

Global Temperature Series – History and the Important Issues

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The talk will begin with a brief history of Global Temperature Series, then move to a discussion of the important issues. The most often discussed are land station issues affecting the long-term homogeneity of site temperature series mainly due to changes to observation times/methods to calculate monthly means and site changes. These can be easily shown to be relatively unimportant at larger scales, as a limited network of many fewer sites reproduces the hemispheric land averages back to the late-19th century. The more important land issues are biases due to the introduction of screens or changes to screens (exposure of thermometers) and changes around the site (possible urbanization effects) are potentially more pervasive as neighbouring sites, in some parts of the world, might be similarly affected. The most important bias issue of all relates to sea surface temperatures (SSTs) across the world's oceans. Attempts to use marine air temperatures will also be discussed.

The talk will conclude with a comparison of the HadCRUT datasets going back to 1986. CRU efforts to improve real-time coverage reductions and to use more station series before about 1920 that have recently been digitised, will also be discussed. Both these are not as easy it may sound, as station use depends on having 1961-1990 averages. Local-expectation kriging techniques are being used. Despite these efforts coverage improvements in some parts of the world such as Africa, South America and the Asian tropics are limited.