

Paper ID	273
Author(s)	Kei Yoshimura, Jingya Chen and Xiaoxing Wang
Title	The Millennium Atmospheric Reanalysis using Natural and Anthropologic Proxies
Abstract	
<p>How have climate and weather changes affected or not affected human society over the past 2,000 years of history? To answer such a question, we are trying to develop the Millennium Atmospheric Reanalysis, which is an atmospheric reanalysis product that covers approximately 2,000 years, far longer than the 20th Century Reanalysis, the longest existing atmospheric reanalysis product (approximately 180 years). To do this, we proposed the two data assimilation methods. One is the isotope proxy data assimilation method to estimate the annual variability of the global distribution of surface temperature and precipitation (Okazaki and Yoshimura, 2017). The other is the historical diary weather data assimilation method to estimate the 6-hourly atmospheric states constrained by the weather information recorded by the ancient diaries (Toride et al., 2017). Recently, we improved both methods. Chen et al. (2024) implemented the “chunk method,” which utilizes the proxies across different time scales, and the results indicate the feasibility of incorporating coarse-resolution proxies in seasonal reconstructions. Wang et al. (2023) applied a Gaussian transformation (GT) approach to the diary weather data assimilation and demonstrated the usefulness of GT in high-resolution historical weather reconstruction using old descriptive diaries.</p>	
Keywords	plants, humans, data assimilation, millennium history

Paper ID	224
Author(s)	Hisayuki Kubota, Togo Tsukahara and Jun Matsumoto
Title	Data rescue of instrumental meteorological data records of Dutch Naval ship logs sailing along East Asian coastal regions during the 1850s and 1860s
Abstract	
<p>Before the establishment of a weather station network in East Asia, European and U.S. naval ships sailed along the region’s coastal waters during the 18th and 19th centuries. Weather records observed using meteorological instruments onboard these ships provide valuable insights into the climate studies before the network’s establishment. These ship log weather records are stored in libraries and archives of various countries. We have collected weather records from the ship logs of 10 U.S. Navy vessels from Perry’s fleet of Japan Expedition during the 1850s and 11 British Navy ships that participated in two wars in Japan during the 1860s. Historical tropical cyclone (TC) tracks were identified from these records for the 1850s and 1860s. In this study, we focus on Dutch naval ships that originated from the Netherlands and sailed along East Asian coastal regions during the 1850s and 1860s. Six Dutch naval ship logs were retrieved from the National Archives of the Netherlands. One significant finding includes an analysis of the size of the "Ansei-Edo Typhoon," a powerful TC that hit Tokyo in September 1856, based on Dutch naval ship records. This research is part of the international data rescue effort known as the Atmospheric Circulation Reconstructions over the Earth (ACRE) initiative. Data rescue activities in Asia are conducted under ACRE Japan, one of the regional branches of ACRE.</p>	
Keywords	Disasters, Air, Land, Typhoon, Data rescue

Paper ID	160
Author(s)	Takehiko Mikami

Title	Climate variations in East Asia from the 18th to the 19th century, with particular emphasis on the 1780s and 1830s
Abstract	<p>The 18th and 19th centuries correspond to the second half of the 'Little Ice Age' and are a period of interest in terms of climate change. However, because there are almost no meteorological observations for East Asia, including Japan, it has been difficult to discuss quantitatively the differences in climate change during this period compared to the present.</p> <p>Therefore, we attempted to reconstruct the climate of the 18th and 19th centuries based on the many diary weather records that have survived from various parts of Japan. As a result, we found that the average summer temperature was at its lowest in the mid-1700s, but then gradually warmed, peaking in the 1850s and 1860s, reaching its lowest point around 1900 and continuing to warm until the present day.</p> <p>However, detailed analysis shows that there were temporary cool periods in the 1780s and 1830s. These periods are known to have been marked by great famines in Japan, and it is thought that the abnormally low summer temperatures led to poor rice harvests, which in turn may have led to severe famines.</p>
Keywords	climate variation, East Asia, famine