

## What's the Latest: Climate Change and Food



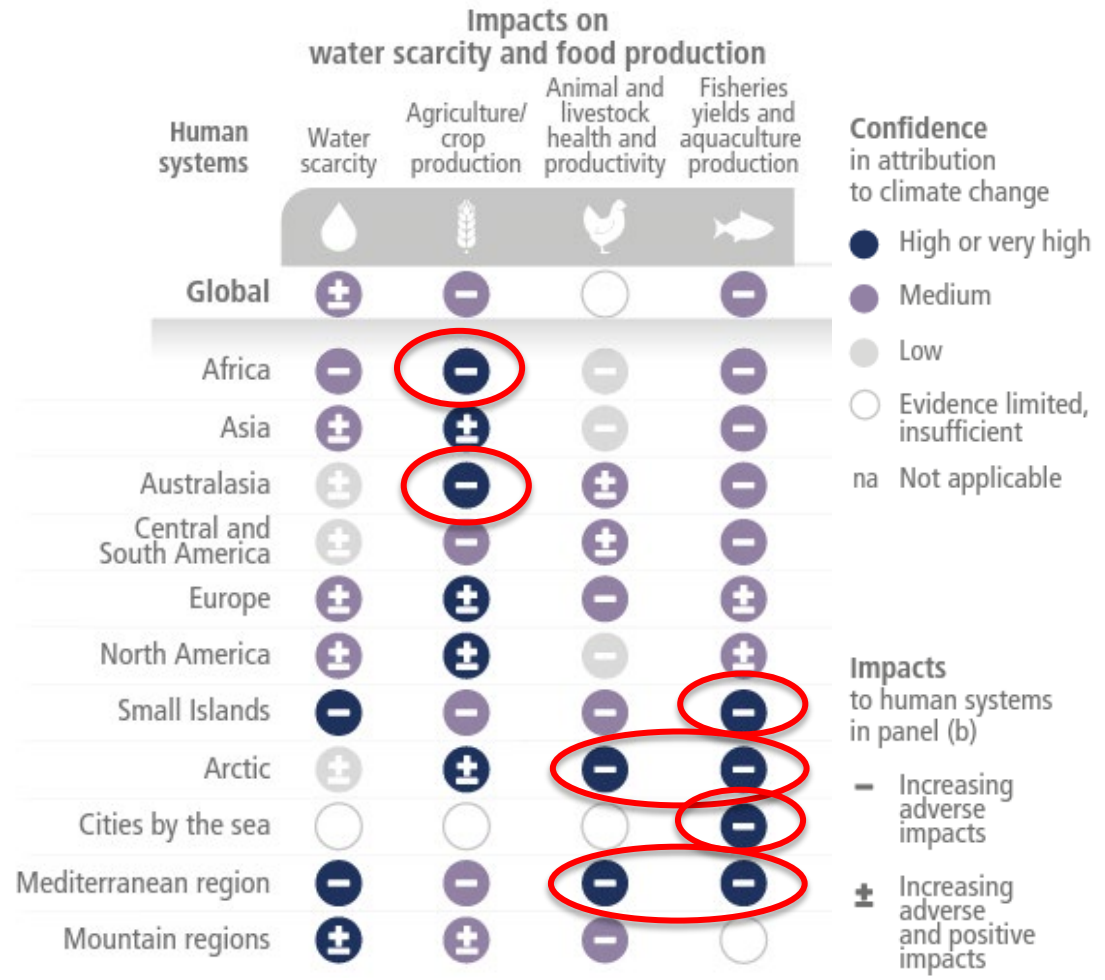
**Cynthia Rosenzweig**  
**NASA GISS & Columbia Climate School**

*GAIN Interview Cruncher*  
*July 28, 2022*

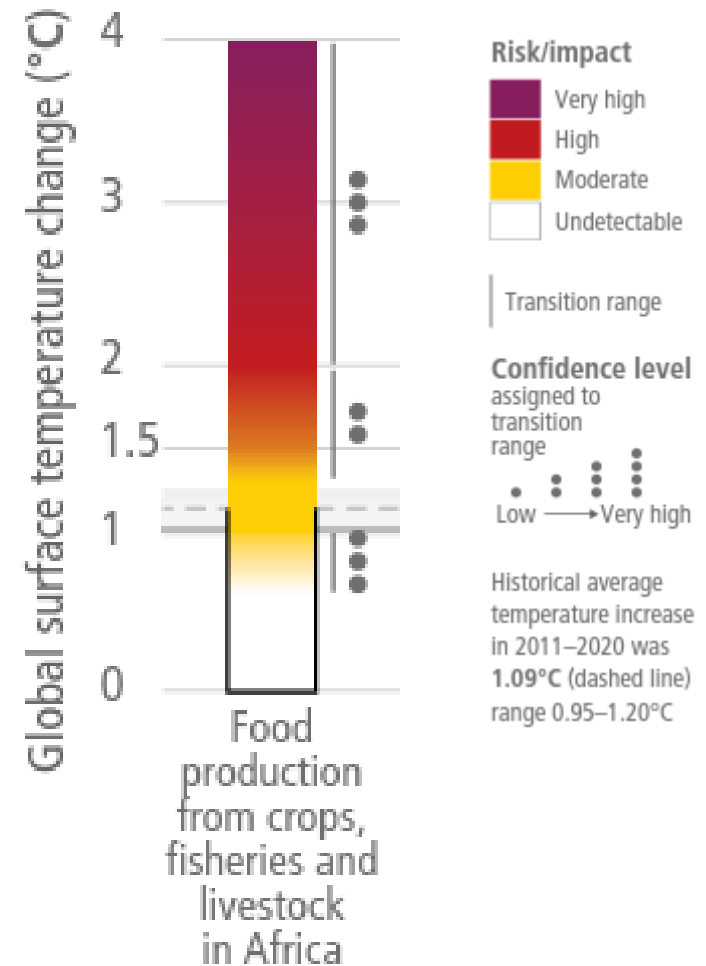
***AgMIP models are mathematical representations  
of interrelated agricultural processes***

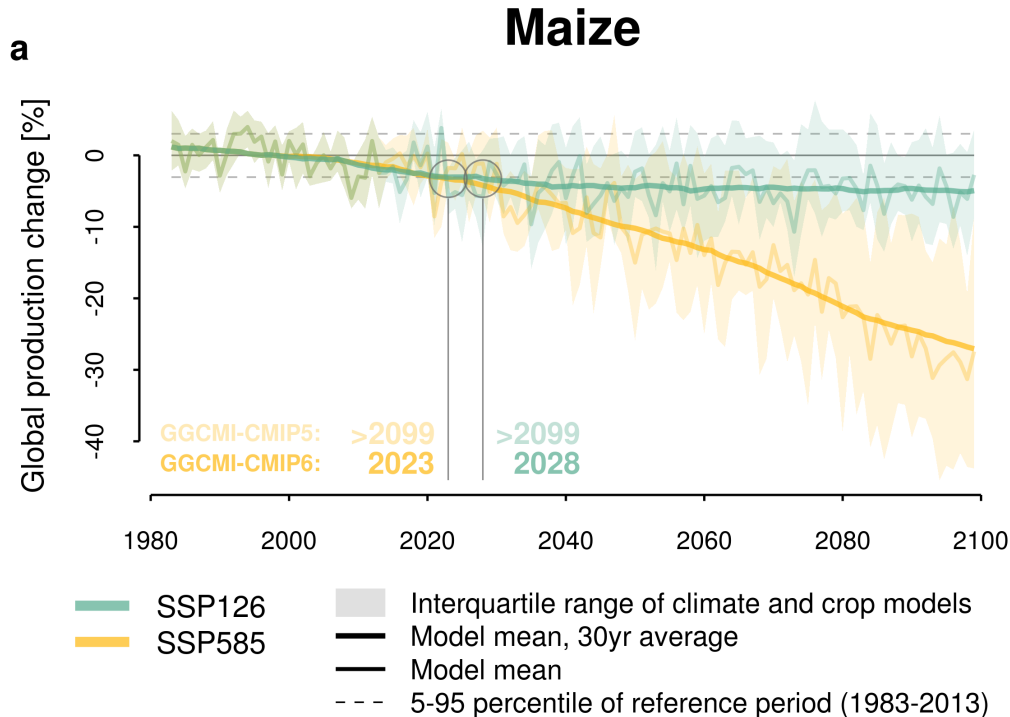


- Climate change, including increases in frequency and intensity of extremes, has reduced food and water security, hindering efforts to meet Sustainable Development Goals (*high confidence*).



- **Climate change will increasingly put pressure on food production and access,** especially in vulnerable regions, undermining food security and nutrition (high confidence).
- **In Africa:** Increased risk to food security, risk of malnutrition (micronutrient deficiency), and loss of livelihood due to reduced food production from crops, livestock and fisheries
- **In Asia:** Decline in coastal fishery resources and increased risk to food and water security due to increased temperature extremes, sea level rise, rainfall variability, and drought





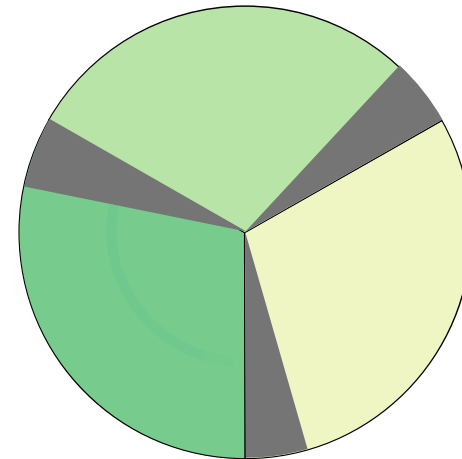
**Climate Impact Emergence**

*Jägermeyr et al., 2021, Nature Food*

- Time of climate impact emergence (TCIE, open circles) describes time when average climate change impacts are projected to occur outside envelope of historical variability.
- In the SSP585 scenario, negative climate change impacts on maize appear in the 2020s, much earlier than was shown in GGCMI-CMIP5 results.
- Maize yield changes are substantially more negative than were found in GGCMI-CMIP5 simulations (RCP85 +1.3% → SSP585 -22.9%).

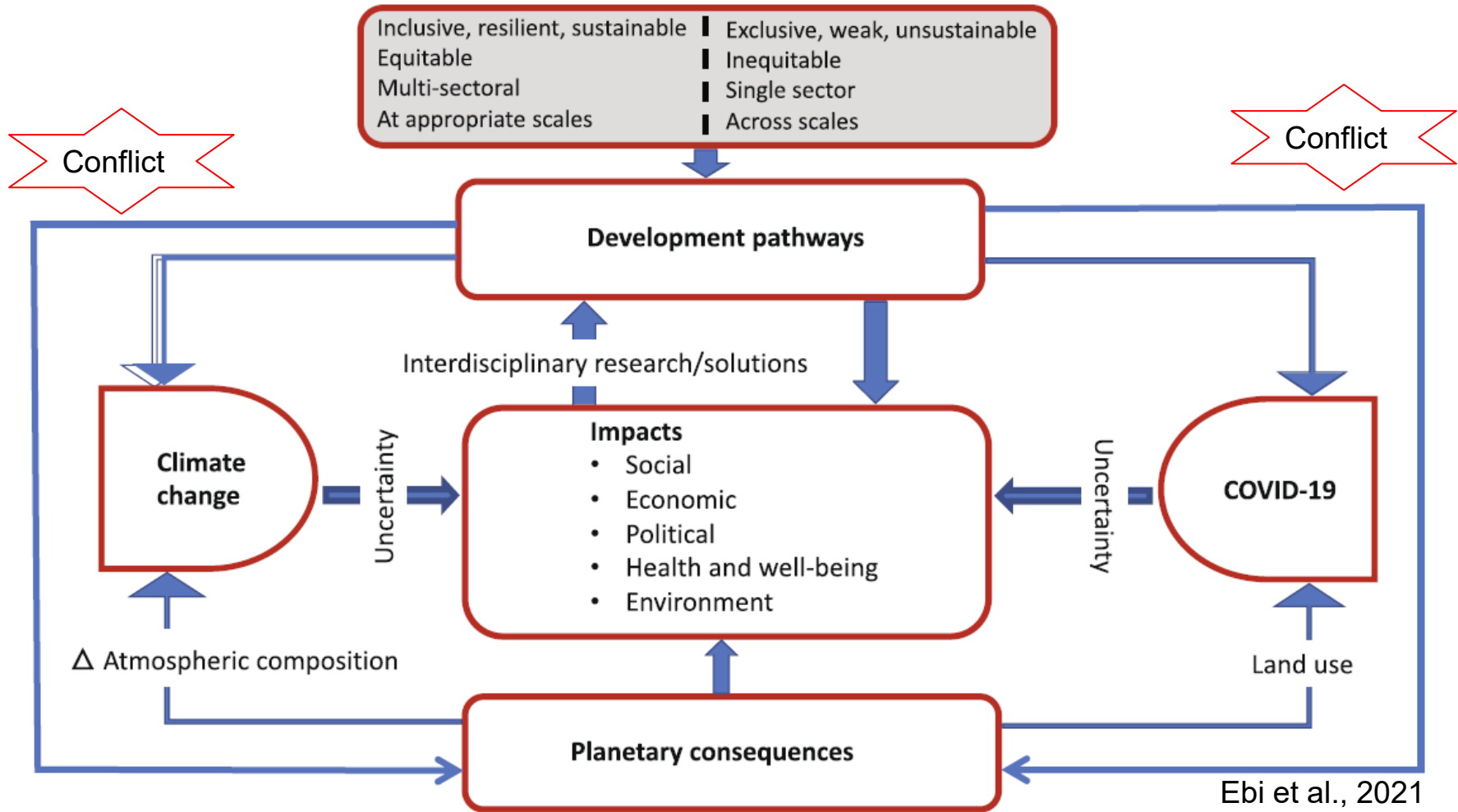
Current

Climate change



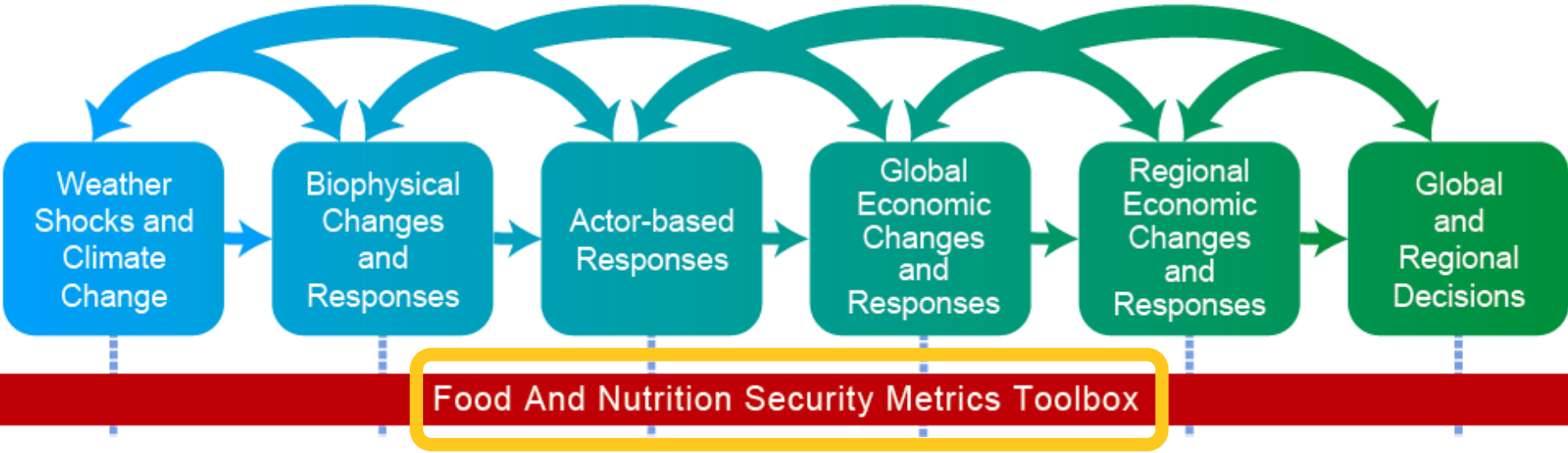
Muller et al., Food Security: Fertilizing Hidden Hunger  
Nature Climate Change

Climate change alone decreases calories –  
CO<sub>2</sub> effects restore calories but decrease nutritional content



**Development pathways have planetary consequences, including climate change, conflicts, and pandemics, that in turn have impacts with implications for the development pathways we follow.**

Representative Agricultural Pathways and Representative Dietary Pathways





*For protocols, up-to-date events and news,  
and to join AgMIP, visit [www.agmip.org](http://www.agmip.org)*