Weather & Sampling

I looked over the Ward paper. It is reasonable with regard to the sampling theorem, though I could quibble about some missing elements, such as the Gibbsian effect of finite data strings, etc.

The difficulty arises when applying the sampling theorem to weather data.

Here, as an example, is a plot of the global weather stations, from the Goddard Inst. of Space Science.

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The first thing you notice is the absolute obsession the USA has with weather stations. Only Germany approaches the USA.

The reality is that most of the planet has no weather station nearby - **so what is the temperature? No one knows.**

Next, a weather station is a point measurement. How large an area does its temperature represent? Well, that depends, doesn't it.

Here is a plot of temperature throughout August 25, 2023 from the Crestwood weather station about 3 kilometers from where I live.

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Does this represent the temperature accurately where I live, especially the HIGH temperature which lasted about 5 minutes near 4:30PM? I live on a hill top about 100 meters higher than the weather station. The lapse rate on a hot, clear summer day is about 10 C/km vertical. So, the temperature at my home might be 1 C cooler than  at the station. **No one knows,** since it was not measured with an inter-calibrated thermometer. I do have various external thermometers - the ones on thermostats to control the A/C for example, but the temperature they measure is influenced by the heat exchangers of the A/Cs, etc., and they do not agree to within 5C because the sun can be shining on one and not the other.

You begin to see the problem.

Measuring an accurate temperature is very difficult.

It changes as a cloud passes, and changes with altitude, as function of the time of day as the lapse rate varies, changes with every puff of wind, the height above ground where it is measured, the local surroundings, etc. etc. etc..

So, obviously, the sampling theorem is not satisfied since we have no control over the rate of change of the measured temperature - and **we should no**t, of course.

Nor, has it ever been controlled. Nor, can a temperature be measured globally, especially over land for all the above reasons. Even measuring the temperature over every km2 would require over 50 million weather stations - and how many do we have? A few thousand.

Measuring the temperature over the ocean might be a bit easier - there are no mountains, no cities, but there are wind and waves, and a mixed layer which responds quickly to insolation, etc. Particularly, the global ocean is not measured simultaneously and there is over 100 million km2 of ocean. There are also interferences - clouds, diurnal variations, surface currents, and mixing.

Measuring the ocean and land surface temperature is a very tricky proposition  -  one that is hardly acknowledged by the various agencies such as the IPCC who claim to know the 'planetary' temperature to 0.1C.

**It is a fiction. Worse, that fiction is coupled to the easily measurable rise in CO2 as if CO2 caused the clearly not measurable increase.**

There we have the crux of the global climate issue.

The variable global temperature, which we must measure, cannot be measured accurately with the means we have.

So, we guess and use an 'approximation' which represents a BIASED view of the temperature.

Even IF the temperature were measured correctly, its longer term variation shows we are in a recovery of the global temperature after cooling for the prior 500 years. The climate models do not predict the cooling, nor the warming, and are not worth the electrons to run the computers for the purposes to which the models are placed: to convince the world to commit seppuku.

But, SO FAR, it has worked.