

# South African colonial diaries are helping climate scientists reconstruct weather patterns of the past

September 9 2022, by Stefan Grab



A copy of the VOC's registers for April 1789. These daily registers contained rich detail—including about the weather. Credit: Tracing History Trust

The current climate crisis raises many questions. Some are forward-looking: how can this be fixed? Some look to the recent past: how did we get here? And some reach further back into history: are today's extreme heat waves, catastrophic droughts and floods all due to climate change? Was climate and weather this bad 100 or a few hundred years ago?

For scientists to answer those last two questions, they need to consult reliable instrumental [weather](#) records. But these only go back a few decades for many regions of Africa. The continent's longest continuous single station weather record is that of the South African Astronomical Observatory in Cape Town, starting in 1841. [This record shows](#) that rainfall has gradually declined since about 1900.

Yet, it also demonstrates that while Cape Town's 2015–2017 drought was severe, it was little different from a much earlier drought (1930–1939). Looking even further back could help to create a more complete, nuanced picture of weather and climatic shifts in Cape Town. But given the absence of instrumental weather records prior to the 19th century—or during times well before human-induced accelerated global warming—this hasn't been possible.

Now some answers are being provided by what seems at first glance an unlikely source: a massive project to photograph and transcribe daily registers kept by the Vereenigde Oost Indische Compagnie (VOC), or [Dutch East India Company](#), between 1651 and 1795.

All of the trading company's activity in the Cape Colony was carefully documented in the VOC's *daghregisters*, its daily registers or journals. Since 2016, these detailed records, held by the [Cape Town Archives](#) and [Nationaal Archief](#) in The Hague, have been photographed and digitized by the non-profit [Tracing History Trust](#). By 2021, 2.5 million words had been transcribed for the VC Dagregister Project.

As we outline in [a recent research paper](#), the digitized records are a [treasure trove](#) for [climate scientists](#). They represent the longest and oldest known corporate chronicle of near-continuous daily weather recording for the southern hemisphere.

Here's what we've learned from them so far—and what they may have to teach us about current and future climate.

## Detailed entries

The VOC had a monopoly on shipping trade between what is today the Netherlands and southeast Asia through Indian Ocean trade routes at the end of the 16th century. By the mid-17th century, the company realized it needed a permanent reprovisioning and resting station. Table Bay at the Cape was deemed the most suitable. [Jan van Riebeeck](#) was then commissioned to establish the settlement as the first governor at the Cape from 1652.

Daily journal entries were written by trained scribes in a relatively informal style. The language used was an older version of modern Dutch of the Netherlands and Flanders, and also of Afrikaans, which evolved as a South African language from such early Dutch.

The register entries detail a wide range of human activity: trade, politics, diet, health, diplomacy, religion, governance and so on. They also contain environmental observations, such as daily weather phenomena. Daily weather observations were written into the registers in a consistent and systematic manner. Particular attention was given to sub-daily wind direction and force, which was important to shipping.

Other regular observations included precipitation (rainfall, hail, snow) and conditions of the sky (cloudiness, visibility). Extreme events such as violent storms, gale force winds, exceptionally hot or cold conditions,

flooding and drought were noted and at times elaborated on with detail on human, agricultural, infrastructural, and environmental consequences and responses.

## Historical climate extremes

Our [initial investigation](#) focused on the period 1773 to 1791. We outlined extreme inter-annual climate variability ranging from the highest number of annual rain days on record and flooding in 1787, to severe drought in 1788. Temperatures must have also been highly variable. Even though we do not have thermometer values, anecdotal accounts regularly speak of "excessive heat" during summer and icy winter conditions.

It is clear that society had to cope with "wild weather" and climate extremes during historical times. But coping mechanisms were not advanced and so societal suffering was often considerable—the weather records also provide valuable context to notable historic events such as shipwrecks and chronic food shortages.

This is not the end of our research; the records hold far more information from which we can learn about the Cape's historical climate and weather. Our ongoing work aims to extend the climate chronology back to 1652 and establish the causes of climate variability and extreme weather during the 17th and 18th centuries. If we are better able to identify the drivers of past climate variability and [extreme events](#), it will benefit our modeling of projected future climate scenarios and assist in forecasting expected short-term (the next few months) weather conditions.

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