Byw gyda ansicrwydd hinsawdd – Golygfa o Gymru
Living with climate uncertainty – a view from Wales

Sarah Davies
Department of Geography and Earth Sciences, Prifysgol Aberystwyth University
“This is going to happen elsewhere. Sometimes you have to see someone else go through it – we just happen to be the first.”

Fairbourne resident, interviewed for the Guardian (18th May, 2019)
UK heatwave: Welsh farmers 'fighting to survive'  

4 July 2018

Farmers have brought in emergency water tankers

Farmers in Wales are warning that they could be fighting to survive if the summer’s dry weather continues.

Many say the grass they feed their cows effectively stopped growing weeks ago, prompting concerns about the food available to herds in the longer term.

‘a community’s ability to cope with severe droughts where standpipes need to be used is not well-researched in the UK, including in Wales, as it is such a rare event.’

UK Climate Change Risk Assessment, Summary for Wales (2017)
'Spaces of Experience and Horizons of Expectation': Extreme weather in the UK, past, present and future (December 2013 - December 2017)

Multi-institution project, PI Georgina Endfield; Co-I with Neil Macdonald, Simon Naylor; Researchers: Lucy Veale, Marie-Jeanne Royer, James Bowen

Funded by:

Working with partner organisations:
• develop a set of local and regional climate histories in order to identify periods of unusual weather and extreme events

• investigate the scale of impact and the nature of human responses to these events and the way in which time and place specific contexts influenced both impact and response

• examine how individual and community responses to climate variability, including the recording and recollection of events, have changed over the course of recent centuries and are still changing

• explore how social memory of and adaptations to past events influenced perceptions of relative resilience and vulnerability.
Introducing TEMPEST

Tempest – Tracking Extremes of Meteorological Phenomena Experienced in Space and Time

Veale et al., 2017. Geo: Geography and Environment 4: e00039
c. 18,000 event records.

1346 – 2007 = 661 years (most post 1700), skewed by particular diary sources. Many examples of multiple accounts of the same weather event

**Dominant weather types:**
Rain (assigned to 5,550 entries)
Cold/extreme cold (assigned to 3,966 entries; ‘freeze’ a separate category)
Snow (assigned to 3,934 entries with ‘snowstorm’, ‘snow shower’, ‘heavy snow’, ‘snow drift’ and ‘snow lying’ being separate categories).

**Fewer entries relating to hot / dry weather:**
Drought conditions – 221 entries,
Water scarcity - 88 entries,
Lack of rainfall - 553 entries,
Extreme heat - 460 entries and
Heatwave - 22 entries.
Blwyddyn y Rhew Mawr
Year of the Great Frost

“The Winter of 1739-40 was remarkable for its uncommon severity, and the occurrence of one of the most intense frosts that had ever been known in this Country; and which from its piercing cold and long continuance, has been recorded in our Annals by the Appellation of the Great Frost.

It commenced on Xxmas day and lasted till the 17th of the following February, when it began to break up, but was not wholly dissipated till near the end of the month. xx

Above London Bridge the Thames was completely frozen over, ad tents and numerous booths were erected on it for selling liquors &c.

xx even a printing press was established xx


From Crosswood Diaries NLW1757B, Diaries of Walter Davies 1822-1845
Summer drought, 1762

June 19th: ‘... earth as dry as a horn, clay ground all clefted and parted asunder for water. Corn on thin lean ground all burned and withered up...’

July 17th: ‘... The first Three days of this week ye Green and Court’s folk did raise ye malt pit, wch pool have not been wholly dry since yt dry summer after ye great frost in 1740 ... the report is yt there are many dying in several places... rain do fall in showers elsewhere not here... I believe for ye dryness is but in some places and as good wheat with us as ever for it was a wet winter (and not a dry frosty as in 1740 for 13 weeks... and a dry summer after a wet winter will bring plenty, but it is a yr to bring down several proud farmers or renters’

Sept 14th: ‘ very misty in ye mg and wind South but it cleared and mad a fair eg very good harvest and great plenty of hay and grass when this six weeks past people was in despair yt cattle would starve this winter for ye 12 weeks dryness it made before, but God is omniscient and man is a worm’

Diary of William Thomas, Michaelston-Super-Ely, South Wales
Oiche na Gaoithe Moire, 6th January 1839, ‘The Night of the Big Wind’

‘The great storm, which just one hundred years ago swept over Ireland, has throughout the years remained in the popular memory as a definite point, an epoch-making event in the history of the nineteenth century.’

Eoghan de Buitléir, teacher, Gortlony, Co Meath, writing in December 1938.

The Schools’ Collection, Volume 0716, Page 245, National Folklore Collection, UCD

Shields and Fitzgerald, 1989
Impacts of ‘The Night of the Big Wind’ (6\textsuperscript{th} Jan, 1839) in Wales

**Menai Bridge** ‘This justly celebrated communication between North Wales and Anglesey has been rendered totally impassable’
(Carnarvon and Denbigh Herald, 12\textsuperscript{th} Jan)

**Flint** ‘The damage here has been very great accompanied with loss of life... five large chimneys attached to their extensive works blown down, some of them above 30 yards in height’
(Carnarvon and Denbigh Herald, 12\textsuperscript{th} Jan)

**Llanelli** ‘the destruction of property by the storm was very considerable... we are happy to state that no lives were lost’
(Merthyr Guardian 19\textsuperscript{th} Jan)

Newspaper records retrieved from www.newspapers.library.wales, courtesy of National Library of Wales
‘The inhabitants of Borth were great sufferers by the gale. The water poured into the cottages and much furniture and property has been lost. The masters and pupils of Uppingham School set themselves manually to help the distressed…’

‘The flats between Ynyslas, Llancynfelyn and Lodge Farm were all under water... The houses at Ynyslas were nearly full of water to the lofts…’

Aberystwyth Observer, 3rd February 1877

Recurrent extremes

Welsh Gazette and West Wales Advertiser
12th October 1899

Newspaper records retrieved from www.newspapers.library.wales, courtesy of National Library of Wales
The CHERISH Project

Climate, Heritage and Environments of Reefs Islands and Headlands

Reconstructing past environments and weather history

Discovering, assessing, mapping and monitoring heritage on land and beneath the sea

Targeting data and knowledge gaps to raise awareness of heritage in these remote coastal locations.

Establishing new metrically accurate baseline data & recording standards

2017 – 2021 €5.1 Million EU Ireland-Wales Territorial Co-operation Programme

Comisiwn Brenhinol Henebion Cymru
Royal Commission on the Ancient and Historical Monuments of Wales

Aberystwyth University

The Discovery Programme
Centre for Archaeology and Innovation Ireland

Geological Survey
Suirbhéidhmacht Gheolaifotcha Ireland | Éireann
New archaeological and palaeoenvironmental investigation of at risk sites

Improved evidence base for statutory protection, decision-making and adaptation strategies

Raising awareness of climate change in coastal communities through heritage

Illauntannig, Co Kerry

#climateheritage
Dinas Dinlle
Quantifying rates of change over timescales from individual events to millennia

Improving our understanding of coastal palaeoenvironments and archaeology before future loss

Engaging communities and raising awareness of climate change

Can long-term landscape / climate / weather histories help to build resilience?
Public Service Boards in Wales

- ‘assess the state of economic, social, environmental and cultural well-being in its area
- Develop a Local Wellbeing Plan
- Set objectives that are designed to maximise the PSBs contribution to the well-being goals.’
- Explain ‘why the PSB feels their objectives will contribute within their local area to achieving the well being goals’
Community Resilience

Create environmentally responsible and safe communities that can adapt and respond to the effects of climate change.
Support communities to enhance their relationship with the natural environment and prepare for extreme weather events.

This aim represents just two of the potential priorities identified in the assessment but these two are arguably the most fundamental for any well-being plan that seeks to improve the Well-being of Future Generations: Climate Change and Nature Connectedness. Although the issue of climate change is a global one, it is heavily influenced by factors far beyond the control of the PSB, there are ways in which the PSB can make a difference. This aim addresses the importance of communities being prepared for the extreme weather events before they happen; this means supporting the community to take more responsibility for the effects of climate change.

Short Term

Create a Ceredigion Climate Change Risk Assessment that will outline areas of risk, actions and trigger levels and community awareness training.
Why we have chosen this action
This action is an amalgamation of several key suggestions made at the events. It captures two significant areas: the need for understanding on a local level and the need for community engagement and understanding. Not specifically captured in the action but inherent in its inclusion is the assertion that the PSC leads by example.

Medium Term

Promote community sustainability and responsibility through education and projects e.g. renewables, waste minimisation and clean ups.
Why we have chosen this action
Following on, the medium-term action will further galvanise the community in order that they recognise their crucial role in environmental sustainability. The PSB will promote, support and celebrate community opportunities to protect our environment.

Long Term

Protect and enhance the natural assets of Ceredigion whilst optimising our economy, health and well-being.
Why we have chosen this action
Although many event participants referred to aspects of spatial planning policy, these issues are already determined by local authorities under Welsh Government regulation and guidance. Our focus of this Plan, therefore, is on community resilience, i.e. how the PSB organisations can act together to realise the value of the natural environment and, further, to enhance nature connectedness with its considerable benefits to well-being.