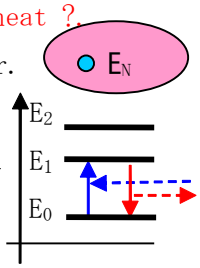
APPENDIX:Frequency Asked Questions. '09/8/31,

(1)Why could a matter radiate or absorb Electro-Magnetic(EM) wave as heat ?.

A:It's caused from atomic structure(nuclear with electrons) of matter.
The major actor is electrons which form various clouds(E_N) of each different energy level E_N around nuclear.An external stimulus could change $E_0 \leftrightarrow E_1$ with energy emit or absorb as EM wave radiation or absorbing energy(heat) of $\pm(E_1-E_0)$.



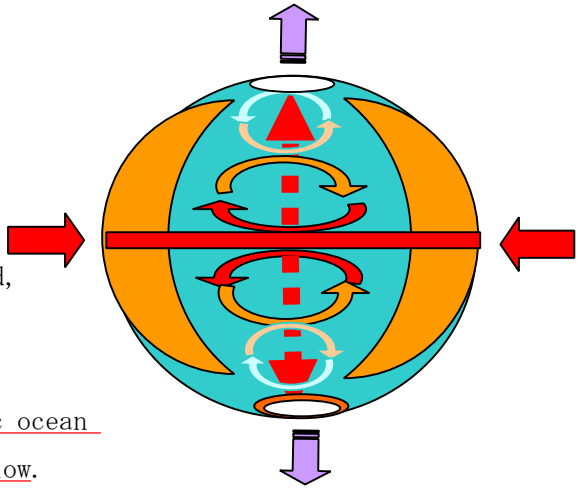
(2)Why does global 1℃ temperature rise need outrageous huge heat ?.

A:The most heat reserver is not atmosphere nor lands,but **global oceans of equivalent mean depth of 200m** where year heat input and output are balanced. For example,a desert is hotter in day,while colder in night.Those don't reserve heat.Atmosphere is also the same.Thus global effcitve heat is managed by oceans which effect temprol and local weather in each area.

global insolation input on stratsphere	5.5×10^{24}J/y	$F_0\pi R^2$x(3600x24x365) =1366w/m. π $(6.38X10^6m)^2$x3.15x10^7sec
effective gloabl heat capacity C_G	2.7×10^{23}J/K.	**global ocean capa Co═$5.3X10^{24}$J/K** $C_G\fallingdotseq$200m mean depth in all oceans
Temp rise rate/year	0.05K/year(recent)	

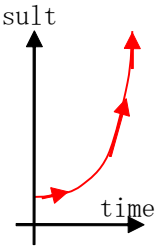
(3)Arctic is one of most cold place,as though, why does Arctic ice melt become dangerous ?.

A:The fact is up side down.A heat entirely flows from higher temperature zone into lower one(2nd low of thermo dynamics). The most heat input zone is **equator**,from where surplus heat entirely is oriented to **coldest north and south pole zone**.Then the heatcarrier is **ocean flow** of slow speed, but huge amount.Antarctic is a **land** with very thick ice cover of less direct effect of ocean heat flow,while ice cover on Artic ocean is more infulencial by ocean direct heat flow.



Another fatal factor is ice-cover melt-itself,which enahance more insolation input into opened sea water.The heat reseved in the ocean enhance more ice melt(positive-feedback).In addition it,if GHG erupted,more temeperature rise ..

⑷How does a positive feedback process progress ?.



A:In general talking,it would become a rat population growth as 2,4,8,16,32,...,or exponetial function increasing. Its starting is slow and calm,but turn to rapid increasing before long.At last,it would encounter certain kind of catastrophe.

⑸Why does vegitations on lands and sea water in oceans turn to emit CO2 at certain point of temperature rise ?.

A:In general speaking,a temperature is a degree of huge collective momentum of chemical particles,then temperature rise means more increasing of the momentum. Therefore,those **order of carbon chemical bonding** tend to **be broken into pieces of CO2** in atmosphere.If your body temperature rose,what would happen to you ?,

⑹Why could Arctic ice melt prediction not be accurate in early times ?.

A:Maybe they tried by themselves,but not called for others aids.Another factor might be one called **chaos** causing essential deficit in prediction.

Why is the serious reserver size of methan clathrate so coarse as 400～1000GtC?

A:One may be observation difficulty in sea flor sediment with ice cover on top. Another factor may be what they wish it secret.Now author the person exterior of geo-science has been suspicious on them and their political enviroment.

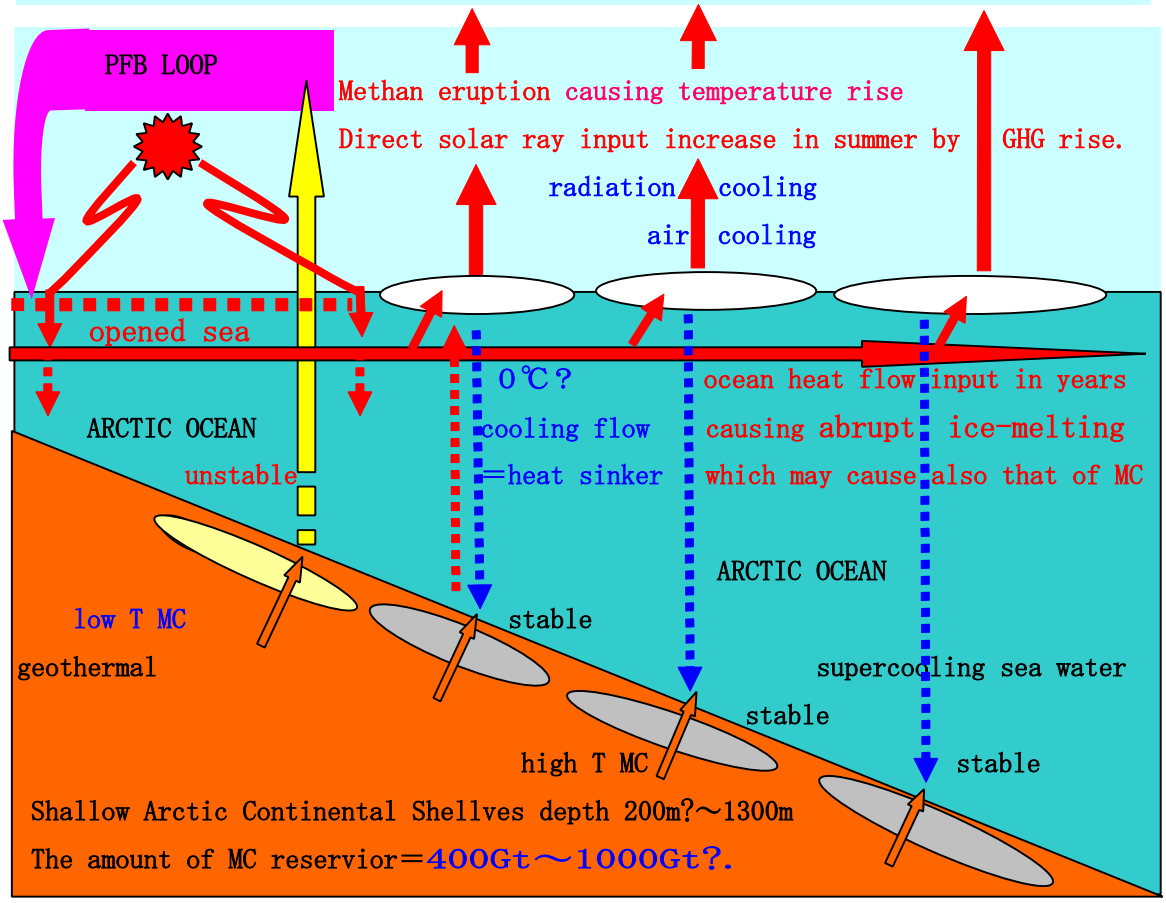
⑺**What is the total cause-result process of Methan Catastrophe ?.**

①Next event after **abrupt ice-cover melting** at sea surface in Arctic ocean may be that of MC in **shallow continental shellves**.MC is ice like unstable solid by heat.Then MC in more shallow sea flor is cooler,which accelates more heat flow. Since a heat flow from high temperature into lower one(thermodynamic 2nd low).

②Then problem is **heat transfer time** to MC.100m depth is zone of solar ray direct input,200m may be in a year,and 1300m may be few years.Generally to tell,ocean is so hudge heat capacity that heat up time is long as decades.

③However,once MC eruption in sea flor had begun,it becomes stronger GHG to accelate global atmospheric temperature rise by vicious feedback looping.Then if **man-made GHG reduction action** became late,the process could not be stopped to become catastrphic point. MC of **1Gton** release could be catastrophic.

Abrupt Methan Catastorophe the POSSIBILITY:



④Remarkable **singularity of Arctic ocean with ice** may be the 0℃ sea temperature. Fundamentally such cobeing of matters in different phase called **critical point**, where **dynamic heat capacity of water is fundamentally zero**. Since heat uniquely flow into ice. Consequently it may act **the abrupt ice-melting in Arctic, which shall enhance direct solar ray input to the ocean**.

reference for next (8):

＊J_G＝**0.24W/m²**. radiative forcing calculator formula for ＣH3 with ＮO.
http://ja.wikipedia.org/wiki/%E6%94%BE%E5%B0%84%E5%BC%B7%E5%88%B6%E5%8A%9B

＊J_{MC}＝4.5×10^{18}J/y.　Methan clathrate melting heat＝440KJ/Kg.

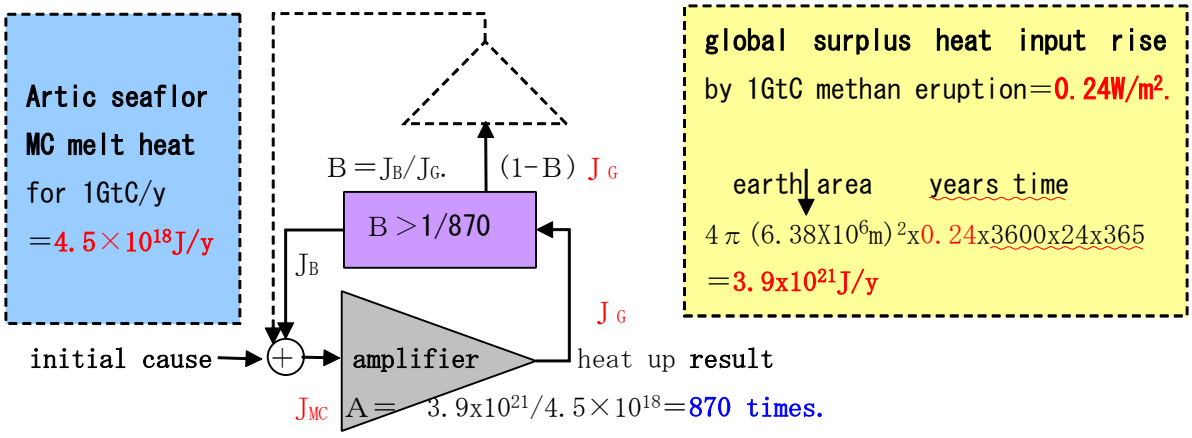
＊{heat input into arctic=J_B/global heat surplus= J_G}＞10%.

A heat entirely flows from higher temperature zone to lower one. 3 times temperature rise in Arctic(4% area) than that of global(96%). Area percentage is assumed equivalent to the heat capacity. 3(1-x)/96＝x/4.→x＝11%. Ice cover melt is no effect on temperature rise.

＊lifetime atomospheric methan:http://en.wikipedia.org/wiki/Atmospheric_methane

(8)How much could the **dangerous degree** be estimated for methan catastrophe ?
<<eruption(causing instant golobal heat input rise by the GHG concetration jump) to heat back transfer into the target of methan clathrate in Arctic sea flor>>.

(a)Following paragraphe are **very coarse estimation**, but may be essential. Now let's review on positive feedback process. Result is fed back to enhance cause. For example, methan eruption(by heat input J_{MC} on MC at sea flor)cause heat input rise on globe J_G(**radiative forcing**). Amplified gain $A = J_G/J_{MC}$.



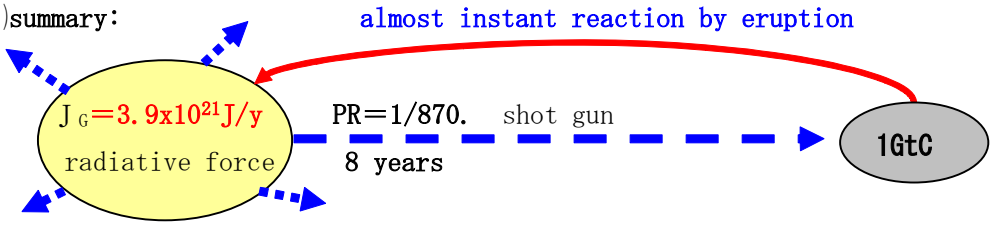
(b)The feedback partitioning(into MC in Arctic sea flor) ratio＝B.
If J_B was larger than J_{MC}, then the system could **run away** without exterior input.

(c)Note that {heat input into Arctic=J_B/global heat surplus=J_G}＞10%.

(d)Then, if {heat input on MC/heat input into Arctic}＞1/87, run away could be triggered.

(e)A problem of time delay for feedbacking(heat transfer time into seaflor).
0.24W/m² by 1GtC eruption would be **reserved constant at least 8 years** of methan decay in atmosphere. Therefore time delay could be allowed as within 8 years.
Direct solar ray input into arctic sea flor of 200m depth is in a year, while horizontal ocean heat transfer from equator to arctic may be 1,2 years less than 8 years. Vertical transfer into depth more than 300m may be few years.

(f)**summary**:



You could hit out the target with probability 869/870 within 8 years.