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Strategies for climate data rescue: a service learning approach

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Long-term meteorological observations are indispensable to an enhanced understanding of past climate variability and assessment of frequency, duration, intensity and geographical distribution of extreme events. According to WMO (2016) numerous international digital climate datasets comprise records dating back to the 1940s or 1950s whereas the historical observations remain as image or paper data-source which are in need of rescue due to the vulnerability of the unique and fragile paper or obsolete digital data-sources.

Climate data rescue can be expensive and time consuming. Crowdsourcing by citizen scientists (e.g. Brönnimann, 2009) or by university students in the classroom (Ryan et al., 2018) have been investigated as alternatives to faster data rescue procedures in contrast to the costly professional keying.

However, the engagement of secondary school and university students through volunteering programmes in climate data rescue was previously unexplored. As part of service learning assessment, over 850 000 daily maximum and minimum air temperature values have been rescued by:
1. Over 150 secondary school students undertook climate data rescue in the classroom for the first time as part of a) community service or b) working placement training or c) green school modules.
2. Undergraduate and postgraduate university students at NUI Galway through the volunteering programme ALIVE (A Learning Initiative and the Volunteering Experience).
3. Over 190 a) Geography and b) Applied Social Sciences undergraduate students at NUI Galway as part of an assignment on climate data rescue and statistical data analysis;
4. Volunteers at Met Éireann and members of the Irish Meteorological Society.

With this contribution we intend to:
1. Share and discuss experiences on climate data rescue training activities.
2. Present the benchmarking and quantification of data rescue errors.
3. Review the feedback of participants on climate data rescue through survey analysis.
4. Highlight opportunities, advantages and recommendations on the engagement of secondary school students and of university students through volunteering programmes in future climate data rescue projects.

Key-words: climate data rescue, historical climate datasets, education, volunteerism.

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