



Advancing climate science together

Environment (including weather and climate), and health (including mental wellbeing): challenges and opportunities

Dr Dan Bloomfield
Met Office / University of Exeter, UK



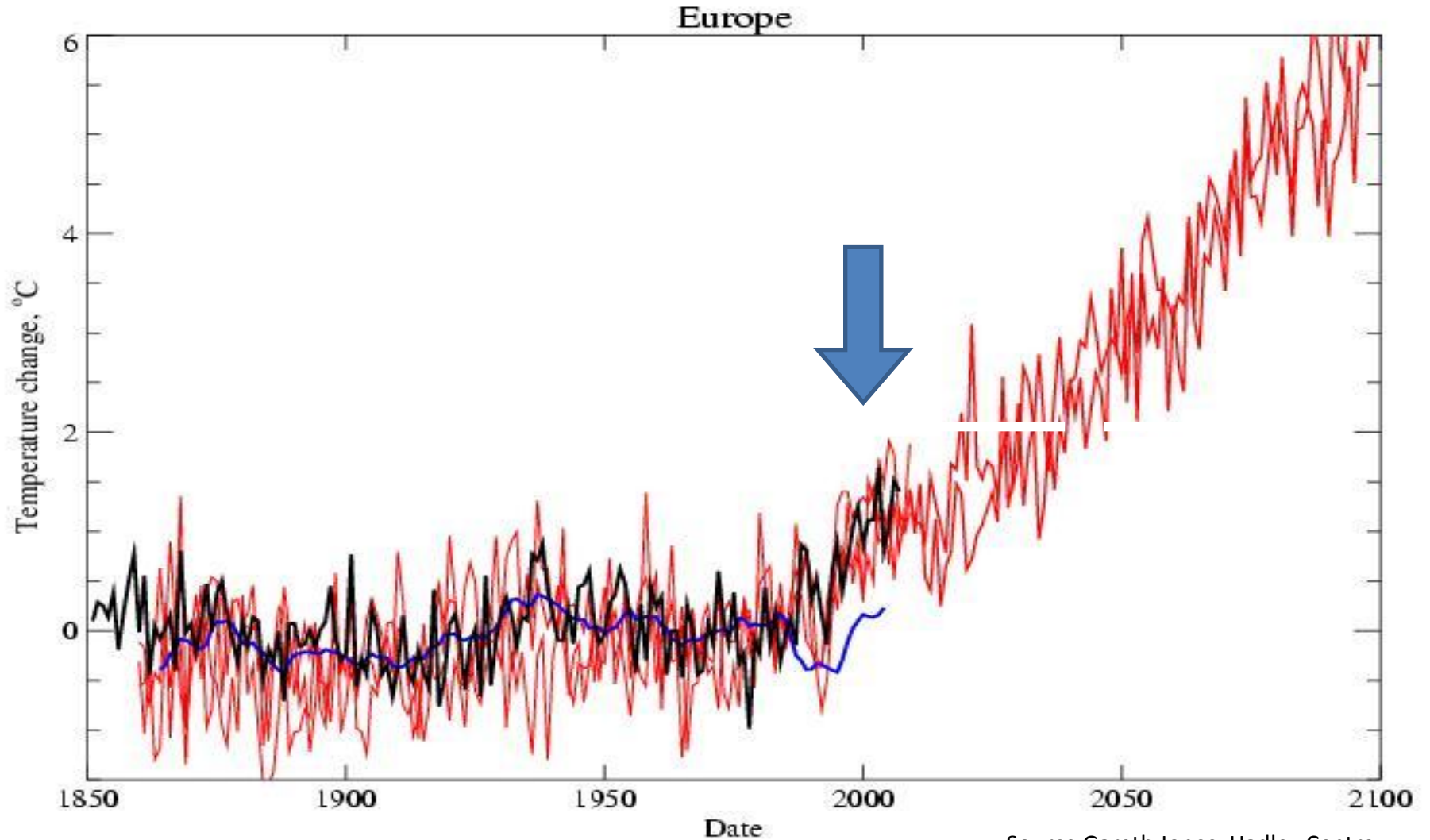


Seamless prediction

Forecasting is essential to help you prepare for the best and worst of our climate



European 2003 and 2006 summers could be 'normal' by 2040 and 'cool' by 2060





European Centre for
Environment & Human Health

The European Centre for Environment and Human Health

Exeter Medical School
Truro Health & Wellbeing Campus
Cornwall, UK



European Regional
Development Fund
Investing in your Future



European Union
European Social Fund
Investing in jobs and skills



convergence
for economic
transformation



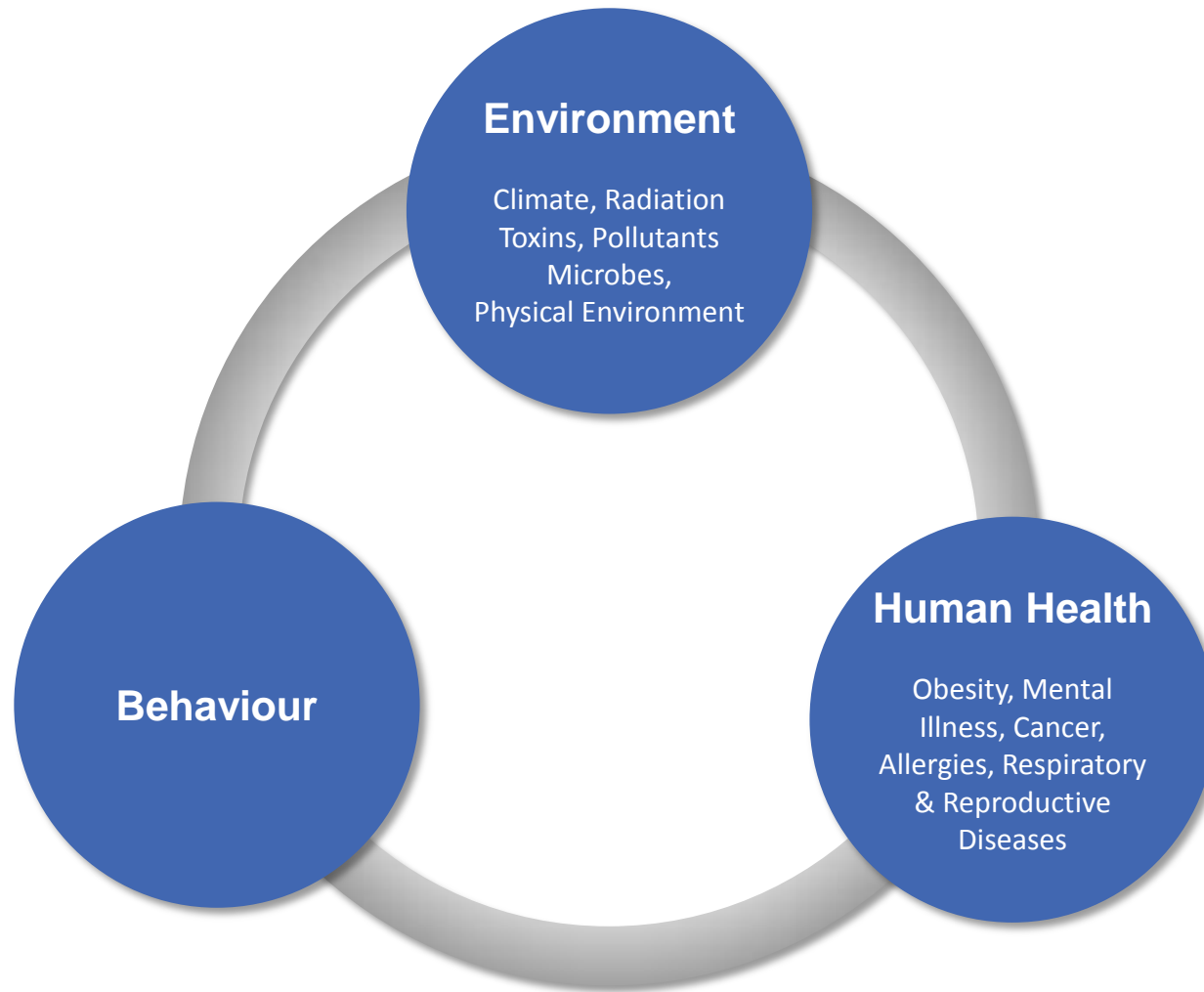


The European Centre's **Mission** is:

“To explore the interconnections between the Environment and Human Health using a unique cross-cutting interdisciplinary approach.”

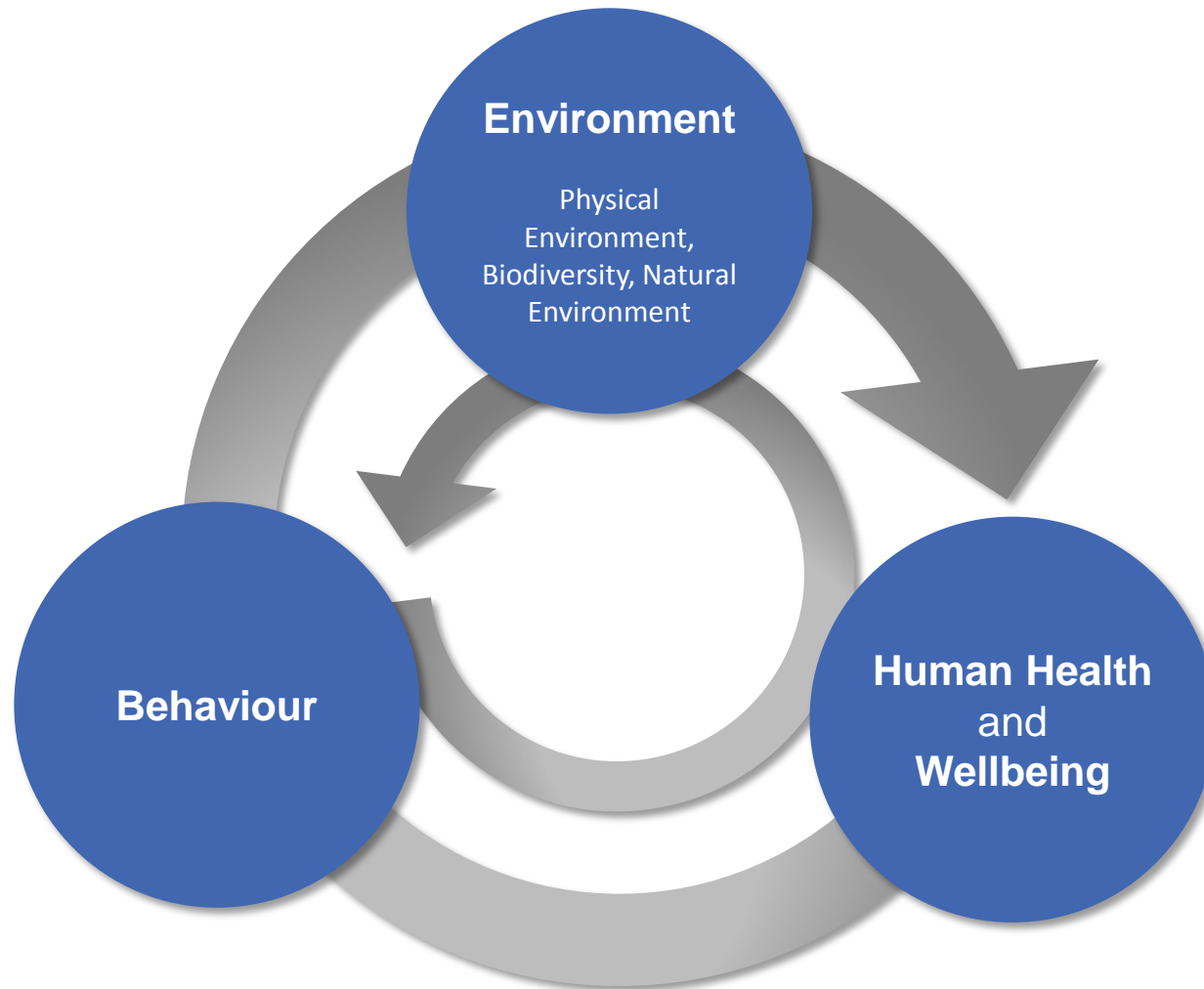


Interconnections: Environment ↔ Human Health





Interconnections: Environment ↔ Human Health





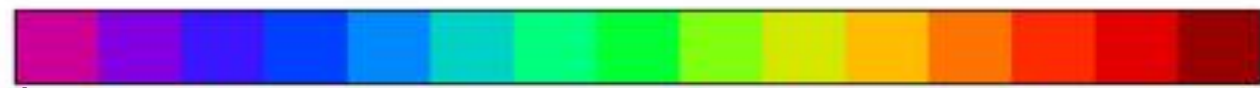
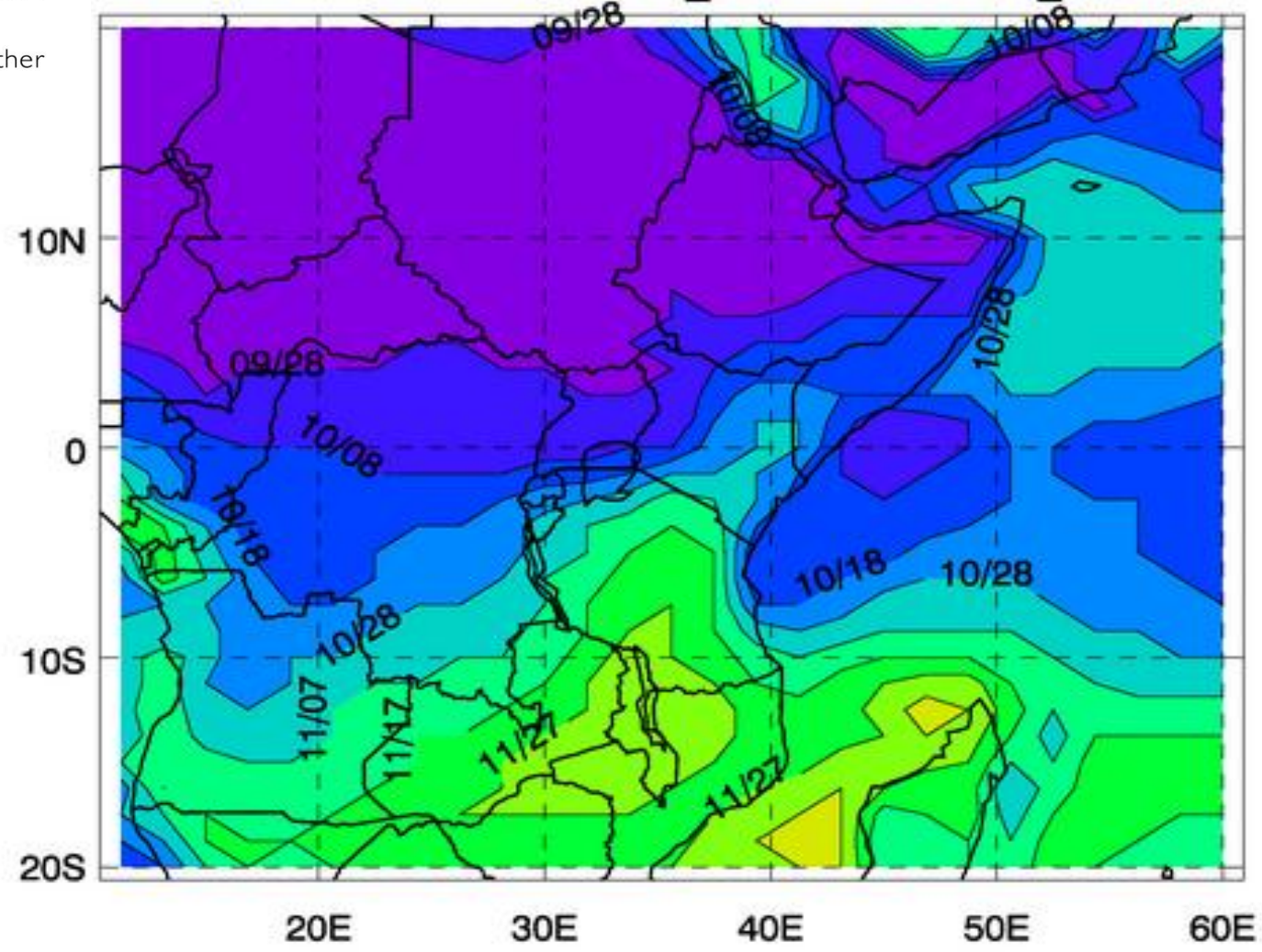
Met Office



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Meteorological Data

110801 clim. mean 20th_isochrone 0918_0130



09/18 09/28 10/08 10/18 10/28 11/07 11/17 11/27 12/07 12/17 12/27 01/06 01/16 01/26



Health Data

81 101921 N DEE4E5107B0B76123C8447A7888677C4 EX1 2 07082003 21

Age

Born Oct. 1921

African

Patient identifier

Postcode district of residence

Female

Admitted 7 Aug. 2003

Emergency: via Accident and Emergency services

30082003 19 1 23 J450 Z501 Z508 RH8 L83143

Discharged 30 Aug. 2003

Destination: usual place of residence

Discharged on clinical advice or with clinical consent

Duration of spell

Predominantly allergic asthma

Other physical therapy

Care involving use of other rehabilitation procedures

Royal Devon and Exeter NHS Foundation Trust

Source: maps.google.com

Practice





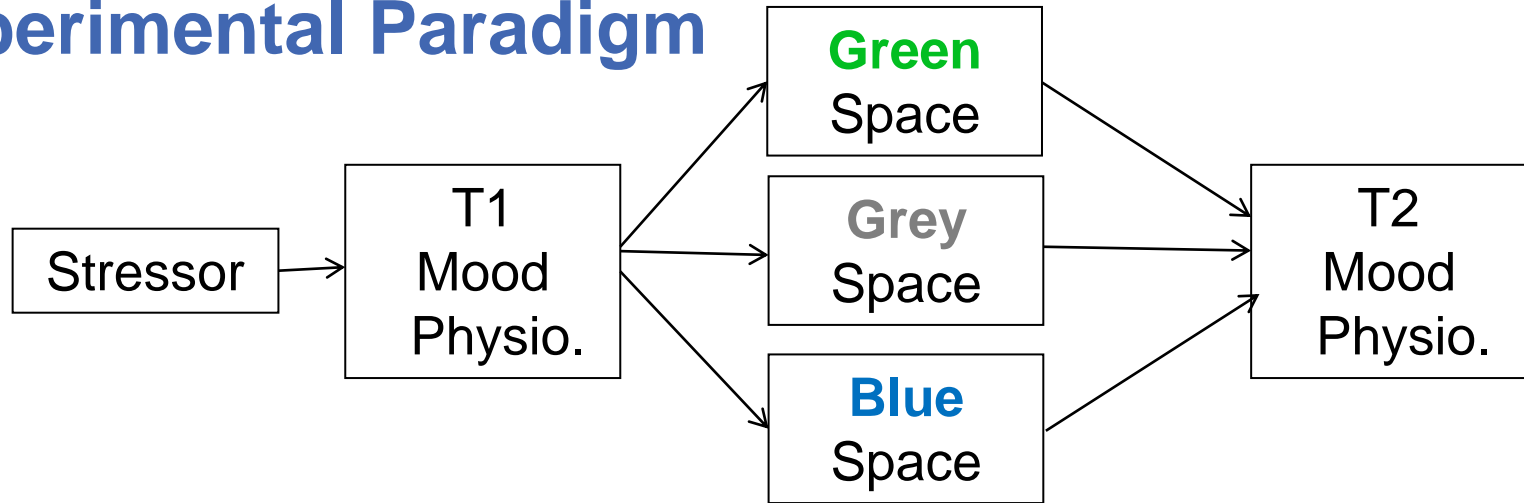
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Some relevant ongoing research topics:

- Blue Gym
- Healthy Marine Environment
- Wellbeing across the life-course
- Workplace dimension
- The benefits of participation
- Systematic Review



Basic Experimental Paradigm

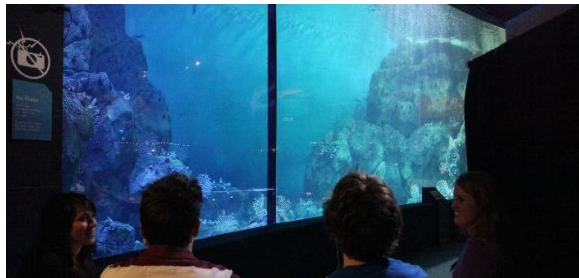


Lab work:

(Films, Sounds, + During Exercise)



Applied Settings & Different Populations



Dental surgeries (+ VR)



Mat White PhD et al

Blue Gym = Campaign + Research



Rockpool rambles



Sailing



**Health and Wellbeing
from the Environment**



Rigorous scientific studies

(Secondary Data, Intervention & Mechanistic studies)



Mike Depledge PhD et al



Swimming



Diving





English census data shows that people living near the coast report higher levels of self-reported good health (especially among more deprived communities).



Self-reported health Census Data (England, n = 48 million)

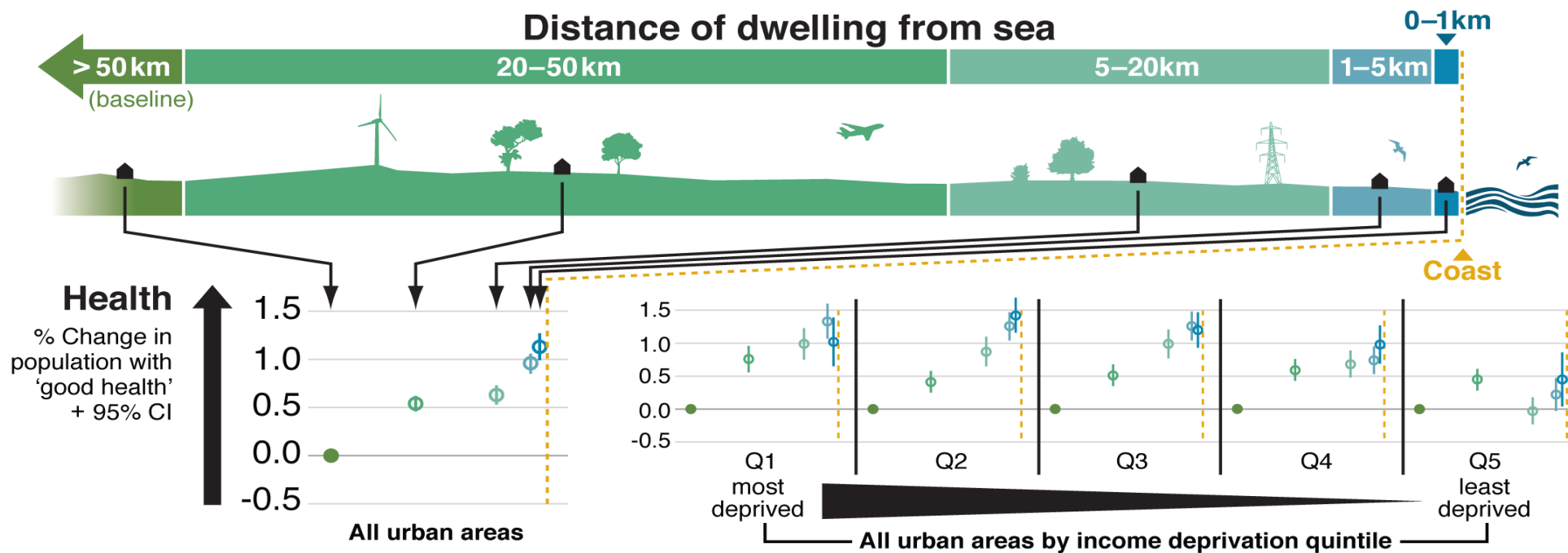


Fig 1. The coast and good health in urban areas. Age standardised % of population stating 'good health' relative to those in areas furthest from the coast (>50km) - adjusted regression coefficients with 95% confidence intervals; total and by income deprivation quintile.

The Value of a Healthy Marine Environment

- Doctoral Research between with the European Centre for Environment and Human Health, the University of Exeter Medical School and Plymouth Marine Laboratory.
- Examining the barriers and motivators that influence public usage of the marine environment for recreation, particularly from a health and well-being perspective and whether those motivating factors have the potential to be used to encourage more people to use the sea and coast for the health and well-being benefits.

- Andrea will then try to estimate what the economic value to the public is of a marine environment that supports health and well-being through facilitating and motivating recreational use.
- Andrea's study will involve a survey of residents and visitors to Cornwall in the UK.



- Andrea Harvey
- Email: anha@pml.ac.uk
- Tel: +44 (0)1752 633100 / +44 (0)7770 954529



Health & Wellbeing in the Natural Environment Across the Life Course

Transitions into Retirement

Young Adults & Outdoor Physical Activity (ESRC/National Trust)

‘Stories of the Sea’:

Exploring *Embedment* in Deprived Coastal Communities



European Centre for
Environment & Human Health

Cornwall Healthy & Sustainable Workplace Research Programme



- **↓ Absenteeism**
- **↑ Productivity**
- **↑ Mental Health & Wellbeing**
- **↓ MD Visits, Rx, Referrals**

**↑ Protection &
Appreciation of the
Natural Environment**

Jane Abraham et al

a systematic review of quantitative and qualitative evidence

¹European Centre for Environment and Human Health, University of Exeter Medical School, Truro, TR1 3HD. ²PenTAG, University Of Exeter Medical School, Exeter, EX2 4SG.

*Corresponding author: Ruth.Garside@pms.ac.uk 01872 258148

Review aims

The review will investigate the impacts of being involved in environmental enhancement activities on health and well-being related outcomes for different groups of people.

The project will use theory-driven systematic review methods to understand the proposed mechanisms by which environmental enhancement is thought to affect health and well-being, and to assess the empirical evidence to support them. We will include evidence about activities across a range of settings and population groups in order to examine both whether these activities *can* have positive impacts, but also to understand *how* and *why* these occur, and in *what* contexts these effects can be optimised.

We will review and synthesise quantitative and qualitative research evidence and develop, where data allow, a logic model which describes the nature and potential interactions of impacts.

Review questions

- What are the health and well-being impacts (both positive and negative) of taking part in environmental enhancement/conservation activities for different groups of people?
- How do these activities achieve these impacts?
- Are there any particular impacts on different groups of people?
- What are the contextual factors contributing to these differing impacts?

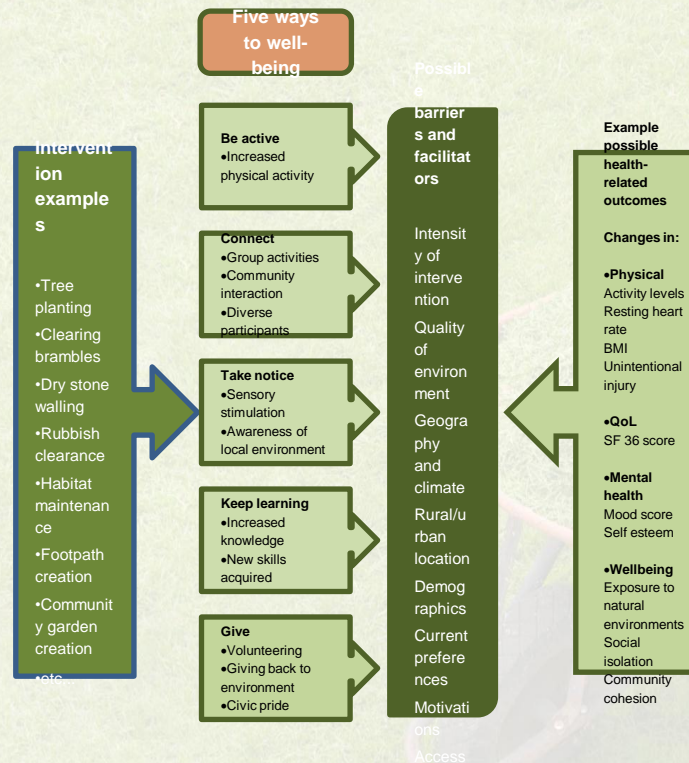


Figure: Potential mechanisms for the health and well-being impacts of participating in environmental enhancement activities

Work to date

- We convened the project reference group & held the first workshop to:
 - Initiate the development of the theoretical framework to identify the mechanisms through which the activities are believed to have health effects (see Figure);
 - Refine our definition of “environmental enhancement activities”;
 - Develop search terms and inclusion criteria.
- Contacted more than 200 organisations in the UK to identify grey literature. 245 documents obtained which, after screening, yielded 12 quantitative and eight qualitative studies for inclusion in the review.
- These twenty studies have been data extracted and quality appraised.
- Developed the search strategy for use in the electronic databases.
- We have registered the title with the Cochrane Public Health Group and are currently negotiating a formal protocol. Various hypotheses have been proposed to explain the potential health and well-being impacts of involvement in these activities. These include formal, academic theories as well as lay, “everyday theories” understood by participants and organisers.

Academic theories include BIOPHILIA which suggest an evolutionary connection between humans and the natural world which causes individuals to seek out contact with nature and for them to experience negative health impacts when unable to do so (Wilson 1984). ATTENTION RESTORATION THEORY was developed by psychologists and posits that contact with nature can reduce levels of mental fatigue and stress (Kaplan & Kaplan 1989; Ulrich et al 1991).

The project reference group suggested a number of possible mechanisms of action which we found reflected the Foresight project’s 5 WAYS TO WELL BEING (Aked & Thompson 2008). We have used this in the draft model above, as an initial conceptual structure to frame the proposed mechanisms. This initial model is simple and linear, and we hope to elucidate possible interaction between elements through the remainder of the review.



Salutogenesis

- The process of 'health creation'

Most research simply discusses generic 'greenspace' –what about benefits of specific environments?

- Environment type – woods, parks, beaches, upland...
- Blue or Green? What kind of green/blue ?
- Biodiversity?
- Urban vs rural environments?
- Protected/designated areas?

ECEHH Systematic review - in progress

"What is known from existing literature about whether more biodiverse 'natural' environments can have greater salutogenic effects than less biodiverse 'natural' environments?"



Summary

- Data is key
- Climate change and weather is part and parcel of the environmental context and the drivers of behavioural change
- There are European dimensions to explore further
- Mental health and wellbeing is not an isolated phenomenon
- Reserach requires multi-disciplinary groupings