FLOODSCAPES FOR INLAND WATERSCAPES:

Floods do not need to mean disasters

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ABSTRACT: The objective of this article is to provide a photo essay of inland waterscapes in which a floodscape remains or is created with the aim of preventing disasters. The theory of a flood being different from a disaster is long established with many empirical examples, but neither visualisation nor how to visualise effectively across audiences is always evident. Images by the author accompanied by brief captions from the author's experience aim to fill in this gap. Framing, analysis, and discussion examine the nuances and limitations of photo-word combinations. Key points are that images affect the interpretation of accompanying text and vice versa, a certain literacy level is required in the language(s) of photo-related text, and images are not seen or interpreted equivalently by everyone. The overarching challenge for visualising how floods do not need to mean disasters for inland waterscapes is that many measures to avoid floods from becoming disasters do not appear to be flood-related, instead being enfolded into day-to-day life, often being ordinary and unexciting.

KEYWORDS: disaster, disaster risk reduction, DRR, drought risk resilience, flood, photo essay.

Introduction

Disaster research, policy and practice have long eschewed the term "natural disaster" (O'Keefe et al., 1976). The premise is that disasters do not occur due to environmental variations, such as floods, but rather due to societal decisions meaning that some people cannot deal with these environmental variations (Hewitt, 1983; Lewis, 1999; Wisner et al., 2004). For floods, examples are people forced to live in floodplains without evacuation routes, not having warnings in an understandable or actionable form, lacking information about or money for increasing the flood resistance of their homes or workplace, and being fired from a job for requesting flood-related safety measures. Often, society-wide decisions about managing floods, such as building large barrages or levees, augment flood risk and exacerbate flood disasters, because cultural and behavioural changes for reducing flood risks have not accompanied the technical measures (Criss and Shock, 2001; Etkin, 1999; Tobin, 1995).

All these aspects regarding flood risks for inland waterscapes are written about extensively across academic disciplines (Fordham, 1999; Scaini and Scaini, 2025; Szöllösi-Nagy and Zevenbergen, 2005) including legislative frameworks (Di Quarto and Venturini, 2025) and histories of floods affecting inland waterscapes within cultures (Grillotti Di Giacomo et al., 2025). Less common is using other academic communication means and media while

emphasising the importance of accepting and showing floods and floodscapes without flood disasters. The theory of a flood being different from a disaster is long established with many empirical examples, but neither visualisation nor how to visualise effectively across audiences is always evident in publications, despite the demonstrated importance of inland waterscapes for society (Di Quarto and Venturini, 2025; Fordham, 1999; Grillotti Di Giacomo et al., 2025; Scaini and Scaini, 2025; Szöllösi-Nagy and Zevenbergen, 2005). Briones (2019) is an exception, but is a photo essay about post-disaster circumstances, rather than covering disaster risk reduction (DRR) to stop a disaster from manifesting. Meanwhile, Spadaro and Rosset (2025) use "geo-photography" to explore an inland waterscape, covering some aspects of flooding.

The objective of this article is to provide a photo essay of inland waterscapes in which a floodscape remains or is created with the aim of DRR. These inland waterscapes and floodscapes include waterways with flowing water, such as brooks, burns, canals, creeks, rills, rivers and streams. They also include tracts of land experiencing pluvial flooding, ponding, and surface flooding, when water does not flow away or drain fast enough. The next section outlines theories and structures for the photo essay, followed by a section with the photo essay comprising images taken by the author (Figures 1-18) with brief captions from the author's experience. The captions are deliberately brief in order to focus on the images, as per the theorisation provided regarding photo essays. Then, an analysis and discussion section critiques this use and presentation of the photos, referring to the photos specifically in the context of previous publications, followed by conclusions connecting back to wider DRR.

Theorising and structuring the photo essay

Sutherland (2016) refers to a contemporary "photo essay" as "a series of photographs investigating and describing a specific theme" (p. 116), indicating complete flexibility with the amount and style of text to the point that "sometimes they avoid text altogether" (p. 120). Marín and Roldán (2010) concur, since a "photo essay may be accompanied by written text, but most importantly the critical content of the research is presented visually" (p. 13). Mark (1990) is described as a "collection of images and an interview with Mary Ellen Mark". The photos do not have extensive text and, in the interview, Mark is circumspect regarding exactly what a photo essay is or should be. In fact, Becker (2007) explains that a "well-made photographic sequence supports a large number of comparisons and thus a large number of interpretations" (p. 53) and that users must do a lot of interpretative work for themselves (p. 42). Küttel (2021), in blurring the line between a series of photos and a photo essay, agrees, by noting:

> *Even though the photographs in my photo-essay act as re/presentations and re/constructions of scenes, I have to acknowledge that once they are published, others will look at and interpret them in their own way.* (p. 64).

Previous publications describing and defining photo essays offer numerous types in nebulous categories, without consensus. Some examples:

- Deale (2014) sought photo essays in the form of PowerPoint presentations with images.

- Grimwood et al. (2015) formulate an undergraduate assessment as "tell a story about his or her touristic experience using photographs taken during that experience" (p. 370).
- Marín and Roldán (2010) offer direct definitions for "photo series" and "photographic discourse", while describing without directly defining a "photo essay": "[t]he photographs included in photo essays, and especially their interrelations, gradually reveal possible interpretations and meanings with sufficient clarity to outline the idea or line of reasoning" (p. 13).
- Quinn et al. (2006) explain, "the photo essay is a qualitative visual strategy, its main function is to capture the attention of" (p. 233) professionals which, in their case, is to support medical staff for preventative medicine.

In scientific journals, photo essays are presented for topics as diverse as autoethnography (Küttel, 2021), ophthalmology (Ahmad, 2016), environmental education (Stock et al., 2016), and traditional knowledge (Whincup, 2007). For international relations, Hansen and Spanner (2021) try to differentiate "between the academic photo essay and the photojournalistic (or artistic) one" (p. 314) and then acknowledge in a footnote that "our distinction between the academic and the non-academic photo essay is thus not a rigid one" (p. 314).

Combining many aspects of these approaches and definitions, and emphasising the flexibility espoused by Mark (2010) and Sutherland (2016), the photo essay here sets out to focus on visuals qualitatively demonstrating floodscape DRR strategies for inland waterscapes. Minimal text accompanies the photos in order to determine whether or not the images could tell a story and offer the viewer a variety of interpretations (cf. Jay, 1993). The photos are nonetheless sandwiched by scientific text to offer an academic audience a possible contextualisation and analysis of the photos, indicating aspects of what the interpretation could be – although not necessarily what it should be.

In particular, the storyline is here described explicitly. This description could legitimately be critiqued as proffering a linear and narrow narrative for (re)constructing the temporal and spatial scene around each image, given that a photo can capture only a moment in space and time. At the risk over-justification and over-"transparence" (cf. Scott, Jr., 1981; Sontag, 1966), in comparison to transparency in presentation and expression, this storyline comprises three parallel threads, enfolded within Figures 1-18.

The first and underpinning thread is that the scapes were deliberately selected to focus on those with recreational use, thereby improving quality of life and offering people daily benefits from DRR. The images depict green spaces, riverside paths, sports facilities, playgrounds, and a pub – all deliberately and specifically designed, engineered, and maintained for DRR in floodscapes. Yet these measures to avoid floods from becoming disasters do not inevitably appear to the user to be flood-related. Intentionally excluded are images of inland floodscape measures which do not offer non-flood-related amenities, with examples from the author's photo archives being river barrages underneath roads in Guangzhou, China and an isolated dam in Samoa.

The second thread is a journey. The figures are ordered as a westerly tour of the northern hemisphere, starting in Canada (Figures 1-5), heading south to the USA (Figures 6-7), traversing the Pacific to South Korea (Figures 8-10), moving south again into Singapore (Figures 11-12), and ending in Europe with the Netherlands (Figures 13-14) followed by the UK (Figures 15-18). The lesson is that this article's title applies around the world.

The third thread is incorporating communication as part of the floodscapes, especially since the flood-related aspects are not always obvious to the waterscape's recreational user. The photos that display text are important for demonstrating that part of developing and maintaining a place for DRR is on-site information and warnings (Kuller et al., 2021). Yet the text might exclude those who have limited literacy in the signs' language(s) or who are visually impaired (Cumiskey et al., 2015; Gomes et al., 2022). Apps can assist through automatic translation and text-to-voice, if users can afford smartphones and are not afraid of the device being stolen by using it in public. Equivalently important are locations not explaining the DRR value of what has been done with the floodscape.

This glimpse into the photo essay's narrative cannot be the full or final story. As per Becker's (2007) and Küttel's (2021) theorisations of photo essays (see also Jay, 1993; Sontag, 1966), viewers and readers will and should have their own interpretations. Ensuring that floodscapes do not become flood disasters through DRR is a participatory and interactive process (Cook et al., 2025; Di Quarto and Venturini, 2025; Fordham, 1999; Wolff, 2021) with recent successes in inland waterscapes reported from South Korea (Ro and Garfin, 2024) to Sudan (Tambal, et al., 2024). Photo essays, too, must involve those engaging with them, so that the photo essay not only inspires positive action (here, for DRR), but also generates discussion about whether or not the depictions (here, for floodscapes) offer useful and useable science (here, for flood risk reduction; e.g., Glantz and Ramírez, 2018).

Photos

Figure 1 – In 1954, Hurricane Hazel swept through Toronto, Ontario, killing dozens in their homes along the Humber River. Instead of rebuilding these houses, floodplains were turned into recreation and nature areas (2016).

Figure 2 – Every year, salmon return to Toronto to breed, here swimming upstream in the Don River (2014).

Figure 3 – Signs remind trail users of the floodscape along the Humber River (2016).

Figure 4 – Calgary, Alberta built a wall to separate houses from the Bow River, making the dike a bench to add rest and socialising areas to the riverside recreational path (2024).

Figure 5 – The wall has gaps for access, with gap-filling panels locked underneath the benches. The presumption is that a flood warning leaves time to find the key, unlock the storage area, and slot in the panels (2024).

Figure 6 – Boulder, Colorado removed houses from the flash flood zone along Boulder Creek, with recreational paths and facilities built along the floodscape (2007).

Figure 7 – Signs along Boulder Creek explain the hazard and warn against sheltering on the path under bridges (2011).

Figure 8 – In Seoul, South Korea, an elevated motorway was removed from 2003-2005 to restore/re-create the stream Cheonggyecheon. Air quality improved, public transit use increased, and pluvial flooding declined (2024).

Figure 9 – During heavy rainfall, the paths alongside Cheonggyecheon are closed (2024).

Figure 10 – When open, Cheonggyecheon is a community space for relaxing, socialising, and exercising (2024).

Figure 11 – Singapore city has been engineering its rivers to drain more water, aiming to reduce surface flooding (2014).

Figure 12 – Parks in Singapore city absorb runoff while warning about storm dangers (2013).

Figure 13 – Benthemplein in Rotterdam, the Netherlands is a public square with recreational and relaxation facilities designed to store rainwater and prevent nearby properties from flooding (2023).

Figure 14 – Drainage channels need to be cleaned of leaves and litter or else they will clog, leading to flooding (2023).

Figure 15 – River Cam flows through Cambridge, UK, with St. John's College at the University of Cambridge leaving a field as green space, so that adjacent buildings on slightly raised land are less likely to flood (2001).

Figure 16 – The ground floor of Cambridge's The Anchor pub sits at river level. The ground floor has been designed to let muddy water in and then out, so that cleaning and disinfecting permits a swift re-opening for business (2001).

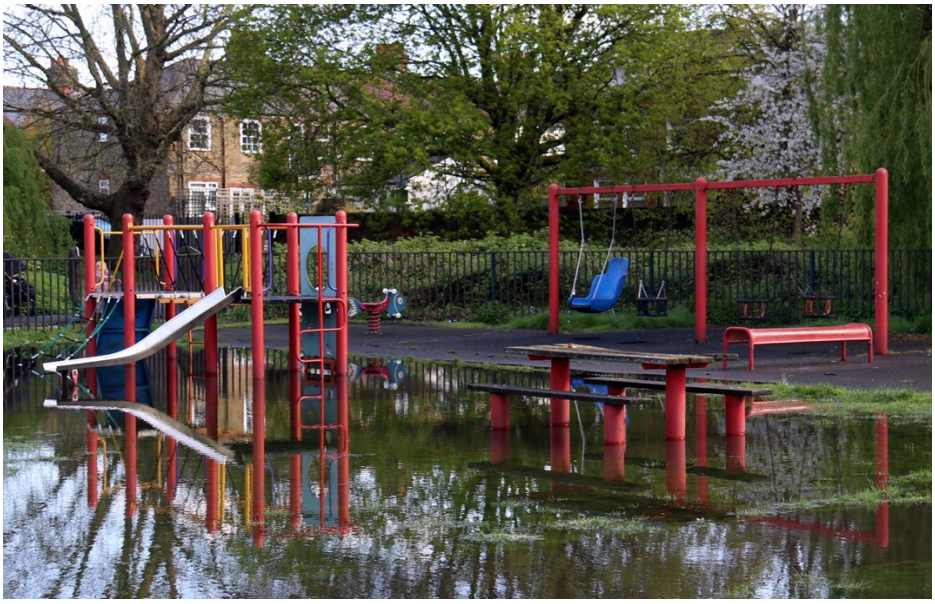

Figure 17 – Wandle Park in south London, UK provides recreational and relaxation space and it stores runoff, so that nearby houses do not flood (2023).

Figure 18 – Once the water has drained, the playground and fields might remain muddy for a while (2024).

Analysis and discussion

Irrespective of the aesthetics of Figures 1-18 which vary widely – and compare to Figure 19 – photo dimensions, shapes, and layouts have not been addressed in this photo essay (cf. Whincup, 2007), nor are these aspects typically analysed or deconstructed in previous publications theorising photo essays (Mark, 2010 and Sutherland, 2016 are exceptions). It is also telling that many images require background information and explanatory text to make the point that floods do not need to mean disasters. The photos rarely illustrate baseline nuances, notably the advantages and limitations of waterscape engineering for DRR (Criss and Shock, 2001; Etkin, 1999; Tobin, 1995), as in Figures 8, 11, and 13. As per expectations from theories and definitions of photo essays, much is left up to the viewer and reader to interpret the photos in their own ways.

One aspect not evident in the photos is that the main advantage of waterscape engineering for DRR is controlling flood parameters up to certain levels, so the floodscape around an inland waterscape is designed, constructed, and managed. One main disadvantage is that the resources required for designing, constructing, and managing an artificial inland waterscape. Another significant disadvantage is that eliminating small floods and droughts can inure people to the absence of water variations, so that they neglect DRR measures and are surprised and unready when eventually a large flood or drought exceeds the design capability of the engineering (Criss and Shock, 2001; Etkin, 1999; Tobin, 1995). While waterscape engineering is visible and typically appears solid and protective, nuances in flood and disaster consequences emerge because people's attitudes and behaviour have a significant influence on the actual DRR enacted or neglected (Fordham, 1999).

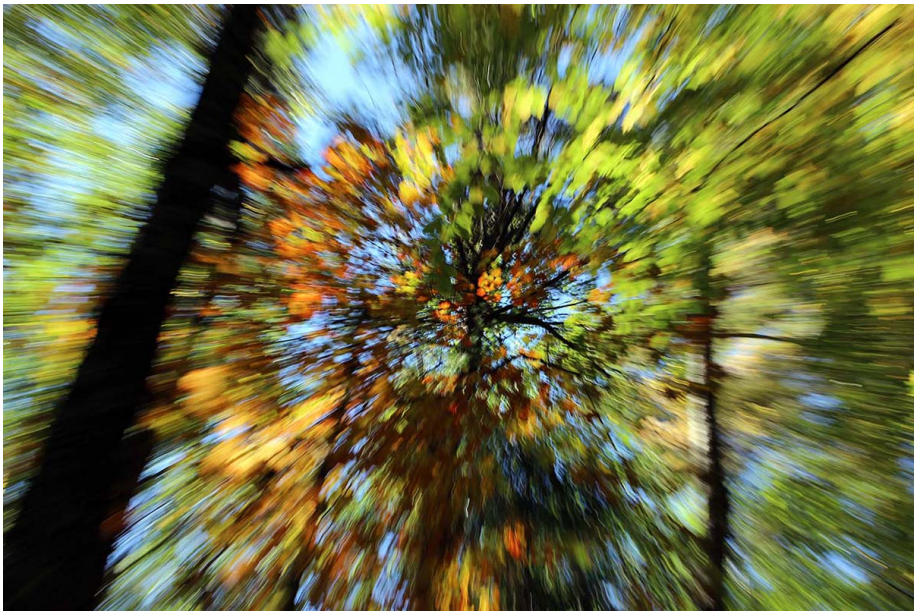

Figure 19 - A potentially creative, artistic, and aesthetically pleasing photograph of trees, taken by the author in Algonquin Provincial Park, Ontario (2014). The image represents flood risk reduction for inland waterscapes (e.g., Rüegg et al., 2022) in terms of water absorption (mitigating some floods while possibly exacerbating droughts) and slope stabilisation, yet offers little in terms of conveying this message.

Another important nuance not evident in the images is the influence of human-caused climate change on today's floodscapes. IPCC (2021-2022) offers no doubt that precipitation and melt patterns are changing rapidly due to human-caused climate change. AR6 WG1 Table 12.12 (IPCC, 2021-2022) states "low confidence of direction of change' (meaning "evidence is lacking or the signal is not present') that "river flood' will be significantly affected by human-caused climate change by 2100 across all regions for the highest greenhouse gas emissions scenario. In contrast, for the same high emissions scenario, "pluvial flood' has "medium confidence of increase' for Northern Europe, Northern Asia and East Asia between 2050 and 2100. Consequently, human-caused climate change has limited influence on the floodscapes of inland waterscapes, precisely due to all the other factors illustrated in the photos and mentioned earlier in this section, namely land use and management. Examples are adding or removing vegetation including for wetlands, landscaping and infrastructure development storing or channelling runoff, and focusing on structural approaches (or not) to design and manage inland waterscapes.

With limited link evidenced at the moment from human-caused climate change to inland floodscapes (IPCC, 2021-2022), the focus can remain on less global human actions influencing inland floodscapes. With captions, even when brief, floodscape and waterscape stories can be narrated and/or implied, drawing in viewers and readers through the photos in order to engage them more through the word-photo combination (see also Hansen and Spanner, 2021). Three immediate limitations emerge.

First, images affect the interpretation of accompanying text and vice versa (Hansen and Spanner, 2021; Pozzer and Roth, 2023). Care is needed in ensuring that photos and captions provide consistent messaging, understandable across cultures and (where feasible) languages, without possibilities for presuming and pursuing incorrect actions based on the material. Evidence – from even before social media overtook television as dominant information sources with instant, short, and superficial messages – show how readers do not pay full attention to material provided (Peeck, 1993). Mundane photos irrespective of engaging text, and vice versa, might lead a viewer and reader astray and perhaps discourage DRR work, rather than acting to avoid a disaster despite a flood. Some photos (Figures 2, 13, 18, and 19) would not seem to have any relevance to floods or floodscapes, without an accompanying explanation.

Second, a certain literacy level is required in the language(s) of the text accompanying the photos. In this context, photos with text (Figures 3, 5, 6, 7, 9, and 12) would exclude people without sufficient availability in those languages (Cumiskey et al., 2015; Gomes et al., 2022). Moreover, these notices do not convey how to recognise flood signs and signals in time to act, as well as who could be excluded, namely people with visual impairments and people who cannot move or climb quickly. Figures 7 and 12 advise what not to do, without indicating what to do. Techniques have been tested for text-free DRR advice in order to avoid language and literacy constraints (Mueller et al., 2020).

Yet the third limitation is that images are not seen or interpreted equivalently by everyone (Jay, 1993), as expected for photo essays (Becker, 2007; Küttel, 2021). From colour-blindness (Edridge-Green, 1909) to social constructions (Berge, 1972), long-standing work details how visualisation has limits as much as text (Tufte, 1997), corroborated by recent disaster-related studies (Yin et al., 2024 for colour blindness and Coca et al., 2025 for social constructions). Any image use must certainly remain cognisant of people with visual impairments. The point is not to avoid visuals and visualisation, but to offer alternatives and complementarities in order to balance communication media, rather than relying on a single mode. Extended captions could be adjusted to fully explain each photo, as should always be done through ALT-text or embedded audio in online material and files, such as Word and PowerPoint documents.

Conclusions

Images can be selected to overcome the limitations of photo essays for demonstrating that floods do not need to mean disasters for inland waterscapes. As per the images in this photo essay, flood risk reduction measures might not appear to be such, instead being enfolded into day-to-day life and as regular and accepted parts of daily living (Hewitt, 1983; Lewis, 1999; Wisner et al., 2004) – from playgrounds (Figures 17 and 18) to walking and cycling paths (Figures 4 and 8). While such photos may appear to be ordinary and unexciting, portrayals of living with floods without disasters should surely be inspiring and galvanising! Yet it rarely happens. After all, Singapore and Toronto promote their green spaces for quality of life through the taglines, respectively, "a city in a garden" and "a city within a park" – highlighting placidity within urban life rather than DRR. Even for photos which are not necessarily aesthetically appealing or particularly artistic – at least, within certain cultural contexts since both these criteria are subjective – visualising these efforts and successes remains relevant for managing, and promoting flood risk management of, inland waterscapes.

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