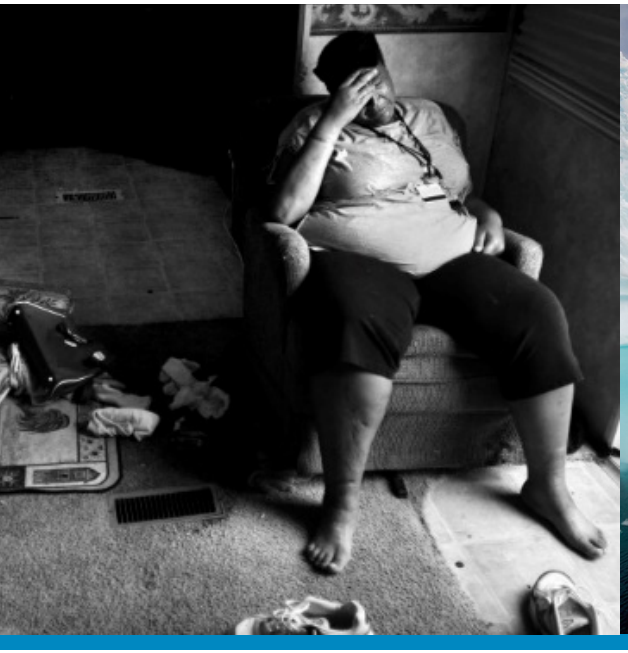

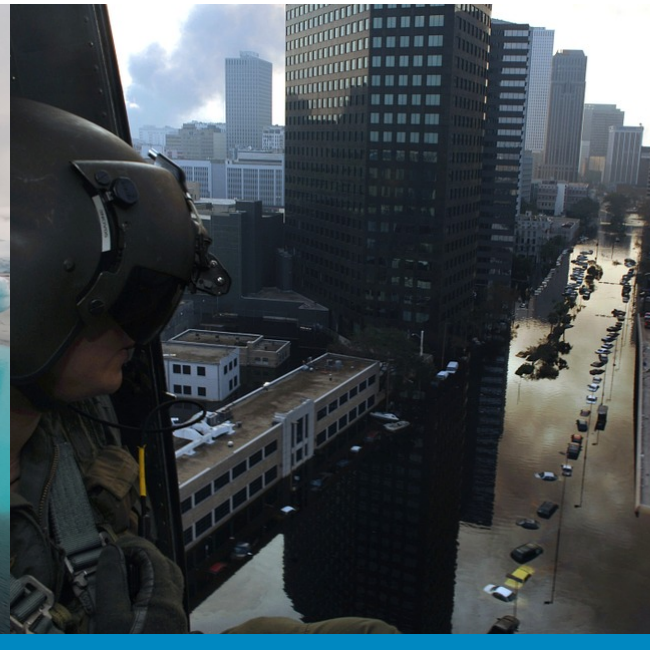

Developing a framework to encompass Coastal Flooding and Mental Health under present and future Climate Change

Caroline Anitha Devadason and Luke Jackson

Climate Econometrics

Nuffield College
UNIVERSITY OF OXFORD

The ROCKEFELLER FOUNDATION

OXFORDMARTIN SCHOOL

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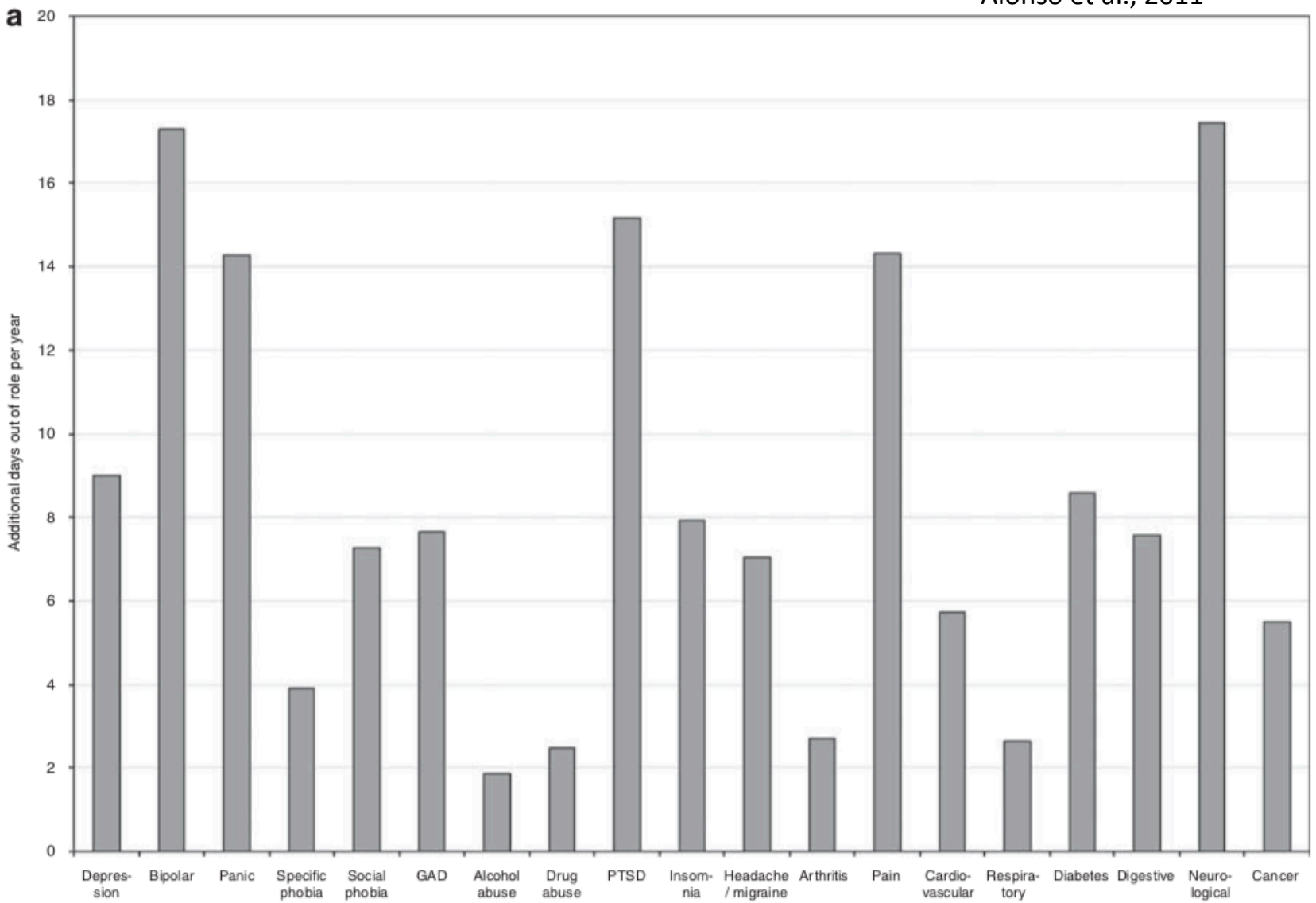
Impact of Mental Health

Results from WHO Mental Health Surveys showing days out of role per year

Alonso et al., 2011



Impact of Mental Health

World Health Organization Mental Health Surveys with mental health conditions impacting days out of role

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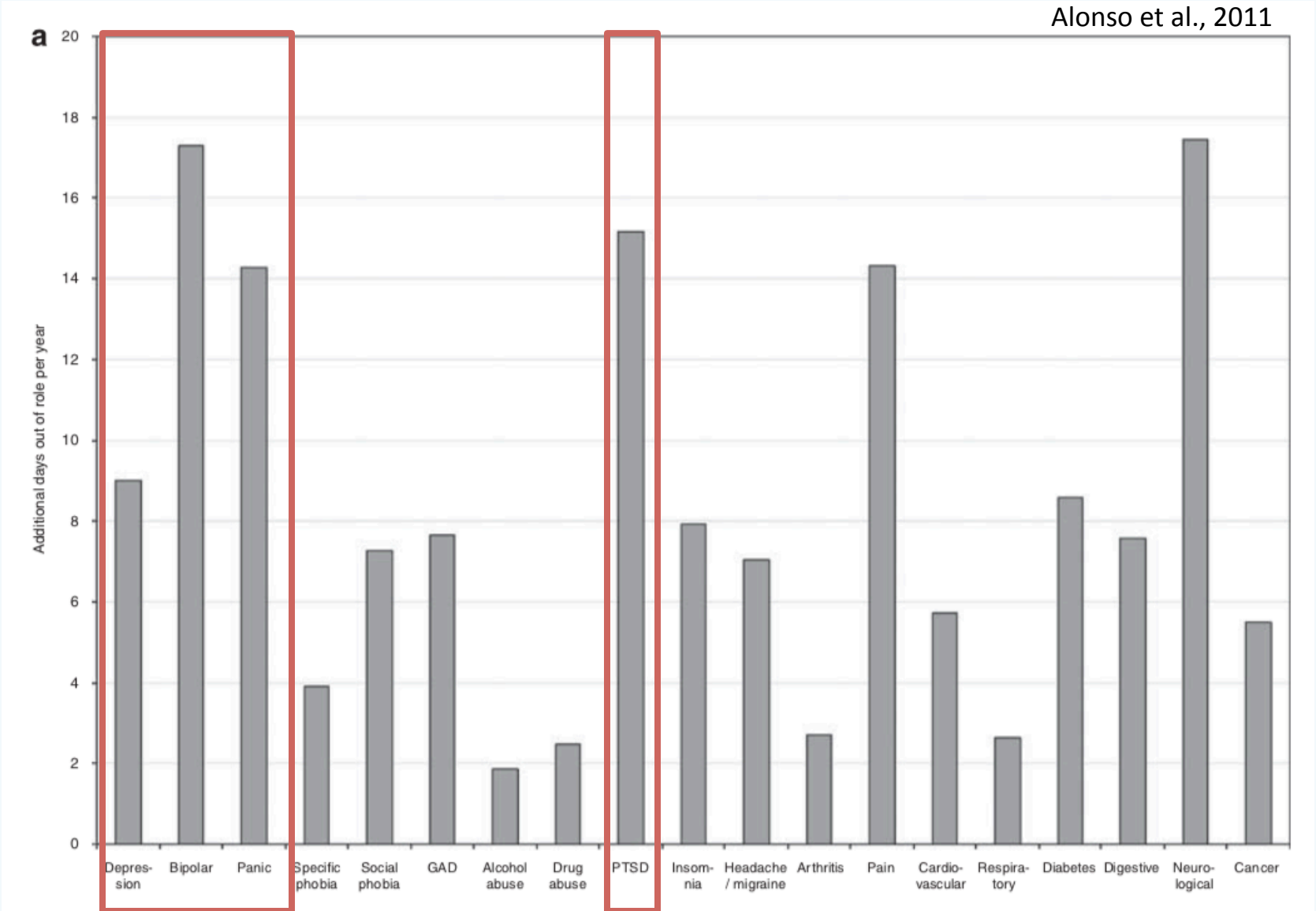

Climate Change and Mental Health

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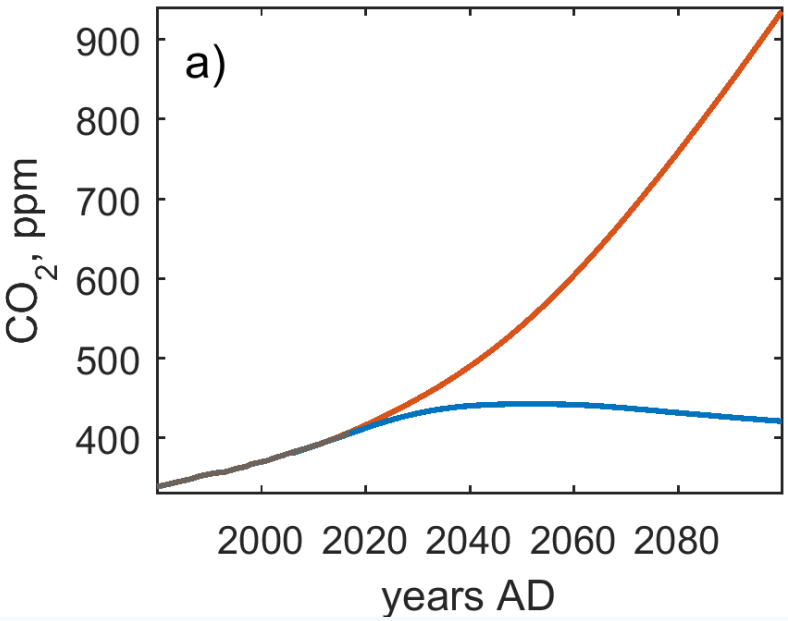
Climate change impacts communities in Barrow, Alaska.

~ 90% of Alaska Native communities reside along the coast.

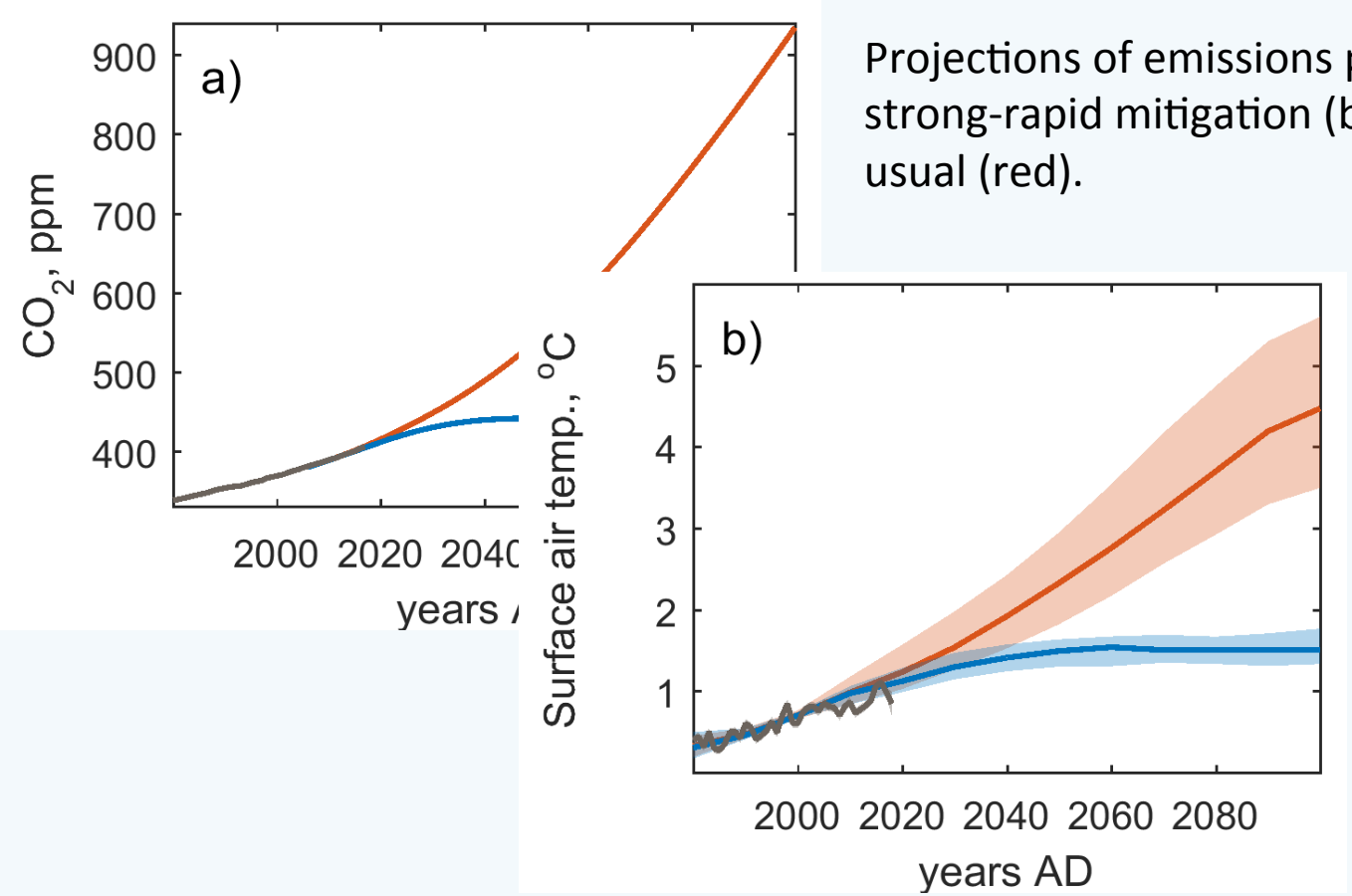
Source: © Vlad Sokhin, Panos Pictures

Climate Change: where are we going?



Projections of emissions pathways span from strong-rapid mitigation (blue) to business-as-usual (red).

Climate Change: where are we going?



Projections of emissions pathways span from strong-rapid mitigation (blue) to business-as-usual (red).

Climate models indicate that under these scenarios, global average surface temperature would rise to 1.5°C for strong mitigation and 4.5°C for business-as-usual by 2100

Climate Change: where are we going?

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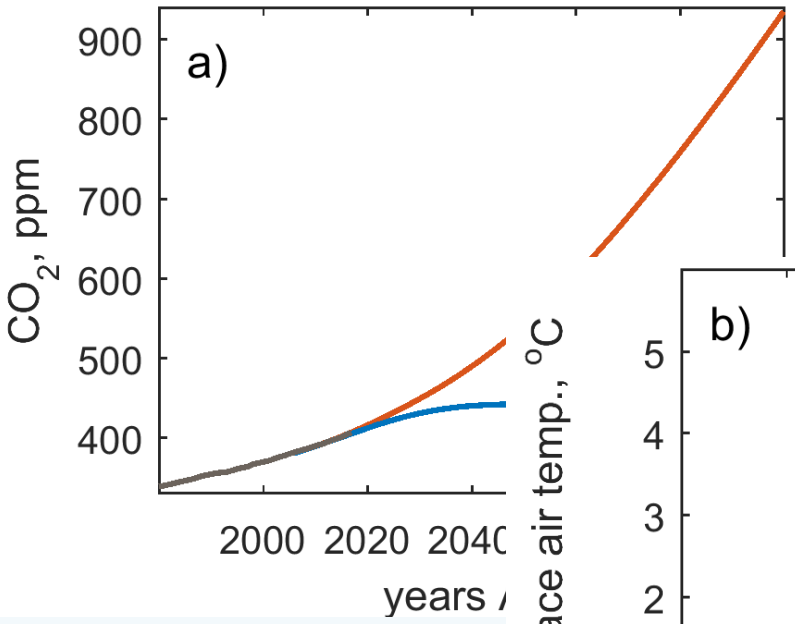

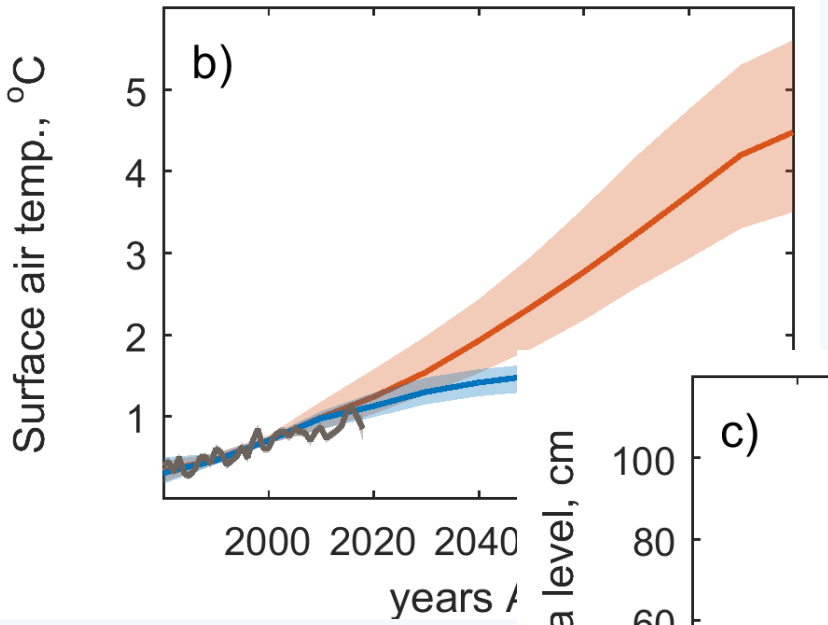

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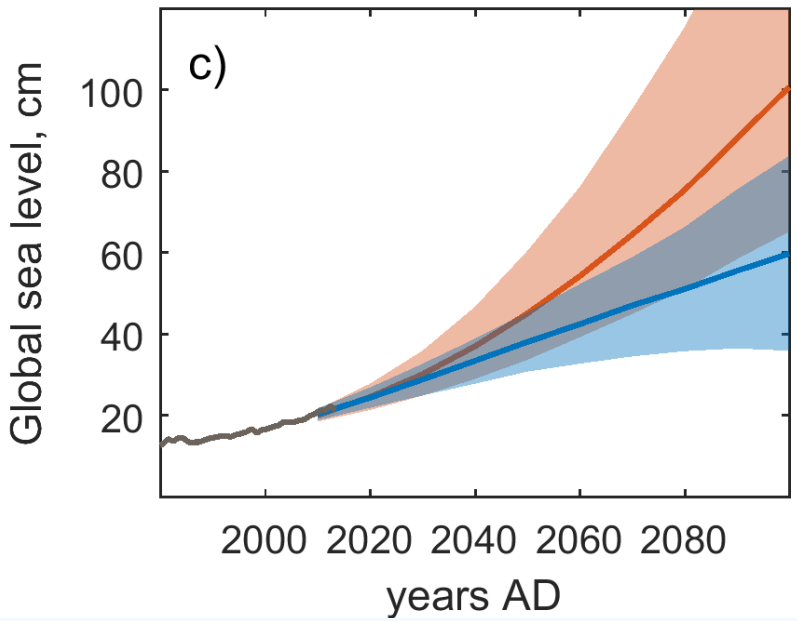
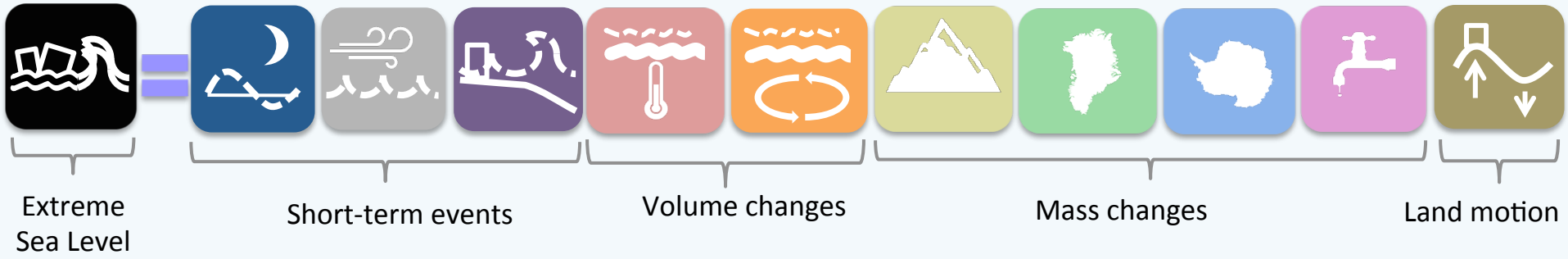


Climate models indicate that under these scenarios, global average surface temperature would rise to 1.5°C for strong mitigation and 4.5°C for business-as-usual by 2100, with sea level rise at 44 cm to 100 cm respectively

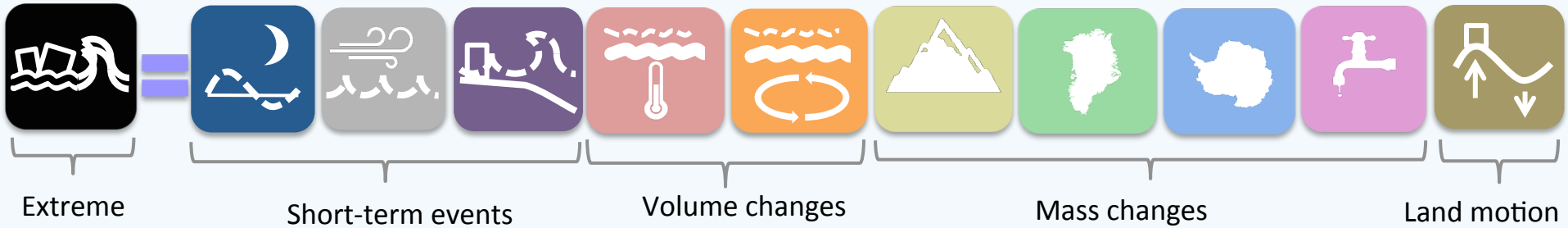
Extreme Sea Level

Short-term coastal flood events are added to long term sea-level change resulting in Extreme Sea Level.

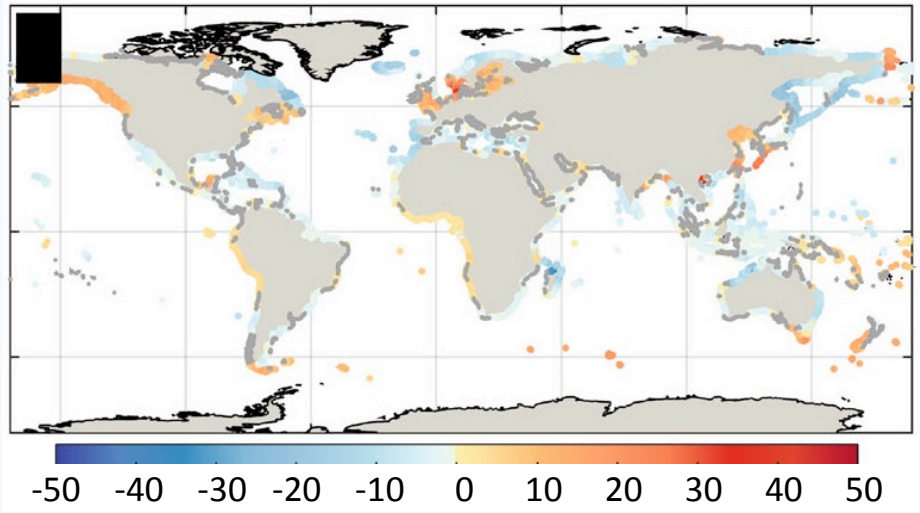


Extreme Sea Level

Coastal extreme sea-level is always local due to each contributor having a unique spatial pattern.



Change in storm surge and waves in 2100 (Business-as-usual scenario), centimetres



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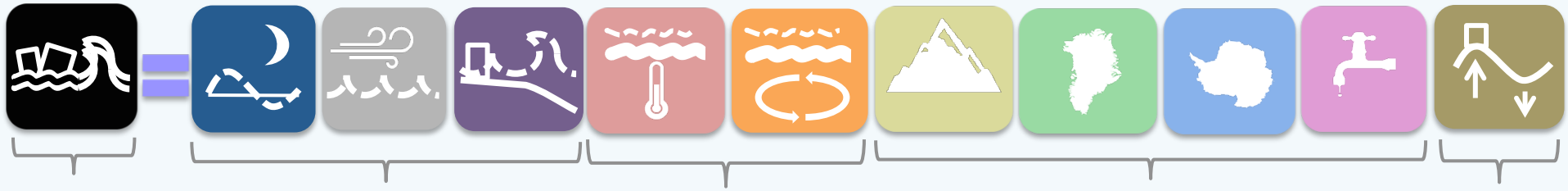


Extreme Sea Level

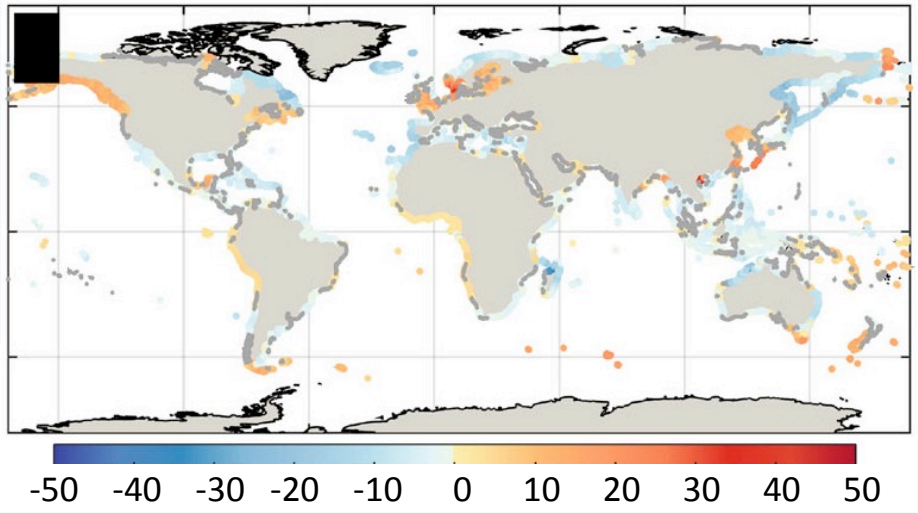
Short-term events

Volume changes

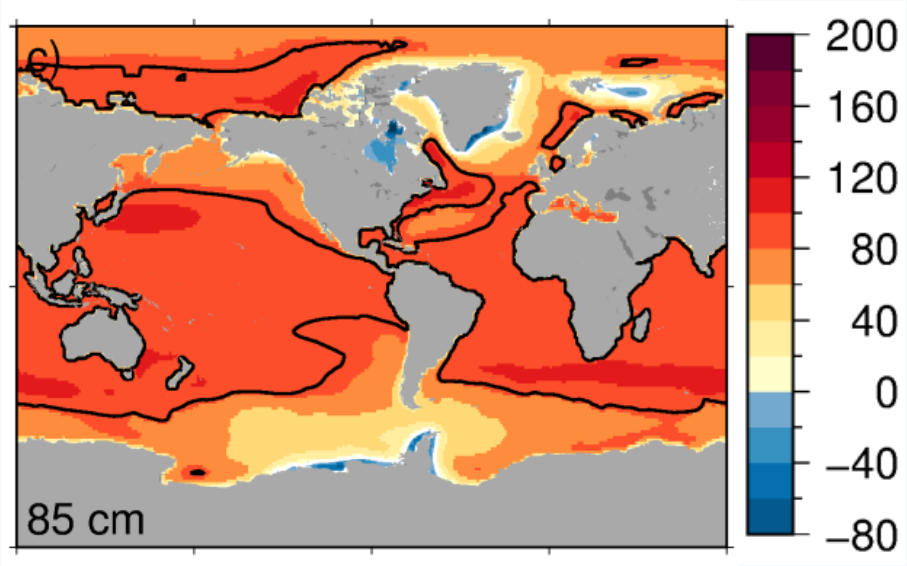
Mass changes

Land motion

Change in storm surge and waves in 2100 (Business-as-usual scenario), centimetres



Long term sea-level change plus long term land motion in 2100 (Business-as-usual scenario), centimetres



Extreme Sea Level and Damage

By 2100, the global average 1-in-100 year coastal flood event is likely to be 58-172 cm higher than today (under a business-as-usual scenario).

Northern European and American cities are likely to see an increase of exposure from the present-day 1-in-100 year event by a factor of 5 to around 1-in-20 years by 2050 (Vousdoukas et al. 2018)

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Nuisance Flooding

Nuisance floods are short-lived and cause annoyance and frustration to the general public.

Example of results of nuisance floods:

- temporary road closures
- burst water mains
- power outages

Scientific evidence indicates that nuisance flooding will become more frequent and increasingly disruptive.

Source: © Vlad Sokhin, Panos Pictures

Climate Change and Health

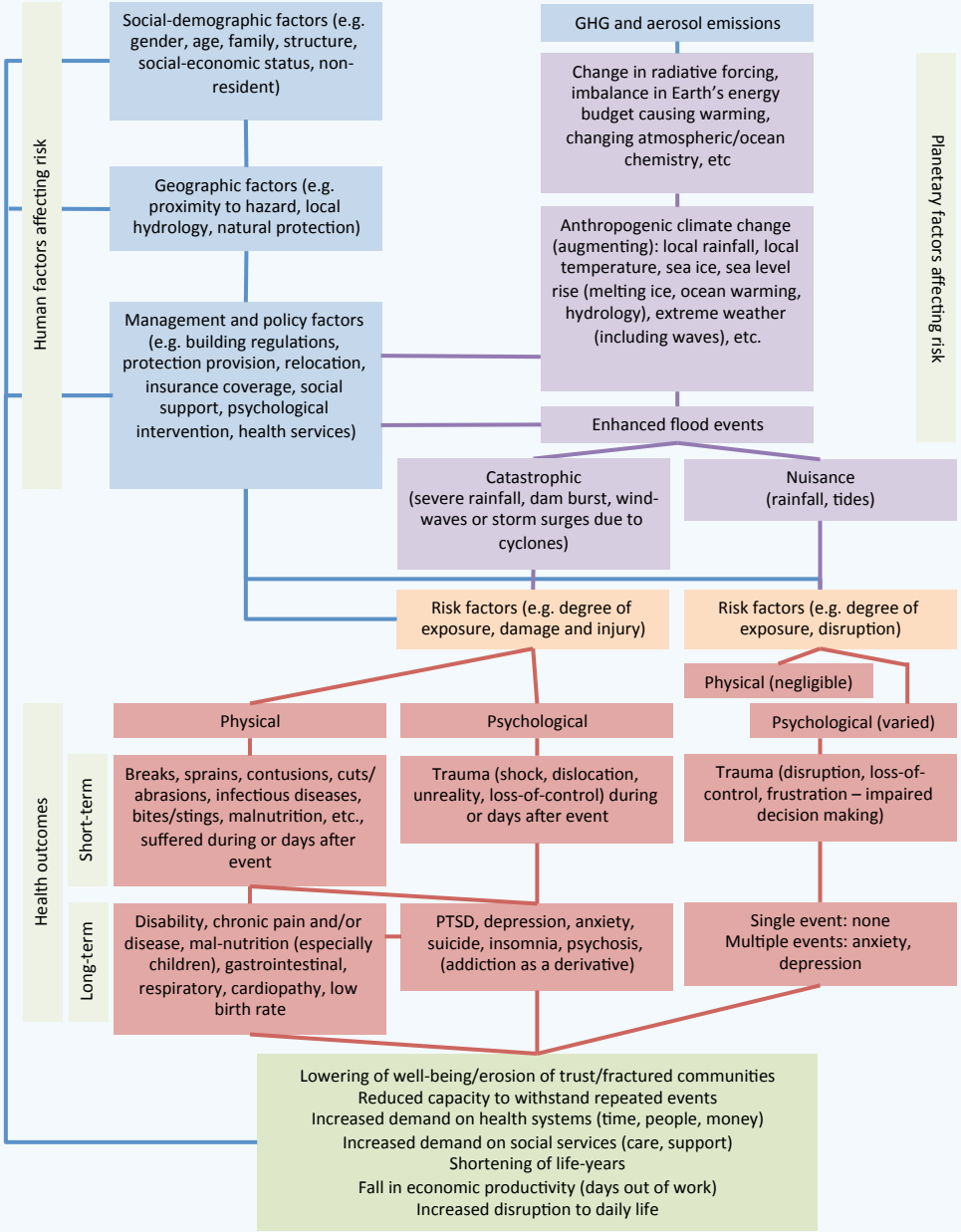
Current models of coastal flood impacts do not account for the impact to society, people or health, including mental health.

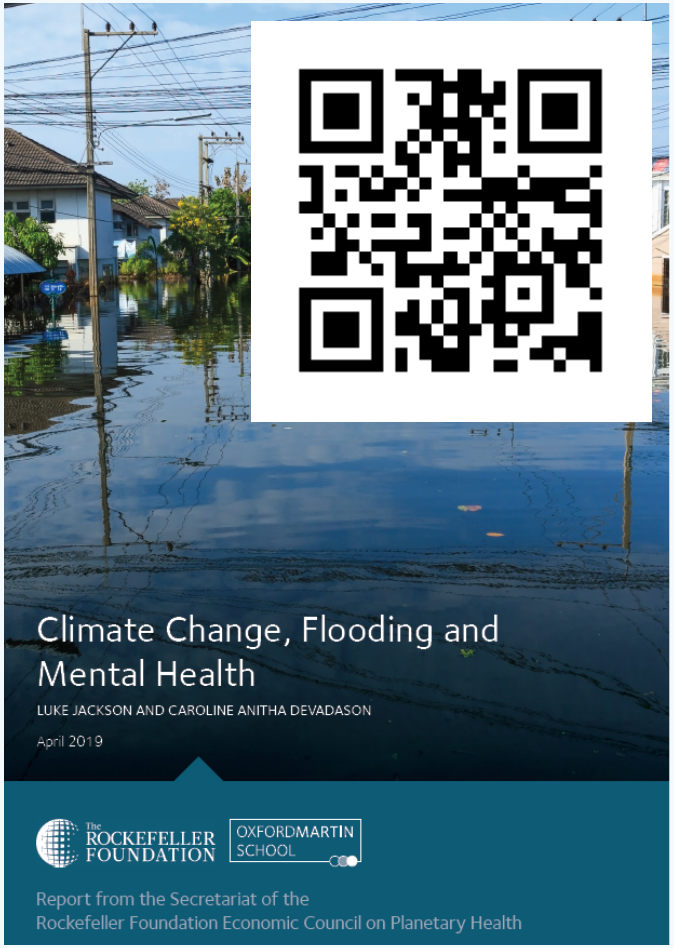
Confounding factors in assessing mental health impacts:

- geographical factors
- degree of exposure
- socio-economic factors
- social support
- prior disorders
- level of preparedness

Source: © Vlad Sokhin, Panos Pictures

Our Proposed Conceptual Framework





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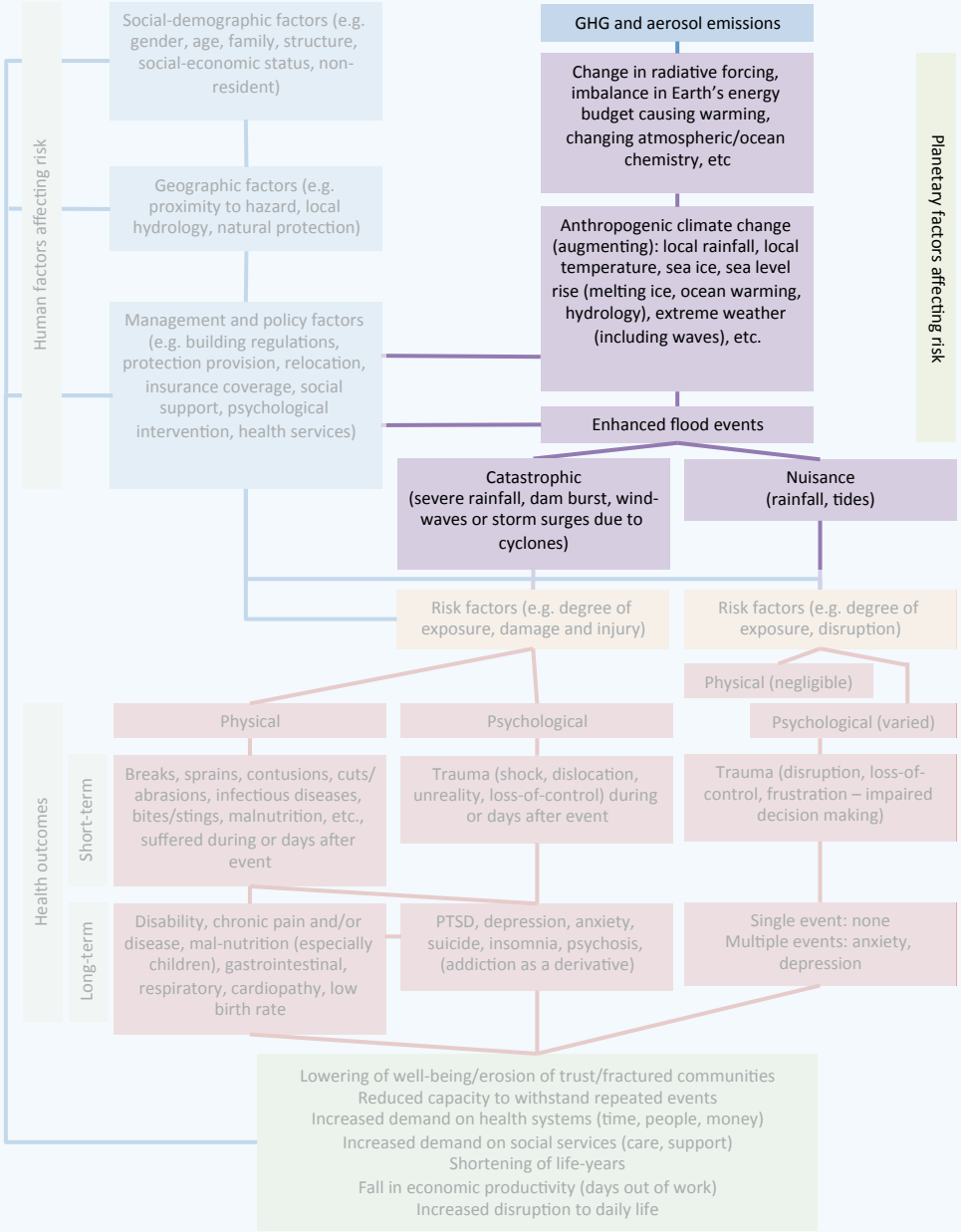

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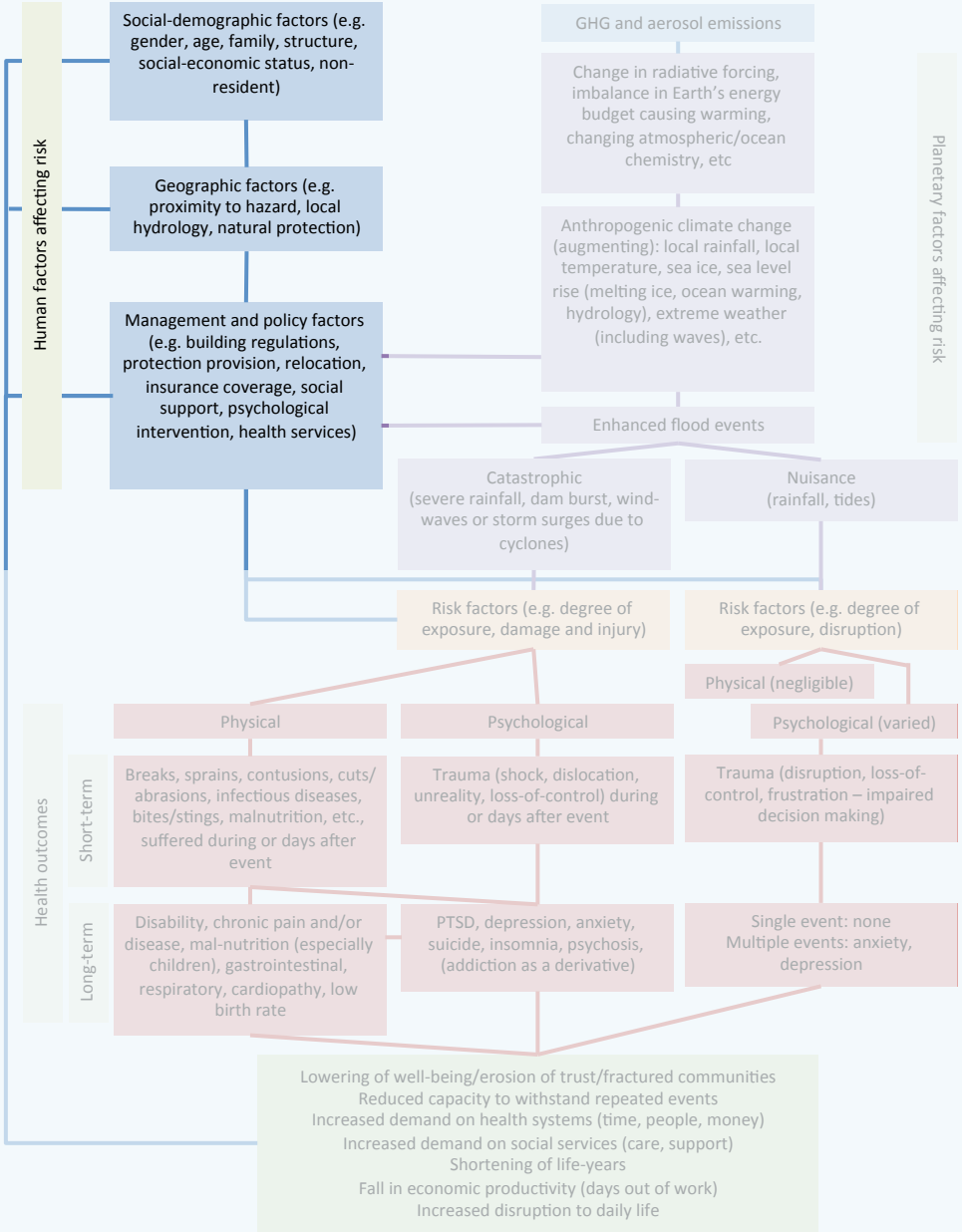

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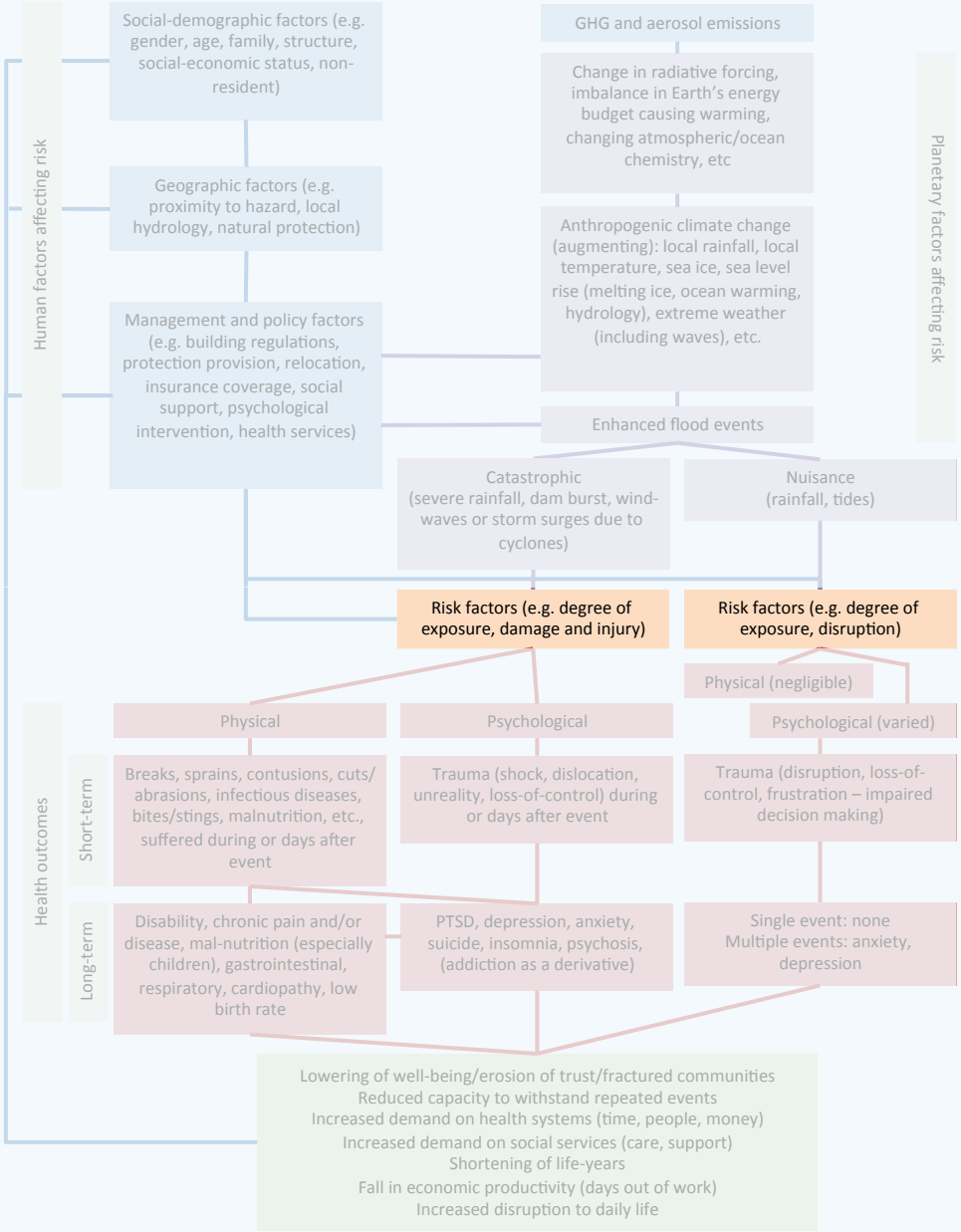

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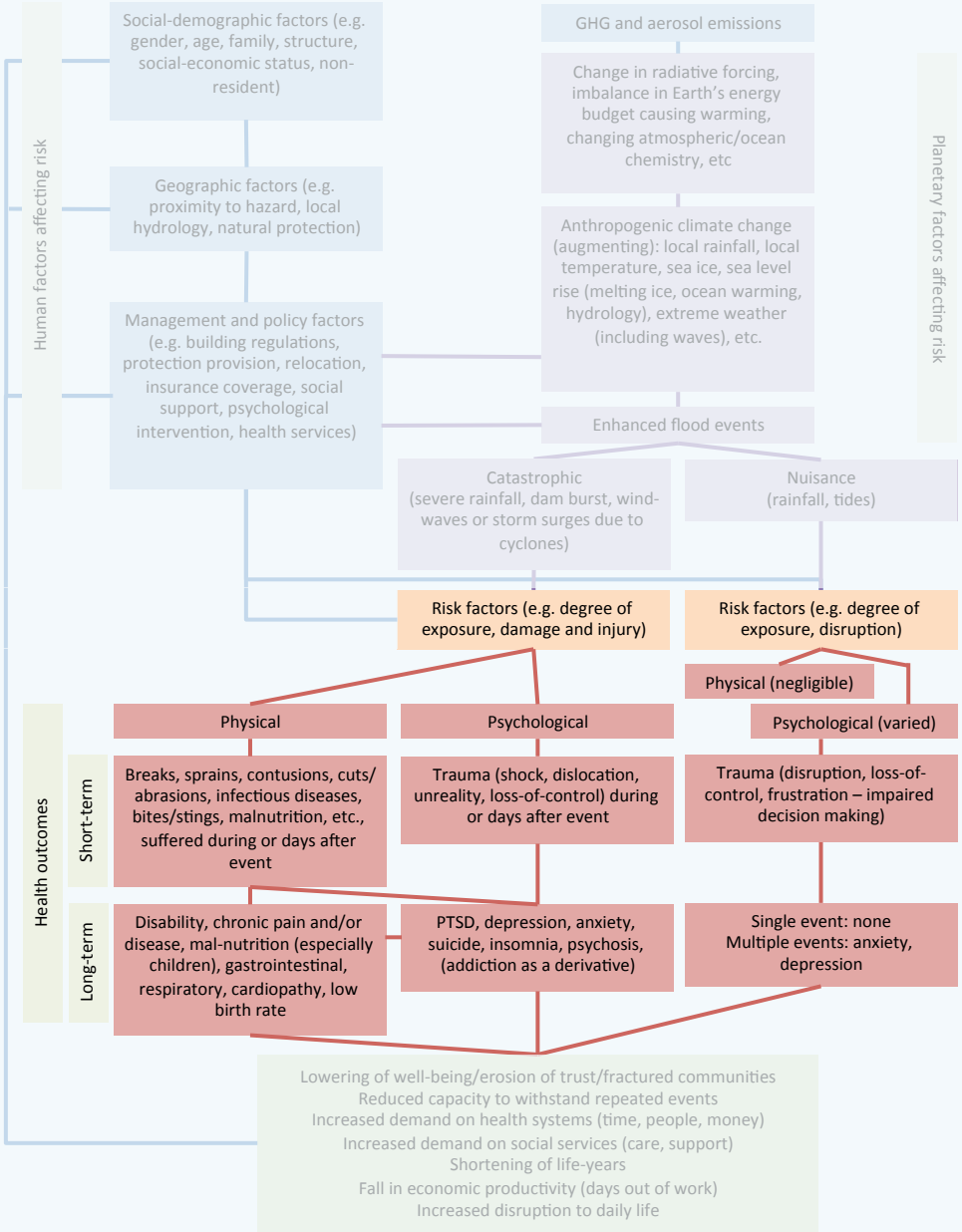

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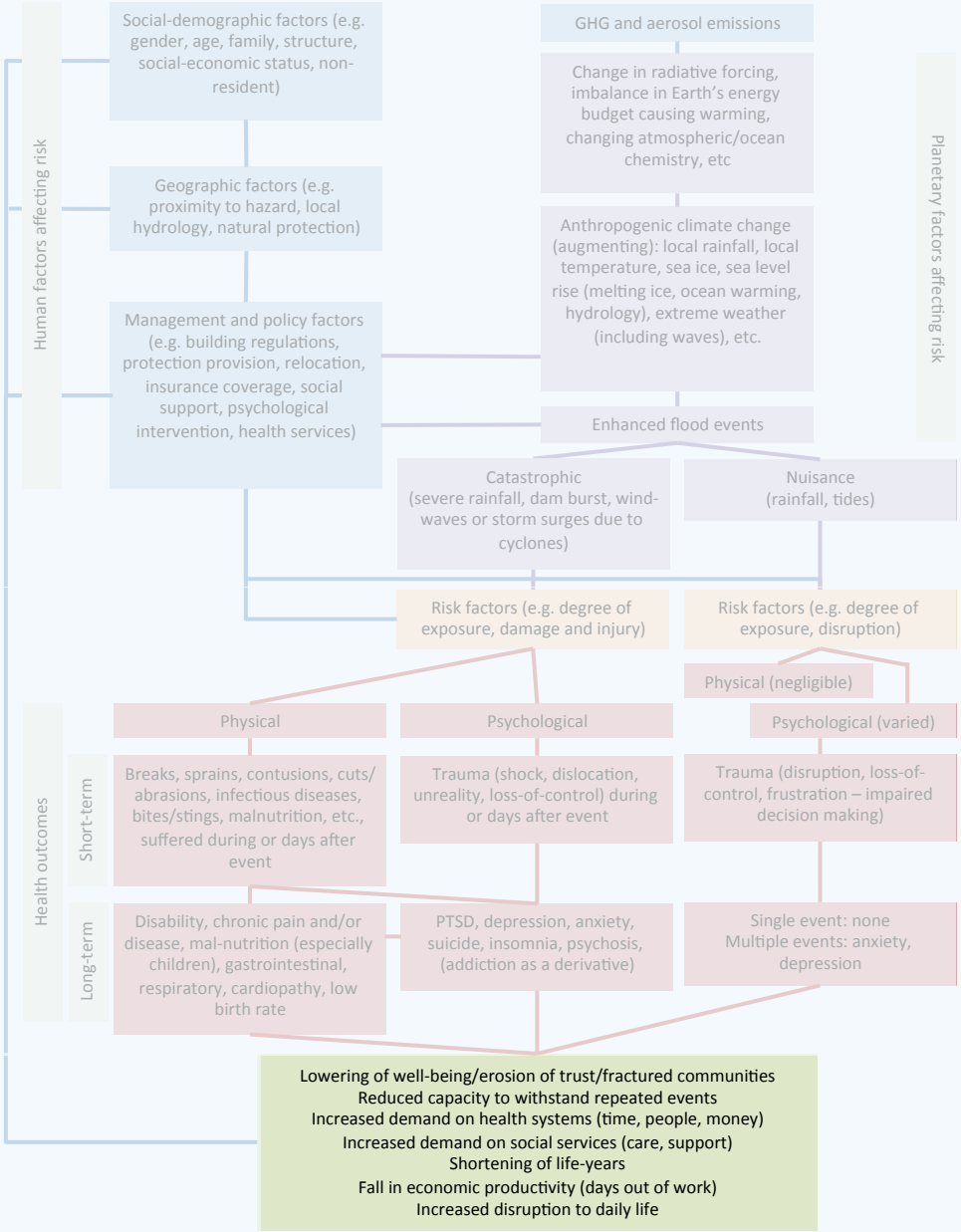

Impact of Flooding on Mental Health

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Focus group discussions after flood events in the United Kingdom indicate that the greater the damage, and tangible losses like personal items and inconvenience caused, the greater the stress upon victims (Tapsell et al., 2002).

Psychological distress may account for physical illness experienced following floods (Reacher et al., 2004) and impact on QOL (quality of life) of survivors.

The psychological disorders most commonly found in people affected by flood events are:

- PTSD
- Depression
- Anxiety

Source: © Vlad Sokhin, Panos Pictures

Conclusion and Next Steps

Mental health impacts from flooding can be long-lived and affect every aspect of an individual's life.

The public health approach of prevention and response is mimicked in climate policy with mitigation and adaptation. This implies that there needs to be a holistic approach to prevent flooding while responding to the needs of mental health impacts.

Further research is warranted in the development and empirical analysis of the proposed framework.

Source: © Vlad Sokhin, Panos Pictures

Thank you


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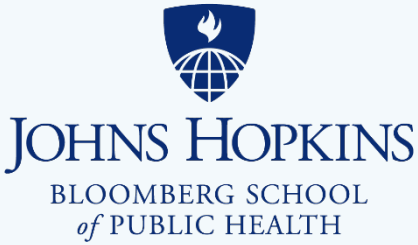
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