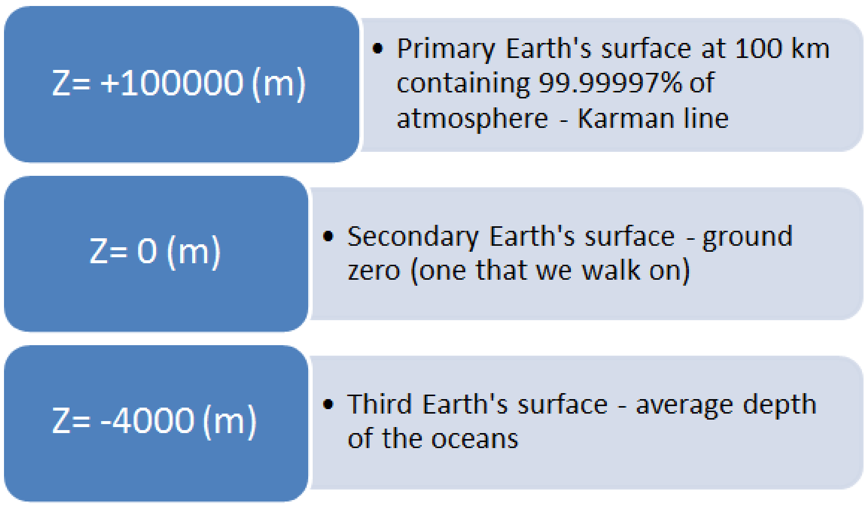
Why is searching for missing 33^{O}K lost cause, sign of ignorance or case of fraudulent science!

By Dr Darko Butina

When the heat energy from the Sun, and that is the ONLY heat energy that keeps the Earth warm, hits the top of the Earth's atmosphere, it enters the space that is full of molecules and therefore particles with a mass, from the space without any molecules and any mass. Just because we don't see air around us it does not mean that it is empty space. Any object with mass that enters our atmosphere at great speed, like meteorite, will start to burn and disintegrate. And the reason for that is very simple and equivalent if a car at great speed hits a static object, like a brick wall. Something has to give. If you talk to NASA engineers, who incidentally do great job and know what they are doing unlike their modelling colleagues, and ask which task is more difficult – to send the spacecraft outside our atmosphere or bring it back – it is bringing it back! And why is that – for the same reasons mentioned earlier – you are bringing in an object that has mass and at great speed into the atmosphere with lots of mass and you have to do it very very gently to avoid head-on collision.

From the diagram below we can see that the heat energy will encounter the primary Earth's surface, i.e. the first molecule at altitude of 100 km, mainly N2 and O2. As it approaches ground level zero, our secondary and visible surface, it will start to encounter also molecules of water, either in their gas or liquid state (clouds). And when it reaches zero level, Z=0 (in our imaginary X,Y,Z coordinate system) it will heat 70% of the secondary surface area that is made of H20 molecules in the liquid state, and 30% of the surface that contains huge amount of different molecules in their solid state. And every single one of those molecules will absorb and emit the heat. The heat energy that has been absorbed in few meters of the oceans' surface will then encounter steep temperature gradient which will drive heat energy towards the bottom of the oceans that average about 4000 m deep (Z= -4000):



It is estimated that atmosphere consist of **4.2 billion cubic kilometres of air**, which for all practical purposes consists of 80% of N2 molecules and 20% of O2 molecules with estimated molecular weight of 29.0.
Density of air, at 1 atmosphere is 1.2kg per cubic meter, which is equivalent of 41 moles of air per m^3 **(1200g/29.0=41.4).**

Since one mole of any molecule has ***6x10^{23}*** *molecules it follows that just* ***1 cubic meter*** *of air contains* ***41x6x10^{23}*** *molecules. If we then multiply that with 1000 to convert cubic meters to cubic kilometre, and then multiply that number by 4.2 billion, we get huge number of molecules that stand between the Sun and the Earth's visible surface as defined by the water and land, i.e. our secondary surface where Z=0.*
So, after lot of heat from the Sun has been used to warm up such a huge number of invisible molecules to our eye, and bounced of the cloud surfaces, the rest finally reaches the Earth's secondary and visible surface.
By far the largest 'sink' for the heat energy at the secondary surface level are oceans covering 70% of the surface. Here are some interesting facts:

- *To get number of moles one divides weight in grams with molecular weight*
- *1 mole of any gas has volume of 22.4 litres which is* ***0.04 moles per litre of gas***
- *1 litre of water is equivalent to 1000g water or* ***55.56 mols per litre of water*** *(1000/**18** MWt of water)*
- *Since 1 litre of water contains 1389 (55.56/0.04) times more molecules than 1 litre of air, and since heat capacity of liquid water is 4.2 kJ/kg and heat capacity of air dry air is 1.0, water traps 3620 times more heat than air.*

So, if one wants to get some sensible numbers when the atmosphere's heat balance is concerned, one has to take into account that the oceans can be as **deep as 10,000 m**, that the estimated volume of that huge 'thermal storage space' is **1.3 billion cubic kilometres** and at the bottom of the oceans the temperature is just above the freezing point, at about **0.05^{O}C**. The knowledge of basic level of thermodynamics will tell you that once the surface of the oceans is warmed during daytime, there will be big competition between the ocean's surface warming the air above and the water below during night-time. Any attempt to simplify that process and assume that all that heat that was absorbed at the surface level has to come back again can best be described as playing some silly number games that have no place in physical sciences. The scientists who understand thermodynamics of oceans inform us that the upwelling of just-above-freezing water masses to the surface might take as long as 500-1000 years by slowly warming up and using all that stored heat capacity of the oceans to eventually reach the warm surface. And the whole process starts again.

All this heat exchange issue cannot be more simple: whether the heat energy is coming from the Sun down (daytime) or from the surface up (night time), it has to warm up lot of molecules that make our atmosphere, the land mass and deep oceans. Therefore, it is our atmosphere, 99% of which is N2 and O2, clouds and water vapours that forms the primary blanket, with the oceans as secondary and **the major heat reservoir** which protects the Earth from overheating during daytime and overcooling during night time.