Unveiling and communicating climate change by near-real-time attribution and projection of the current weather based on nudged storyline simulations

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Attribution and projection of climate change by event-based storylines has recently been established as a powerful tool that complements the well-established probabilistic approach. Event-based storylines which nudge the observed atmospheric winds in climate models have been particularly helpful in isolating the thermodynamic component of climate change. The approach is characterised by a high signal-to-noise ratio because differences due to internal variability are effectively removed by imposing (via nudging) the same large-scale atmospheric circulation in different climates. Nudging-based storylines make it possible to unveil the "climate change signal of the day" for the actually observed weather, be it an extreme or an every-day event, which comes with a great potential for climate change communication. Here we take the approach one step further and present our efforts to provide nudging-based climate storylines in near-real-time. This includes not only the automated extension of storyline simulations on a daily basis, but also the dissemination via an online tool that allows both scientific and non-scientific users to explore the "climate change signal of the day" for a number of relevant variables in useful and intuitive ways. While the omission of possible dynamical changes and the reliance on a single model need to be communicated as clear limitations, we envisage that tools like our prototype may become an important piece of the future dissemination portfolio of climate change information.