

# Sensors show tropical heat stress conditions approaching upper limits of human survivability

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A team of researchers affiliated with Monash University and one with Hasanuddin University in Indonesia has found that some people living in

tropical regions are already living under conditions of heat stress that are approaching the upper limits of human survivability.

In this new effort, the researchers noted that [climate models](#) used to predict heat conditions around the world are generally based on data from weather stations in relatively populated areas. Such data, they note, excludes conditions for people living in what they describe as [informal settlements](#). To learn more about conditions for such groups living in areas that are expected to be the most strongly impacted by [global warming](#), the researchers deployed heat sensors in and around 100 houses in Makassar, Indonesia, a settlement in a tropical part of the country. The researchers suggest that conditions in Makassar are likely typical for many such settlements in the tropics—areas that support approximately 370 million people in East and Southeast Asia alone.

The researchers found that 80% of the sensors recorded temperatures during the rainy season that were higher than established health thresholds. At such temperatures and humidity levels, conditions are said to have adverse health impacts on people living there. They also found that in a few instances, the sensors recorded temperatures that are believed to represent the upper limit of human survivability. They noted that their findings are alarming for several reasons. The first is that millions of people living in many parts of the world are already living under heat conditions that are harmful to their health. Another is the fact that many such people engage in physical labor for work. Doing so in [extreme heat](#), they note, can be fatal. Perhaps most alarming is the near certainty that conditions in such places are going to get worse as the planet continues to warm. In most such places, they point out, there are no relocation plans, and little chance that heat-mitigating technology such as [air-conditioning](#) will be installed—suggesting that a disaster of massive proportions is on the way.

**More information:** Emma E. Ramsay et al, Chronic heat stress in

tropical urban informal settlements, *iScience* (2021). DOI: [10.1016/j.isci.2021.103248](https://doi.org/10.1016/j.isci.2021.103248)

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