



CLIMATE EMERGENCY INSTITUTE

The Health and Human Rights Approach to Greenhouse Gas Pollution

February 2019

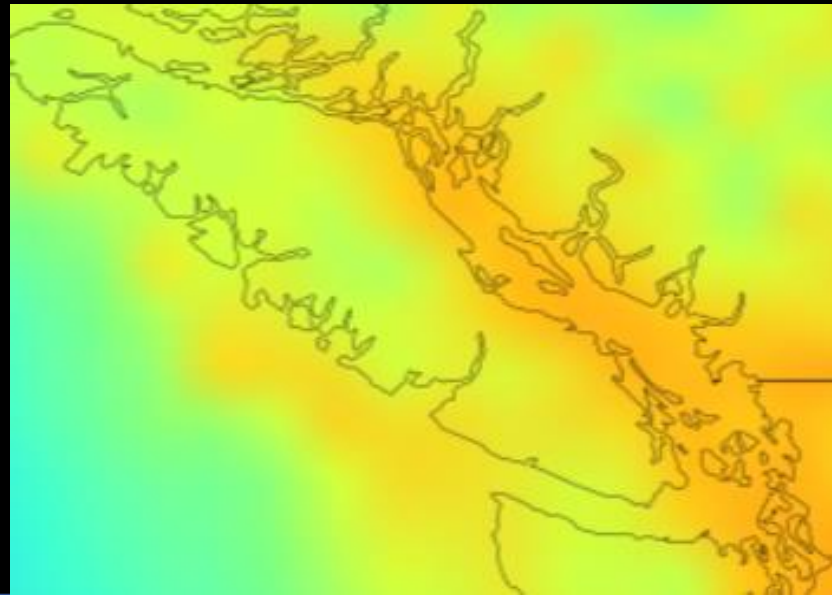
Peter Carter

Environmental Health Protection Policy

Expert reviewer for the 2018 IPCC 1.5°C Report

In support of the climate change emergency resolution

Capital Regional District





**2019 data:
WE ARE ALL IN
A DIRE EARTH EMERGENCY**

“Global climate change is an existential threat to most life on the planet, including and especially humankind.”

15 May 2018 UN Secretary-General António Guterres



UNIS Vienna UN Secretary-General António Guterres addresses the Austrian World Summit at the Hofburg in Vienna.

**If global emissions are not declining by 2020
we risk runaway (hot house Earth)**

11 Sept 2018

“If we do not change course by 2020, we risk missing the point where we can avoid runaway climate change, with disastrous consequences for people and all the natural systems that sustain us.”

— Antonio Guterres



From IPCC 1.5°C Special Report 2018

Press Release, 8 October

“Limiting global warming to 1.5°C would require rapid, far-reaching and unprecedented changes in ALL aspects of society, with clear benefits to people and natural ecosystems, limiting global warming to 1.5°C compared to 2°C”. (my emphasis)

“We are already seeing the consequences of 1°C of global warming through more extreme weather, rising sea levels and diminishing Arctic sea ice, among other changes”.

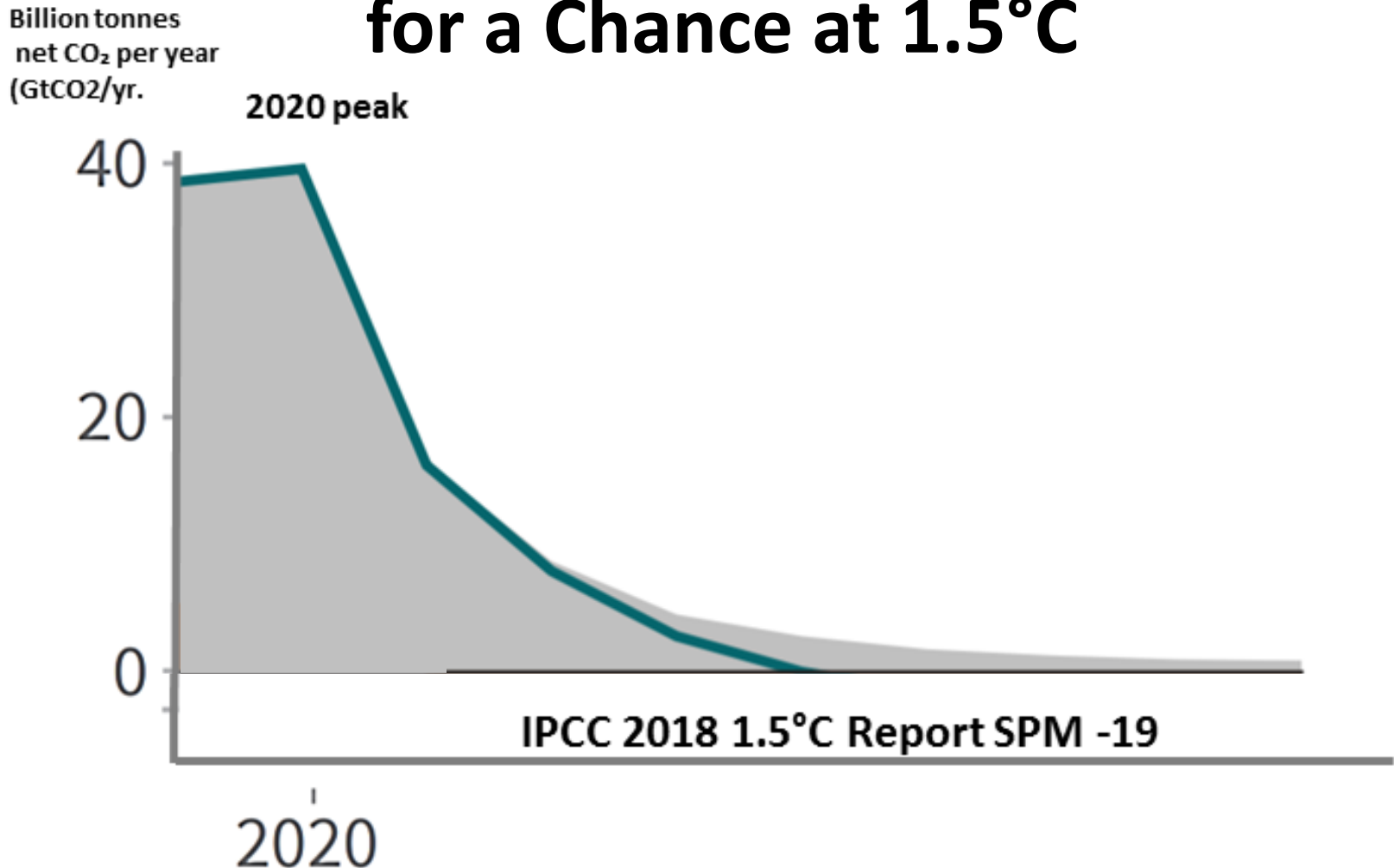
“Every extra bit of warming matters, especially since warming of 1.5°C or higher increases the risk associated with long-lasting or irreversible changes, such as the loss of some ecosystems”.

Communication and Education

Atmospheric Greenhouse Gas
POLLUTION

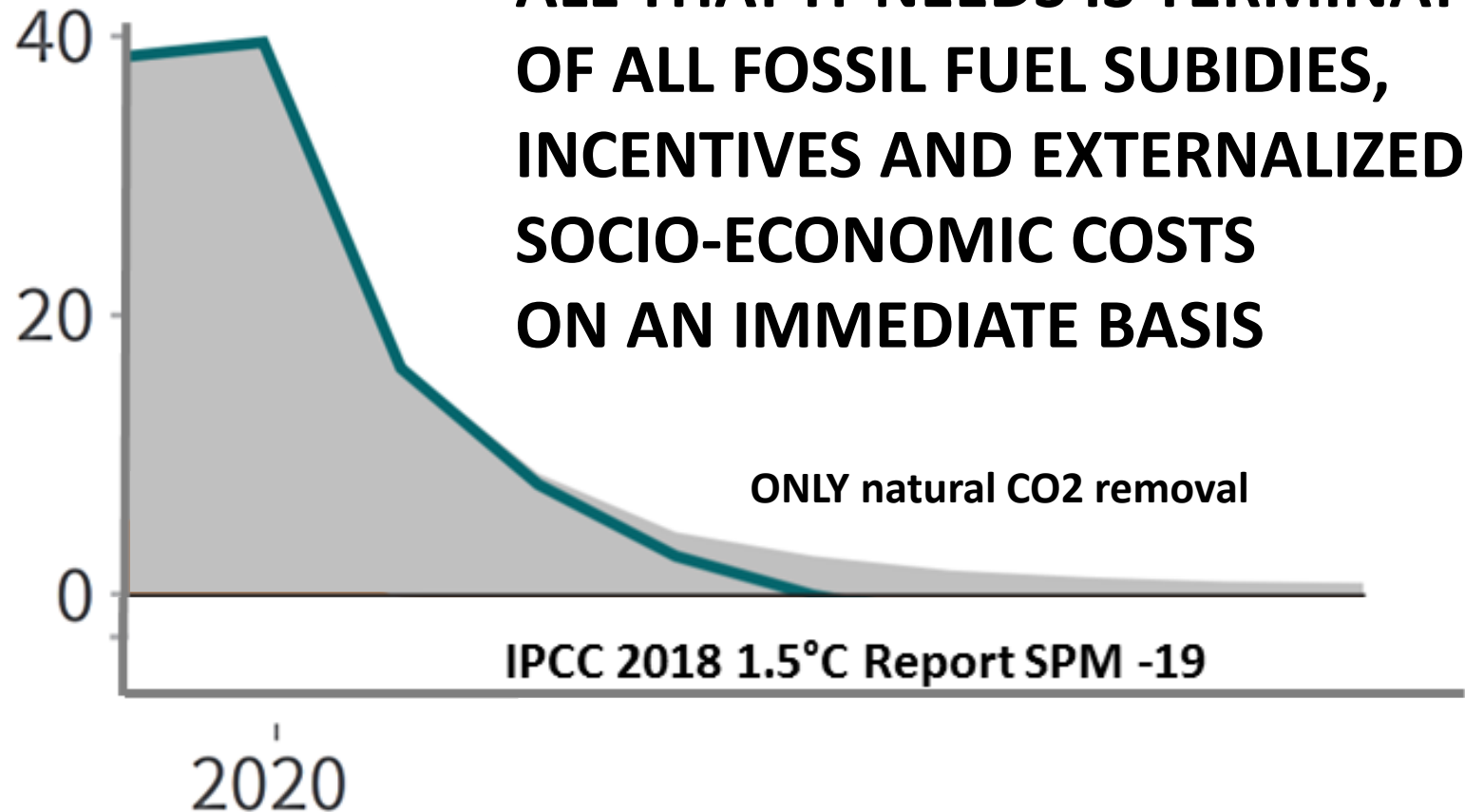
**Zero-combustion
REGULATION
& INNOVATION**

IPCC 2018 1.5°C Special Report Emissions Decline Rapidly from 2020 for a Chance at 1.5°C



Emissions Decline Rapidly from 2020

Billion tonnes
net CO₂ per year
(GtCO₂/yr.)



**ALL THAT IT NEEDS IS TERMINATION
OF ALL FOSSIL FUEL SUBSIDIES,
INCENTIVES AND EXTERNALIZED
SOCIO-ECONOMIC COSTS
ON AN IMMEDIATE BASIS**

ONLY natural CO₂ removal

IPCC 2018 1.5°C Report SPM -19

IPCC 2018 1.5°C Report on Specific Fossil Fuel Reduction TARGETS

IPCC 1.5°C Report specified minimum reductions in fossil fuel energy for RAPID DECARBONIZATION by 2050 Average **-86%**

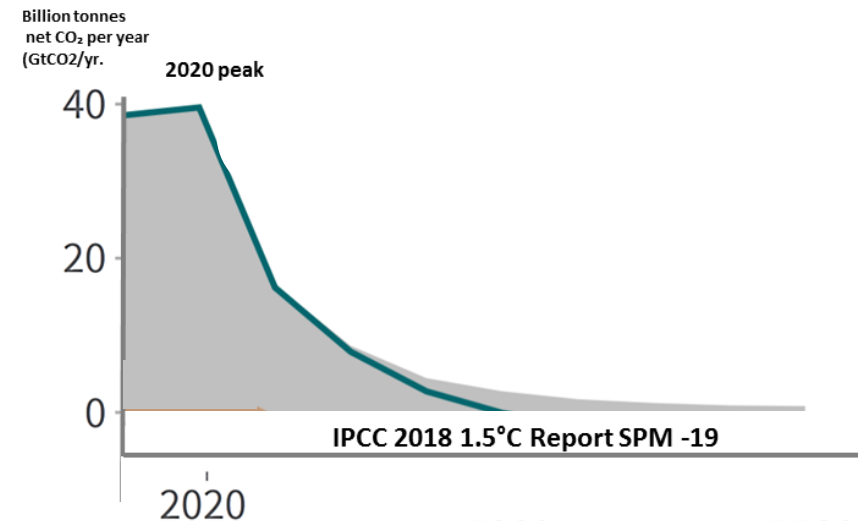
This is a **ZERO FOSSIL FUELS, ZERO-COMBUSTION** world economy

| | |
|-------------|-------------|
| COAL | -97% |
| OIL | -87% |
| GAS | -74% |

Rapid decarbonization

| | |
|--|-----|
| Primary energy from coal in 2030 (% rel to 2010) | -78 |
| ↳ in 2050 (% rel to 2010) | -97 |
| from oil in 2030 (% rel to 2010) | -37 |
| ↳ in 2050 (% rel to 2010) | -87 |
| from gas in 2030 (% rel to 2010) | -25 |
| ↳ in 2050 (% rel to 2010) | -74 |
| from nuclear in 2030 (% rel to 2010) | 59 |
| ↳ in 2050 (% rel to 2010) | 150 |

IPCC 2018 1.5C Report SPM -19



Afforestation and carbon conservation are the only carbon dioxide removal methods considered

IPCC 2018 1.5°C Report on Specific Fossil Fuel Reduction TARGETS

IPCC 1.5°C Report specified minimum reductions in fossil fuel energy for
RAPID DECARBONIZATION

Average **-86%**

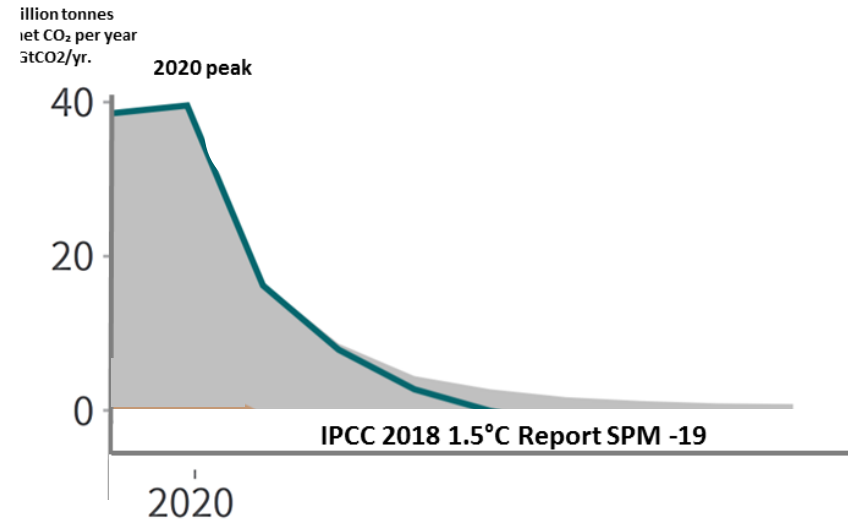
The policy is 100% **CONVERSION**
of industrial sources CO₂ and GHGs

This is a

ZERO FOSSIL FUELS, ZERO-COMBUSTION
world economy

CONVERSION
FROM CONSUMER TO CONSERVER SOCIETY

IPCC 2018 1.5°C Report SPM -19



IPCC 2018 1.5°C Report on Specific Fossil Fuel Reduction TARGETS

IPCC 1.5°C Report specified minimum reductions in fossil fuel energy for RAPID DECARBONIZATION by 2050 Average **-86% by 2050**

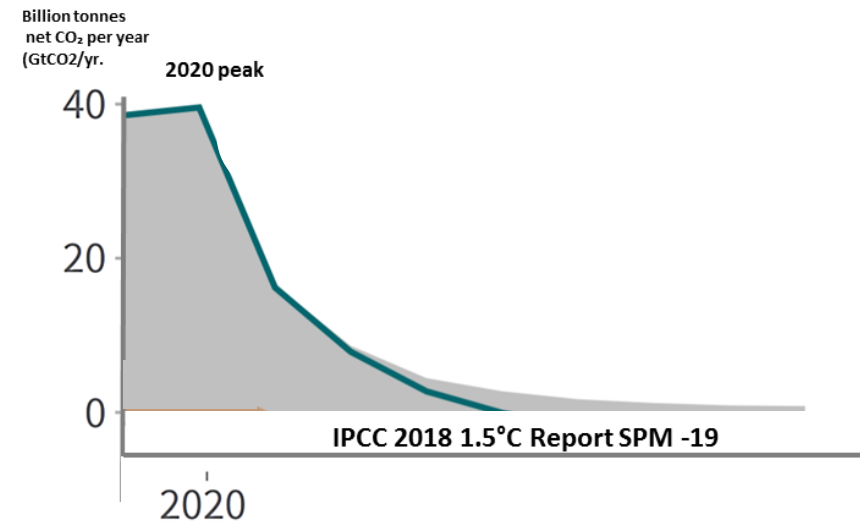
This is a **ZERO FOSSIL FUELS, ZERO-COMBUSTION** world economy by 2050

The policy is 100% **CONVERSION**
of industrial sources CO₂ and GHGs

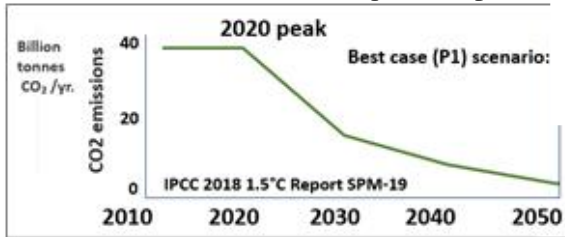
- **ENERGY** 100% clean renewable (everlasting energy)
- **CONSTRUCTION** Conversion of steel and concrete building to wood
- **FOOD PRODUCTION** Conversion of chemical intensive agriculture to regenerative organic
- **FORESTRY** Conversion of forestry to old growth conservation and afforestation
- **CONSUMPTION** 100% REDUCE RE-USE RECYCLE
- **ECONOMICS** Conversion of externalizing future discounting economics to full cost-full benefit to very long term sustainability (natural capital etc.)

ZERO FOSSIL FUEL SUBSIDIES OR INCENTIVES

IPCC 2018 1.5C Report SPM -19



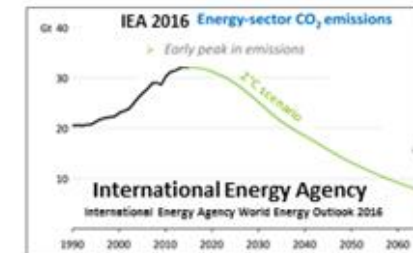
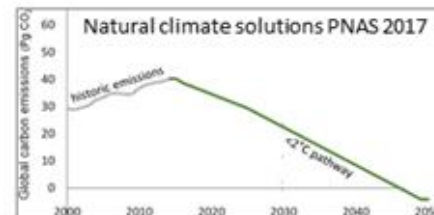
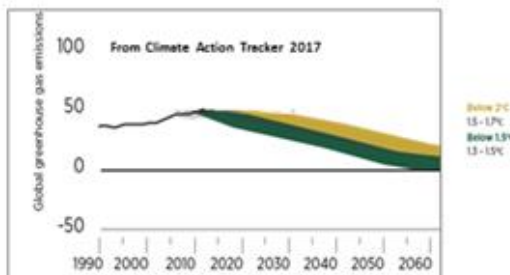
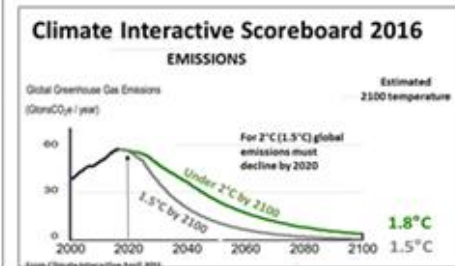
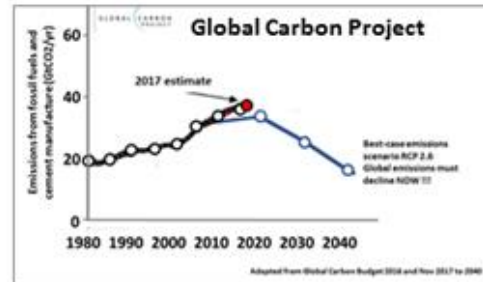
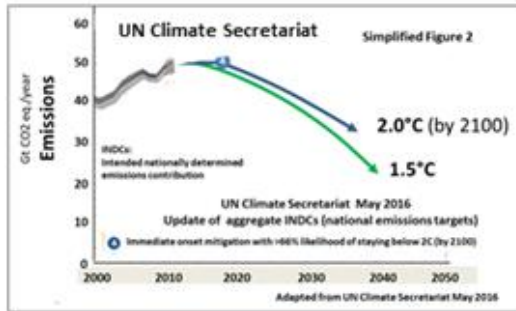
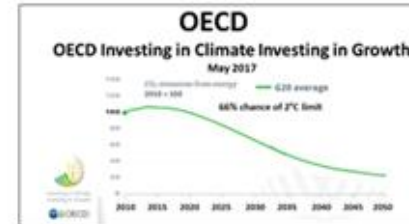
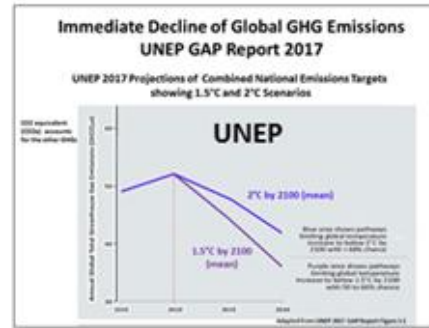
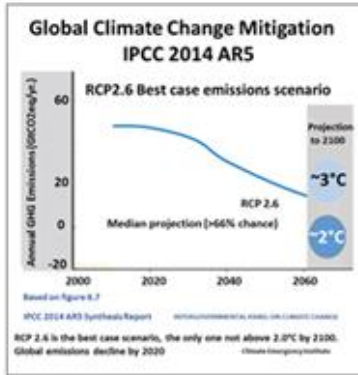
For Years, All Sources Have Projected Global Emissions Declining Rapidly from 2020 (for just a 2°C limit)



IPCC 2018
1.5°C Report

Climate Emergency Institute 2018

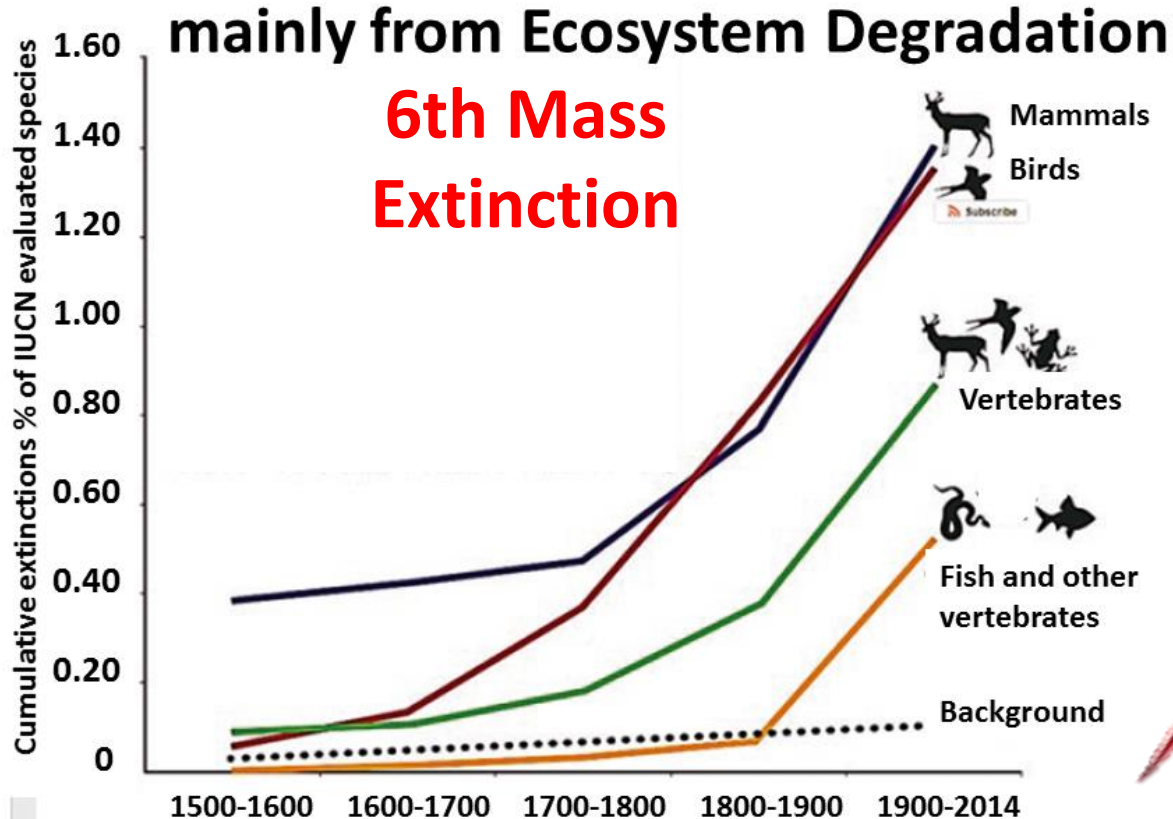
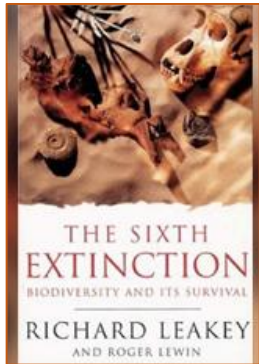
IPCC 2014
Fifth
Assessment



EARTH EMERGENCY

AT ISSUE IS OUR COMMON FUTURE SURVIVAL

1995



Cumulative vertebrate species recorded as extinct in the wild by the IUCN (2012).

Accelerated modern human-induced species losses, Gerardo Ceballos, 2015

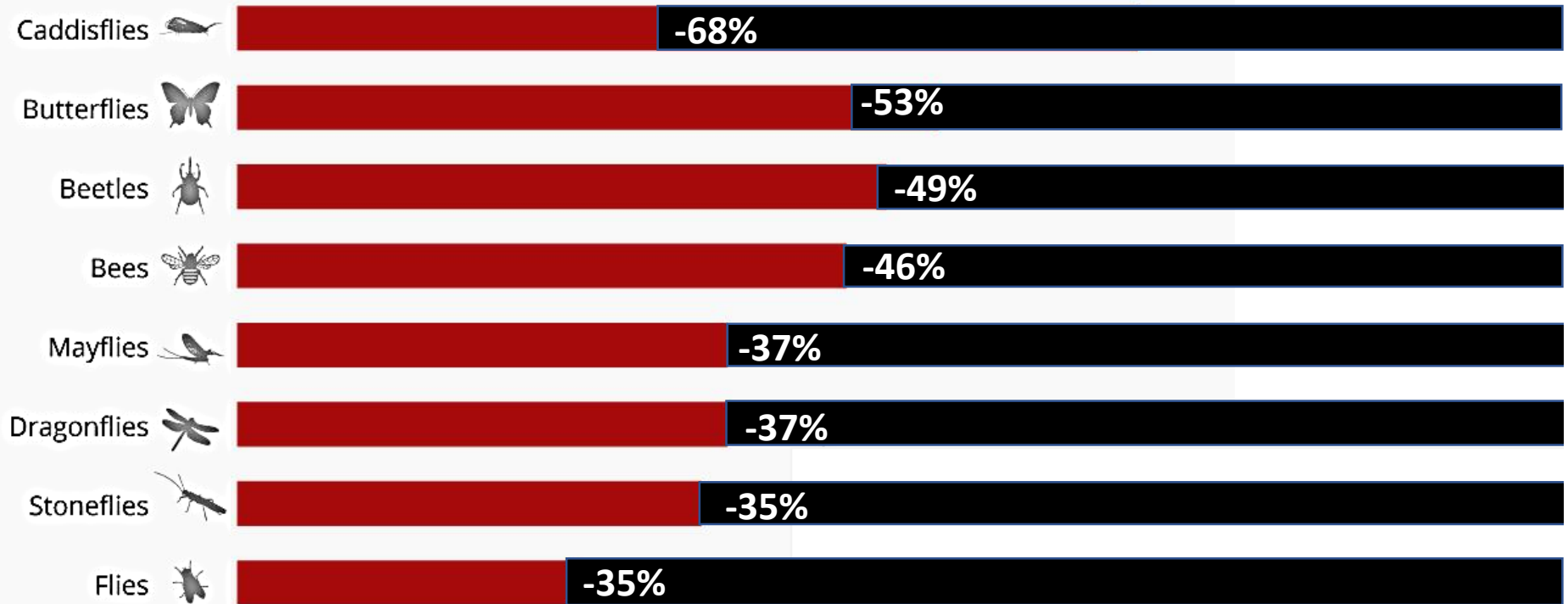
Global climate disruption

Global Catastrophic Collapse of Insects

Total global insect population decline over the past decade **41%**

Massive Insect Decline Threatens Collapse Of Nature

Percentage decline in selected global insect populations over the past decade

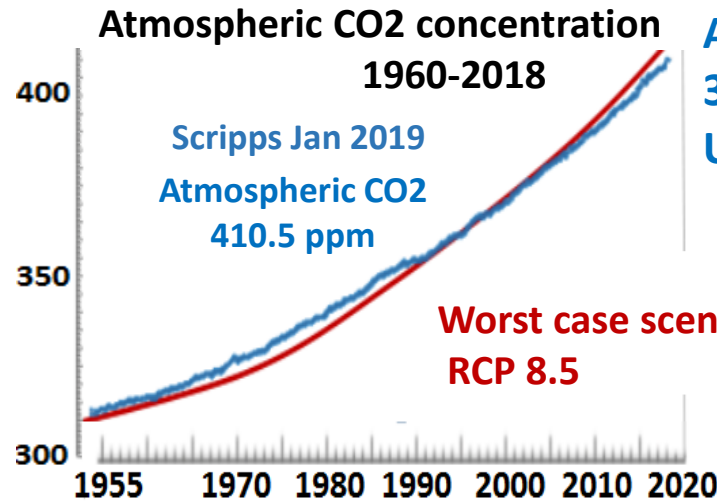


Worldwide decline of the entomofauna: A review of its drivers
Francisco Sánchez-Bayo, Jan 2019

Global CO2 Emissions and Atmospheric CO2 Concentration are on the Worst-Case Scenario

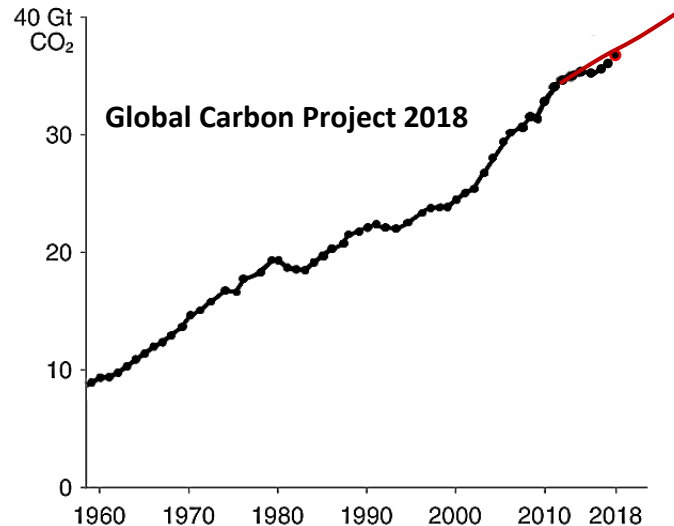
EARTH EMERGENCY

The world's governments have the world on a CO2 global suicide scenario



Accelerating atmospheric CO2
3.5 million year high
Unprecedented increase rate

Global Fossil Fuel CO2 Emissions
1960-2018

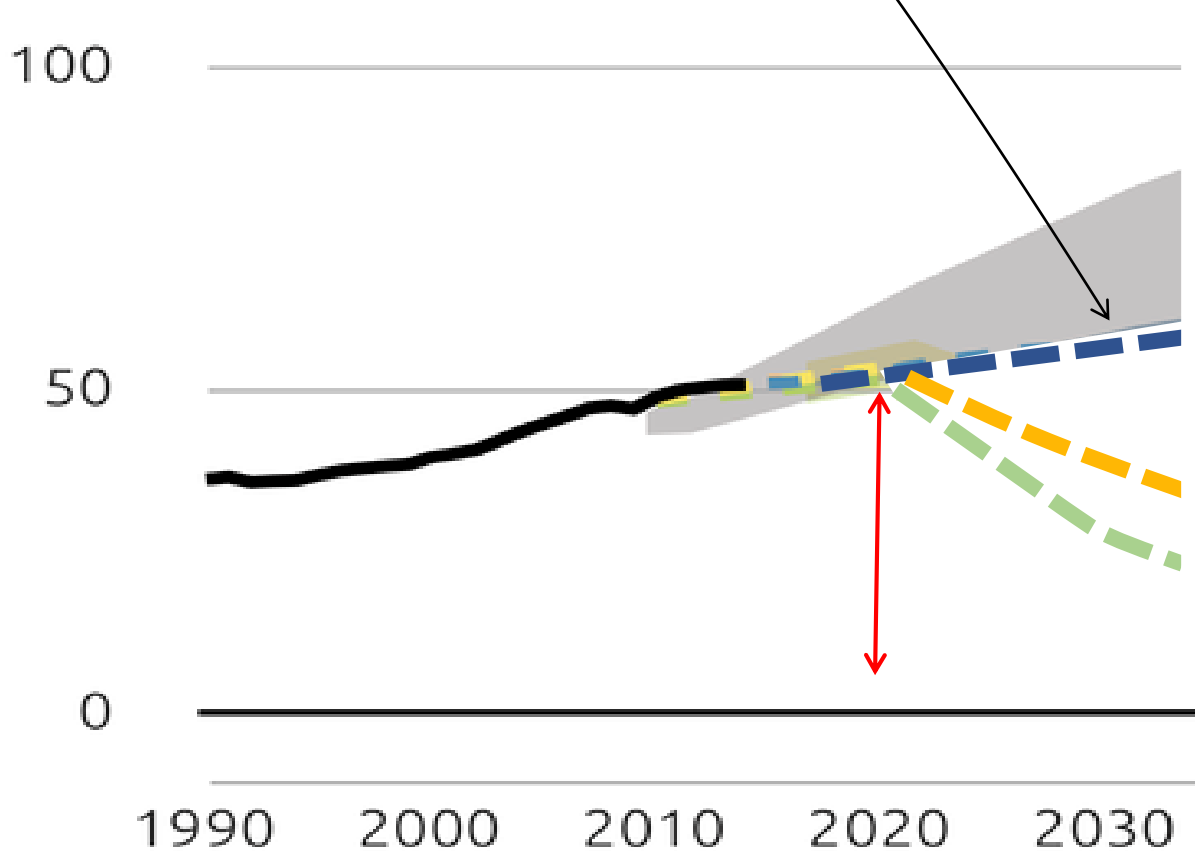


For our common future survival, global emissions must decline rapidly from 2020

BUT our governments have pledged to keep emitting MORE (the global suicide scenario)



Dec 2018 update



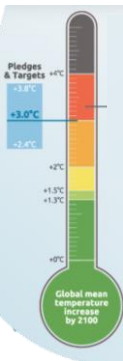
Warming projected by 2100

Baseline
4.1 – 4.8°C

Pledges & Targets
+3.0°C

— 2°C consistent by 2100

— 1.5°C consistent by 2100



Global and Regional Food Insecurity



At 1.5°C the CRD region will be impacted by increasing heat waves, wildfires, drought and severe storms at levels putting crop productivity at risk.

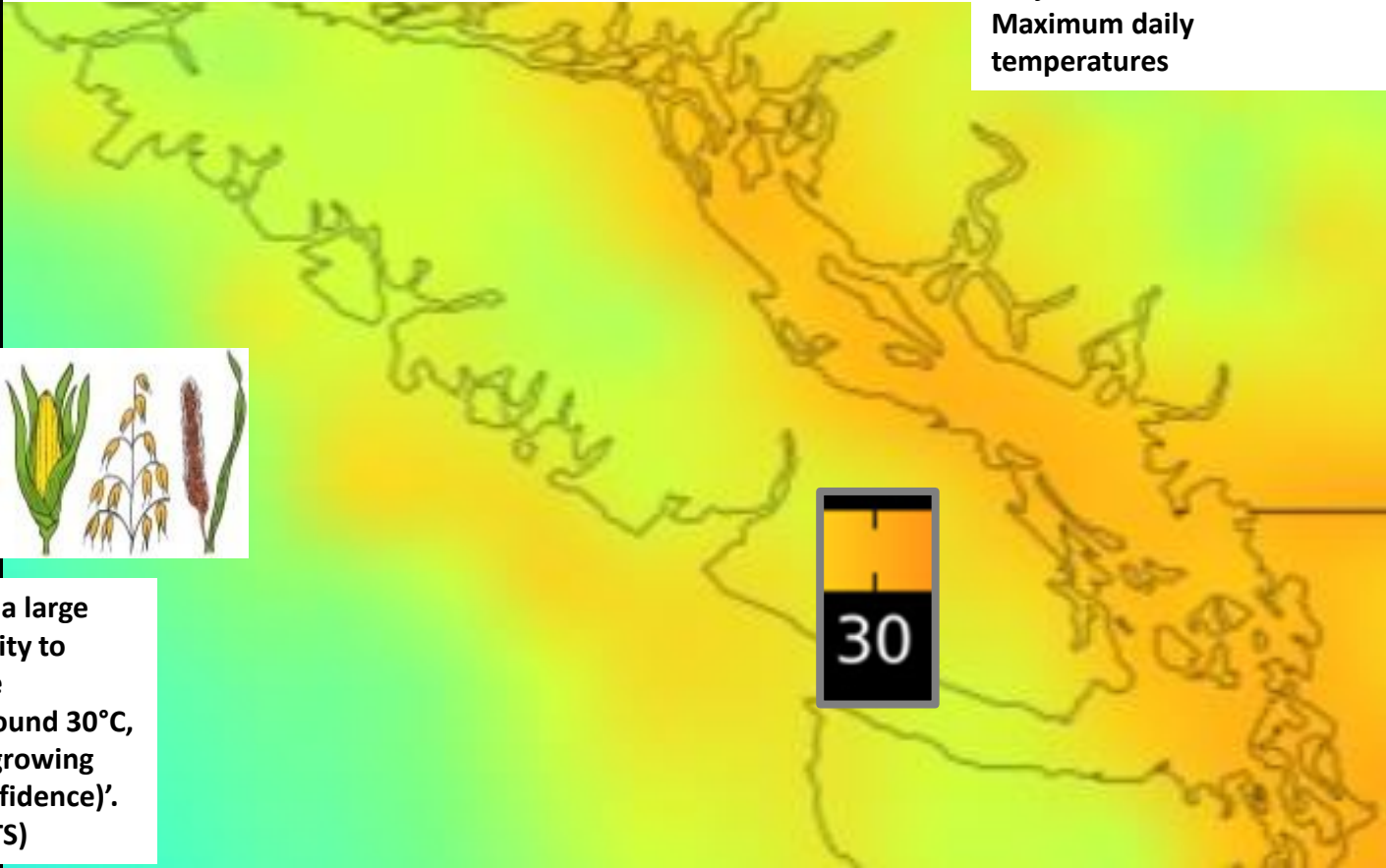
Regions that we import food products from will be much more severely impacted by climate variation and extreme weather events.

'It is virtually certain that, in most places, there will be more hot temperature extremes as global mean temperatures increase. These changes are expected for events defined as extremes on both daily and seasonal time scales. Increases in the frequency, duration and magnitude of hot extremes along with heat stress are expected'

(IPCC 2014 5th Assessment, Ch 12, Executive Summary)

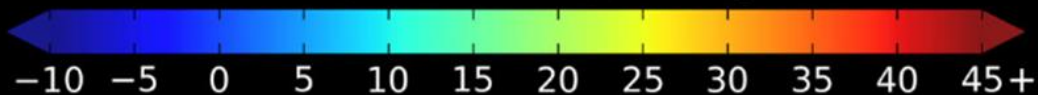
1.6°C of Global Warming

NASA Earth Exchange (NEX)
Downscaled Climate
Projections
Maximum daily
temperatures



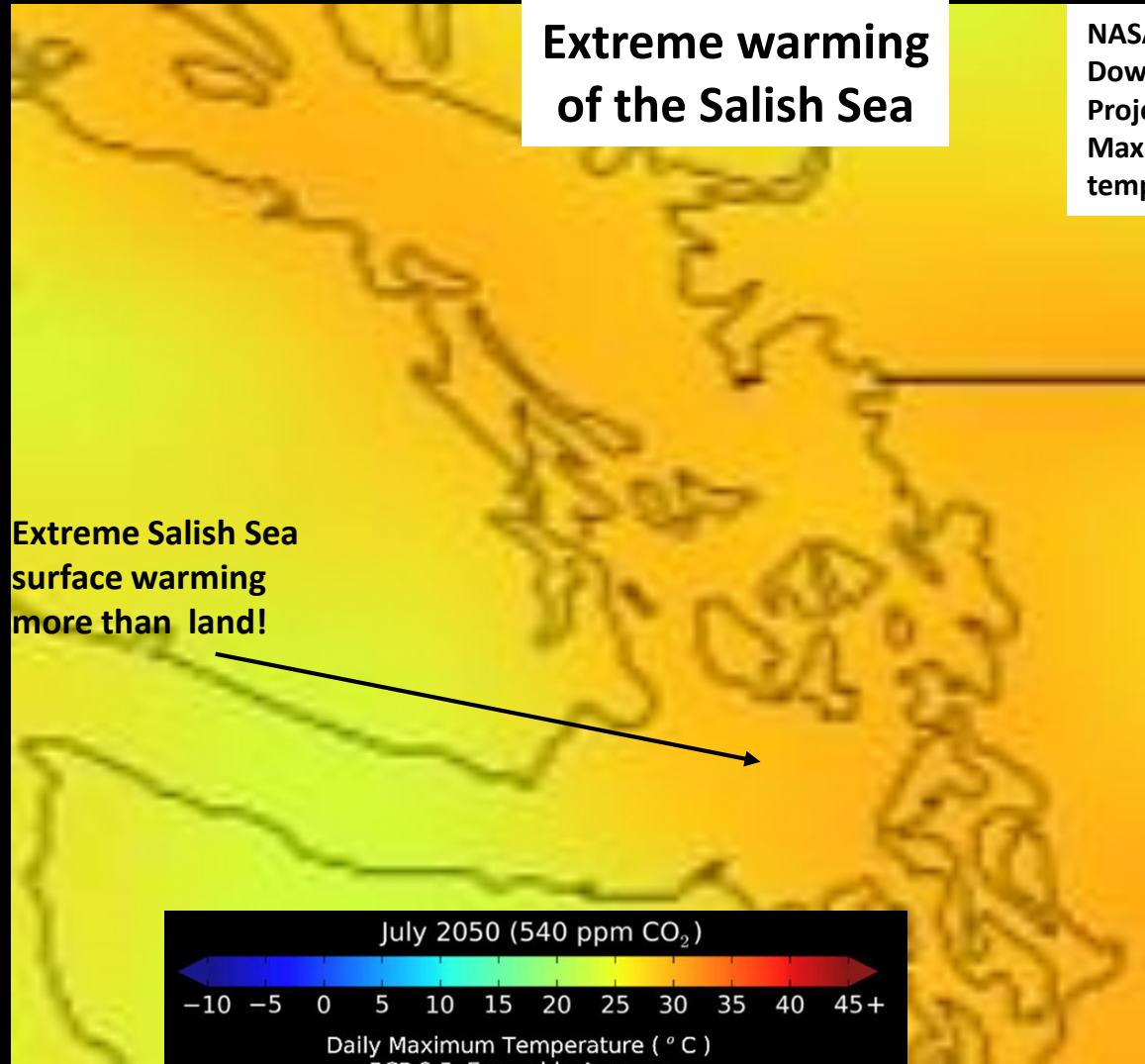
Crop yields have a large negative sensitivity to extreme daytime temperatures around 30°C, throughout the growing season (high confidence)¹. (IPCC AR4 WG2 TS)

July 2050 (540 ppm CO₂)



Daily Maximum Temperature (° C)
RCP 8.5, Ensemble Average

Maximum daily summer temperatures for Vancouver Island & Salish Sea at 1.6°C global warming



All salmon
species now
threatened

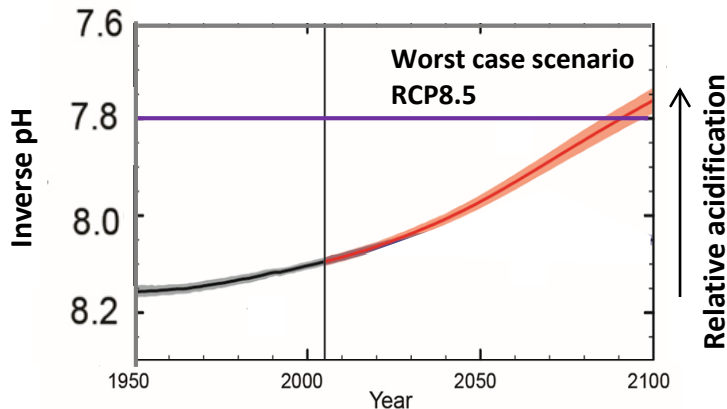
The Salish Sea

Big Ocean Acidification Hotspot

“The Salish Sea is one big ocean acidification hotspot. It’s corrosive from late fall through winter, including early spring. It’s so severe that it’s not just impacting pteropod shells; it’s impacting their survival.”

Dr. Nina Bednaršek

Southern California Coastal Waters Research Project



IPCC 2014 5th assessment WG1 Figure SPM 0-7

Puget Sound pH (Feb 2019)



pH (-10 ft) 7.8

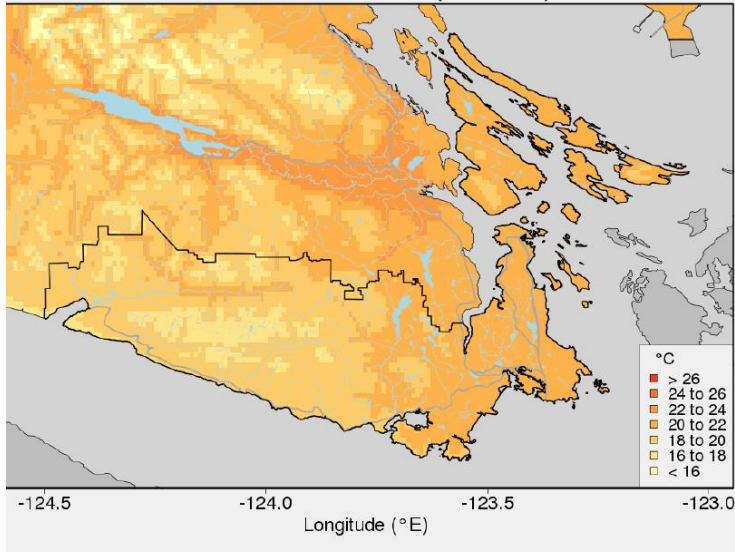
CRD: HEAT WAVES

“Crop yields have a large negative sensitivity to daytime temperatures around 30° C throughout the growing season” (high confidence) (IPCC AR4 2007 and AR5 2014)



1971-2000

Capital Regional District
Summer Max Temperature Past
CMIP5 Ensemble RCP85 (1971-2000)

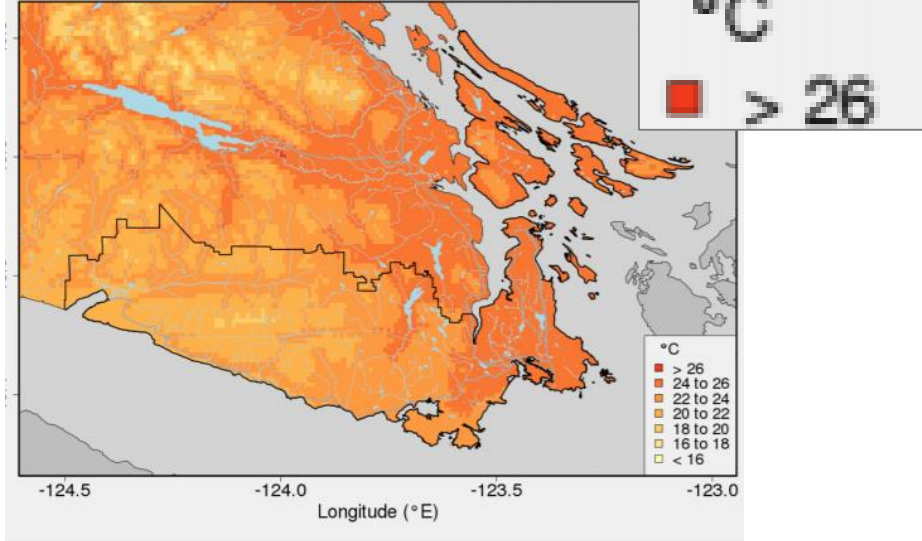


Summer Average Daytime High Temperature - Past

Maximum Temperature increase for the CRD at 2.5°C global warming

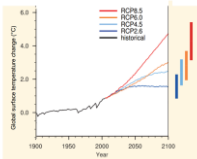
2.5°C Global Warming

Capital Regional District
Summer Max Temperature Projections
CMIP5 Ensemble RCP85 (2041-2070)



2: Summer Average Daytime High Temperature - Future (2050s)

IPCC AR5 temperature increase projections mean from 1850



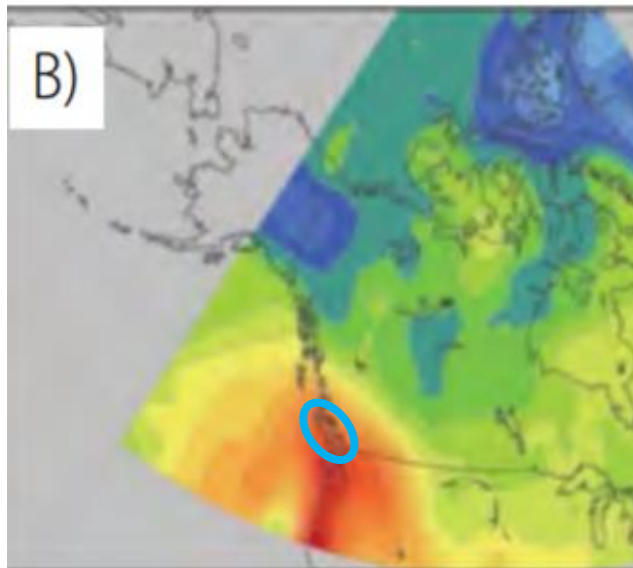
CLIMATE PROJECTIONS FOR THE CAPITAL REGION
APRIL 2017 Victoria CRD Capital Regional District

CRD:DROUGHT

Summer Season Regional Precipitation Changes for Central and Western Canada

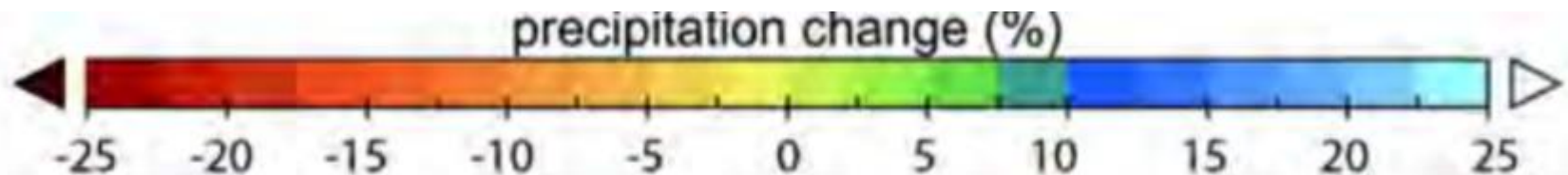
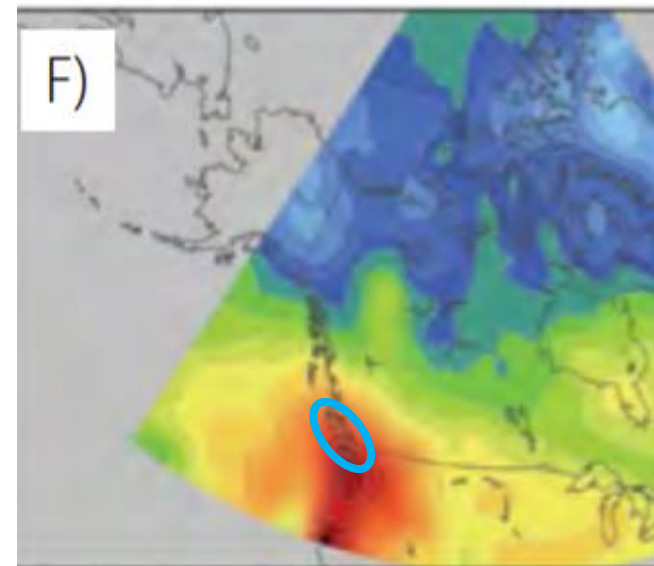
1.7°C global

(%) 2050s B1



2.4°C global

(%) 2080s B1



Warren, F.J. and Lemmen, D.S.,(2014): Canada in a Changing Climate..., NRCAN Government of Canada,

FIGURE 12: Projected seasonal changes in precipitation across Canada for the middle and end of the 21st century under various SRES scenarios. Changes are expressed relative to average values between 1961-1990.

