CAN WE TRUST CLIMATE CHANGE SCIENTISTS?

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This presentation is only eligible for an oral presentation. I also kindly ask for a keynote presentation due to the length of the talk.

Rarely do we encounter a scientific fact that stirs widespread debate and distrust as does the science of climate change. Despite consensus among climate specialists, and a theory that is supported by an ostensible mountain of facts from physical, natural, and cultural sciences, the climate change debate continues to be perpetrated by politicians, industrialists, academics, and arm-chair scientists.

Much of the intense scepticism about climate change science began in 2009, when thousands of emails and data files were stolen from the Climate Research Unit (CRU) at the University of East Anglia, UK, and later exposed under the guise of a purported conspiracy to alter facts. The allegations claimed that scientists had only publicized results in support of their theory—that climate change is real and driven by human activities. Other facts, that may negate this claim, were said to have been hidden (Adams 2010). In a subsequent survey of politicians and directors from Swedish municipalities, 61% claimed uncertainty about whether climate change is real, while another nine per cent rejected climate change altogether (Carlsson-Kanyama and Hörnsten Friberg 2012).

Selective reporting is a real and serious issue in scientific communities as theories require consideration of all available facts. Is the science of climate change immune from a phenomenon that has been documented in medical, physical, and biological sciences? Could the climate change consensus be based on a biased selection of facts? **Surprisingly, nobody had addressed the central question of publication bias in climate change research** (until we recently did, Harlos et al. 2017).

My lab used meta-analysis methods to search for such evidence of publication bias in a sample of marine climate change publications. We used advanced statistics on a large set of data (>1,100 studies) to identify potential biases in this field, and **rejected the hypothesis that non-significant effects are under-represented** in the literature: **The theory of climate change is built on a foundation of science giving credence to positive, neutral and negative experimental results.**

However, our research found stylistic biases in how articles about climate change are written. Large, significant results were prominently displayed in abstracts where they are most likely to be seen; small and non-significant effects were relegated to technical results sections where they are likely overlooked by the majority of readers, especially non-scientists. We also demonstrated a correlation between two landmark events in the climate change community

that showed publication rates, and reported effect sizes, tending to wax and wane with the apparent popularity of the field.

This research relates to the marine environment, but not to the WIO region *per se*. **The results I present however, discuss climate change research and publication issues in general that should be of great interest to end-users of climate change science, including other climate change scientists, ecologists, and public audiences.**

References

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