Integrating data rescue into the classroom

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The availability of long-term observational data at fine time scales (e.g. daily or sub-daily) is paramount to examining changes in the magnitude, duration, intensity, and frequency of extreme events and to assess whether or not the likelihood of recent events has changed throughout the historical record. The capacity to extend current observational data holdings is, however, largely dependent on the resources available to carry out the digitisation and transcription process. This paper presents an ambitious research led teaching experiment in which undergraduate students engaged in a substantial data rescue effort to transcribe almost 1 million daily rainfall values and associated metadata across Ireland for the period 1860-1939. The aim of the project was first, to motivate students by engaging them in a practical exercise whereby their contribution has considerable value to research, second, to expose students to the basic processes involved in climate data rescue, and third, to examine the potential for students to produce accurate and reliable observational data. Students were provided with digital images of annual rainfall sheets recovered from the national archives together with templates used by Met Éireann in transcribing the data. Using video and text supports, together with an online discussion forum for additional support, students double keyed more than 1300 station years of rainfall data and associated metadata. The assessment process was linked to creating a corrected data series whereby differences in double keyed sheets were identified and a master 'correct' series created by teaching staff. Data previously transcribed by Met Éireann was used as a benchmark against which students showed that they were as accurate as the professionals in the process. The success of the students makes a major contribution to understanding the historic climate variability of Ireland, a sentinel location on the western margins of Europe. Given the large volumes of archived data currently held in Met Éireann and other meteorological organisations there is huge potential to extend this project to other Universities so that valuable data can be unlocked to further scientific insights into changes in climate and extreme events.