Ganymede on the Wolynski-Taylor Diagram: No Life Now or in the Past

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Abstract: Ganymede is a unique remnant. The variables need to be worked out more in depth. It is proposed as a challenge for future developers of stellar metamorphosis to figure out if life formed on Ganymede based on first principles, or even principles that have yet to be discovered. It is suggested to follow the work of Daniel Archer and Jeremy L. England to further refine these conclusions. It is important to write about these matters, because as of 2018 there exists not a single theory that comes close to explaining how and why life should form on evolving stars, except for GTSM. I place Ganymede as moving too quickly to ocean world stages.

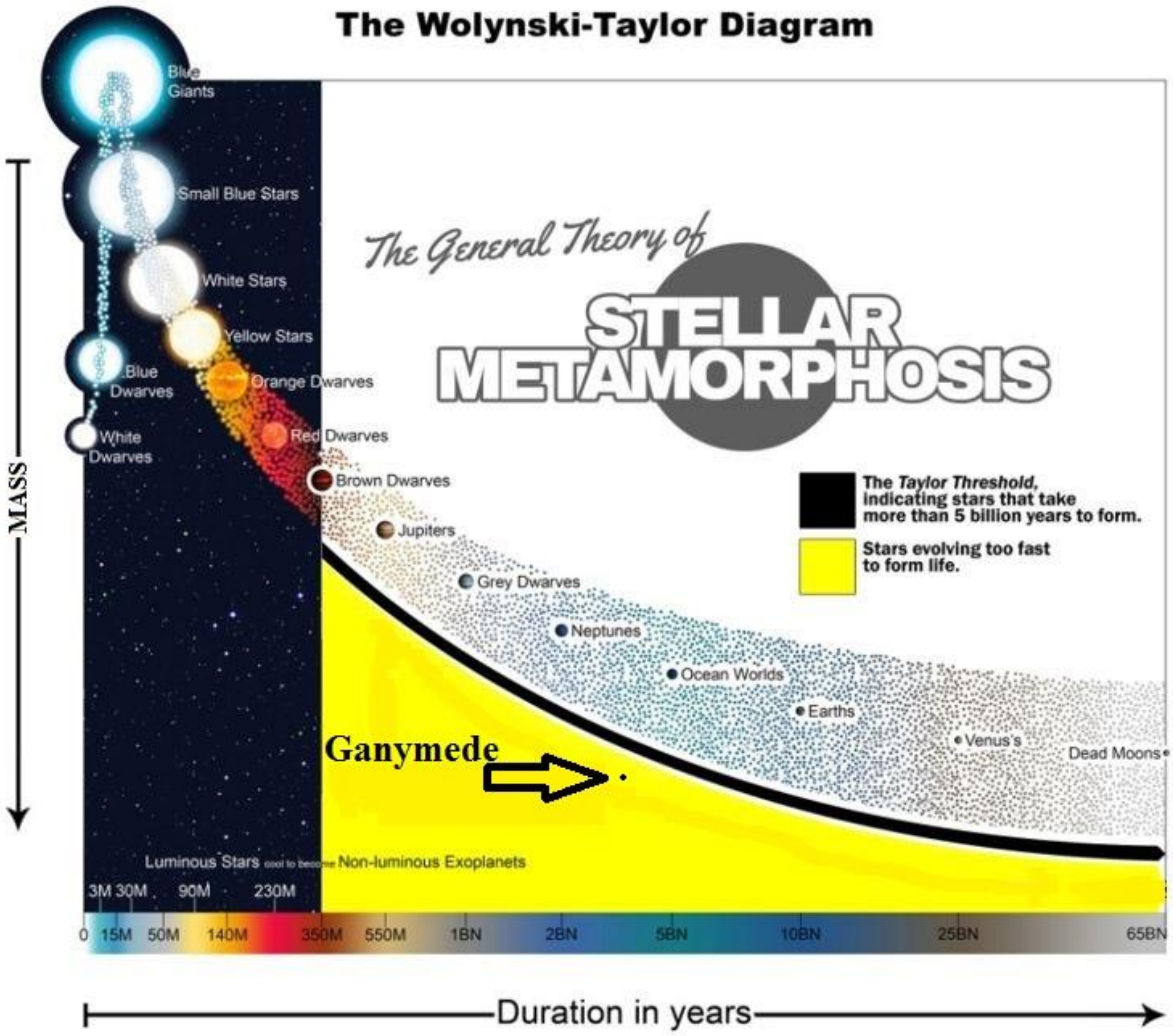
Placing Ganymede on the WT diagram is a bit tricky. There are a few factors that need to be estimated, and if done correctly, can tell of a past history of Ganymede far beyond modern dogma's gross misinterpretation of Ganymede as being leftovers of a fictional giant protoplanetary disk that formed all the objects in the solar system at the same time. Ganymede for one is not geologically active on the surface… but the list as we will see should help us place it appropriately as well even be used to determine if it had/has life on it.

1. Ganymede has a larger diameter than Mercury, but is much less dense. It is about 8% larger, but 45% less massive. This says a lot. It means Mercury is vastly older, as much more iron was collected in the central regions making it heavier. It also means the star that formed (became) Mercury had a hell of a lot more time to do so than Ganymede. G's iron core is very small in comparison to Mercury. The star that formed G must have collected little iron quickly from the interstellar environment and moved to the ocean world/silicate forming stages rapidly, but then stayed at the silicate/ocean world stages for a while, until finally losing its atmosphere. This means you have at least 2 different hosts Ganymede has orbited in the past, as its interior tells the story of mass loss at two distinct stages. One stage of rapid mass loss preventing large iron core formation, and the second ripping away the atmosphere quickly enough so that it could not sustain an atmosphere. Of course this is up for revision, but cannot be denied simply because dogma says it is impossible. That being said, Jupiter itself is a bit beyond brown dwarf stages, so it might have been the irradiation provider when Ganymede had an appreciable atmosphere similar to Earth, or even thicker.

2. It has a small magnetic field, which means its interior is still churning, producing a field through the motion of a conducting fluid. Though, this interior is much less active than Earth's, so it means out of the material left over from orbiting hotter hosts, it had less to work with. This means it is younger, possibly younger than Earth, but has cooled quicker (weaker magnetic field because less material to churn), and less material to sustain the heat. It is well known that volumetric comparisons of heated bodies, given compositions are similar, the larger of the two will take longer periods of time to cool. An iron ingot at 1000 degrees Kelvin 3 cubic feet solid will take much longer periods of time to cool than another iron bar at 1000 degrees Kelvin at 1 cubic foot solid. The same can be said about the cooling rates of smaller remnants versus larger ones.

3. It must have moved to ocean world stages too quickly, but somehow was tossed out of a previous system and adopted by Jupiter to allow its crust to form, trapping all the remaining water.

4. All this being said, Ganymede sits below the Taylor Threshold. This means it did not host life in the past, nor is it currently hosting life. Vast, subsurface salt water oceans are irrelevant. It is a remnant that evolved too fast for life. Of course, this can be revised in the future, but for now, all bets are off.



It is not a dead moon, but is more of a frozen pre-ocean world that was ripped apart by a hotter host in its past, before it orbited Jupiter.