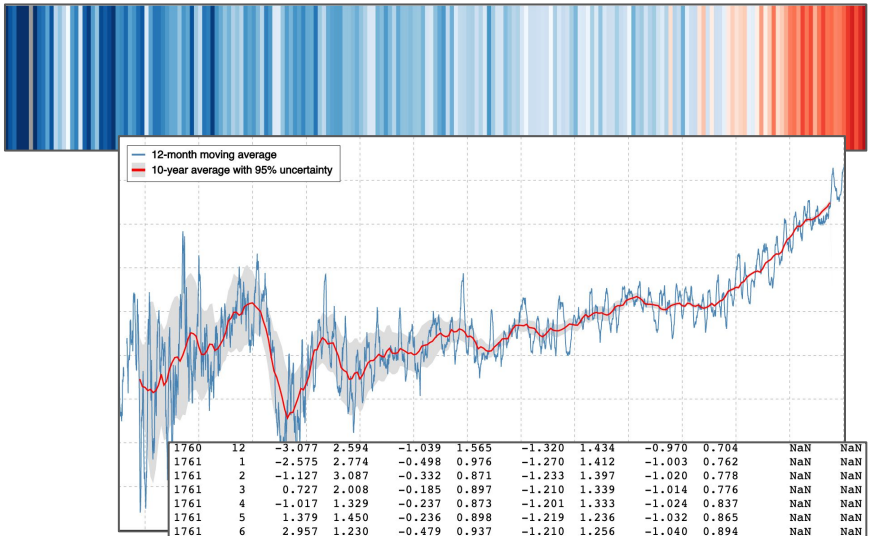
BERKELEY EARTH™

Visualisation of Climate Crisis

Luis Günther, Maurice Seifert,
Wenli Xu



1760	12	-3.077	2.594	-1.039	1.565	-1.320	1.434	-0.970	0.704	NaN	NaN
1761	1	-2.575	2.774	-0.498	0.976	-1.270	1.412	-1.003	0.762	NaN	NaN
1761	2	-1.127	3.087	-0.332	0.871	-1.233	1.397	-1.020	0.778	NaN	NaN
1761	3	0.727	2.008	-0.185	0.897	-1.210	1.339	-1.014	0.776	NaN	NaN
1761	4	-1.017	1.329	-0.237	0.873	-1.201	1.333	-1.024	0.837	NaN	NaN
1761	5	1.379	1.450	-0.236	0.898	-1.219	1.236	-1.032	0.865	NaN	NaN
1761	6	2.957	1.230	-0.479	0.937	-1.210	1.256	-1.040	0.894	NaN	NaN
1761	7	4.039	1.155	-0.049	0.982	-1.268	1.254	-1.047	0.937	NaN	NaN
1761	8	0.738	1.690	0.123	0.970	-1.253	1.226	-1.041	0.961	NaN	NaN
1761	9	-0.294	1.960	-0.072	1.101	-1.254	1.213	-1.033	0.965	NaN	NaN
1761	10	-3.433	2.123	0.010	1.018	-1.240	1.234	-1.029	0.993	NaN	NaN
1761	11	-1.161	5.427	-0.186	0.931	-1.230	1.295	-0.998	1.036	NaN	NaN
1761	12	-5.988	2.189	-0.483	0.940	-1.270	1.307	-0.980	0.972	NaN	NaN
1762	1	2.583	5.542	-0.889	1.213	-1.258	1.305	-0.989	1.003	NaN	NaN
1762	2	0.936	2.983	-0.974	1.181	-1.279	1.310	-1.002	0.984	NaN	NaN
1762	3	-1.614	3.868	-1.118	1.160	-1.288	1.267	-0.989	0.976	NaN	NaN
1762	4	-0.038	1.798	-1.089	0.952	-1.241	1.201	-1.009	0.992	NaN	NaN
1762	5	-0.965	2.482	-0.991	1.176	-1.203	1.144	-1.027	0.990	NaN	NaN
1762	6	-0.608	1.610	-0.652	0.888	-1.096	1.043	-1.041	1.003	NaN	NaN
1762	7	-0.832	2.325	-1.100	1.043	-1.000	0.961	-1.072	1.030	NaN	NaN
1762	8	-0.284	2.143	-1.384	1.317	-0.995	1.044	-1.082	1.054	NaN	NaN
1762	9	-2.022	1.795	-1.559	1.679	-0.926	1.013	-1.093	1.077	-0.904	0.546
1762	10	-3.085	3.576	-1.673	1.737	-0.887	0.959	-1.063	1.050	-0.897	0.549
1762	11	0.016	1.899	-1.711	1.778	-0.879	0.946	-1.028	1.051	-0.888	0.548
1762	12	-1.917	2.373	-1.790	1.607	-0.902	1.015	-1.021	1.040	-0.873	0.550
1763	1	-2.800	4.683	-1.579	1.515	-0.875	0.914	-1.026	1.039	-0.884	0.551
1763	2	-2.475	4.944	-1.624	1.826	-0.864	0.880	-1.033	1.053	-0.887	0.552
1763	3	-3.716	2.673	-1.553	1.521	-0.846	0.818	-1.050	1.071	-0.896	0.554
1763	4	-1.402	2.457	-1.547	1.744	-0.820	0.815	-1.050	1.059	-0.889	0.558
1763	5	-1.417	2.938	-1.719	1.611	-0.802	0.876	-1.050	1.044	-0.882	0.559
1763	6	-1.558	3.535	-1.660	1.606	-0.762	0.856	-1.053	1.025	-0.886	0.561
1763	7	1.696	1.449	-1.598	1.374	-0.772	0.805	-1.046	1.002	-0.885	0.563

Domain Problem Characterisation

Users

general public without professional knowledge but decent experience in reading graphs

Context

Global warming has been observed since the pre-industrial period (between 1850 and 1900). Although there were different periods of climate change in the history of the earth, the current changes are not simply due to natural causes. It is a global problem, but people in different countries express various degrees of concerns.

Data and Task Abstraction

Tasks

1. Visualizing global warming in a understandable and convincing way
2. Impressing people with objective evidence
3. Providing a general overview and more detailed information

Data

- datasets from Berkeley Earth
- temperature data as “anomalies”
- textfiles with data for most countries in a timespan of 1750 to 2020
- only little inconsistent data

Interactive Prototype
or
Screencast

https://berkeleydatavis.herokuapp.com/start
or
https://www.youtube.com/watch?v=KkbPHWmv08s

Visual Encoding and Interaction Design

- **an overview for all countries (chart with climate stripes)**
- **colored bar chart for countries**
- **colors for temperature difference (blue and red*)**
- **search menu for different countries**
- **uncertainty shown only in tooltip**
- **tooltip information for values**
- **reference and explanation for data**

* George A. Morgan et al. (1975): Age Differences in the Associations between Felt Temperatures and Color Choices, The American Journal of Psychology , Vol. 88, No. 1, pp. 125-130
* Ho H-N, Van Doorn GH, Kawabe T, Watanabe J, Spence C (2014) Colour-Temperature Correspondences: When Reactions to Thermal Stimuli Are Influenced by Colour. PLoS ONE 9(3): e91854. doi:10.1371/journal.pone.0091854

Additional Deliverables

Interactive Prototype:

- https://berkeleydatavis.herokuapp.com/start

Screencast

- https://www.youtube.com/watch?v=KkbPHWmv08s

Project Documentation:

- https://github.com/zino212/berkeleydatavis/blob/main/README.md