

Greening Archives: Mitigating the Environmental Impact of the Archives with Designated Storage for Photographic Materials

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Background

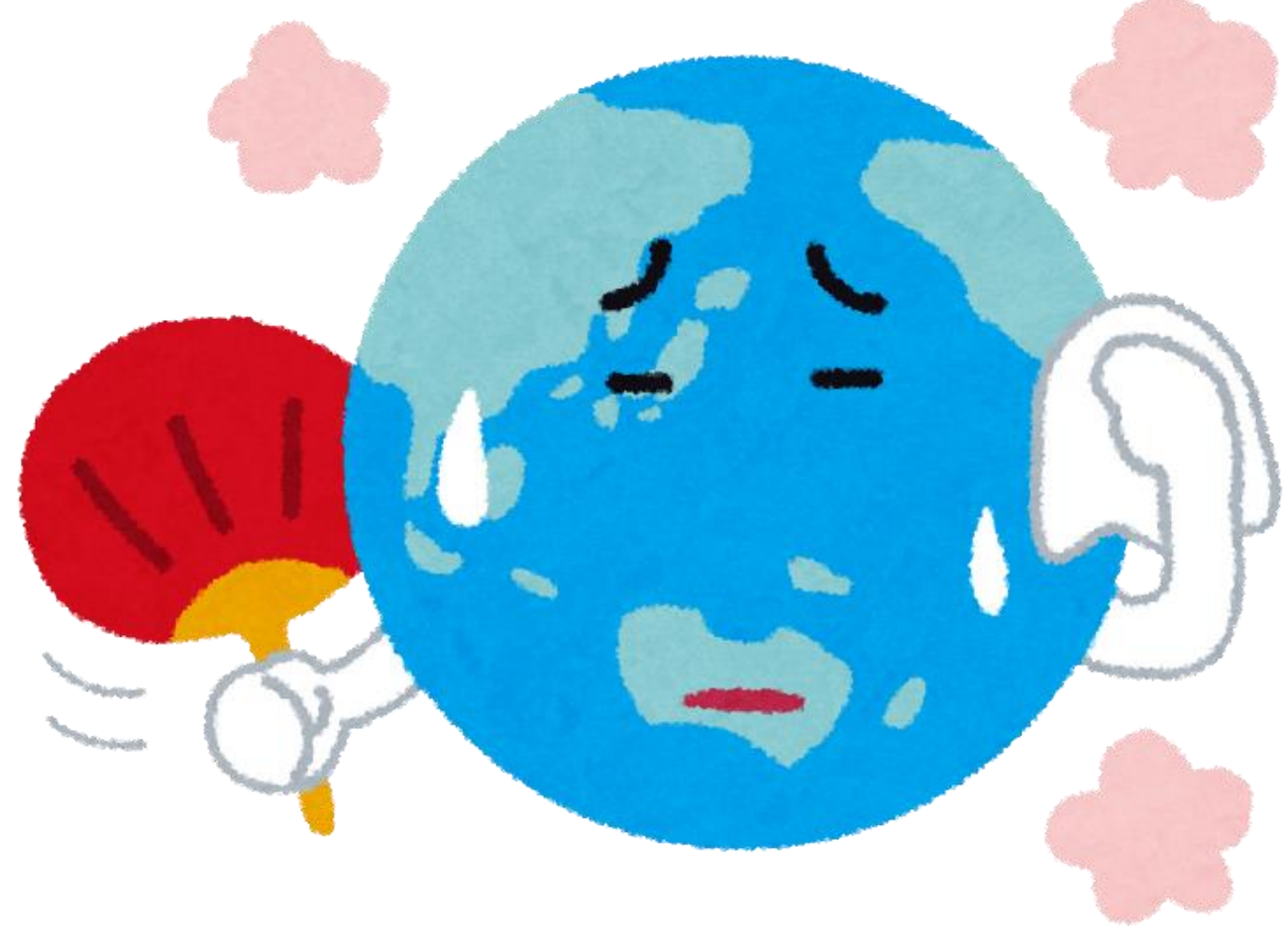
In 2015, 196 countries adopted the Paris Agreement to reduce global warming in order to fight against climate change. Its overall goal was to limit warming to no more than 2°C by 2050¹. However, commitments made by governments to date fall far short of what is required and if we stick to the current national climate plans submitted, it would lead to an increase of almost 14% in global carbon emissions by 2030, compared to 2010 levels². We need the whole world; Global, Governmental, Organisational and Individuals' commitments to take bold steps towards reducing emissions as soon as possible to have any chance of meeting the 2°C goal.

Collecting institutions such as Archives and Museums are facing difficult choices between lowering carbon footprint and preserving collections. Early photographic materials are particularly known for their high dependency on low temperature and low RH storage environment. Therefore, institutions with historical photographs need to plan the step carefully, as allowing collections to deteriorate in sub-optimal environmental conditions would be a significant loss to the humanities and to society.

It is crucial for institutions to make realistic changes and integrate sustainable energy use practices by Collection Care and Facilities Management staff working together to manage the environment closely to reach both preservation and energy saving goals.

This research will explore the sustainable update options for existing purpose built archive buildings that hold vulnerable historical photographic materials with HE Archive as the main case study.

PhD Research Project started: 31/01/2022



Questions

What do we currently have?
(Facilities, Plant and Collections)

How object conditions have changed over the years?

Where are the most vulnerable materials located within archive?
(Location mapping of objects)

Can an Eco-friendly archive have sub-zero temp. vault within?

How can we make our archive environmentally sustainable?
(Available options)

What methods have already been explored and ruled out?

What facilities do other organisations have?
(Physical improvement examples)

What efforts are other organisations making?
(Action examples)

Pragmatic recommendations

Main Case Study: Historic England Archive

Historic England is the Public Body that looks after the England's built heritage and environment. The Archive located in Swindon was formerly known as; Royal Commission on the Historical Monuments of England → National Monuments Records → English Heritage Archive → and now HE Archive.



Image 1: Archive Building, HE Swindon



Image 2: Aerial view of HE Swindon site

Holds 13 million archive items within a four-storey archive building

Large majority - photographic materials

Purpose-built in 1994, adjacent to grade II listed office blocks

HVAC plant with 10 individually controllable Air Handling Units

Temperature ranges
6 -18°C (±2°C)

RH ranges
32 - 50% (±2%)

Vulnerable Photographic Materials in Archive

Knowledge of material characteristics is crucial for carbon reduction strategy decision making at collecting institutions. Can we keep both our collections and our planet happy?

Early Plastics: Cellulose Nitrate (CN), Cellulose Acetates (CA) and Polyester constitute the majority of support materials for negatives in photograph collections. CN and CA are susceptible to environmental change and the degradation process is irreversible.

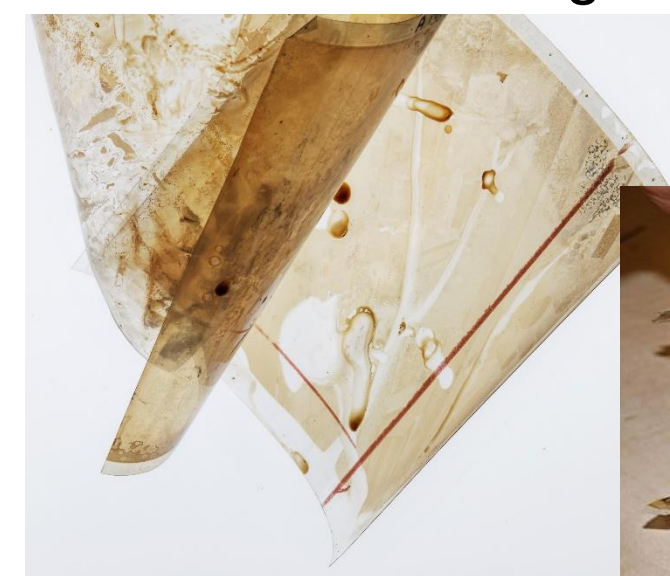


Image 3: Faded and welded CN film



Image 4: Crispy and crumbling CN film

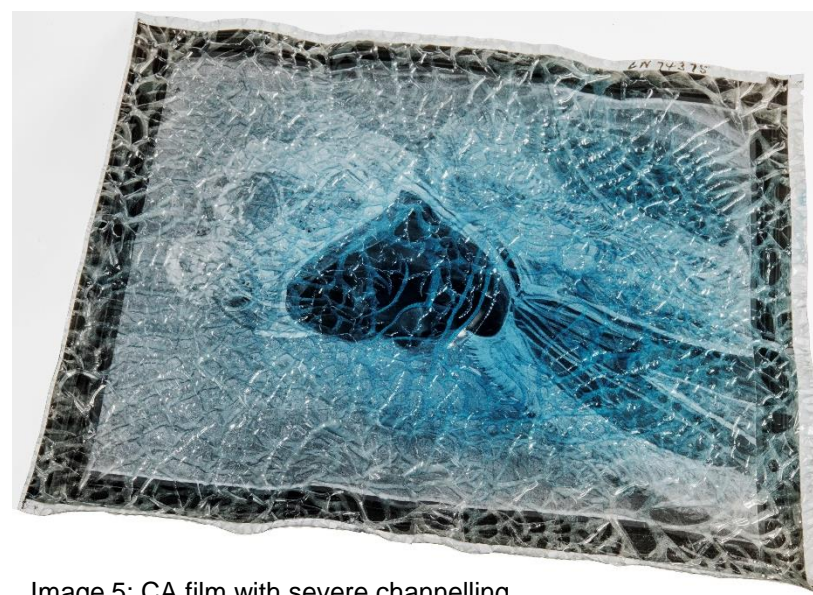


Image 5: CA film with severe channelling



Image 6: CA film with Liquid-filled bubbles



Image 7: Cockled and delaminating CA film



Image 8: delaminating glass plate negative

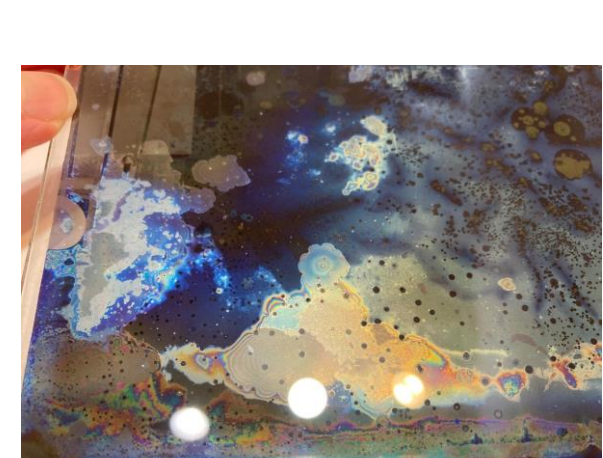


Image 9: Degrading glass plate negative



Image 10: Faded colour print adhered on an ephemera



Image 11: Faded Polaroid



Image 12: Good condition 35mm colour transparency

Glass plates: Glass is extremely dimensionally stable but prone to breakage. Hygroscopic and dimensionally unstable gelatine binder layer cause separation from smooth glass surface, often enhanced by glass deterioration.

Colour Prints and Films: Organic dyes used for colour prints, negatives and transparencies have tendencies to fade in light or in the dark under moist, warm conditions.

Research Methods

Literature Review

- Standards, Guidelines, Recommendations and Benchmarks etc. - Ongoing

Facilities assessment

- Work with Facilities Management Team - Ongoing

Collections condition survey

- State of Archive Survey 2022 compared with State of Archive Survey 2013 - Nearly completed

Accurate identification of plastic base

- Using Nicolet Summit FTIR-ATR Spectroscopy - Ongoing

Simulate the environmental settings

- Using IES VE - In preparation

Online Survey

- Targeting the external collecting institutions – In preparation

Interviews and Visits

- Targeting external collecting institutions with Photographic Materials Storage – In preparation

What's next...?

If you work for a collecting institution, your input is greatly appreciated for the author to learn about the effort against climate change made at various institutions. If you are interested in participating the online survey or outcome of this research, please contact the author. Thank you very much.

References

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- Secretariat, U. (2021) *Nationally determined contributions under the Paris Agreement, Synthesis report by the secretariat* (GE.21-13138(E)). <https://unfccc.int/documents/306848>

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