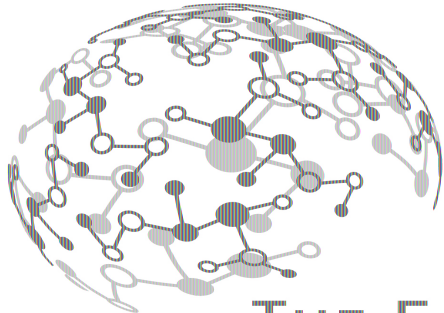


10 New Insights in Climate Science 2019



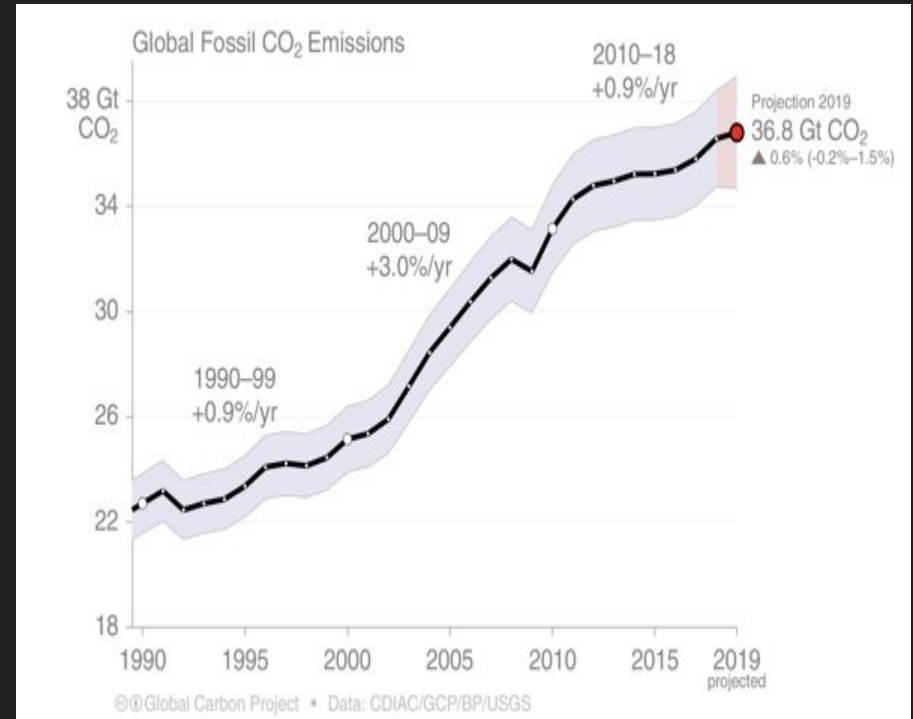
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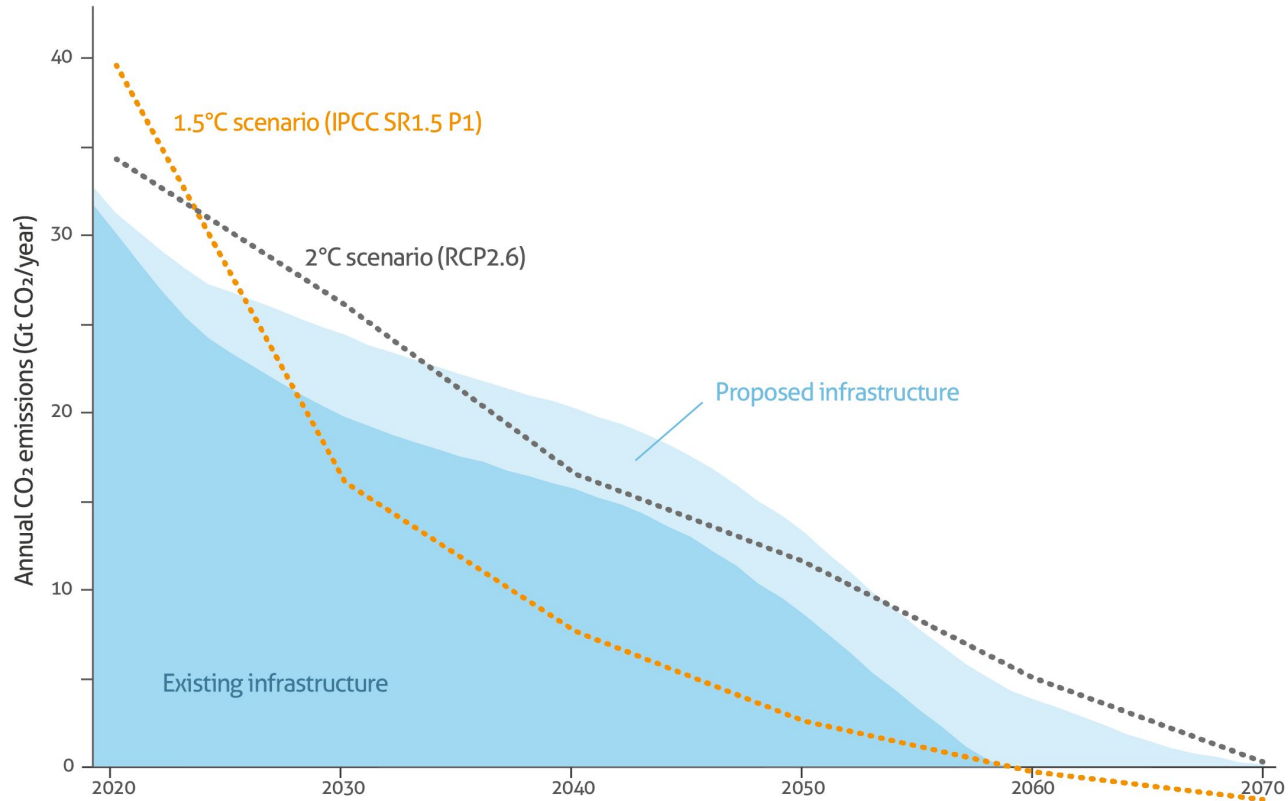
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Insight 1: The world is not on track

- Emissions keep going up
- Since Paris agreement \$1.9 trillion invested in fossil fuels
- Existing fossil infrastructure breaks Paris goals



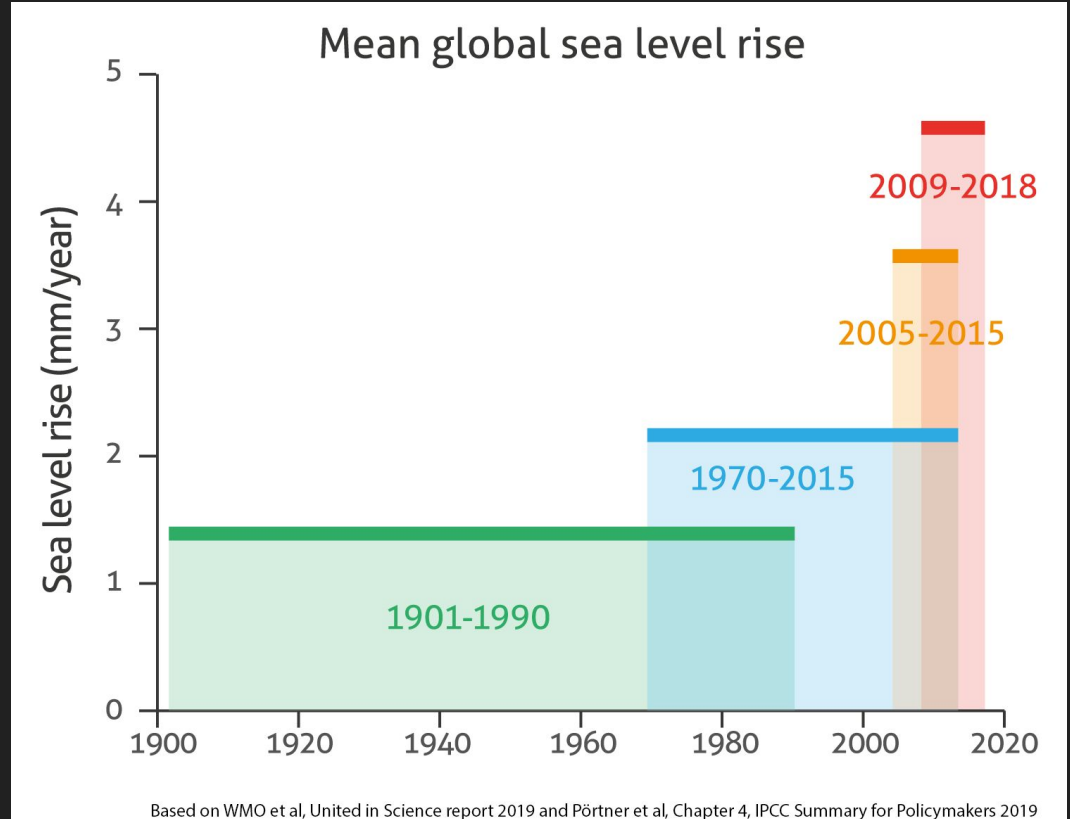
CO₂ emissions from current infrastructure



Adapted from Tong et al, Nature 2019, and Grubler et al, Nature Energy 2018

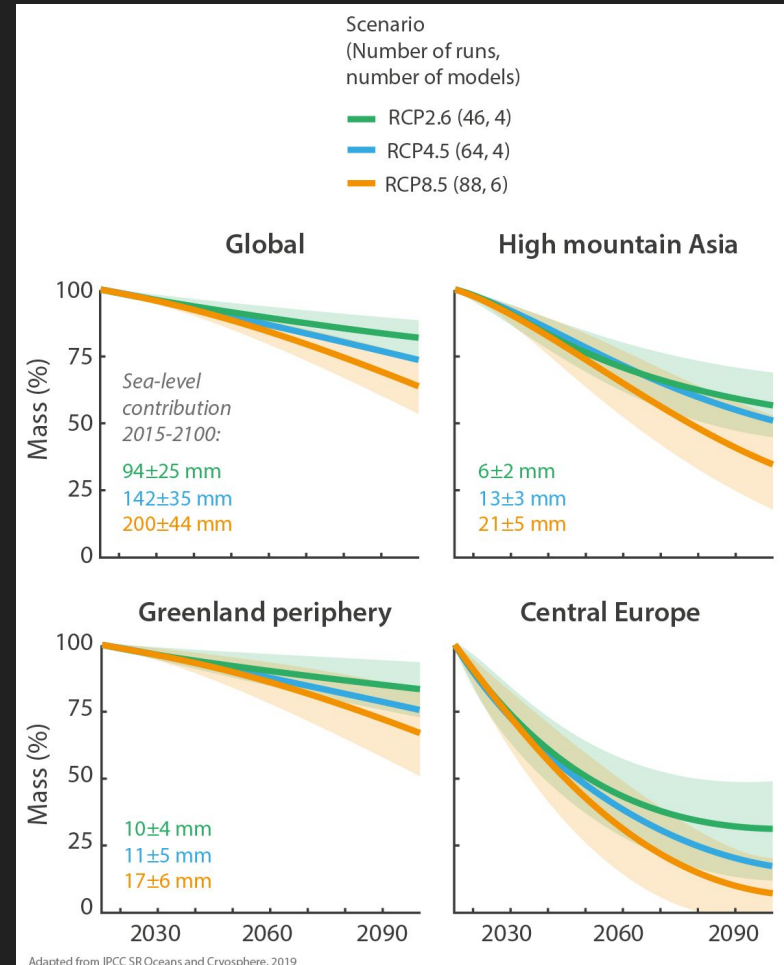
Insight 2: Climate change is faster and stronger than expected

- Observations show continuing warming
- Sea-level rise accelerating
- “Stable” systems show rapid changes



Insight 3: Climate change leaves no mountain summit behind

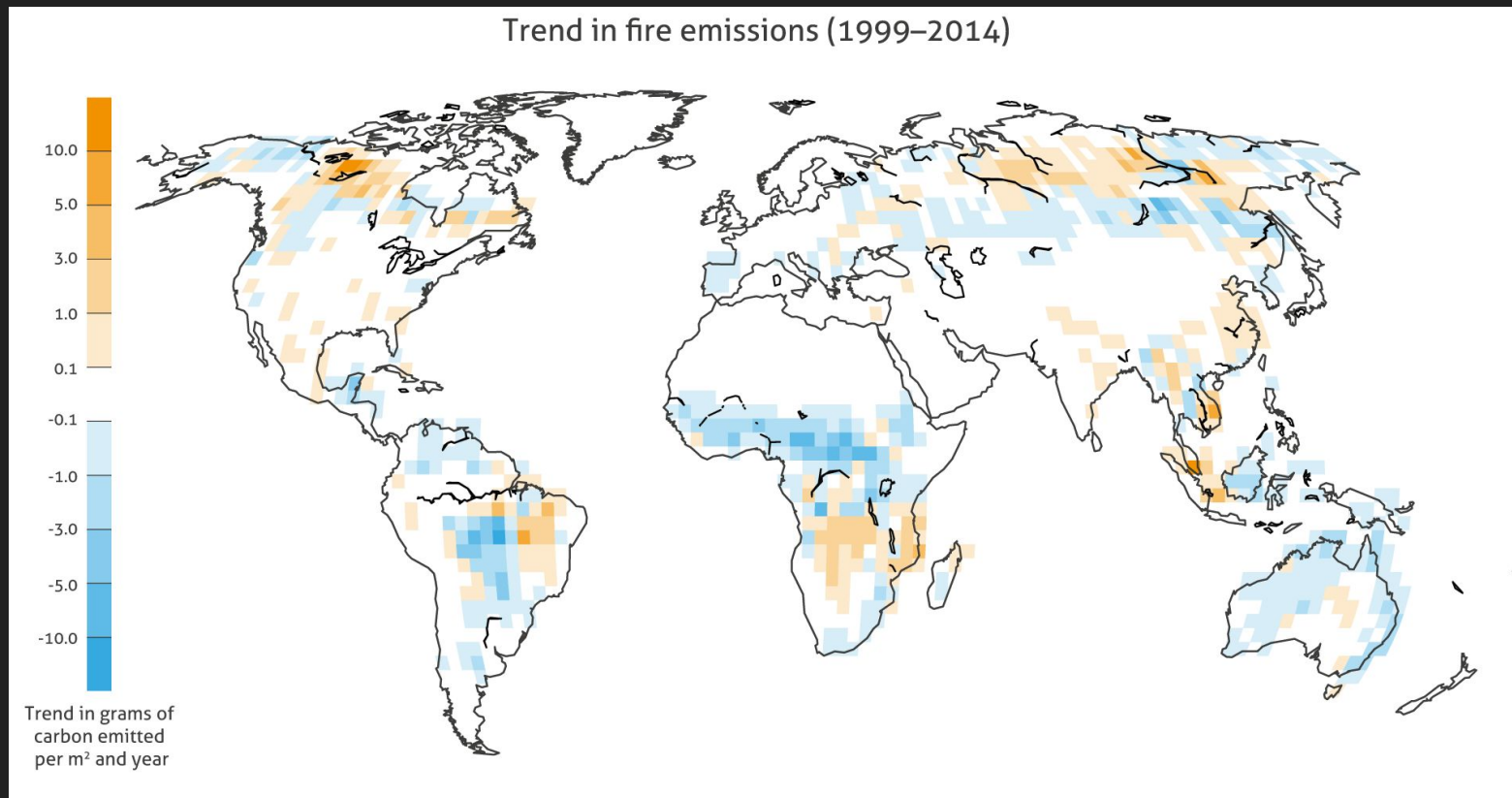
- Observed rapid melting of mountain glaciers
- Mountain runoff changes could affect >1 billion
- Irreversible impacts on biodiversity as climate change progresses



Insight 4: Forests are under threat, with global consequences

- Forests absorb about 1/3 of anthropogenic CO₂ emissions
- Deforestation major CO₂ source
- Temperature increases tree mortality
- Fire threatens forests as carbon sinks

Insight 4 - Trends in fire emissions 1999-2014



Insight 5: Weather extremes – a “new normal” in 2019

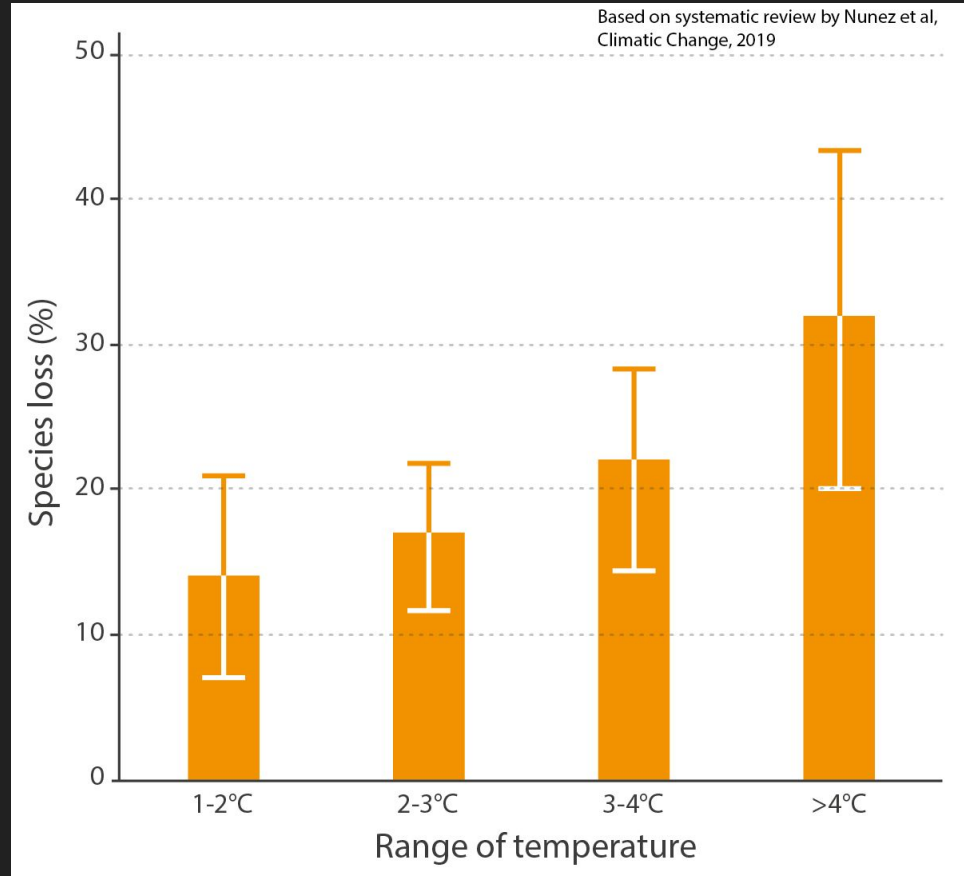
- Formerly rare event becoming a “new normal”
- Compound and cascading events add to damage
- Ocean heat waves



Photo: Marc Averette CC BY 3.0

Insight 6: Biodiversity – threatened guardian of earth's resilience

- 14% of land species threatened at 1-2°C
- 99% of corals wiped out at 2°C
- Freshwater fish heat die-off to double by 2050



Insight 7: Climate change threatens food security and the health of hundreds of millions

- CO₂ concentrations lead to lower nutrition in crops
- Yield losses expected mainly due to droughts
- Future declines in fish and shellfish

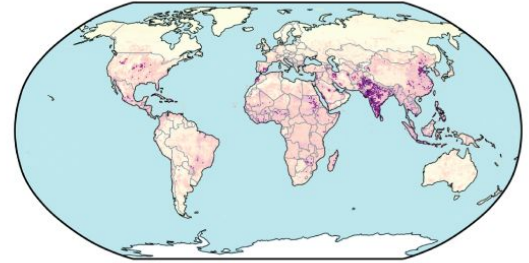


Photo: Nils Kautsky/Azote

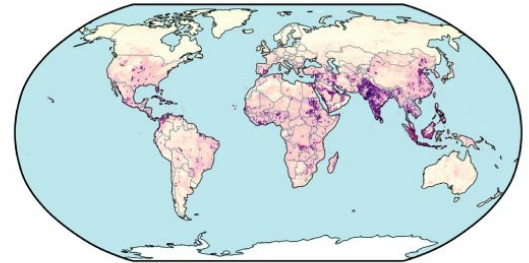
Insight 8: Most vulnerable and poor hardest hit by climate change

- Climate change hits the most vulnerable hardest
- 100M could be pushed below poverty line by 2030
- Could see 10-100sM climate migrants by 2050

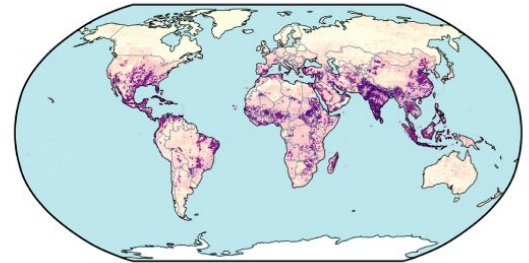
1.5°C



2.0°C



3.0°C



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Insight 9: Equity and equality pivotal to successful climate change mitigation and adaptation

- Fairness, distribution aspects and trust important for climate policy success
- Equality important for societal resilience



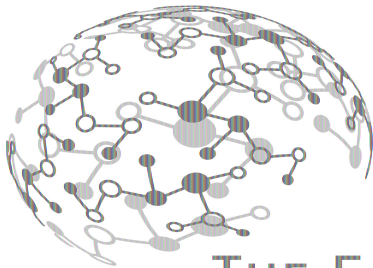
Photo: Matthibcn

Insight 10: Time may have come for social tipping points on climate action

- Increasing numbers of citizens concerned
- Numbers of protestors approaching critical figures



Photo: Rrodrickbeiler



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