

Cold and Heat Stress Indices

It could be found that the heat stress indices are hard to get into high and some mid latitude regions. To some extent, it means that the regions face cold stress, rather than heat stress. Therefore, we apply two indices of Wind Chill Temperature (WCT) and Normal Effective Temperature (NET) to assess cold stress globally in Climate Insights.

Heat stress often brings thermal discomfort or heat injury to human or livestock bodies when they are exposed to ambient air. Heat stress has significantly increased during the past decades and will be intensified in many regions of the world in the future. Heat stress is largely determined by surface air temperature and thus is often projected to be more severe and more frequent under global warming. On the other hand, high humidity combined with a high temperature can further elevate heat stress levels that make hot weather more oppressive.

More than 30 heat stress indices have been proposed since early 20th century. These differ not only in the input variables they use, but also in the way their effects are parameterized. These indices along with their strengths and limitations have been well documented in the literature. However, it should also point out that no single heat stress index is universally applicable. Therefore, a series of heat stress indices are provided in Climate Insights, which should be suitable for application under a widerange of thermal comfort environments, both for climatehealth and energy impacts assessments.