happened during the 20th century but the more important levels of energy losses due to higher economic development increase the climatic impact of these more limited levels of volcanic tephras.

Volcanic eruptions come by clusters and a new cluster has arisen since the end of 2017, leading to a new acceleration in global warming and extreme temperatures recorded everywhere on Earth.

3. An Imperfect Attempt at Statistical Simulation that Nevertheless Approaches the Truth

An attempt at computing the above analysis has been undertaken, using a model relying solely on two streams of data:

-1. the world GDP levels, drawn from [11] with a linear averaging for the missing years in the early 20th century. This allows to have an idea of the levels of energy losses.

-2. the VEIs of volcanic eruptions. A strong latency of very thin volcanic tephras is introduced in the model.

The model is computed with the following rules:

- Introduction of the VEIs of all significant volcanic eruptions, 4 and above, applying a simple rule in which 100% of the tephra gas is in the high atmosphere the first year, 90% the second year, etc. For simplicity, the eruptions of the end of the 19th century (before the Santa Maria eruption) have been left out. This produces a raw index.

To this index is added a number which brings in the rate of growth (approaching henceforth energy losses) so as to *increase the tephra index in proportion with economic development*.

A 3 year average delay is introduced in addition to the latency of thin volcanic tephras. It fits the temperament observed just after the Pinatubo eruption which is first followed by a light cooldown before rapid increase of temperature. In the immediate aftermath of any powerful volcanic eruption (subplinian or plinian), volcanic tephras are in the outer layers of the atmosphere, too high to have a direct impact until they fall down progressively, and these powerful eruptions are the most important contributor in tephra volume so the simulation is tilted in their favor.

The still imperfect final output is as follows. Temperatures are given in an index form but aimed at representing the general average temperature on Earth in degrees C.

Table 1. Simulation

1905	12,59106458	1937	12,877115645	1969	13,356455113	2001	13,893598876
1906	12,602060214	1938	12,882275904	1970	13,378696595	2002	13,848817861
1907	12,612786132	1939	12,887467509	1971	13,396468619	2003	13,842055416
1908	12,6232552	1940	12,892754087	1972	13,415140985	2004	13,861055988
1909	12,633477712	1941	12,897992908	1973	13,444135677	2005	13,881374438
1910	12,643470624	1942	12,897796831	1974	13,453357485	2006	13,904219845
1911	12,653241357	1943	12,897685809	1975	13,459403823	2007	13,927301567
1912	12,662780664	1944	12,90310031	1976	13,480012391	2008	13,939657258
1913	12,672111658	1945	12,908485114	1977	13,498316877	2009	13,938327174
1914	12,681247397	1946	12,924279339	1978	13,517206837	2010	13,96064686
1915	12,692126802	1947	12,939519288	1979	13,531497253	2011	13,977863635
1916	12,701177953	1948	12,949390178	1980	13,540341896	2012	13,991613906
1917	12,709532642	1949	12,959041873	1981	13,549011042	2013	14,006273711
1918	12,717589268	1950	12,966142724	1982	13,553887954	2014	14,029970329
1919	12,725485557	1951	12,991226802	1983	13,567389279	2015	14,040799469
1920	12,733224178	1952	13,0211898	1984	13,586012176	2016	14,050018211
1921	12,740981283	1953	13,029395879	1985	13,606905431	2017	14,060684318
1922	12,756241052	1954	13,046627359	1986	13,620516576	2018	14,071156493
1923	12,771000728	1955	13,071908317	1987	13,635283104		
1924	12,778184981	1956	13,093447419	1988	13,651792664		
1925	12,792392731	1957	13,1106072	1989	13,664964091		
1926	12,799340981	1958	13,123870231	1990	13,674063945		
1927	12,812913834	1959	13,143289158	1991	13,678848129		
1928	12,826075074	1960	13,164546604	1992	13,685905402		
1929	12,832509209	1961	13,181970698	1993	13,693985233		
1930	12,838849218	1962	13,199843333	1994	15,93820945		
1931	12,83884913	1963	13,217525526	1995	15,372477875		
1932	12,845098149	1964	13,247995741	1996	14,946046879		
1933	12,851258424	1965	13,269524202	1997	14,612403087		
1934	12,857333007	1966	13,294796146	1998	14,322998244		
1935	12,865174709	1967	13,310316008	1999	14,114961625		
1936	12,871993139	1968	13,332988021	2000	13,988462607		

There still is an issue linked to the particularly acute effects of the Pinatubo and Hudson conjoint eruptions in 1991 in a period where there is also a strong level of economic activity increasing of course *more* the residence time of the tephra gas in the high atmosphere ; the higher readings of between 1994 and 1998 have to be progressively spread out over the next years.

Bad policy choices, esp. the pursuing of nuclear electricity leading to strong thermal losses with the belief that ending carbon emissions is the answer, and the pursuing of carbon storage schemes, are to explain the remainder of the acceleration that has been seen since the mid-1970s and *especially since the mid-2000s, not shown in the simulation*, as the rate of volcanic activity has decreased after the Pinatubo and Hudson eruptions. These bad policy choices are **impossible to directly intake in a simulation relying on GDP levels** as there has been very limited internalization by the economic agents, except *somehow* for the direct destruction caused by natural disasters linked to the acceleration of global warming. This explains the limits of the mathematical model here presented.

As concerns the planting of trees (as opposed to strict carbon capture and storing in e.g. underground pockets), the increase in tree cover of course contributes to the deceleration of global warming as the trees have a strong cooling effect on the environment, consuming heat for their growth. Trees however *suffer* from policies of carbon storage and reduction of carbon emissions in general as carbon dioxide is the fuel for their photosynthesis. This is a further negative effect of recent policy choices. The coal, oil and gas industries, if associated with smart engineering solutions leading to the suppression of heat losses, and with as strong as possible reduction of aerodynamism issues in motor vehicles, can perfectly have a *very limited* climate footprint while contributing positively to the development of forests contributing as well to the cooling down of the climate – so long as these forests are not harvested for biofuel production, construction wood etc. Nevertheless the development of renewables remains a particularly significant asset; in particular, the extraction of geothermal power in areas with a volcanic risk, through reducing the dilatation and hence the compression associated with strong eruptions, is a direct source of energy that also somehow slowly *reduces the volcanic threat* so long as no water is injected for heat extraction (except if it is confirmed the heat extraction following water injection is enough to reduce the average geothermal activity of the area – but use of a closed water circuit is much more sensible). In a country such as Japan with very strong energy dependency and limited space for e.g. agrofuel production, this solution remains particularly efficient and would also reduce the economically and humanly painful earthquake risk. It is in general an excellent answer to all slowly building magmatic pockets.

The spillovers from one industry to another (for instance as the beginning of a global cooldown shall decrease evaporation of seawater and hence rains, hence slowly reducing the production capabilities for hydroelectric companies) call to the simple answer of a strictly free market, sole configuration in which planning by the economic agents (through communication with prices, in stock markets...) is possible without knowledge issues and other hindrances – and also allows a collective result based on the weighted demands of the players. A single planner cannot indeed know all sources of energy loss and compute at the same time decisions for all sources without freezing individual initiative and imposing at the same time a heavy administration that will consume more resources than the added value it produces, whereas it must as well be ensured that all stakeholders demand an end to global warming ; this is a basic result of economics in a dynamical model.

4. Hurricanes Show Where Their Energy Come from – the Definitive Proof

The definitive proof comes from the behaviour of hurricanes. This is a sensitive subject because it relates to *secret nuclear accidents* – but the author tracked these nuclear accidents in several publications on his website. The Brunswick nuclear reactor was destroyed by hurricane Florence, in southern China (Leizhou peninsula) a secret sodium fast reactor was literally *sublevated* by hurricane Bebinca in August 2018 (it is an image – it was destroyed in a single fireball – leaving a huge burn on the ground, over several kilometers, seen from Google Satellite – the fallout ended mostly on northern Vietnam – it is a positive void coefficient accident so the entire reactor was destroyed in a single explosion and most of the content of the core landed onto north Vietnam where the hurricane dissipated) – less important but still impressive nuclear accidents happened also, for instance in nuclear reactor Joseph Farley in Alabama (two accidents in 2018, seen both with video records of lights from the supercriticity cycles near the plant, the break on the top of the reactor was even seen by the author in a photographic document in the case of the second accident in early October and fallout also tracked with Geiger data together with electricity disruptions at the moment of the accident ; for the first accident in May, as release of waste in the nearby river was needed, 50 000 fish in a public fish breeding farm upstream were preventively killed overnight in a “criminal event” recorded by newspapers), in St Lucie nuclear reactor in Florida, in a number of other PWRs where the marks of small breaks on the shield is obvious with pixel censorship on Google satellite view (always on the southern coast of the USA where hurricanes already caused limited nuclear accidents before 2017), but with limited fallout as the hurricanes were not so important and the reactors had concrete shields. A relatively important accident also was caused by hurricane Trami in the Satsumasendai nuclear reactor in south Japan, with a big fireball whose light was seen on webcam (thanks to the municipal website of the city of Satsumasendai), lighting the city in the night as it was daytime for a few seconds – some fallout evidenced on the path of the hurricane with spikes on Google requests associated with „cough with expectoration“, „pain in chest“ but much less significant than the Google Trends spikes in the USA for „early signs of leukemia“, „early signs of prostate cancer“ (given as significant beacons showing very long lasting trends since Florence for a stream of epidemiological effects that is much wider, of course), for a cluster of cancers in Vietnam (single day spikes suggesting that everybody rushed on Google for medical questions but that there was then censorship). The New York Times also published an article dealing with the „disappareance of the fauna in protected forests of North Vietnam“ in Spring 2019; there is very strong Geiger data in the Leizhou peninsula where the blast happened, showing spikes in one Geiger that was stopped on the day of the hurricane at 214 microSv/h and another one that worked until mid-September, terminated at 9 000 microSievert / hour, both on uradmonitor.com ; there is also very good Geiger data and visual recording of the cycle of flashes (supercriticities in the boiling core) for the Brunswick accident (and a Geiger tracking in a South Korea to Atlanta plane on Sept 23, 2019 ending at 14 microSv/h above Atlanta)... Google Trends data for the Brunswick fallout also shows with of course a delay of many months (with premature births typical of birth defects) significant spikes in a number of frequent birth defects and there is a rain peak in the precise region of the fallout as the alpha emitting particulates of the fallout have of course a positive charge, attracting rains (as usually with clouds (granite areas are cloudy) but the concentration of actinides on the ground created a very strong above-average level of rains in the East Coast, showing also, as the Earth rotates faster at the level of the Equator, pushing thus heavy nanoparticulates to the North, the *north-western angle* of deposition). It is suggested to rank the Brunswick and Leizhou accidents as INES 7 and the other accidents listed above as INES 6.

The recent acceleration of global warming, after a new wave of volcanic eruptions that started at the end of 2017, created more powerful hurricanes. Hurricanes target areas of overpressure – for the simple reason that there is a natural tendency to balance, a thermodynamical law in which extremes balance each other (as when a window in an overheated room is opened to the open air), so hurricanes naturally *seek and destroy* sources of overpressure. Nuclear reactors are not the sole source of overpressure but they are a very significant one and in the year 2018 it was a particularly long and impressive series of nuclear accidents. Links to data and some crucial images are provided in supplementary material.

It is in conclusion reminded that the law of natural balance is a general one. These are events with low probability but that can happen anywhere. It is here focused on nuclear reactors but all other above-average sources of heat loss can – and *will* at some point if nothing is done to improve energy savings – be destroyed by a natural disaster linked to climate change. Cities of high density with few care for energy saving – as the massive Bhola 1970 hurricane for instance in Bangladesh -, refineries, big industries in general when they do not take care of energy efficiency... In plains, tornadoes for instance have the same effect. The increase of urban density in areas prone to flooding leads to human disaster (to take an example in France, Mandelieu-la-Napoule where the very high natural radioactivity of the granites of the Estérel combines with the proximity of the urbanization of the French Riviera is the area which tops the list of the noted winds of the storms of the end of December 1999 [12], it is also the municipality topping the number of victims of the October 2015 floodings and again one of the most destroyed cities in the November 2019 floodings).

There is a general law of natural balance of the extremes. It is impossible to remain too far away from equilibrium levels, by imposing for instance too much changes on the heat levels in a given place and not have a natural retrofeedback effect bringing back closer to average the heat levels. Natural disasters come and destroy part of the sources of energy loss that disrupted the equilibrium. The event *will* destroy devices that caused the above-average energy loss in the atmosphere unless they are turned off and put to cold before the event but in that situation, whenever they are brought back to work later another disaster shall come and threaten it again. There is no escape except cutting energy losses.

5. A synthesis on Smart Use of Nuclear Fission for Electricity

Nuclear reactors must be strongly subcritical – turned into accelerator-driven systems - and water-cooled. The reduction in k is compensated naturally by an higher capture of radiative energy as the coolant is not saturated and hence heat losses in nature are avoided ; so ***the actual consumption of uranium is lower vs. electricity output*** (in spite of the electricity cost of the particle accelerator that is of course more than mitigated by the very strong energy efficiency). And nuclear power does not contribute anymore to global warming in this configuration.

The answer of installing multiple heat extractors to cool down more the water while increasing the electricity output of the reactor without going subcritical involves indeed longer water cycles near the core, hence demultiplying the yield of the accident in case of a supercriticity. It is an extremely dangerous answer – not mentioning the other risks for nuclear reactors, including relativistic neutrons (see [13]).

The existing framework of nuclear reactors can perfectly be turned into subcritical through the simple installation of lead windows and particle accelerators systems along the reactors (with of course secure anchoring of the window). A k of 0,35 is recommended as maximal value for light-water-cooled accelerator-driven systems aimed at electricity production.

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Supplementary material:

1. Bebinca, 14/08/2018 :

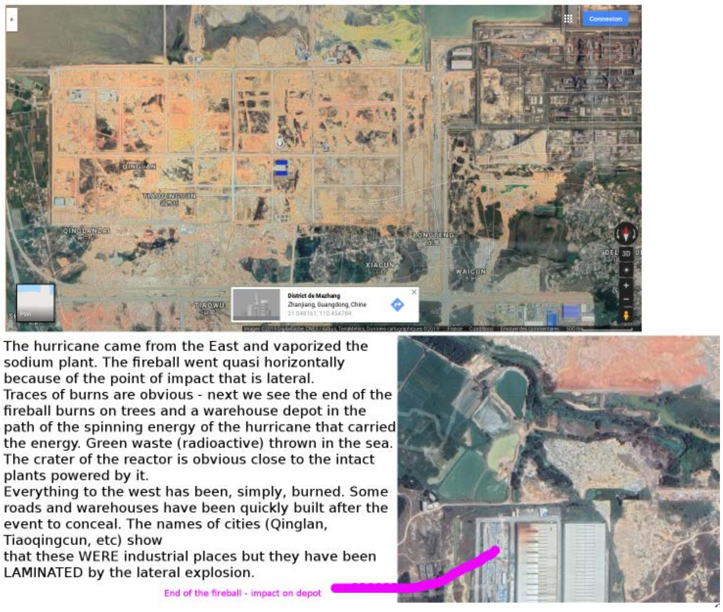

Figure 1. Google satellite image showing the remains of the SFR accident in Leizhou that happened August 14, 2018

There was obviously a lot of people burned alive and one can see the radioactive waste in the north washed into the sea by the authorities ; and the crater, sole remin of the reactor, to the top right. The spin of the hurricane is obvious with the orientation of the ground destruction.

Bebinca was a relatively small „tropical storm“ but accelerated as it locked onto the reactor. Geiger data:

Figure 2. The Geiger shows the beginning of the nuclear accident and is then itself destroyed, or shut down

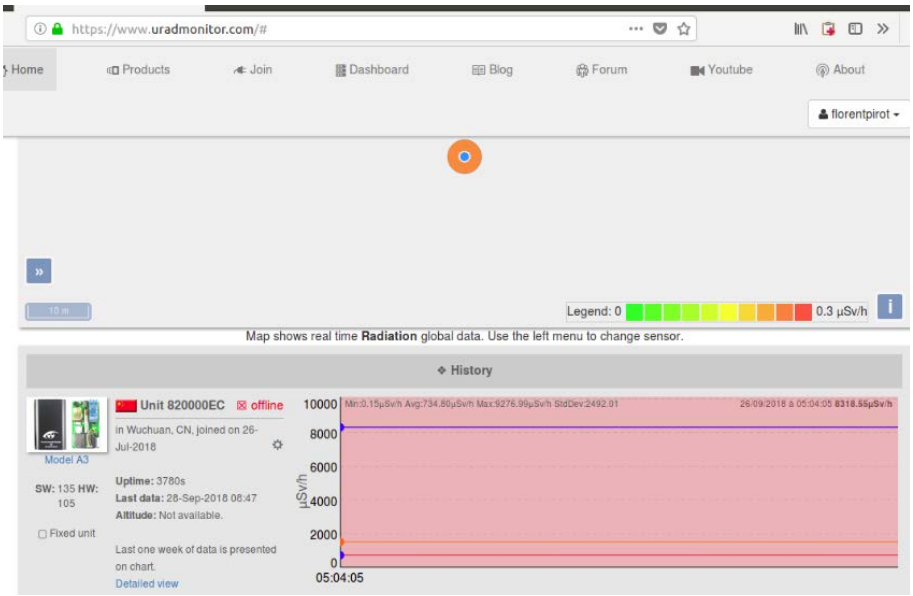

Figure 3. Another Geiger was working still on 26 September 2018, showing circa 9 milliSieverts per hour - it was then shut down, or had a failure

There is more – Google request data in Vietnam showing the strong epidemiological effect – in the link https://uraniumisagenocidegiant.com/2018/12/04/another-chernobyl-in-south-china-and-more-pwr-explosions-in-the-us-un-autre-tchernobyl-en-chine-du-sud-et-dautres-explosions-de-rep-aux-etats-unis/

2. For Brunswick the most important videos (powerful flashes from big supercriticities in the early days, seen from Wilmington NC, and plane recording at 14 microSv/h) are there https://uraniumisagenocidegiant.com/2018/09/29/fallout-cloud-from-the-brunswick-nuclear-reactors-fire-and-explosions/

The fallout, in addition to the epidemiological effects seen with Google Trends (with a sample of typical cancers, birth defects https://uraniumisagenocidegiant.com/2019/08/05/brunswick-fallout-birth-defects-malformations-congenitales-issues-des-retombees-de-brunswick/ caused an array of mutations of virus and bacteria in the precise area of the nuclear fallout a few months after the event – the effect of radiation on the mutations of viruses and bacteria was already identificated by the author in [14] and here the first area of alert shows precisely the area of the fallout – the track of the hurricane with some of the initial fallout to western Canada is also obvious)

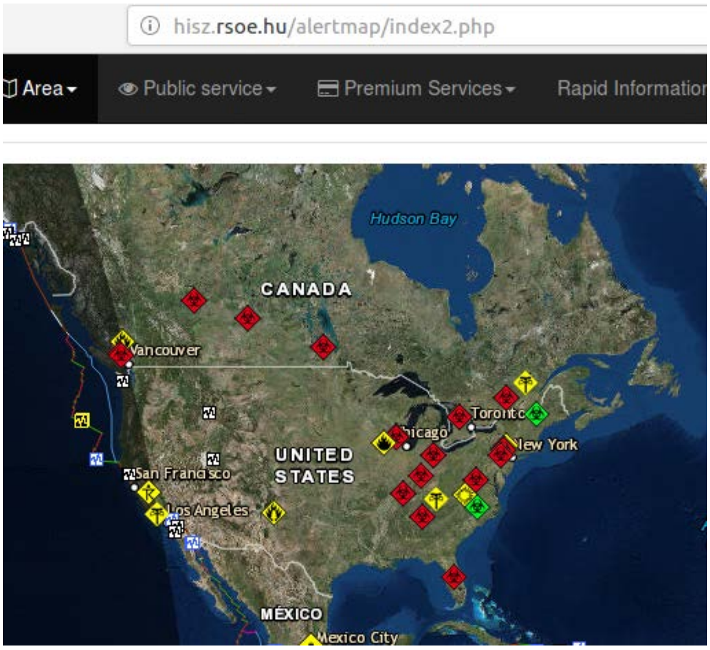

Figure 4. The area of the first alert in mutations in bacteria, viruses etc. (before spreading of these diseases) shows precisely the extent of the Brunswick nuclear fallout

One should note how the area just near the reactor is a bit more protected as the radioactive dust, extremely hot, is still flying and cools downs as it flies away, progressively. This is why the emergency in North Carolina was not so strong. The Google Trends data also shows precisely the same area for the fallout, particularly with prostate cancer which is an excellent signal.

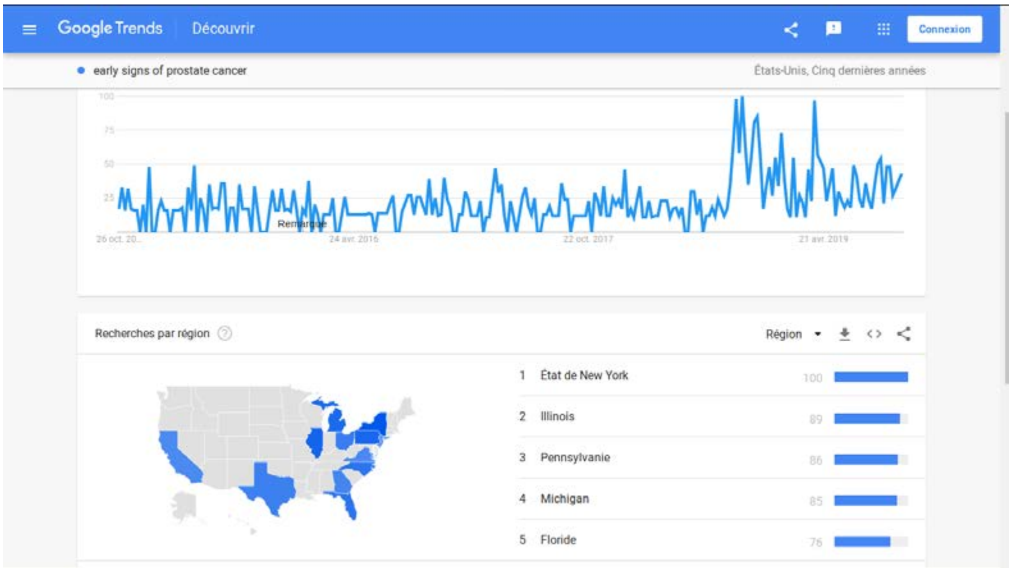

Figure 5. New York State, Illinois, Pennsylvania, Michigan and Florida are where Google notes the most acute peaks for this cancer taken as beacon - there is more, as for the Leizhou data in north Vietnam not included

Rain levels :

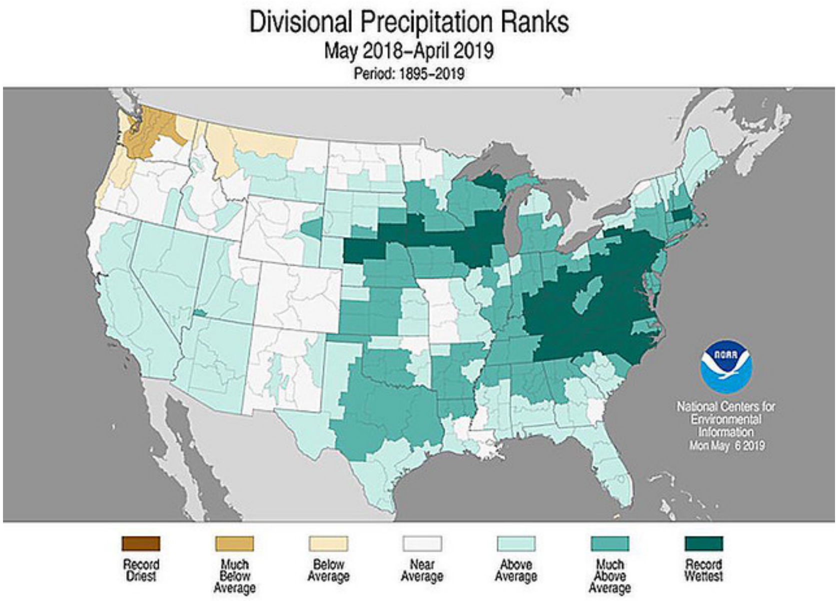

Figure 6. The radioactive tracks of the Brunswick nuclear accident seen through rain levels ; actinides and their positive charge attract storms, concentrating them in areas of fallout, leading also to drying in peripheral areas

The Appalachian shielded a little bit some areas of West Virginia from the fallout coming from Brunswick.

The radioactive waste of the Brunswick nuclear accident has been mostly pushed into the seas – sending actinides underwater kills off the fauna but increases the likelihood of supercriticity and hence reduces strongly the long term contamination, in addition to protecting humans and the ecology of the land.

https://uraniumisagenocidegiant.com/2019/03/22/brunswick-nuclear-reactor-accident-radioactive-waste-washing-in-the-atlantic-killing-off-whales-dolphins-seals-at-extremely-high-levels-les-dauphins-baleines-phoques-de-latlantique-victimes/

and one dolphin corpse was actually tested with a Gamma Scout by the author, recording up to 0,425 microSv/h in blood collected from it. https://uraniumisagenocidegiant.com/2019/06/16/showing-the-radioactivity-in-a-dead-dolphin-from-the-brunswick-nuclear-accident-beached-in-french-brittany-radioactivite-en-provenance-de-laccident-nucleaire-de-brunswick-sur-un-dauphin-echoue/

One cloud release by Brunswick engineers on Dec. 25 2018 to use the fact most people spend Christmas indoors to fasten burn of the core: https://uraniumisagenocidegiant.com/2018/12/26/a-tremendous-radioactive-cloud-from-the-brunswick-nuclear-fire-while-no-one-is-watching/

For Satsumasendai see https://uraniumisagenocidegiant.com/2018/09/29/why-the-sendai-nuclear-plant-cannot-be-expected-to-resist-to-the-typhoon-trami/

For Farley see https://uraniumisagenocidegiant.com/2018/10/12/farley-nuclear-blasts-and-destruction-of-the-plant-after-michael/

There is more but these accidents are the most significant.