Stop pretending we can measure exoplanet habitability!

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Since the first extrasolar planets discoveries in the 1990s, around 3,500 worlds are now known beyond our Solar System. Roughly one third of these have a radius less than twice that of the Earth, leading to the tantalising question about whether we have found a planet that can support life. To prioritise potential candidates for follow-up studies, metrics have been developed to sub-select planets most likely to have detectable signs of life. Unfortunately, these metrics are frequently misinterpreted --both by the popular press and sometimes in scientific literature-- to be a quantitive measure of planet habitability. Such a measure is currently impossible: the conditions relating to detectable habitability are those on the planet surface, but our measurements are restricted to typically two bulk properties. Combined with the fact that our single example of an inhabited planet makes it impossible to judge how variations in planet properties will affect habitability, this makes the use of such metrics pseudo-science. Misunderstandings have potentially serious consequences, from harming the credibility of the field to risking public interest that can lead to a drop in available funds for future missions. As a community, we must therefore plan to watch our language.

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