The International Surface Temperatures Initiative – progress, future developments, and how countries can contribute

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Abstract
The International Surface Temperature Initiative (ISTI), launched in 2010, aims to create a suite of improved land surface air temperature products at global, regional and local scales in support of climate services. The initiative reports to the Commission for Climatology of the WMO, the International Bureau of Weights and Measures (BIPM) and The International Environmetrics Society (TIES). This reflects the involvement of climate scientists, metrologists and statisticians within the activity. It is intended to provide an end-to-end treatment of the problem of developing land surface air temperature products from data collection, through data analysis, verification and provision.This presentation will firstly focus on those enabling aspects which have been undertaken to support analysis and understanding of the data. It will then close by outlining how scientists may become involved and stress how such involvement is absolutely key to successfully meeting the stated aims - i.e. that the participation of National Meteorological and Hydrological Services (NMHSs) and academics matters and is hugely valuable.
The first significant pillar has been the creation of an expanded set of monthly holdings. These holdings increase the pre-existing monthly holdings used in global monitoring from *circa*7000 stations to more than 32,000 stations. Led by NOAA's National Centers for Environmental Information, daily and monthly holdings have been enhanced with contributions from NMHSs, existing international compilations and a variety of sources including e.g. agricultural ministries, along with valuable data rescue efforts. Data have been merged using station attributes (data and metadata) to create a more comprehensive database. This work shall be summarised and the principal attributes of the holdings outlined. It is planned to extend this work to higher-resolution data in due course. The second significant pillar is the creation of a set of benchmarks which exactly mimic the spatio-temporal characteristics of the databank. These benchmarks build upon the successful COST HOME project and similar benchmarking assessments. A variety of open and blind benchmarks are being produced and will be made available for use by any interested individuals, groups or agencies involved in the development of homogenisation methods. Blind benchmarks will be assessed by a dedicated working group and an assessment performed on suitability for various posited purposes as well as strengths and weaknesses and potential for residual biases, and especially for residual large-scale trend biases. By regularly repeating the benchmarking we aim to improve the realism of the benchmark and stay up to date with new homogenization methods.As should be obvious from the above, our ability to understand changes in land surface air temperature stand to be significantly improved. The data holdings and benchmarks offer a real opportunity to substantively improve our understanding. But, this understanding will only be realised if multiple analysts become engaged in producing products from the holdings and engaging in the benchmarking exercise. The involvement of NMHSs will also be extremely valuable in areas such as contributing additional data (where applicable) to ISTI holdings, and helping to facilitate data rescue efforts (which may involve citizen science activities). The presentation will close with how you can become involved and what value your involvement would bring. More information can be found at www.surfacetemperatures.org.