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Cross-sectoral Framework for Socio-Economic Resilience to Climate Change and Extreme Events in Europe (CROSSEU)

Project Overview

Coodinator: Sorin Cheval, National Meteorological Administration, Bucharest Romania
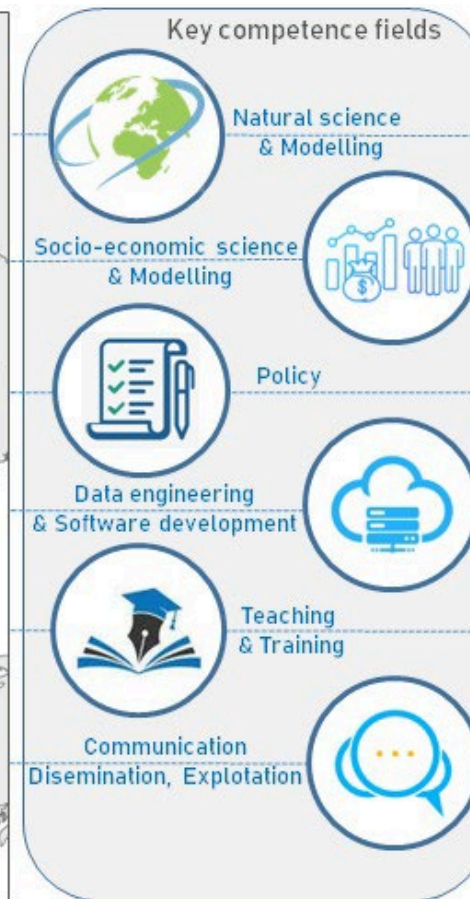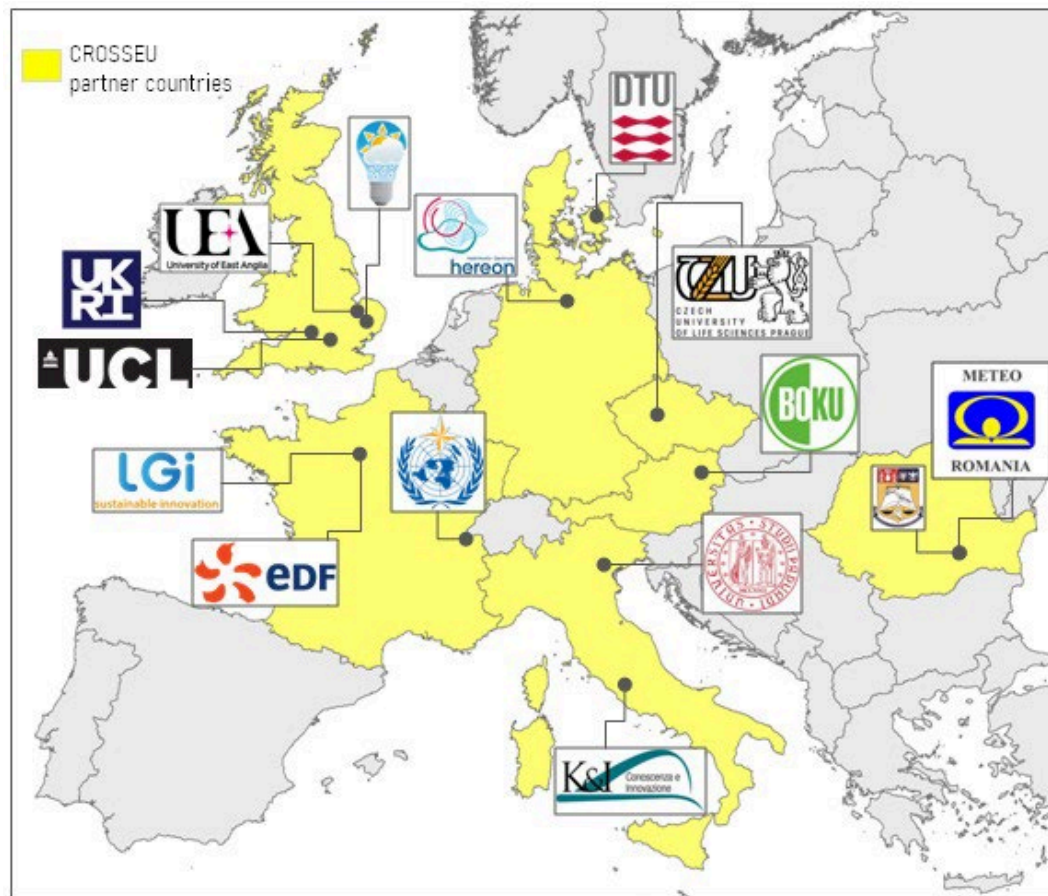
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Consortium

Socio-economic risks of climate change in Europe

HORIZON-CL5-2022-D1-01-02-two-stage

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CROSSEU Primary Goal

To provide a research-based framework for **improving climate resilience and policy response to socio-economic risks of climate change and extreme events in Europe**

Ambition

To provide a **science-based ready-to-use DSS** built on enhanced understanding **of the Biogeophysical (BGP) risks from Climate Change (CC)** and their **Socioeconomic (SE) impacts in Europe,** fully co-produced and implemented **with practice stakeholders** to ensure its **uptake** and support effective coping with cross-sectoral climate risks.

Concept

CROSSEU conducts a comprehensive analysis that **integrates interdisciplinary information:**

i) climate (e.g., *in situ* data, model outputs, reanalysis, satellite images)

ii) SE and BGP data collected during the project implementation (e.g., field surveys, national datasets or local archives

iii) model outputs of climate-sensitive SE pathways

iv) **demand-driven interactions with stakeholder groups at different decision levels** (i.e., local, national, and EU), **public and private sectors** (e.g., research & academia, policy makers, industry, business investors and civil society), and

v) evidence-based knowledge on BGP risks and SE impacts and cross-sectoral implications under different climate and SE scenarios co-produced with experts and practice users.
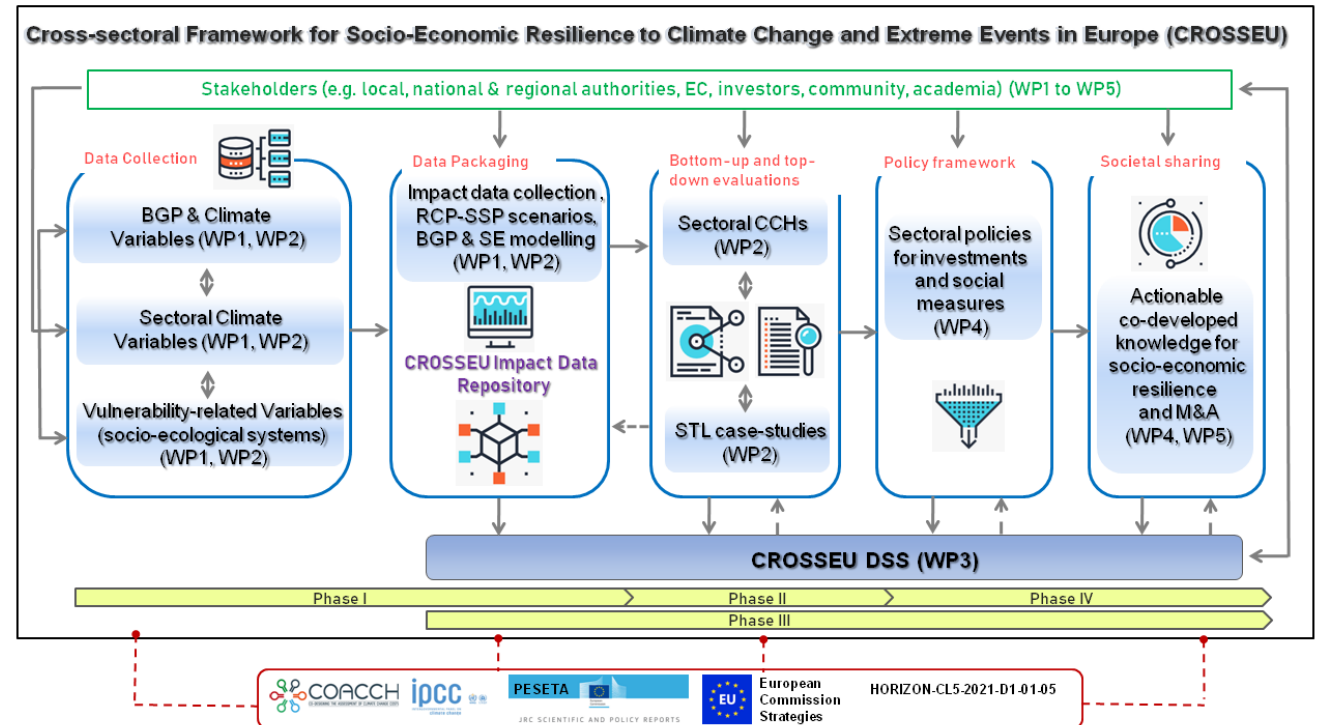
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METHODOLOGY

The **conceptual framework** is implemented in four phases:

I. Scenarios and modelling

II. Case studies

III. Functional DSS implementation

IV. Policy framework for climate resilience and user adoption

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CROSSEU Decision Support System

Objective: **To deliver a common online DSS platform, using an innovative and user-friendly User Interface (UI), and building on the existing visualisation tool, TEAL**.

The DSS will allow to select, launch model computations, and display project research outputs in an accessible format, to provide stakeholders with socio-economic indicators and evaluations of the future CC impacts and enhanced resilience to socio-economic risks across the EU and UK. The DSS will also compile and make available, as downloadable pdf files, policy briefs.

The DSS will be co-produced with stakeholders, by

(i) collecting user requirements and co-design the specifics of the DSS within the available TEAL tool (T3.1)

(ii) developing the visual interface that effectively delivers project outputs to public and private sector decision-makers (T3.2)

(iii) integrating the DSS within the DAFNI infrastructure to allow for seamless data and model processing (T3.3)

(iv) testing, co-evaluating and refining the DSS with stakeholders to ensure the SE risks and opportunities, including the M&A measures for different sectors, regions, timescales, are properly conveyed by and usable via the DSS (T3.4).
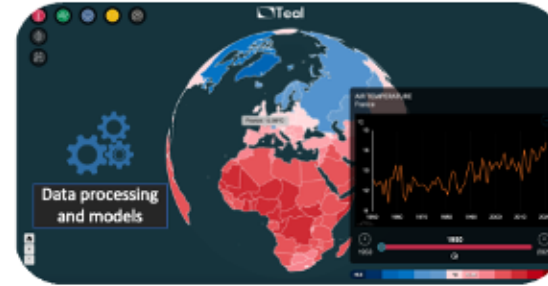
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2. Developing the user interface - Teal

Integrates:

- Graphical user interface
- Database
- Visualisation – maps
- Data analysis – charts
- Downloads
- Data
- Charts
- Chatbot
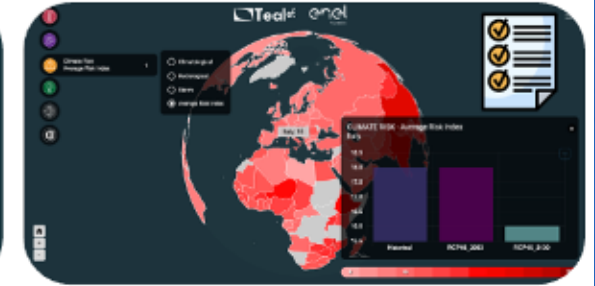- **User selected parameters**
- **PDF generation**

https://tealtool.earth/

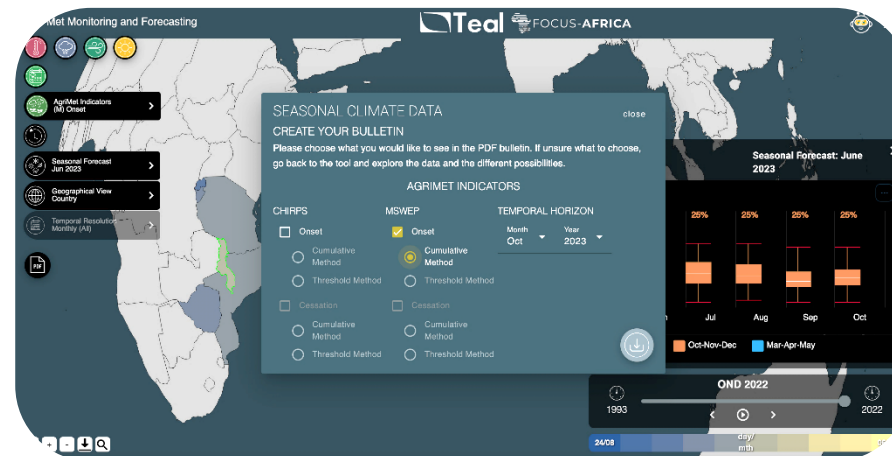1. Enter relevant info: e.g. storyline/sector, location, climate hazard/event, …

2. Combine biophysical data with integrate assessment models, to produce socio-economic indicators

3. Visualise socio-economic indicators, including data and briefs (pdf files) with mitigation and adaption options

Wireframe of the CROSSEU DSS based on the Teal tool.

Teal dialogue box

STLs

STL case studies (**CS**).

IS: Main impacted sectors (**Migration, Social justice, Finance and Insurance** are relevant for all the case studies);

C: main CC Sensitive Systems; lead partners in **bold;**

PP: Project Partners

| CS	IS	C	PP
#1 HEAT	Health	Urban, Rural	CZU, Hereon, ANM, WMO, DTU, K&I
#2 DROUGHT	Agriculture, Food security, Water Energy, Forestry, Biodiversity, Tourism	Rural	ANM, BOKU, UEA, WMO, Hereon, UNIPD
#3, #4 STORM	Agriculture, Transport, Health, Tourism, Biodiversity, Water, Energy	Urban, Coast, Mountain	DTU, UNIPD, K&I, BOKU, Hereon
#5 SNOW	Tourism, Forestry, Transport	Mountain, Rural	ANM, UB, K&I, BOKU, Hereon
#6 INDIRECT	Agriculture, Water, Biodiversity, Health, Energy	Urban, Rural, Mountain	UB, ANM, K&I, BOKU, CZU, DTU, Hereon
#7 INDIRECT	Energy	Urban, Rural	WEMC, DTU, EDF, K&I, Hereon
#8 SPILLOVER	Agriculture	Urban, Rural	UCL, ANM, K&I, Hereon, UNIPD, UB

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STORYLINE HEAT_CZ

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STORYLINE HEAT_CZ – Goals:

- Impact of climate change on heat-related mortality and morbidity in CZ on the regional level (NUTS3)

- The role of socioeconomic differences – age, gender, SES

- The role of demographic and SES changes in the future projections
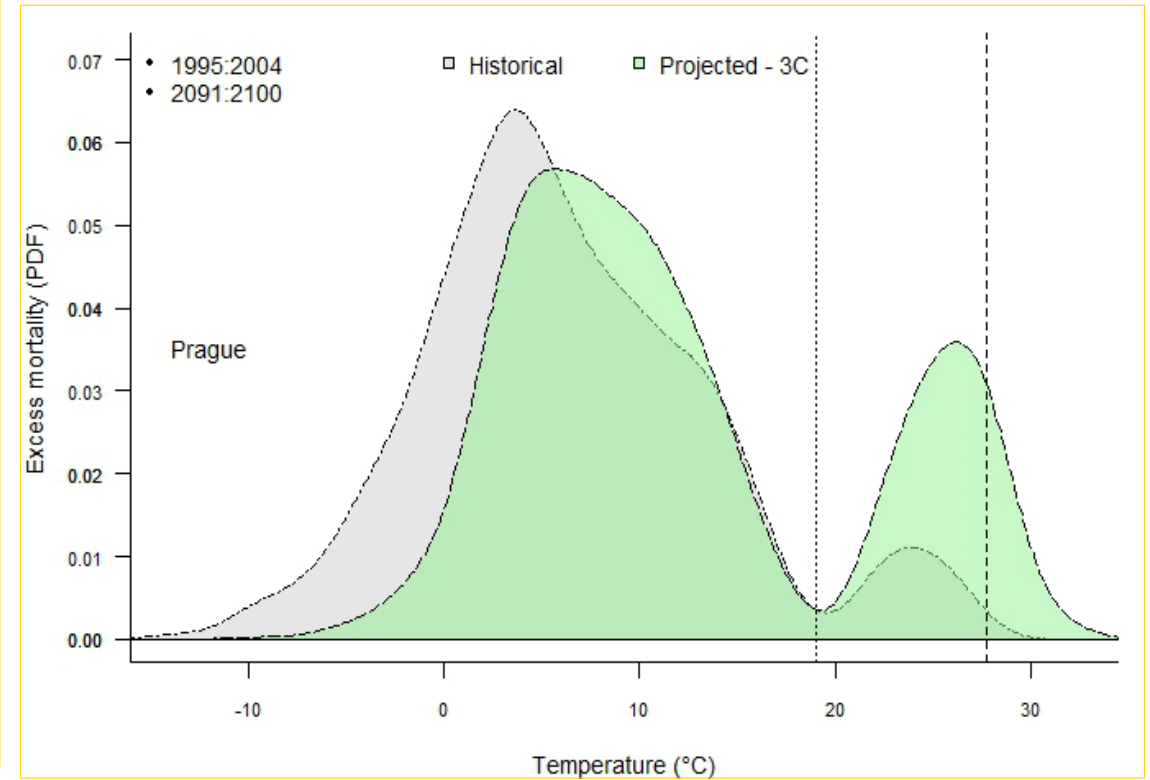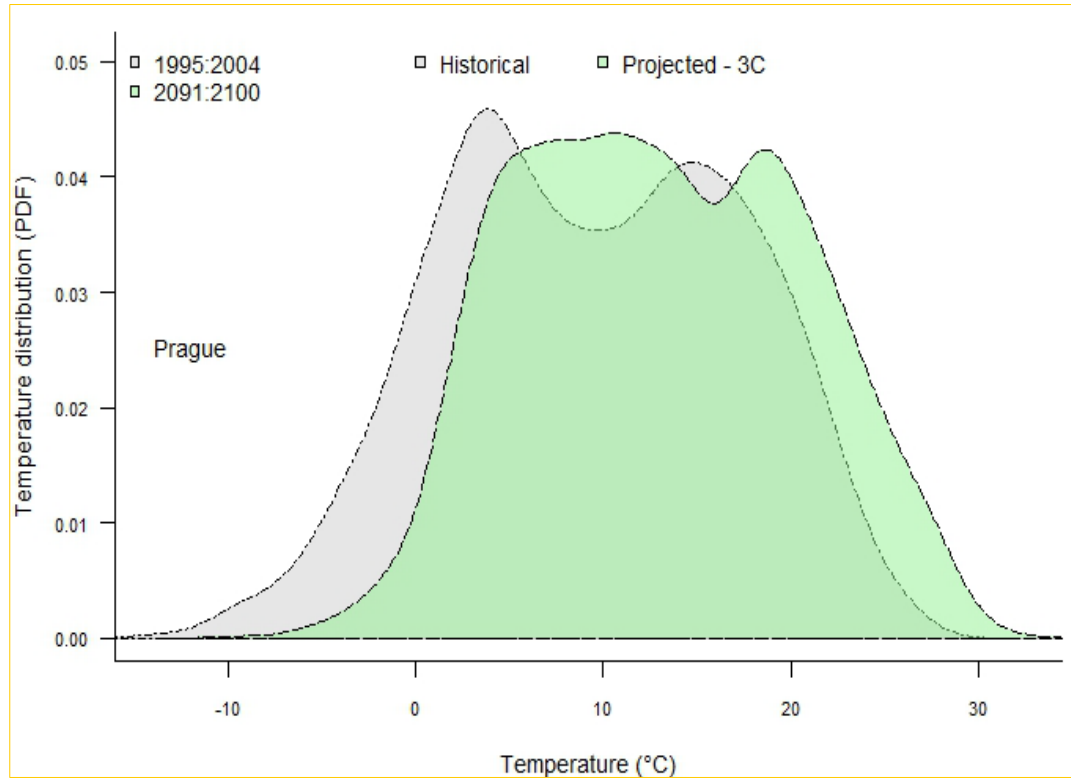 - SSP for Czech Republic?
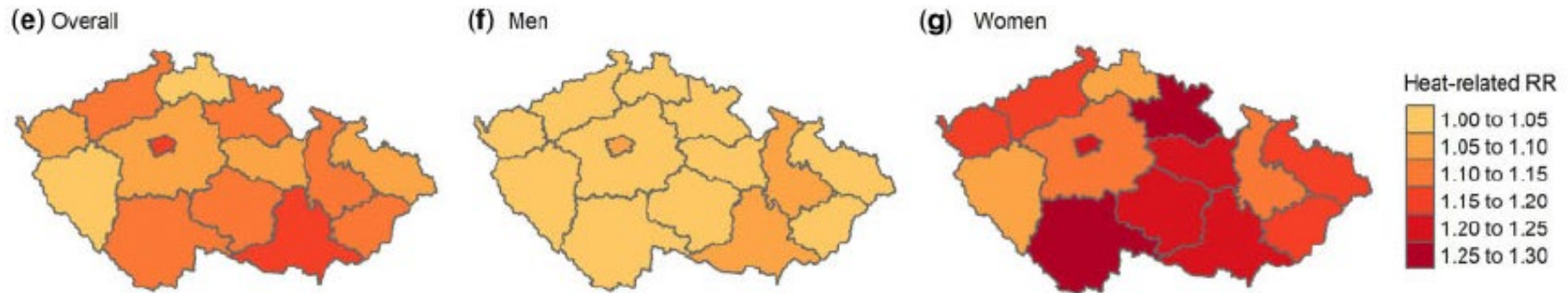
Jánoš, T., Ballester, J., Čupr, P., & Achebak, H. (2023). *International Journal of Epidemiology.*
https://doi.org/10.1093/ije/dyad141

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Projected Temperature Increase by Century's End
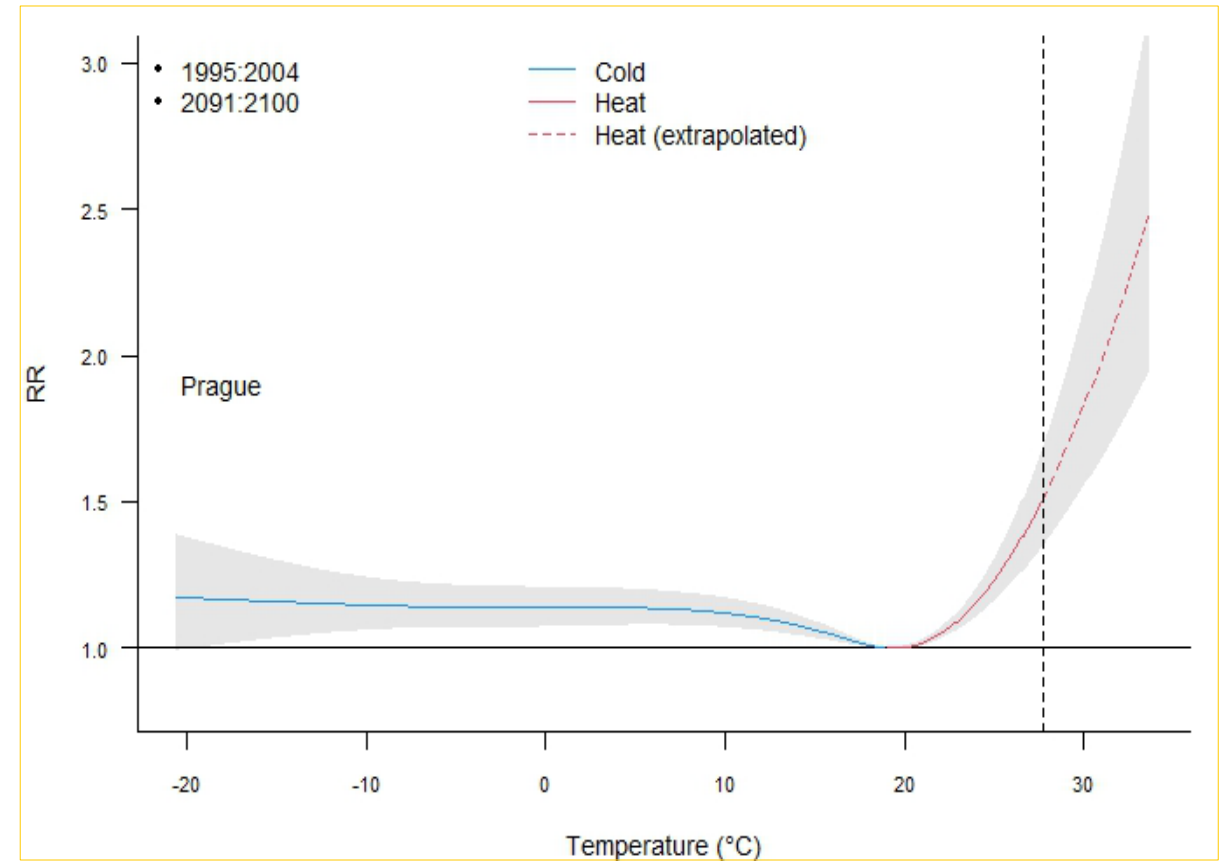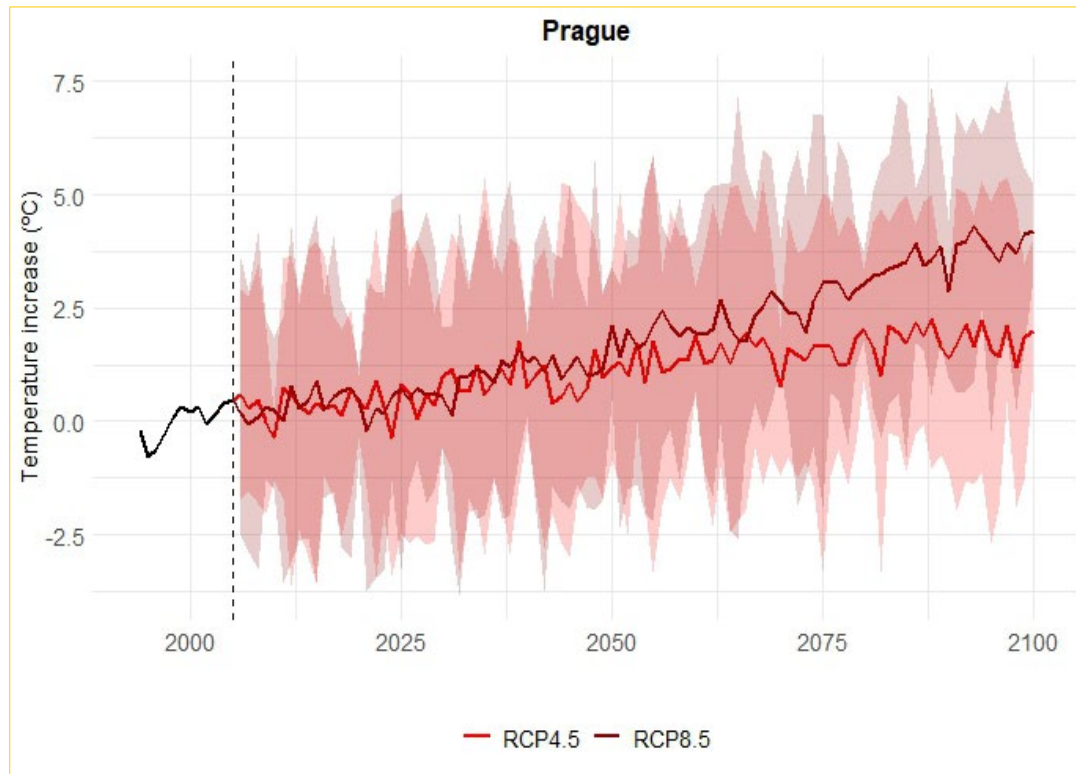
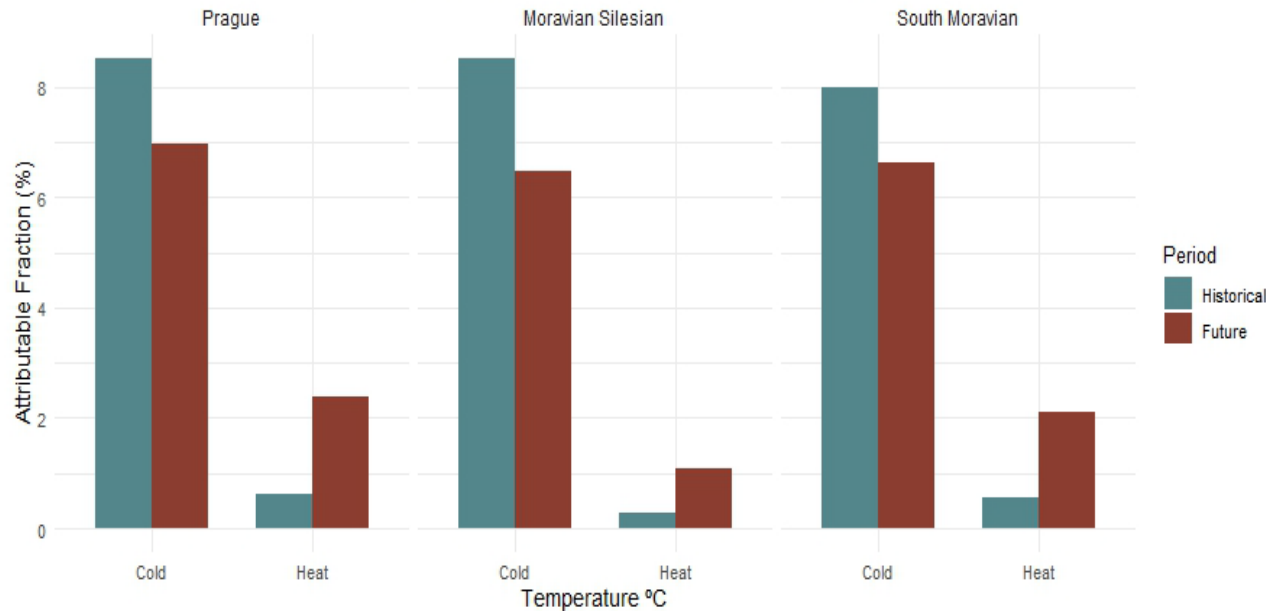# Projected Temperature Distribution under 3 °C warming

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Attributable Health Risks Across Regions Over the Years

Attributable Fraction

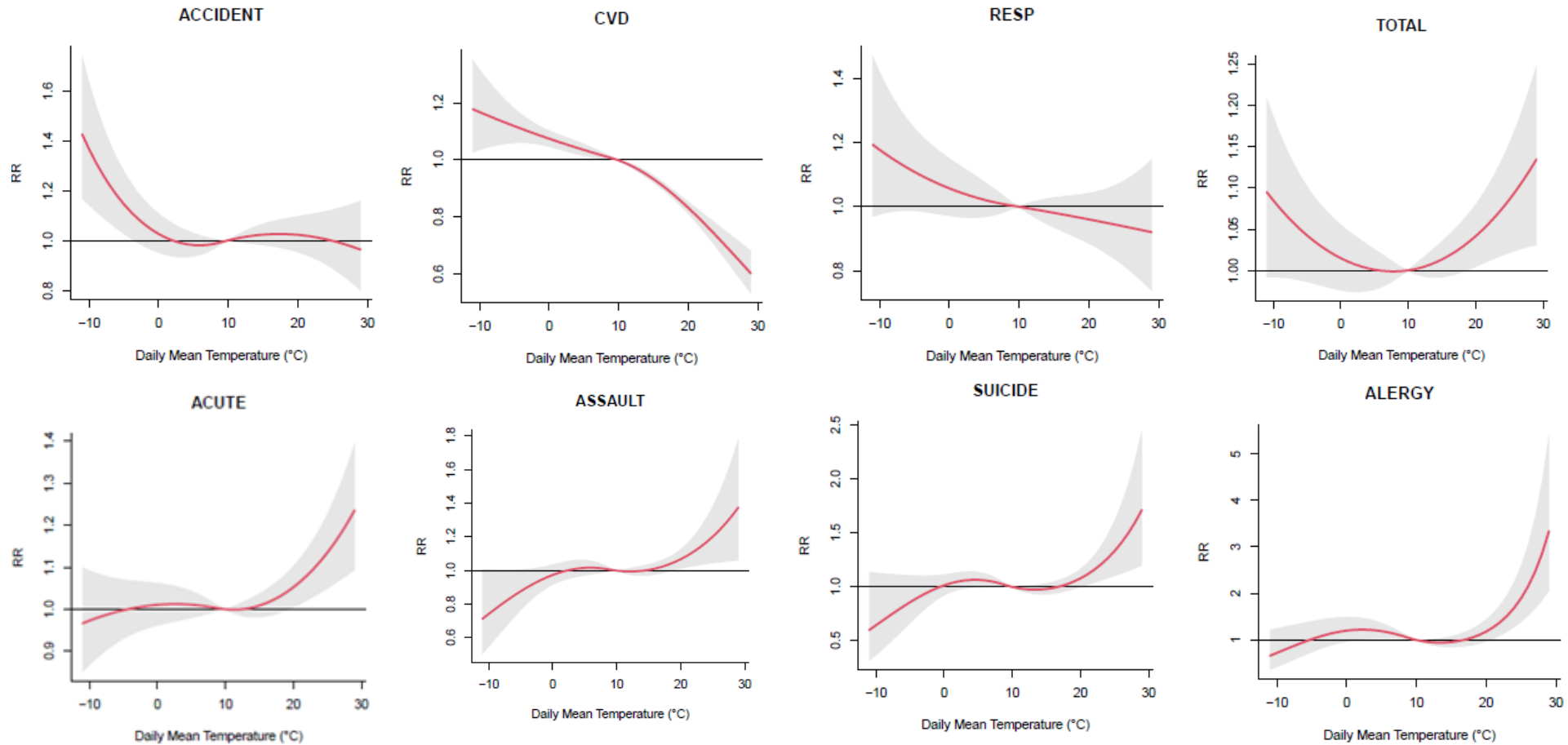Attributable Fraction Comparison: Historical (1995-2004) vs Future (2091-2100)

Attributable Number

Region	Period	Cold	Heat
Prague	1995-2004	13,743	983
	2091-2100	**13,234**	**3853**
Moravian Silesian	1995-2004	14,395	497
	2091-2100	**12,118**	**1806**
South Moravian	1995-2004	12,132	844
	2091-2100	**11,731**	**3182**

+1300 temperature-related deaths per decade in Prague

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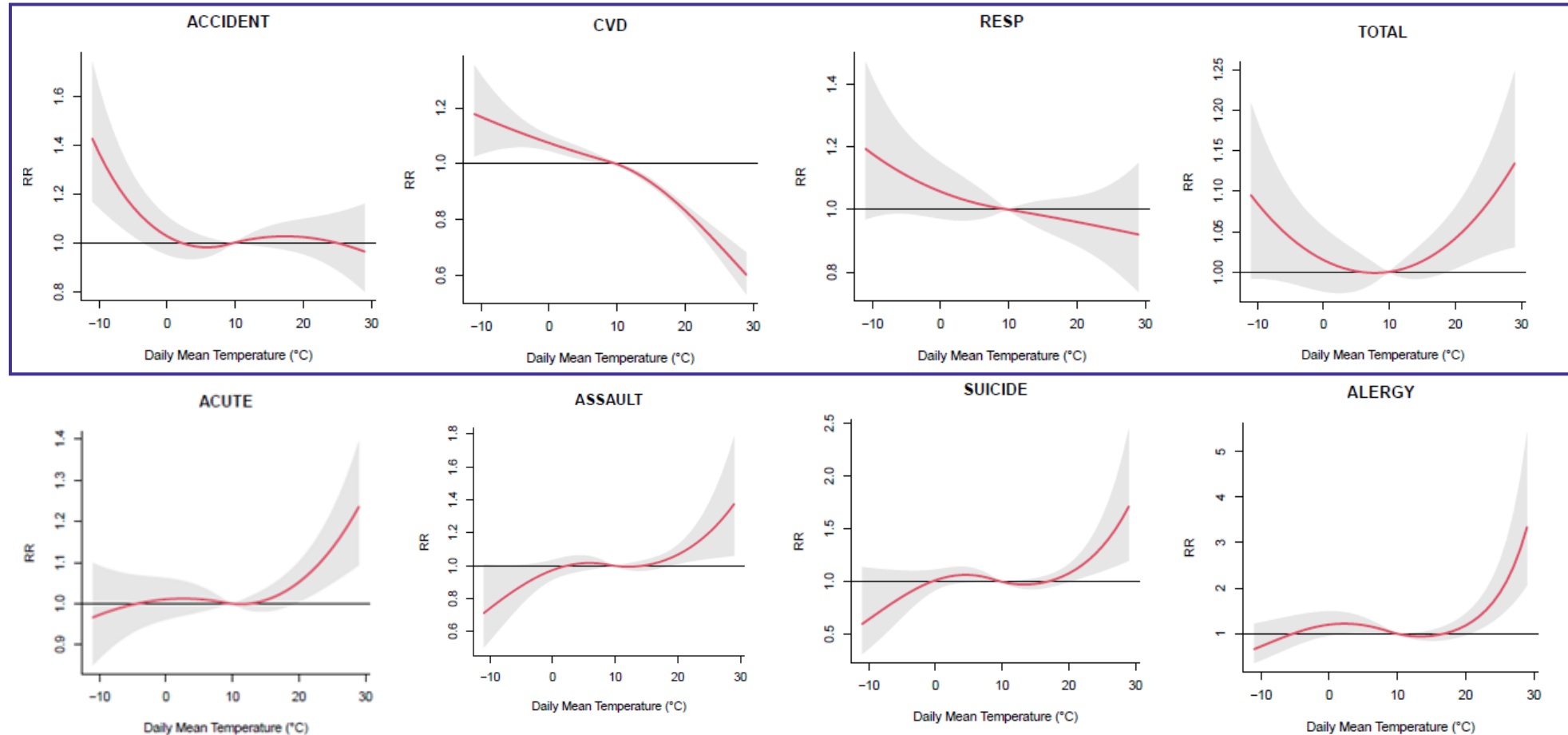# Relative risks of ambulance outcall: Prague 2014–2020
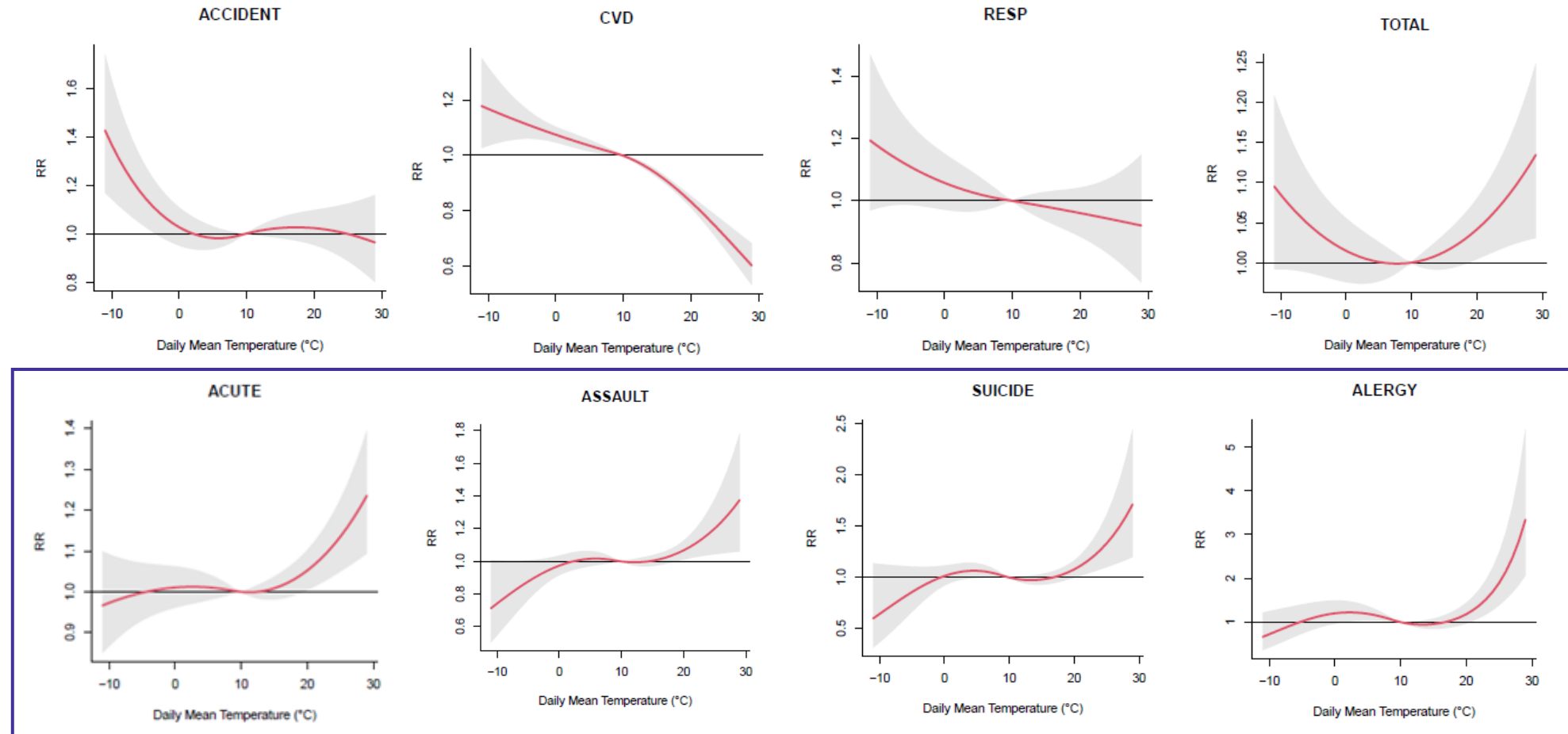

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Relative risks of ambulance outcall: Prague 2014–2020 - COLD

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Relative risks of ambulance outcall: Prague 2014–2020 - HEAT
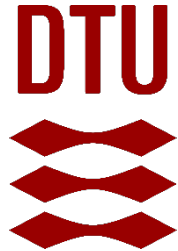

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Ongoing work

- Identify SES factors that affect the observed relationships

- Incorporation of population dynamics into future projections

- Consideration of **adaptation strategies/policies in climate projections**

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Partners

Disclamer

Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

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Aktivita I – Socioekonomické aspekty adaptace vůči vlnám veder

- https://www.mentimeter.com/app/presentation/alj57c1eogzrch7cenwei8i6k8hrhzdb/edit?source=share-modal

- # Menti.com

  code: 2344 8804

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