

Earthquake Prediction by Phenomena of Seismic Electromagnetism(1/2) '12/9/19

This is a trial for best performance method of earthquake prediction by so called **seismic electromagnetism(SE)**. When,where,and how much magnitude prediction by electrical observation methods are introduced.Those could be also best cost performance.

[0] : **Mr frog's earthquake prediction form Shizuoka city Japan**(Japanese language).

Let's predict earthquake by observing atmospheric ion density.

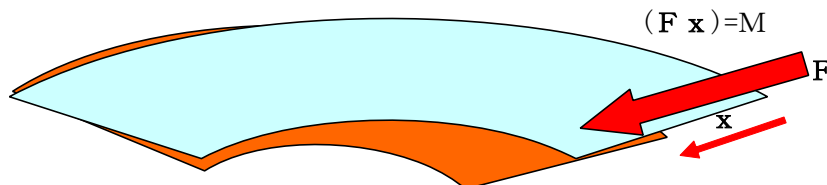
<http://www11.ocn.ne.jp/~juno/page5.html>

It's simple and cheap,but **decisive method**,which could be systematic prediction by network-nization.This may be hated and have not authorized by the academic and concerned administration-cooperate powers.Now the validity is shown in the below.

[1] : Introduction to Elastic Rebound Theory.

(1)Introduction to Elastic Rebound Theory by the movement of tectonic plates.

Disasterous earthquake energy is accumulated mechanical one in long years **continental shift**.Let imagine a simple model of spring plate bending length x with force F . Then energy amount of $M = F x$ Is called **moment magnitude**.Earthquake is rebounding dynamics of spring when it lost constrain force of friction one between so called **fault line**.



The skyblue is initial state of spring without tension force,while red is final state of spring with **maximum tension force**.Initiating earthquake is that by vanishing constrain friction force to spring, bending spring shall start moving toward initial state of no tension force in spring.The beginning is slow,but the last is catastrophic rocks collision in hypocenter.,which trigger generation of mechanical seismic wave.Elastic rebound theory is standard one.

<http://terra.rice.edu/departament/faculty/niu/ESCI446/slides/09-earthquakes.pdf>

(2)Extreme hypocenter high pressure causes rocks to change something different.

Now let's imagine pressure degree P in deep underground(**hypocenter**)as $h = 20\text{Km}$.It is easy to imagine the pressure when you ride **rocks pillar** of 20Km height with $1\text{m} \times 1\text{m}$ area on your head. Perhaps you would be mere a thin liquid plate !.By anyhow,**ultra pressure** in deep underground is outrageous,which would cause to reveal singular feature of matter.

sample calculation) $P = h \rho g = (9.8\text{m/s}^2) \times 2700\text{kg/m}^3 \times 2 \times 10^4\text{m} = 5.3 \times 10^8\text{P}$.

rock density: $\rho = 2700\text{kg/m}^3$, gravity force: $g = 9.8\text{m/s}^2$.

[2] : Introduction to Seismic Electromagnetism.

To tell for classical seismology, mechanical debating may be dominant, while in SE, electrical debating become dominant. The main reason is that **change in matter(rocks)** by ultra pressure is to reflect **electrical behaviour** of negative charge electron and positive charge nuclei in Chemical Bondings. *As for verifying the details, you should ask the experts.*

(1) **Every matter is to become "metal" under supreme high pressure.**

http://www.cgst.osaka-u.ac.jp/research_pres-j.html

To tell for chemical structure, maximized pressure on matter would turn it **closest packing structure**, which is nothing but **metal** one.

<http://blogs.yahoo.co.jp/up6926/28970955.html>

(2) **Inner portion of metal is uniform positive charge density (ASSUMPTION).**

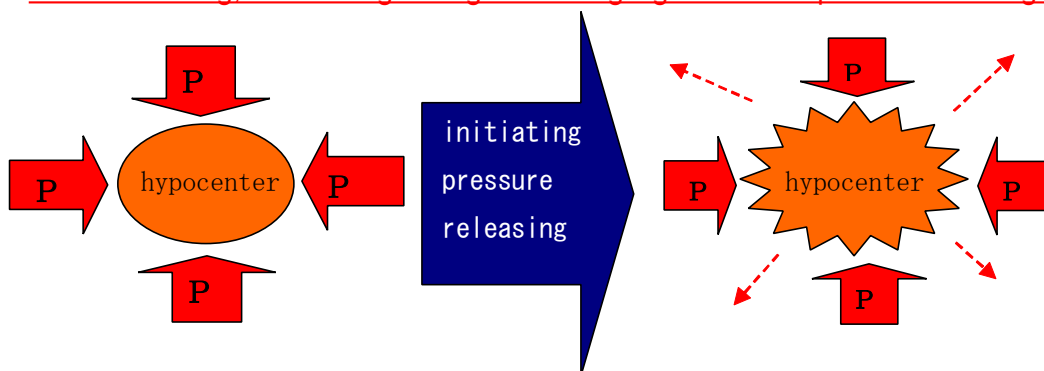
One of remarkable feature of metal may be its **surface shine**, which is caused from reflection of light by **dense surface electrons percolated from inner metal**. Thereby, **inner metal block** is to become **positive charges of nuclei**. Then the inner charge density distribution $\rho(x)$ may be uniform in metal (assumption by author).

(3) **Metalization Hypothesis of Hypocenter Rocks (MHHR) :**

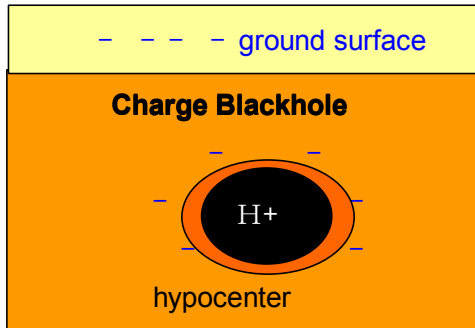
Note author did not proof that every matter in high pressure hypocenter had become metal, however matter in such abnormal environment would become metal like something. This hypothesis could explain realities of electromagnetic phenomena in earthquake.

(4) The outline of the process to cause phenomena of seismic electromagnetism.

At max strain force, earthquake is triggered by catastrophe in frictional constrain force which had been bending spring, then extreme pressure on hypocenter is gradually to be reduced to less. Liberation from high pressure is to cause **giantic charge change in hypocenter** Which is nothing, but radiating emergent warning signal of earthquake outbreaking !!.



(a) **Before earthquake starting, ground surface with hypocenter (positive charge zone H+) had been negative charged** <<seudo breaking down of charge conservation law>>.



Supposing uniform charge density ρ concludes nothing electrical force E_1 in hypocenter (b). It is equivalent to vanishing $H+$ positive charges in hypocenter. Thereby, electron of same amount $H+$ is to be released from hypocenter to the neighbourhood, some of which would be spread to ground or sea surface due to repulsive force between same charges of electrons.

(b) **proof on charge confinement in uniform charge density space.**

$$\square \phi = -\rho / \epsilon \rightarrow \square E_1 = \text{grad } \rho / \epsilon \rightarrow \text{grad } \rho = 0 \langle \text{uniform density} \rangle \Rightarrow E_1 = 0.$$

ϕ : potential, ϵ : permeability, \square = wave equation operator.

Emerging charge blackhole is the kernel point of seismic electromagnetism !.

(4) **Sudden Polarity Change of Ground Surface Charge in preceding seismic tremor.**

Start is slow, but the last is rapid in recovering spring bending, Earthquake initiation is to start reducing strain force in hypocenter, thereby, it is also starting to decay of **H+ charge black hole** in hypocenter. Thereby, $H+$ is to be reduced, or positive charge is reincarnated.

Thereby, it is to attract electron, and also **ground surface turns to positive** from **negative charge**. The final stage of recovering spring bending is generating seismic wave. Thus seismic electromagnetism is **precedent phenomena before seismic tremor**.

(5) **The elementary cause of seismic wide variety phenomena the observable.**

(a) **Giantic charge change in hypocenter** become all sources to reveal such underground current and ground surface charge emerging, which are sequentially to cause the variety of **seismic sensitive animal behaviours** and **seismic atmospheric phenomena**.

<http://www.777true.net/Earthquake-forecasting1.pdf>

(b) **CDW radiation by the charge source in hypocenter.**

$$\square \phi = -\rho / \epsilon \rightarrow \square E_1 = \text{grad } \rho / \epsilon \quad \text{Radiation of longitudinal electrical wave or charge density wave (CDW: } \square \rho_B = -\partial_0^2 \rho \#).$$

Notable feature of CDW is almighty penetrating ability in underground and in sea water).

This is entirely different from commercial utilized EM transversal wave.

*CDW reflects and refracts with surface boundary between different permeability of ground ($\epsilon = 11$) and atmosphere ($\epsilon = 1$). Refraction is equivalent to reradiation from equivalent charge source on ground surface.

(c) **currents driven by electric force due to the radiation or charge spreading.**

$j = \sigma E_1$: **underground current generation.**

current component toward ground surface might cause charge accumulation by current stopping at ground surface. Then secondary ground current would be induced.

(d) **Anomalous animal behaviors and atmospheric phenomena.**

Charge sensitive fish (catfish, eel), snake and frog, birds, cat, dog. They could detect seismic charge variations and behave in anomalous actions. By big earthquake, discharging and lightning on ground, emerging colorful cloud, peculiar shape of cloud are famous.

[3] : **VAN method of underground currents observation (Greece).**

This method gained pragmatical successes by P. Varotsos, C. Alexopoulos and K. Nomikos

http://en.wikipedia.org/wiki/VAN_method

http://physlab.phys.uoa.gr/org/varotsos_cv_van_earthquake_prediction_method_english.htm#VAN

[4] : **Atmospheric Ion Density Observation Method (AIDO).**

<http://www11.ocn.ne.jp/~juno/page5.html>

(1) Charge polarity change is a **warning on coming earthquake in few days.**

(2) **Network Observation** could predict **epicenter position** at **max charge change.**

(3) **The charge change amount** would be proportional to **quake magnitude.**

(4) Thereby, the method AIDOM could satisfy to catch the necessary informations.

Necessary tool is only **ion counter** (electric instrument with rather cheap cost). This method would be implementable in short term with cheap cost. Then network construction could be accomplished by internet with manual or automatic measurement and communication.

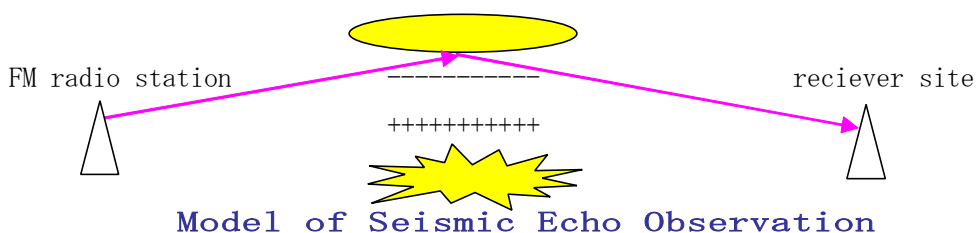
<http://www.n-ion.com/e/theory-03.html>

(5) **Seismic Echo Method by Kushida.**

<http://nanako.sci.hokudai.ac.jp/~moriya/AnomalousFM.htm>

<http://nanako.sci.hokudai.ac.jp/~moriya/fm.htm>

This method is based on **anomalous radio wave propagation** due to **ionosphere anomaly** caused by **ground charge change due to epicenter**. This is also best performance.

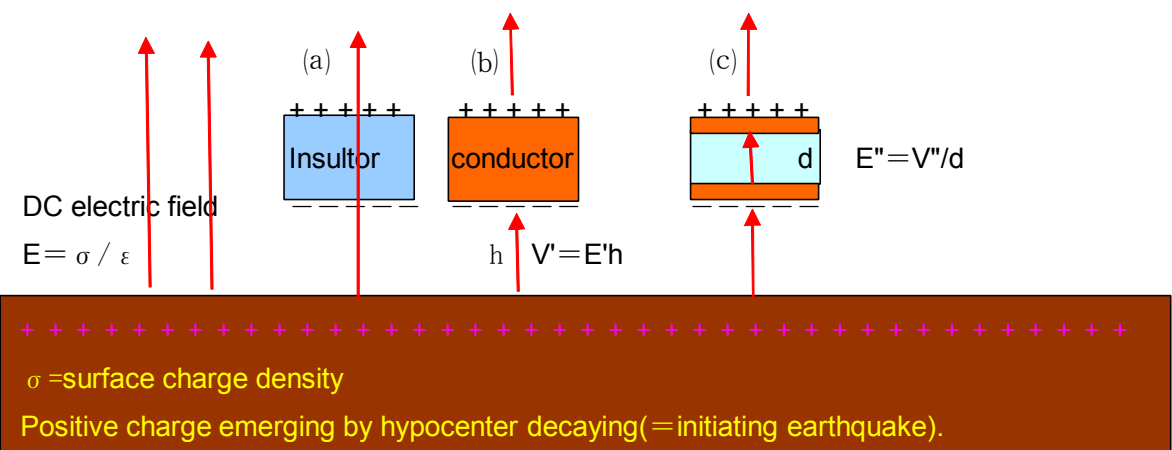


[5] : Charge Sensitive Antena Method(CSA).

(1)Polarity change of ground surface could be detected E filed intensity meter.

Mesurement on **DC electrical field intensity** is rather complicated than that of RF.Because RF is excited by ac current and mesured by standard dipole antenna.While that of DC is due to **charge**,which make mesurement by charge sensitve antenna rather difficult.

(2)Time scale of elastic rebound termination process may be in **few days**.However internal semi-micro process of rocks decaying in hypocenter may be more rapid.The electrical change might be random pulsive of low frequency(0.0...1~10Hz)???.It is called ULF (ultra low frequency).That is,ULF electric field is generated by ground surface charge τ . However precise mesurement may be not so easy due to **ultra small charge amount** and **difficulty of high imput impedance voltmeter**.The details shall be written part(2/2).



(a)insulator internal could be E filed,however we could not observe it.

(b)**Monopole Capacitor** : whole conductor surface has equi-potential $V' = E'h$.

However mesurement become very difficult due to ultra small capacitance and difficulty of realizaing ultra high imedance voltmeter.For example time constant $\tau = C R = 1\text{sec}$ may be necessary for mesurement,because mesurement probing by voltmeter with the impedance cause discharging current dropping observed volatage. $R = 10\text{M}\Omega$ impedance require $C = 0.1\text{micro farad}$ which is impossible by desktop size. $C = 4\pi\epsilon a$ for sphere conductor.
 $\epsilon_0 = 8.85 \times 10^{-12}\text{F/m}$. $\rightarrow a = C/4\pi\epsilon = 0.1 \times 10^{-6}\text{F}/4\pi\epsilon_0 = 899\text{m} !$.

(c)**Bipolr Capacitor** with potential drop $V'' = E''d$.

This has also similar difficulty mentioned in above,however if so called floating amp method could be available,high imput impedance problem might can be overcome.The details shall be written part(2/2).Author recomand also you should survey the details.

(d) **Bio charge sensor in animals.**

Cell membrane is also vivid tiny capacitor and is influenced by E field. Some fishes (eel, gymnarcus) are famous for being sensitive with E field. Author recomand also you should survey the details with seismic sensing view point.

reference sites :

<http://www.777true.net/Earthquake-Forcasting-time-position-magnitude.pdf>

<http://www.777true.net/seismology-the-frontline.pdf>

<http://www.777true.net/HAARP-the-Earthquake-Weapon-Mechanism.pdf>

* The details in this report should be reexamined both by theory and observations.

Author point out results derived from **Metalization Hypothesis of Hypocenter Rocks**. It is equivalent to emerge **Charge Blackholes** in hypocenter which reveals various seismic electromagnetic phenomena before starting tremor due to emerging positive charge on ground surface round with epicenter.