Ice Age Canada

Industrial Revolution Potential

By Rolf A. F. Witzsche – 2013 – Published by Cygni Communications Ltd. Canada

In love with our humanity

Ice Ages are regarded as something mysterious, illusive, something that had happened in the distant past, too distant for anyone to tell us about them, which rumours have it, may be repeated far in the future, of which it is said that they develop slowly over thousands of years. Ironically, a rigorously developed scientific factor has contributed significantly to this mysticism.

Northern development with a focus on the tropics

All infrastructure development must be focused onto the tropics. When the Ice Age begins in 30 years with a 70% dimmer sun, the entire food supply infrastructure must be located in the tropics. Since land for agriculture is scarce in the tropics, all relocated agriculture needs to placed afloat onto the tropical oceans, accessiable by floating bridges between the continents. The floating agriculture, of course, needs to be serviced by a new breed of farmers living nearby in floating cities that are augmented with floating industries, connected with intercontinental high-speed transport.

All of these infrastructures need to be built. To fail is not an option, because the current food resources, industries, and habitats will become largely disabled above the 40 degree latitudes. Food production needs to continue. This means that agriculture needs to continue. The necessary gigantic task must be carried out to maintain the life of humanity. Since the task is truly gigantic, it can only be fulfilled with large-scale automated industrial processes, and the use of a material that is near infinitely available.

The material is Basalt

Basalt is a stone, basically. But what a stone it is! It has amazing properties. It is nearly as hard as diamonds, melts at 'low' temperatures (slightly lower than molten glass), and when it is extruded into the fibers, it is one of the strongest materials known, second only to carbon fibers.

Just compare the tenacity (strength) numbers (given in MPa - mega Pascal; 1 Pa=1kg/square meter). The number for basalt is right up with the best of them:

Structural steel: 400
Ttitanium: 830
The best glass fibers: 4,710
Basalt fibers: 4,870
Carbon fibers: 5,650

While basalt is 12 times stronger than steel, in this comparison, basalt is nearly three times lighter. These amazing qualities of basalt, altogether, enable equally amazing technological capabilities for industrial processes.

The reason why basalt is not yet widely used, is society's reluctance to use its vast nuclear power resources that it is able to develop. Society's thinking is too small-minded to give itself the needed space to set up the corresponding industrial capability that utilizes the new material. Little is done on thei wide-open front, simply because it takes twice as much energy to melt basalt than it takes to melt steel. However, in the nuclear age, energy should no longer be deemed a big factor, especially in heat-based processing where the theoretical energy factor is near zero, as the heat invested for melting basalt can be recovered in the cooling process to a large extend.

For example: It takes 200 kilo-calories to raise the temperature of a ton of basalt one degree Centigrade, termed specific heat. This adds up to 280,000 kilo-calories of heat needed to raise a ton of basalt to the process temperature of 1,400 degrees. This heat volume, by conversion, equates to 325 Kw/hrs. That's the thermal energy needed to process one ton of basalt.

On the basis of this facts, a 1 gigawatt nuclear reactor would be able to process 3,000 tons of basalt per hour. However, since much of the heat that gets put into the process of melting the basalt can be recovered by technological means after forming the basalt product, the entire process can be made several times more efficient. Typically the recovered heat would be applied to preheating the feed stock.

If, for example, only half of the process heat would be recovered, a single 1 gigawatt plant would be able to process twice as much material, or 6,000 tons per hour. In practice far greater efficiencies are achievable. If the process was designed so that 90% of the input heat can be recovered in the cooling process, a single 1 GW plant would be able to process 27,000 tons of basalt per hour, which adds up to 23 million tons per year. This is more than double the output in tonnage of a large-scale steel mill, and is four times greater in volume.

With the current world-capacity in steel production standing at roughly 1.5 billion tons, it would take a mere 55 production units to match the current world-capacity. However, with the structural strength of basalt being ten times greater, a mere 6 production units would be able to produce the equivalent of the entire world-supply of structural steel products.

The above analysis is not intended to suggest that steel production would be displaced, but it illustrates the enormous potential of the basalt process for revolutionizing the economic platform of the world. In real terms, basalt would be used for products where steel is not even considered due to its presently high production cost (in the absence of high-temperature nuclear power).

Steel production is not cheap. Steel production is a complex, multi-stage process, all the way from mining both the ore and the coal for melting it, involving secondary industries for the processing each, such as coke making, steel smelting, and so on, till the end-stage of the milled product is finally reached.

Let me give you a comparison between steel making, and basalt making.

Steel making

The steel making process typically begins with the mining of hematite or magnetite containing rock formations. The mined product is then crushed and ground into a powder that enables magnetic separation. The result, after the tailings (60%-75%) are removed, is a concentrate that contains 60% of iron. That's the typical feed stock for the smelting processes. In order to produce a ton of iron, one typically needs a mix of 1 ¾ tons of the concentrate (ore), with ¾ ton of charcoal or coke, and ¼ ton of limestone. This is piled into the furnaces, or is continuously fed into them.

Typically the furnaces stand 30 feet tall. Traditionally the materials were placed in the furnace in layers. The first layer was charcoal, the next layer limestone, followed by the iron ore. Stoked in this manner, a furnace is able to burn by natural draft. In modern time forced air is used, in blast furnaces, and the charge (fuel and ore etc.) is continuously supplied as the steel and slag are removed.

Coke burns at an extremely high temperature by which the iron in the ore melts. In the process a small amount of the carbon is absorbed by the iron. The limestone combines with the impurities to form a waste material called, slag. The resulting iron product is called "pig iron" that is used for secondary manufacturing.

The Coke that powers the modern process is derived from destructive distillation of low-ash, low-sulphur bituminous coal. The coke making involves a high temperature process (typically 1100°C) in an oxygen deficient atmosphere that concentrates the carbon. Coke making is a separate industry that is loosely attached to the steel industry.

Steel making, typically requires 4 tons of air per ton of steel, which is either vented directly, or cleaned before venting.

Basalt processing

The basalt processing is simpler. Here 100% of the quarried material is used. Almost no tailings result. The quarried material is process ready as it sits on the ground. No separate pre-processing is required. The processing itself is non-polluting. No ash or slag are produced. The end product is derived in a one-step process. The difference between steel making and basalt processing appears to be of the same order of magnitude as the difference between flying from San Francisco to Los Angeles via Tokyo, and taking the local shuttle flight.

The above comparison illustrates the inherent cost differential between steel making and the nuclear-powered basalt processing that opens up a whole new world of applications with many types of manufacturing not yet even imagined. It wouldn't make steel production obsolete. Steel has many valuable qualities. But the potential efficiency in basalt processing would likely result in many more, and more efficient options, for achieving a certain industrial product objective.

Infrastructures for the human dimension

For the automated production of housing, for example, extruded multi-layer corrugated wall units and floor units, of multiple types and shapes, etc. could be produced in single-step processes, for an assembly-ready product that would require little or no post-processing, and would be light in weight for easy transportation.

Consider the following:

For construction, the strength of steel is 10 times greater than wood, and that of basalt it 10 times greater than steel with a third of the weight of steel. The resulting advantage could totally revolutionize housing construction across the world, and this so rapidly that the perception of society of itself, would change.

All that stands in the way at the preset time against this type of industrial revolution is the currently prevailing 'intense' smallness in thinking that society needs to free itself of. No physical limits stand in the way.

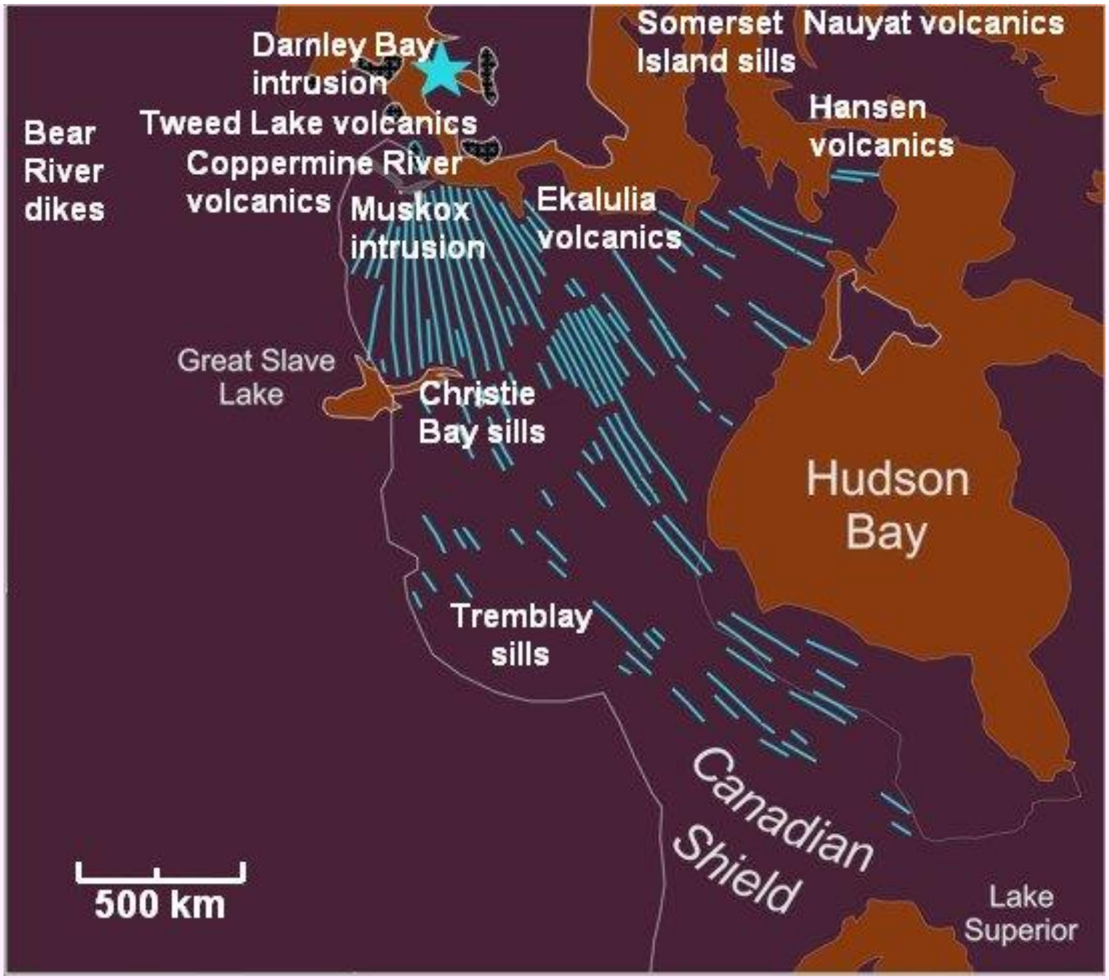
Presently a 2,000 sqft wood-frame house weighs roughly 50 tons. If this weight was reduced to only 10 tons with the use of high-strength modules - which should be achievable with basalt - a single 1 GW basalt processing plant should, on this platform, be able to produce the modular components for 2,700 houses in one hour. Even if this theoretical capacity cannot be achieved, the automated manufacturing of 2,000 houses an hour (or 17 million houses a year) from a single facility, would go a long way in changing the living environment of society across the world.

The same method would also enable the automated industrial mass-production of modules for the floating agriculture that will be needed to facilitate large scale agriculture in the tropics when the next Ice Age begins in potentially 30 years. The building of these types of infrastructures, including the needed floating cities and numerous related infrastructures, is not optional. No other method exists, or is possible, to create the new cities and industries that are required to relocate a large portion of humanity from the Ice Age endangered zones, to safely liveable zones.

Canada is ideally positioned

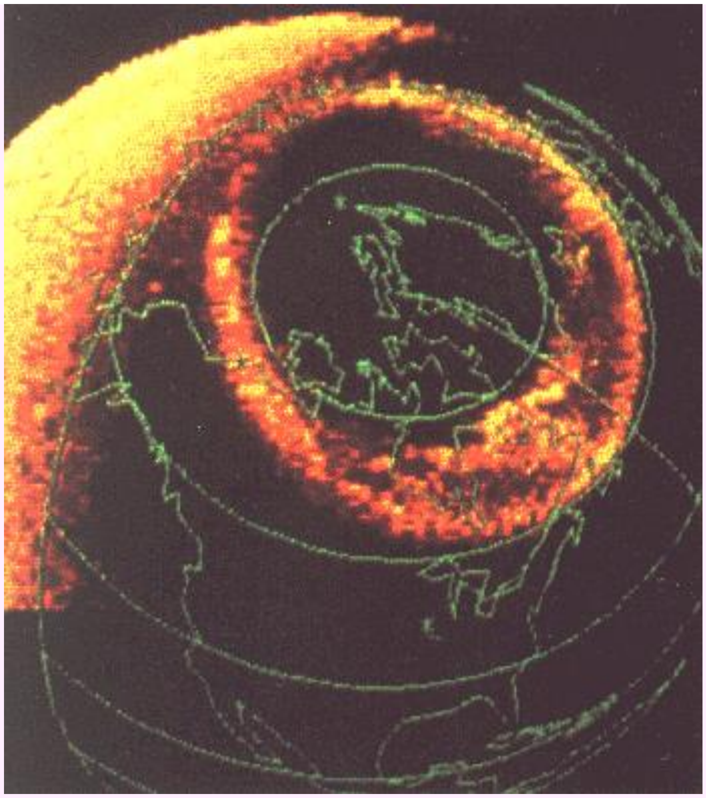
Consider Canada's position on the American continent, which enables it to facilitate the new industrial revolution based on basalt products

The second-largest flood basalt province in the world is located in Canada, in the Northwest Territory. It is named the Mackenzie Large Igneous Province.



Mackenzie Large Igneous Province

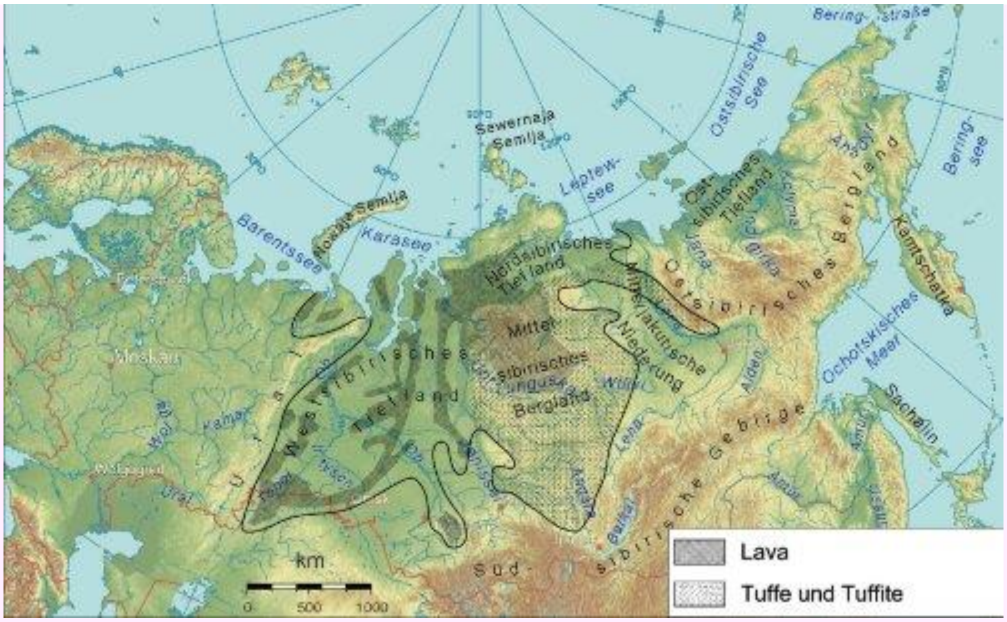
It exists as a 'swarm' of deposits that occupies an area of at roughly 2,700,000 square kilometers, containing the second-largest basalt volume in the world at an estimated volume of 650,000 cubic kilometers. Its enormous size makes the Mackenzie Large Igneous Province as a whole, larger in area than the entire U.S. State of Alaska. And best of all, the area is located in close proximity to the northern cosmic electric interface in the form of the northern aurora belt. This electric belt is visible as a background glow even without the famous aurora events occurring.



The electric energy is faintly visible in the sky over both of the polar regions. It is also referred to as the polar electrojets. With the appropriate technology these ready-made energy streams can be made available to drive technological processes, such as the basalt-based industrial revolution that thereby becomes enabled in Canada's North.

In Russia

The same electrojets energy belt also skirts northern Siberia in Russia, where the world's largest basalt province is located, known as theSiberian Traps flood basalt province.



[See the image expanded](#)

The Siberian Traps extend across 2 million square kilometers – an area roughly equal to all of western Europe. The volume of the basalt located there is estimated at 1 to 4 million cubic kilometers. All of this is 100% usable high-grade industrial material.

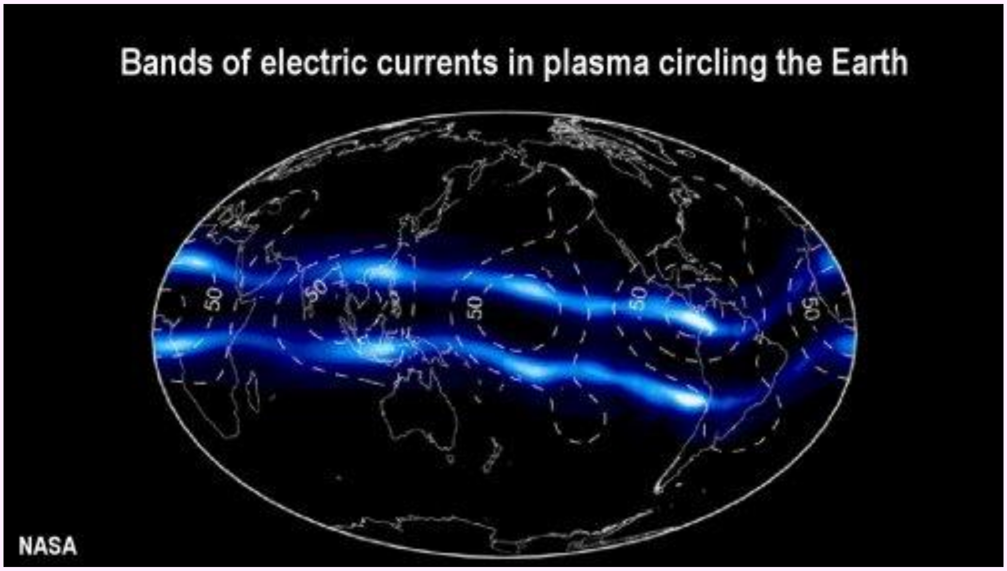
The availability of these vast stores of material, in conjunction with a potential cosmic-electric energy interface being located nearby, renders Russia and Canada natural partners for the development of the new industrial revolution that is required for creating the infrastructures for the coming Ice Age environment.

In India

A similar cosmic-electric interface is also available at the location of the world's third-largest flood basalt province, the famous Deccan Traps in west-central India that consist of multiple layers of solidified flood basalt, which together are more than 6,000 ft thick in some places and cover an area of 500,000 sq km (193,051 sq mi). The Deccan Traps contain a basalt volume of 512,000 cubic kilometers (123,000 cu mi). The term 'traps' is derived from the Dutch word for stairs, referring to the step-like features of the basalt formations.

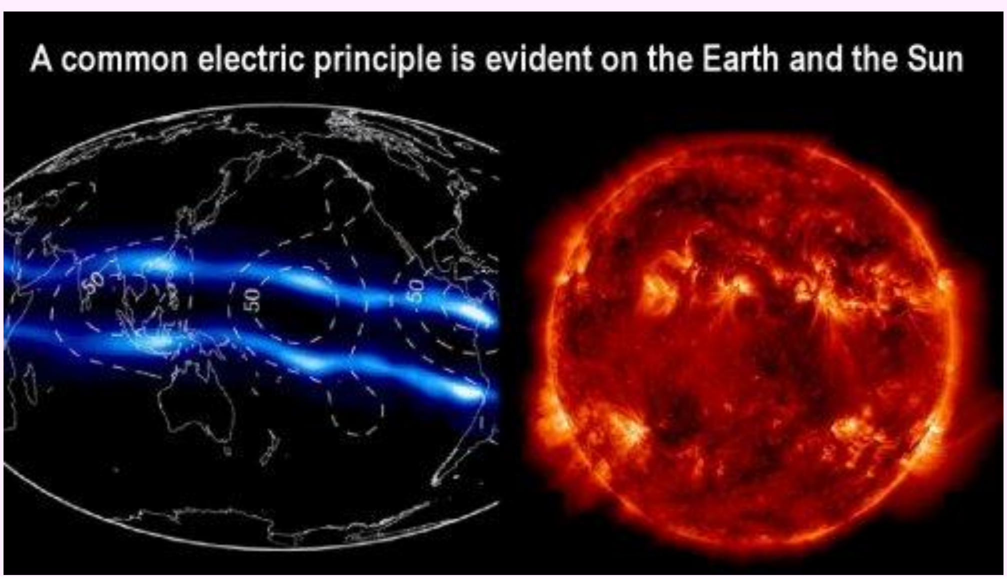
In the world, with energy galore

There is altogether enough basalt in the provinces to cover the entire land area of the Earth 50 to 120 feet deep, depending on the estimates. This adds up to more readily available building material than can ever be used. So, why shouldn't we start right now, using the best that we have, to built our new world with that we will absolutely require in the future? Is there anything more that we need, in terms of high-grade construction material and energy resources than what presently have at hand unused? Are we having cause for hope yet?



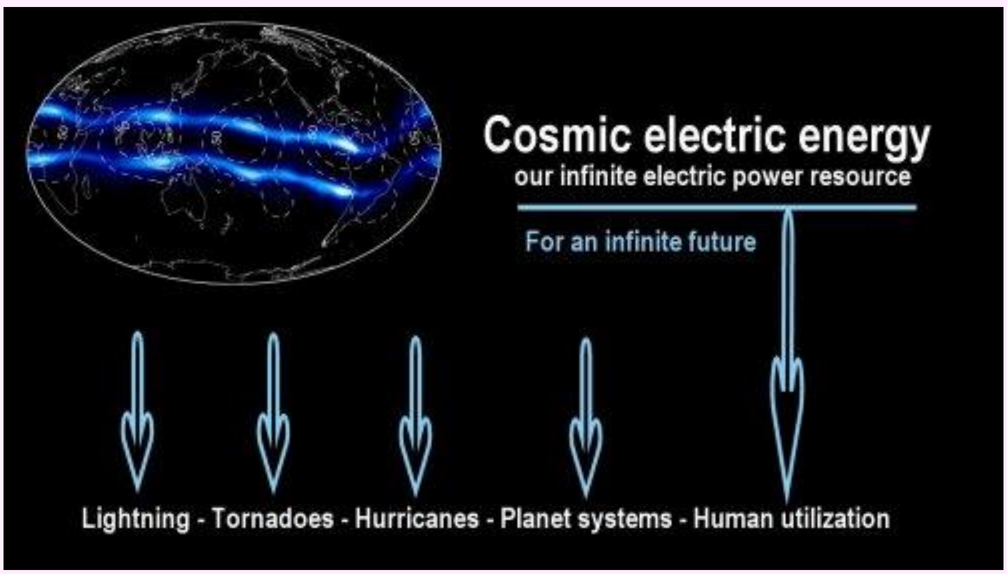
See the image expanded

Two large electric energy streams encircle the world in parallel bands, aligned with the magnetic equator. One of these cuts across India, China, and Japan, where large energy-needs exist. Both streams cut across Africa and South America that may become the new development hubs in the world. The solar energy that we receive radiated from the Sun, through the back door so to speak, was created by similar types of energy streams encircling the Sun that we see on Earth on a much smaller scale.



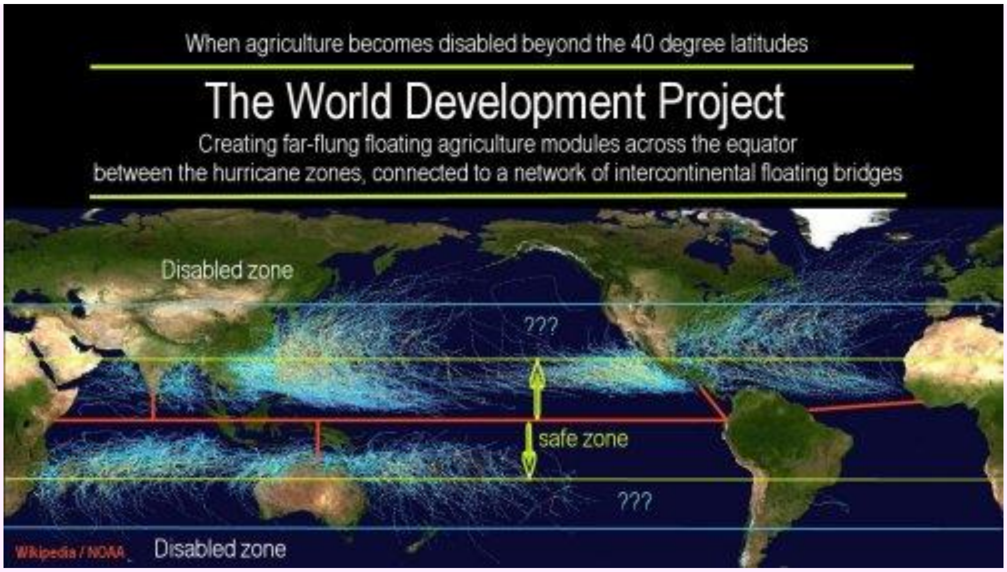
See the image expanded

The energy resource that powers the Sun is electric. This energy resource is enormous. It is so enormous that the Earth becomes a habitable planet by receiving a mere 45 one-billionth of a percent of the Sun's radiated energy, through the back door, as it were. And this received solar energy, through the back door, is nevertheless 150,000 times larger than the entire global electric energy production to date, including nuclear power. Can you imagine the kind of energy depth and density we can have by going directly to the front door of the solar energy cycle? On this basis we have near infinite energy resources within reach, more than the most optimistic future civilization would require. This energy resource exists in cosmic space in the form of plasma electricity. While much of it focused directly onto the Sun, much of it surrounds us also. We are afloat in it.



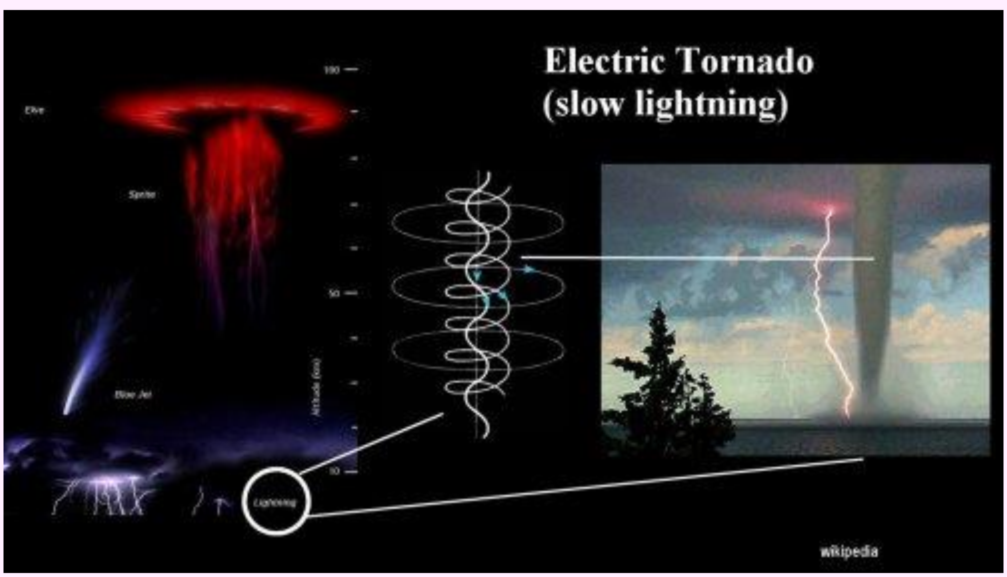
See the image expanded

At the present the electric interface through the Earth's ionosphere powers only hurricanes, tornadoes, lightning, and electric planetary services, which all require large amounts of electric energy, which pale our puny needs. It is interesting to note in this respect that the location of the hurricane zones coincides amazingly well with the electricity streams in the ionosphere that are split into two zones.



[See the image expanded]

While a number of other factors, such as the Coriolis effect and temperature differentials are all contributing factors, it is nevertheless noteworthy that the hurricane zone stops where the electric streams above drifts too far out of range for the contributing factors to be effective, as in the case of the West Coast of South America that is free of hurricanes. The illustration above shows the known historic hurricane paths.



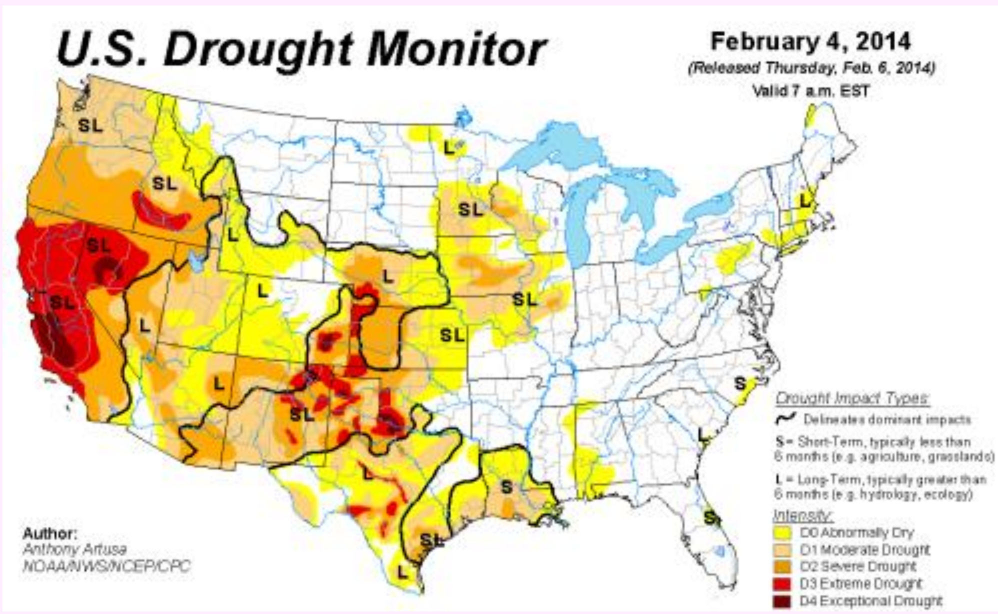
[See the image expanded]

There exists plenty of evidence that twisters and hurricanes, and also lightning, are essentially types of electric events started by thermal events that create a high-reaching channel for discharge processes between the surface potential and the ionosphere.

The point is that the physical principles that enable the Ice Age phenomena, are also manifest as available energy resources that make it possible for us to create the infrastructures needed for living in the resulting Ice Age environment. Without the utilization of cosmic electric energy resources we have no hope for a long-term future. All of our presently utilized energy systems are built on the 'burning' of a consumerable energy resource, such as oil, gas, and coal, which altogether may last us for a hundred years or slightly longer. Even our nuclear power system, including nuclear fusion power, are systems that consume a fuel resource that becomes depleted. The available fuel resources may last us a few hundred years longer in this arena, but they will all become essentially depleted in a short span of times. None will last us a thousand years, while the next Ice Age will be upon us for another 90,000 years. Beyond that, we hope to exist on this planet far beyond just a single 'brief' epoch of this type, and develop and prosper in the process. And this we can accomplish by utilizing the anti-entropic energy streams that power the Sun, which can never be depleted but become more richly powerful the more they are developed and utilized.

See the image expanded

The more the tap is opened, the more the waters will flow, depending on the capacity of the system. The cosmic electric supply system appears to have an infinite capacity, backed up by resources on a galactic scale that power up to 400 billion stars in our galaxy alone. Everyone of these stars is sun, bowered by cosmic electric energy streams. Thus, for us to open the tap a tiny bit for our human use, begins with the scientific acknowledgement that our Sun is an electric star, and the universe in which we live, is electrically powered. This is presently the greatest challenge before humanity. Our success here, will determine if we qualify ourselves to meet the Ice Age Challenge, which is therefore, primarily a human challenge, a challenge of perception. Fortunately, we are the greatest in this field among the countless forms of life that exist on this planet, most of which will likely depend on us meeting the Ice Age Challenge. Thus the onus is on us, and the challenge to move with the capacities we have is already upon us.



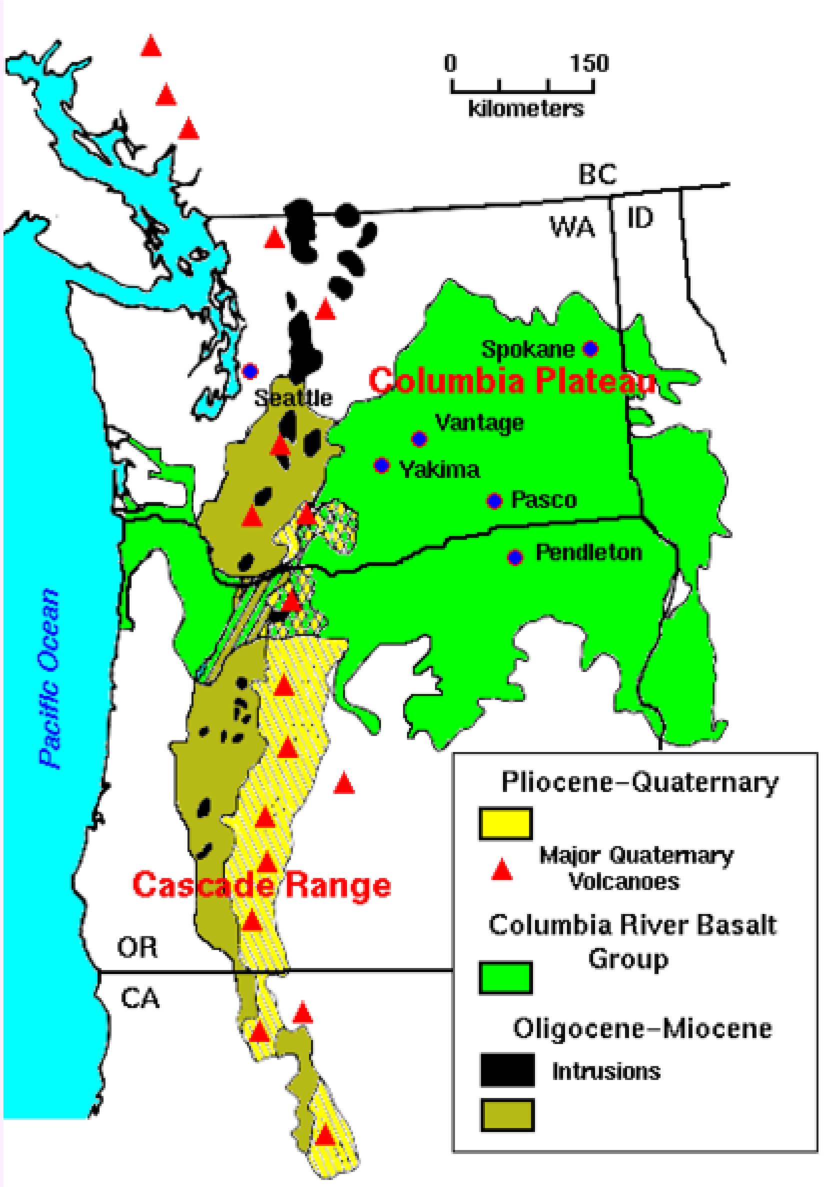
See the image expanded

The great drought that is now developing as the solar system is getting weaker, requires a technological response. Conservation doesn't cut it. For a starving person, to conserve, means to die. California is starving for water now. To die is not an option. The only option is to meet the need. And the need can be met by stepping away from small-minded thinking. An emergency response for the hardest-hit area in California would by to divert the outflow of the Columbia River to the coast of California via pipeline system laid into the sea. Water in water transport is the most efficient form of moving water. It's the natural way. And this can be done quickly, by implementing the basalt technology that already exists, and the materials that lay unused on the ground.

Below the sand (below), and farther than the eye can see, lays the 'gold' of the New Industrial Revolution. Mankind has progressed from the Stone Age to the Bronze Age, and from there to the Iron Age. Now the Basalt Age lies before us.

The key for America's the new basalt technology lies here, in the Great Sandy Desert of the Harney Basin of Oregon. The entire area seen above is but a small part of the Columbia River Flood Basalt Province.

I see in this scene the potential starting ground for the greatest industrial and technological revolution in American history. Beneath the sand and in the mountains in the distance, and in those behind them, unseen by the eye, lies a vast store of basalt that ranks among the large flood basalt deposits on the Earth's surface. Though it is 'small' in global terms, its is large enough for a significant start. It extends across the states of Washington, Idaho, Oregon, and trailing south into California.



[Columbia and Snake River Flood Basalt Province]

The Columbia and Snake River Flood Basalt Province extends across 163,700 km^2 of the Pacific Northwest with stores of basalt that are up to 6000 feet deep and contain an estimated volume of 174,300 cubic kilometers. The basalt was laid down 17–14 million years ago in a volcanic flooding event. This basalt immediately available. While the cosmic-electric interface technology has yet to be developed, the mass-processing of basalt can begin immediately with the utilization of high-temperate nuclear power the Liquid Fluoride Thorium Reactor technology enables. The LFTR technology exists. It operates at 500 to 600 degrees Celsius, which can be pumped up to 1,400 degrees with presently available ceramic materials that remain stable past the 2,000 degree mark. The USA has presently enough known thorium reserves sitting unused on the ground for 900,000 gigawatt-years of power production. India has even more than this.

With this resource and the appropriate industries the Columbia-River diversion to California can be 'easily' accomplished, especially with the use of automated manufacturing.

The development of these materials would also facility the Deep Ocean Reverse Osmosis Desalination technology that is potentially possible, but remains undeveloped for the lack of the needed construction materials. Canada and the USA would naturally join hands in this effort as a pilot project for the development of the MaKenzie basalts. On this path, the USA could become rapidly climate-independent for its freshwater resources. This is a path that the entire nation will depend on this years ahead, and much of the world, likewise. The writing is on the wall. The time has come to take note of it.

(see my video: Freshwater Unlimited)

Rolf Witzsche
researcher, author, producer, and publisher