A study led by the Earth Sciences Department proposes the use of climate models to estimate the quality of observational climate references

The article has been published in Science.

An article published in Science stresses that, given the differences between the results provided by different sources of observation, it's necessary to study their reliability.

The quality of climate models used to study the ongoing climate change is usually checked by comparing their predictions to the data provided by different monitoring systems. However, with the advent in recent years of multiple sources of observation, it has been evident that the data produced by different sources differ from each other. A study to be published this Thursday in Science sheds light on the differences between the results of different observational references and proposes an innovative way to evaluate them, using climate models as a tool of assessment.

Large-scale observational networks based on direct (on field) or remote (from space) measurements are an essential source of information for monitoring the state of the climate and for decision-making. This is why significant amounts of money, time and effort are continuously invested in the development of better observational programs. However, all these observational products are to some degree uncertain: it is not possible to sample every square meter of the planet and all retrievals are always subject to instrumental or methodological errors.

A team of European researchers from the Barcelona Supercomputing Center (BSC-CNS, Spain), the Université catholique de Louvain (UCL, Belgium) and the Centre National de Recherches Météorologiques (CNRM, France) has compared the predictions done for 11 state-of the art climate models of average sea surface temperature in the Pacific with the data from four different observational references. They found that depending on the observational reference chosen, the forecasts have more or less correspondence with the assumed "truth".

The team, composed by F. Massonnet (BSC/UCL), O. Bellprat (BSC), V. Guemas (BSC/CNRM) and F. Doblas-Reyes (BSC/ICREA), proposes an approach to estimate the reliability of the existing observational climate datasets. The researchers started by challenging the widely-accepted hypothesis that a hierarchy exists between observational references and climate models, the formers being usually thought to be an absolute truth to which the latters should be as close as possible. They revisited this paradigm, and proposed a novel framework to estimate the quality of both climate models and observational references simultaneously, and in a consistent way. Thanks to this groundbreaking contribution, they were allowed to highlight objectively the underlying quality of different observational data sets of sea surface temperature and sea ice extent.

The article "*Utilizing climate models to estimate the quality of global observational data sets*" has been published by /Science/ and AAAS, via /First Release/, on Thursday, *6 October * (the article will appear at a later date in print).

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