



ECEHH Research Insight: MEDMI Project

A bite size summary of research <https://www.data-mashup.org.uk>

The Medical & Environmental Data Mash-up Infrastructure (MEDMI) project aimed to connect diverse databases to improve our understanding of the links between climate, environment, and human health.



Who is this relevant to?

Public health-medical professionals, health and environment research bodies, policy makers.

Background

Funded by UK Medical Research Council (MRC) and Natural Research Council (NERC), researchers from the University of Exeter Medical School led the interdisciplinary MEDMI project with the UK Met Office, Public Health England (PHE), and London School of Hygiene and Tropical Medicine (LSHTM).

By bringing together several complex datasets, MEDMI aimed to improve research into the links between climate, weather, the environment, and health.

MEDMI explored different ways to link and interrogate databases and lay the foundations for a shared resource for medical, environmental and public health researchers in the UK. By linking databases on climate, weather and disease, MEDMI attempted to create a resource that will allow researchers to shed light on these complex interactions.

Findings

As proof of concept and MEDMI Platform creation process, MEDMI demonstrated the feasibility of linking diverse datasets and utility of this approach for population health using interdisciplinary, hypothesis-driven Demonstration and collaborative Pilot Projects.

1. *Extreme temperatures, air quality, & mortality*
2. *Climate, weather, & infectious diseases*
3. *Climate, coastal ocean dynamics, harmful algal blooms (HABS), & human health*

Pilot Projects: a) *Weather & Symptom Fluctuations in Meniere's Disease*, b) *Linkage Tools for Pre-Processing of Pollen data*, c) *Osteoporosis & Solar Irradiance* (Biobank); d) *Childhood Obesity & Neighbourhood Environments*, e) *Statistical Downscaling Gridded Air quality data*, f) *Pathogen reasonability: regression trawling*, g) *Tracing Data Journeys Across Climate, Environment & Human Health*. <https://www.data-mashup.org.uk/research-projects/>



Recommendations

A data mashup of accessible and linked integrated health-environmental data applied to the human health and wellbeing impacts of climate change would provide the evidence base and decision support tools through:

- Facilitating novel research;
- Rapidly identifying “hot spots”;
- Providing surveillance information for improving services;
- Initiating and evaluating interventions;
- Disseminating and providing access to data;
- Providing novel perspectives,
- Fostering resilience and adaptive capacities



Selected References/Resources

Canali & Leonelli. *Reframing the environment in data-intensive health sciences*. Stud Hist Phil Sci 2022;93:203 <https://doi.org/10.1016/j.shpsa.2022.04.006>.

Fleming LE et al. *Beyond Climate Change and Health: Integrating Broader Environmental Change and Natural Environments for Public Health Protection and Promotion in the UK* Atmosphere 2018;9:245 <https://doi:10.3390/atmos9070245>

Fleming LE et al. *Big Data in Environment and Human Health*. Oxford Encyclopedia Env Human Health Oxford Uni Press. Jul 2017 <https://10.1093/acrefore/9780199389414.013.541>

Hajat S et al. *The effect of ambient temperature on type-2-diabetes: case-crossover analysis of 4+ million GP consultations across England*. Env Health. 2017;16:73. <https://10.1186/s12940-017-0284-7>

MEDMI has developed some web application tools that are able to link and analyse environmental and human health data. <https://www.data-mashup.org.uk/tools/>

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