Workshop on High-Risk Cascading Shocks

Date: 18 – 20 November, 2024.

Venue: World Meteorological Organization (WMO) headquarters, Geneva, Switzerland.

Organizers: World Climate Research Programme (WCRP) and S&P Global

Draft Agenda

Note that times are local time in Geneva

Monday Nov 18, 2024 (9:00-17:30)

9:00 - Opening address – Workshop framing and goals

9:10 - Introduction to Cascading Shocks and real-world evidence from observations

9:35 - Coffee Break

10:00 - Session 1: Cascading Shocks to Terrestrial Ecosystems
- Recurring extremes and changes in disturbance regimes: climate vs. non-climatic drivers
- What mechanisms control vulnerability and resilience?
- The role of biodiversity in high-risk events
- Cascading impacts and links between fire, climate and ecosystems

12:00 - Lunch

13:00 Session 2: Cascading Shocks to Agricultural and Food Systems
- Concurrent climatic extremes and their impact on food security
- Modelling the agricultural impacts of extreme events: from AgMIP to ML Emulators
- Food pricing and dietary shocks from extreme climatic events

15:00 - Coffee Break

15:30 - Session 3: Cascading Shocks in the Oceans and Oceanic Ecosystems
- Extreme Marine Heat, Acidity, and Deoxygenazation events: climatic risks and impacts on ecosystems
- Extreme Compound Events in the Tropical and South Atlantic.
- Role of extremes in AMOC collapse and role of AMOC state in heat and acidification ocean extremes
- Sea level extremes from compound storm tides and heavy precipitation

19:00 - Group Dinner

Tuesday Nov 19, 2024 (9:00-18:00)

9:00 - Session 4: Challenges and Opportunities to simulate and project Cascading Shocks

- Simulating Cascading Shocks: Probabilistic Projections vs. High-Impact Storylines
- Atmospheric analogue storylines with spectral nudging: downward counterfactuals, attribution, and impacts
- Generating Physically Consistent Storylines of High-Risk Climate Extremes with Ensemble Boosting
- Statistical Emulation of Extremes: what can and cannot be done?

11: 00 - Coffee Break

11:30 - Breakout Discussion: What is missing to be able to address cascading shocks, adapt to them and predict their risk in the future?

12:30 - Lunch

13:30 - Session 5: Economic impacts and costs of cascading shocks

- How do climate extremes affect economic growth across countries
- Missing cascading effects in climate-economic modelling
- Climatic risks and extremes in IAMs and their impact on the costs of climate change

15:30 - Coffee Break

16:00 Session 6: Novel approaches to identify Cascading and Compounding Risks

- Understanding and Identifying Compounding Risks and Increased Vulnerabilities
- Identifying cascading and compounding impacts across sectors using ML

Wednesday Nov 20, 2024 (9:00-14:00)

9:00 - Breakout Discussion: What are low hanging fruits and multidisciplinary opportunities that are now becoming achievable?

10:30 - Coffee break

11:00 - Plenary discussion, Next Steps and Closing Remarks

12:00 - Keynote Address – Dr Stephane Hallegatte, Senior Climate Change Advisor, World Bank Group.

13:00 - Closing Lunch