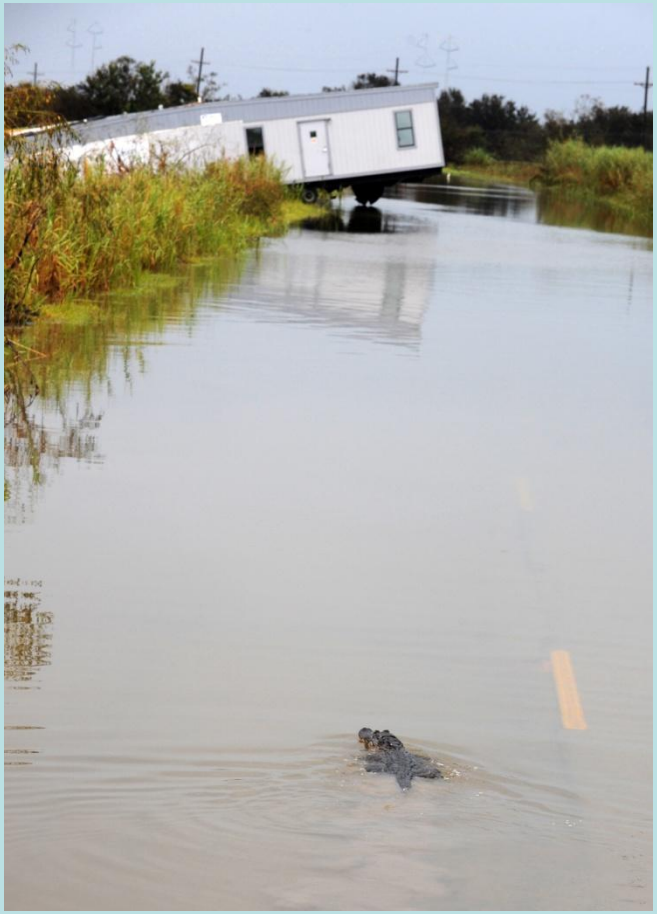
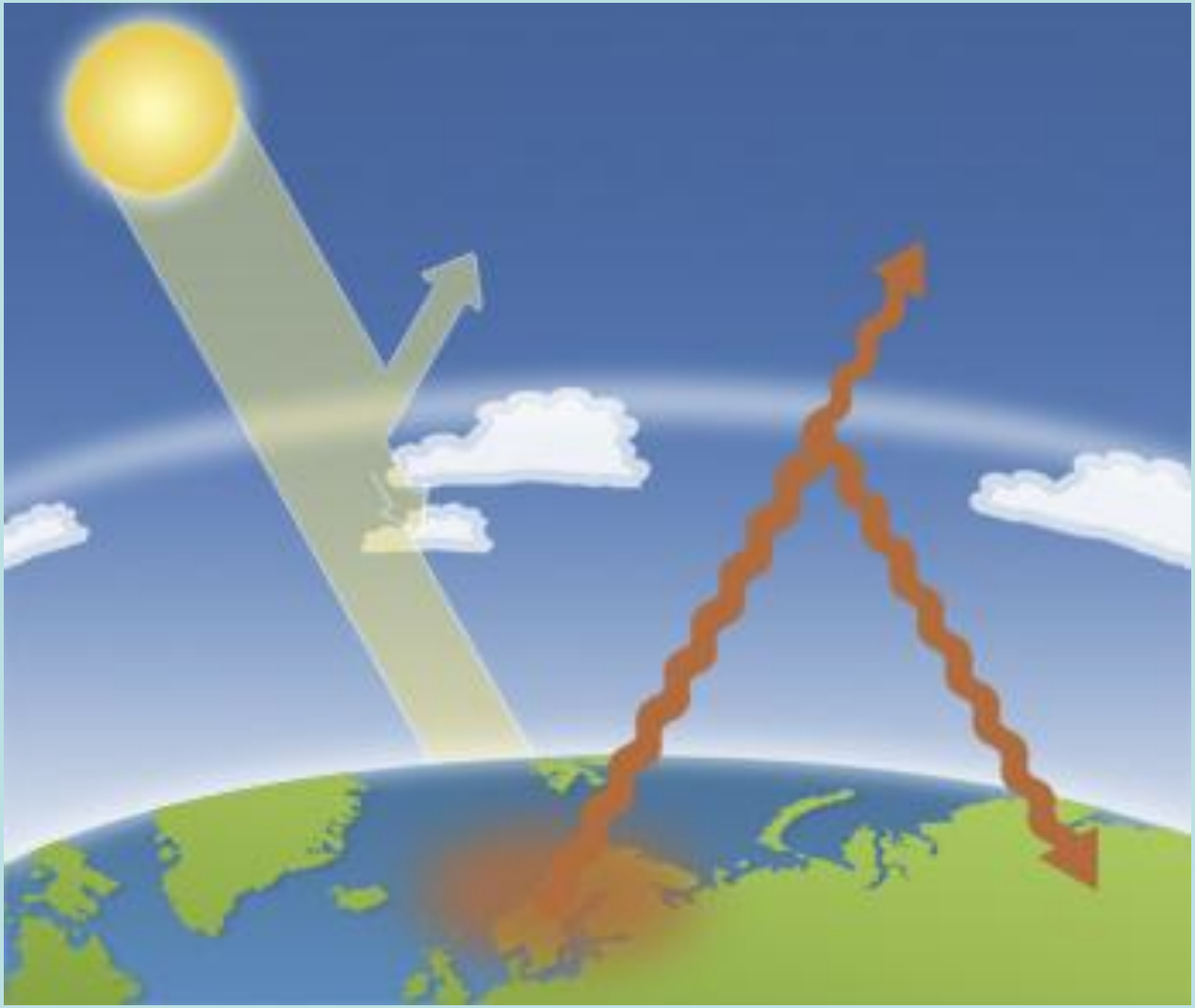
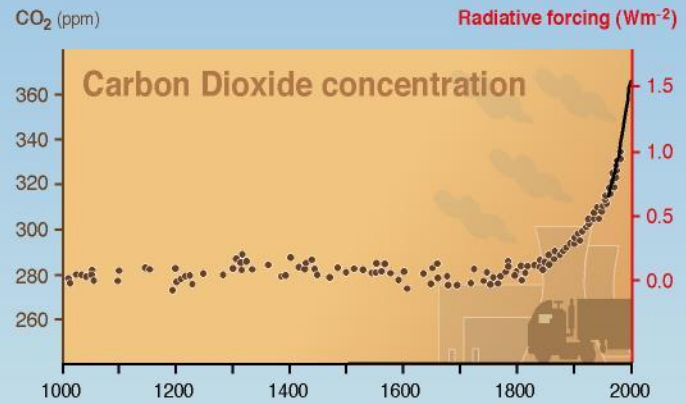
Klimaet under forandring
30. oktober 2010

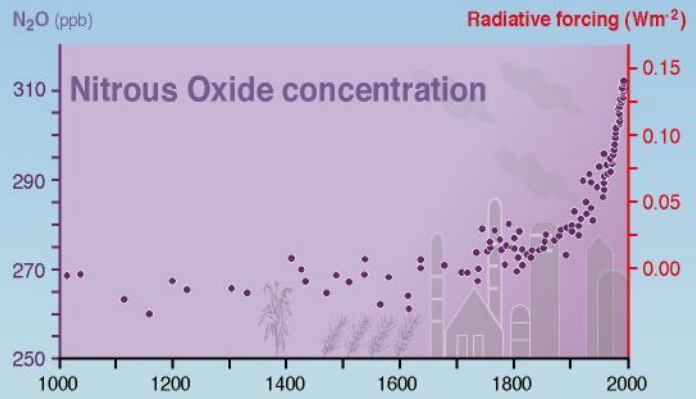


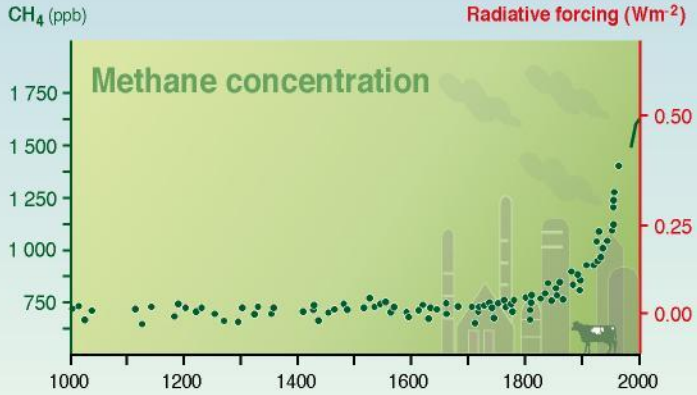
DRIVHUSEFFEKTEN

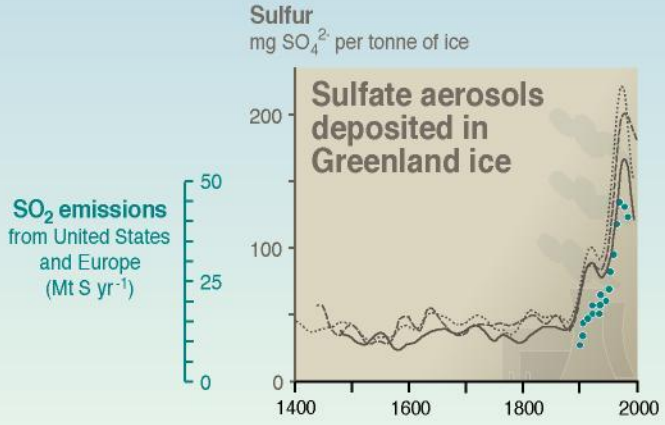


Indicators of the human influence on the atmosphere during the Industrial era









SYR - FIGURE
WG1 FIGURE S

WMO UNEP

CO2 beregninger

IPCC Fourth Assessment Report: Climate Change 2007

Table TS.2: *Classification of recent (Post-Third Assessment Report) stabilization scenarios according to different stabilization targets and alternative stabilization metrics [Table 3.5].*

Category	Additional radiative forcing (W/m^2)	CO_2 concentration (ppm)	CO_2-eq concentration (ppm)	Global mean temperature increase above pre-industrial at equilibrium, using "best estimate" climate sensitivity[a), b)] (°C)	Peaking year for CO_2 emissions[c)]	Change in global CO_2 emissions in 2050 (% of 2000 emissions)[c)]	No. of assessed scenarios
I	2.5-3.0	350-400	445-490	2.0-2.4	2000 - 2015	-85 to -50	6
II	3.0-3.5	400-440	490-535	2.4-2.8	2000 - 2020	-60 to -30	18
III	3.5-4.0	440-485	535-590	2.8-3.2	2010 - 2030	-30 to +5	21
IV	4.0-5.0	485-570	590-710	3.2-4.0	2020 - 2060	+10 to +60	118
V	5.0-6.0	570-660	710-855	4.0-4.9	2050 - 2080	+25 to +85	9
VI	6.0-7.5	660-790	855-1130	4.9-6.1	2060 - 2090	+90 to +140	5
						Total	177

Notes:

a) Note that global mean temperature at equilibrium is different from expected global mean temperatures in 2100 due to the inertia of the climate system.

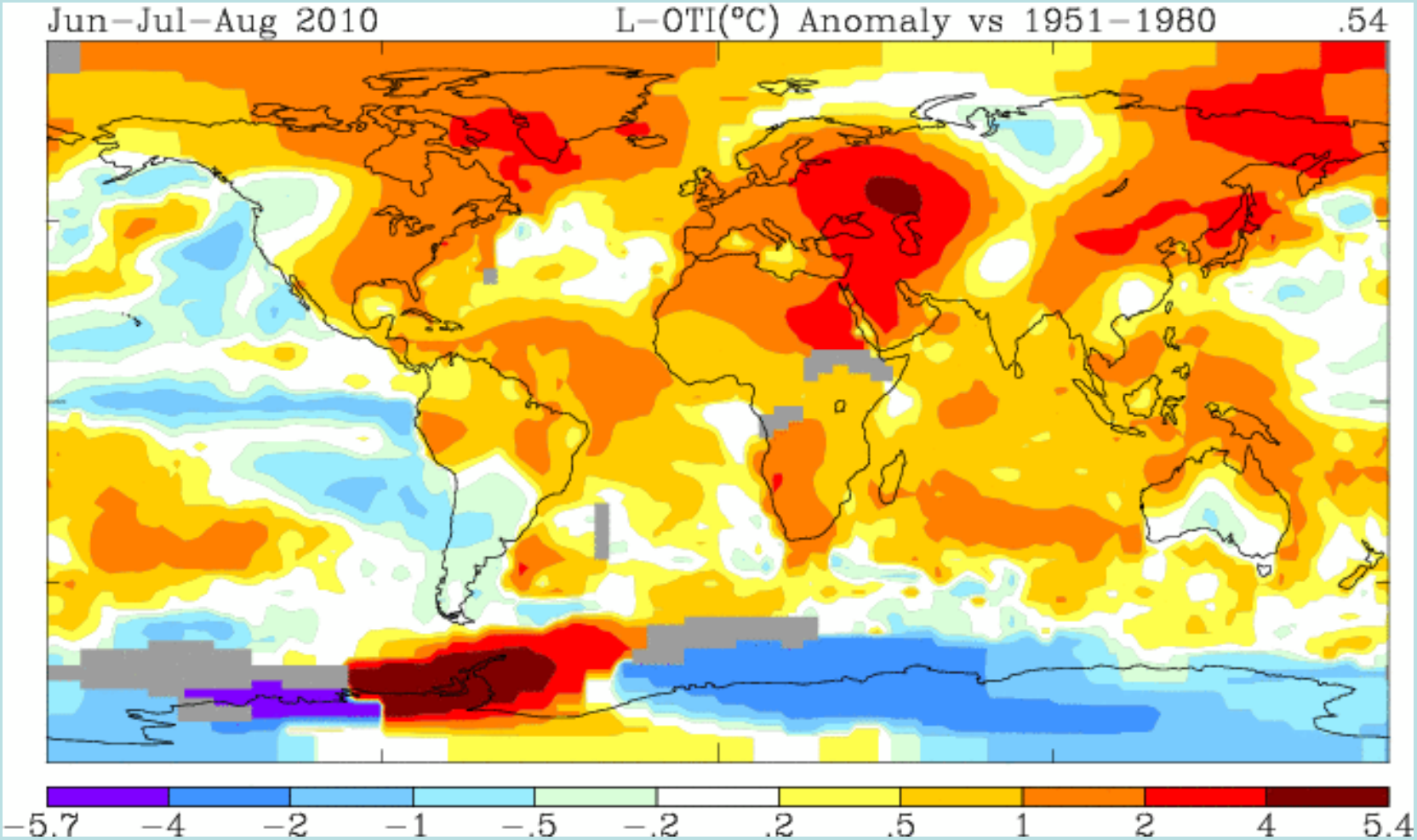
b) The simple relationships $T_{eq} = T_{2\times CO2} \times \ln([CO_2]/278)/\ln(2)$ and $\Delta Q = 5.35 \times \ln([CO_2]/278)$ are used. Non-linearities in the feedbacks (including e.g., ice cover and carbon cycle) may cause time dependence of the effective climate sensitivity, as well as leading to larger uncertainties for greater warming levels. The best-estimate climate sensitivity (3 °C) refers to the most likely value, that is, the mode of the climate sensitivity PDF consistent with the WGI assessment of climate sensitivity and drawn from additional consideration of Box 10.2, Figure 2, in the WGI AR4.

c) Ranges correspond to the 15th to 85th percentile of the Post-Third Assessment Report (TAR) scenario distribution. CO_2emissions are shown, so multi-gas scenarios can be compared with CO_2-only scenarios.

Note that the classification needs to be used with care. Each category includes a range of studies going from the upper to the lower boundary. The classification of studies was done on the basis of the reported targets (thus including modelling uncertainties). In addition, the relationship that was used to relate different stabilization metrics is also subject to uncertainty (see Figure 3.16).

- **It could mean more flooding, more droughts, more extreme weather and a serious disruption of water supplies**

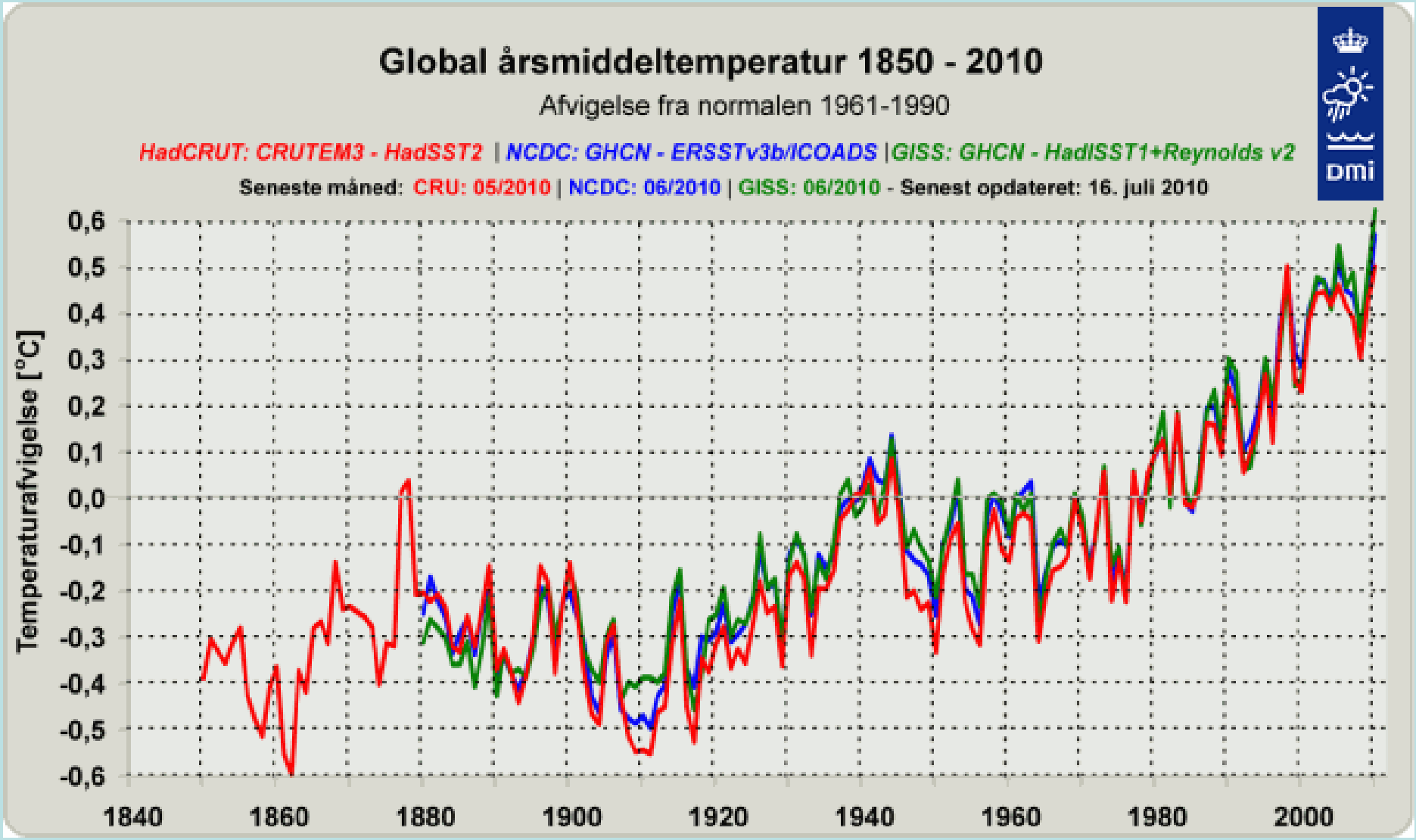
Sommer 2010


Jun–Jul–Aug 2010
L–OTI(°C) Anomaly vs 1951–1980
.54
–5.7
–4
–2
–1
–.5
–.2
.2
.5
1
2
4
5.4

Sommer 2010

Rank (out of 131 years)	Warmest/Next Warmest Year on Record		
Global			
Land	+1.04°C (+1.87°F)	1st warmest	2007 (+1.02°C/1.84°F)
Ocean	+0.53°C (+0.95°F)	2nd warmest	1998 (+0.56°C/1.01°F)
Land and Ocean	+0.67°C (+1.21°F)	1st warmest	2002 (+0.62°C/1.12°F)
Northern Hemisphere			
Land	+1.14°C (+2.05°F)	2nd warmest	2007 (+1.22°C/2.20°F)
Ocean	+0.55°C (+0.99°F)	1st warmest	2005 (+0.54°C/0.97°F)
Land and Ocean	+0.77°C (+1.39°F)	1st warmest	2007 (+0.73°C/1.31°F)
Southern Hemisphere			
Land	+0.78°C (+1.40°F)	3rd warmest	2005 (+0.86°C/1.55°F)
Ocean	+0.53°C (+0.95°F)	2nd warmest	1998 (+0.60°C/1.08°F)
Land and Ocean	+0.57°C (+1.03°F)	2nd warmest	1998 (+0.63°C/1.13°F)

January - July	Anomaly	Rank	Warmest/Next Warmest
		(out of 131 years)	Year on Record
Global			
Land	+1.07°C (+1.93°F)	1st warmest	2007 (+1.06°C/1.91°F)
Ocean	+0.54°C (+0.97°F)	2nd warmest	1998 (+0.56°C/1.01°F)
Land and Ocean	+0.68°C (+1.22°F)	1st warmest	1998 (+0.67°C/1.21°F)
Northern Hemisphere			
Land	+1.16°C (+2.09°F)	3rd warmest	2007 (+1.26°C/2.27°F)
Ocean	+0.54°C (+0.97°F)	1st warmest	1998 (+0.53°C/0.95°F)
Land and Ocean	+0.78°C (+1.40°F)	1st warmest	2007 (+0.75°C/1.35°F)
Southern Hemisphere			
Land	+0.83°C (+1.49°F)	3rd warmest	2005 (+0.88°C/1.58°F)
Ocean	+0.55°C (+0.99°F)	2nd warmest	1998 (+0.60°C/1.08°F)
Land and Ocean	+0.59°C (+1.06°F)	2nd warmest	1998 (+0.64°C/1.15°F)

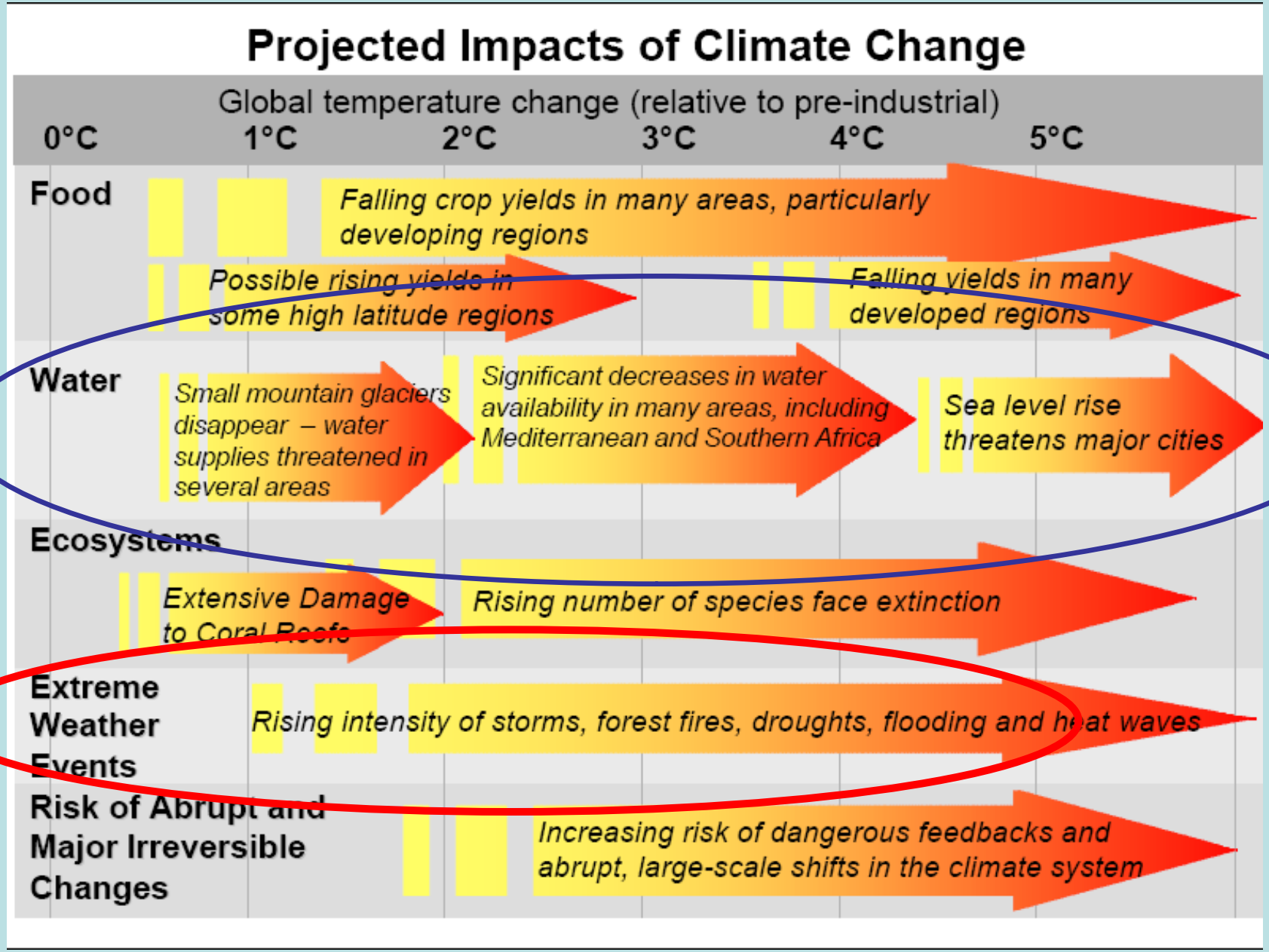

Global årsmiddeltemperatur 1850 - 2010
Afvigelse fra normalen 1961-1990
HadCRUT: CRUTEM3 - HadSST2 | NCDC: GHCN - ERSSTv3b/ICOADS | GISS: GHCN - HadISST1+Reynolds v2
Seneste måned: CRU: 05/2010 | NCDC: 06/2010 | GISS: 06/2010 - Senest opdateret: 16. juli 2010
DMI
Temperaturafvigelse [°C]
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
-0,2
-0,3
-0,4
-0,5
-0,6
1840
1860
1880
1900
1920
1940
1960
1980
2000

Konsekvenser Danmark

- **Længere vækstsæson**
- **Mildere vintre → mindre energiforbrug**
- **Vindøgning**
- **Stigning af vandspejlet/grundvandet**
- **Nye skadedyr/sygdomme**
- **Ændring af nedbøren sommer og vinter**
  - **Intensitet**
  - **Mængder**

Konsekvenser globalt

- **Færre kuldedødsfald**
- **Størst temperaturstigning i Arktis/Antarktis**
- **Vandmangel pga. ændret fordeling**
- **Voldsommere vejr**
- **Stigning af vandspejlet**
- **Fødevare mangel**
- ***Ændring af sygdomsudbredelse***



Stern Review (2006)

’Vi arver ikke Jorden fra vores forældre, men vi låner den af vores børn’

(Indiansk ordsprog)

TIPPING POINTS

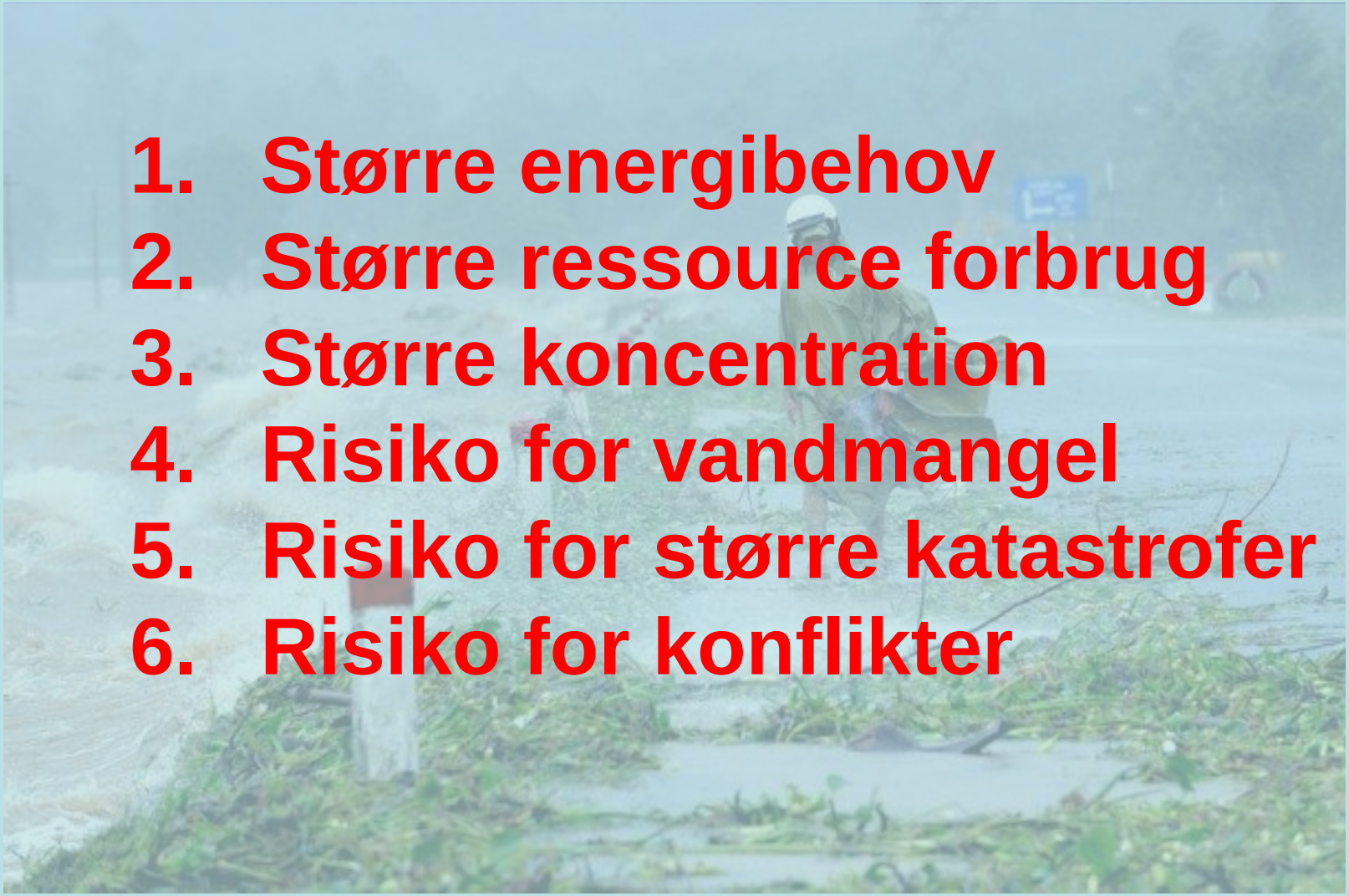
1. Mindre is og sne på kloden

- Meget is→ stor refleksion af sollys
- Mindre is → lille refleksion af sollys
- Lille refleksion → større opvarmning
- Opvarmning af havet → mere is smelter
- Smeltevand øger gletsjerhastighed
- Endnu mindre is → øget opvarmning

2. Optøning af permafrost

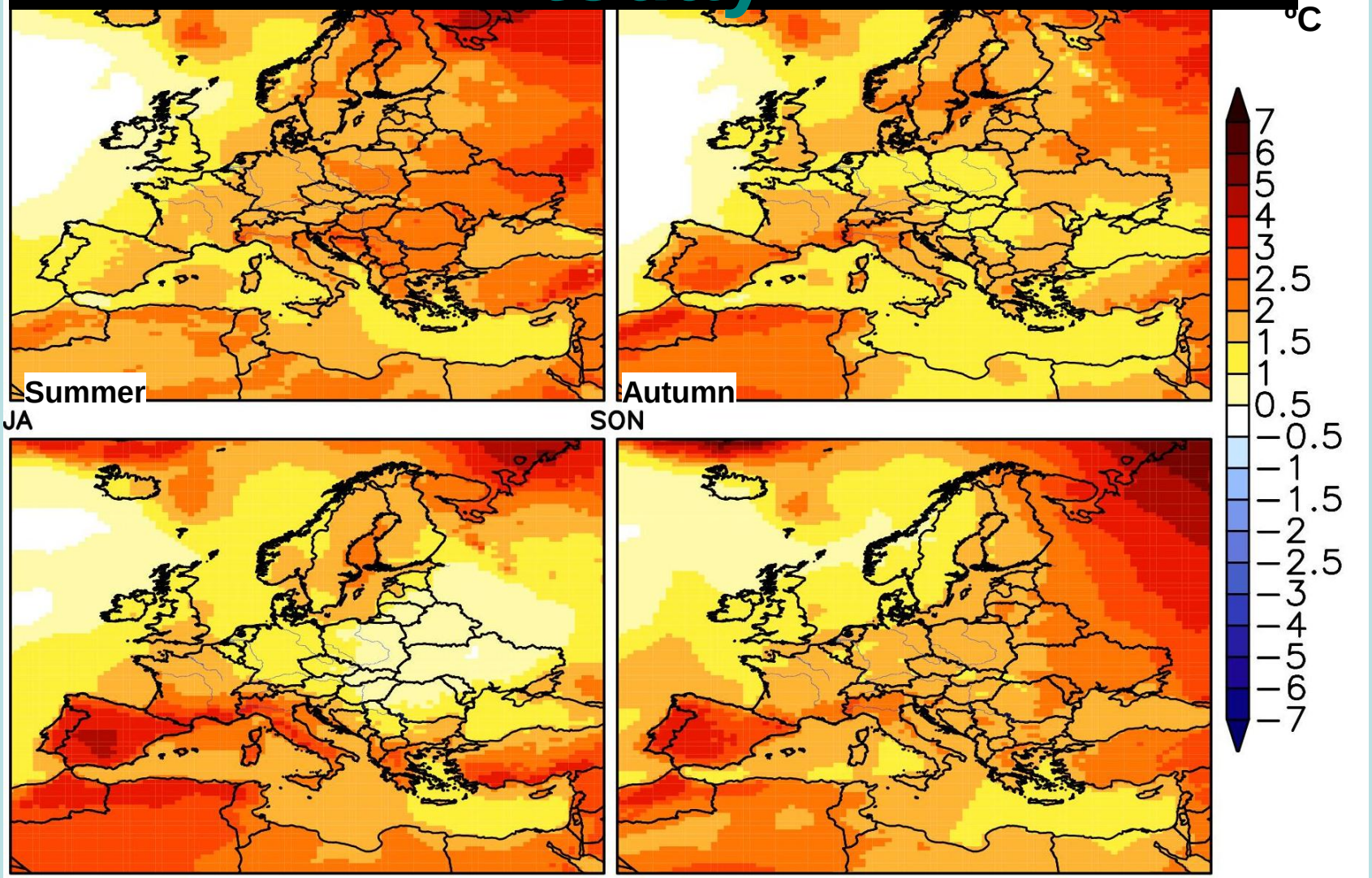
- Frigivelse af metan→ større drivhuseffekt → øget opvarmning → hurtigere optøning

BEFOLKNINGSTILVÆKSTEN

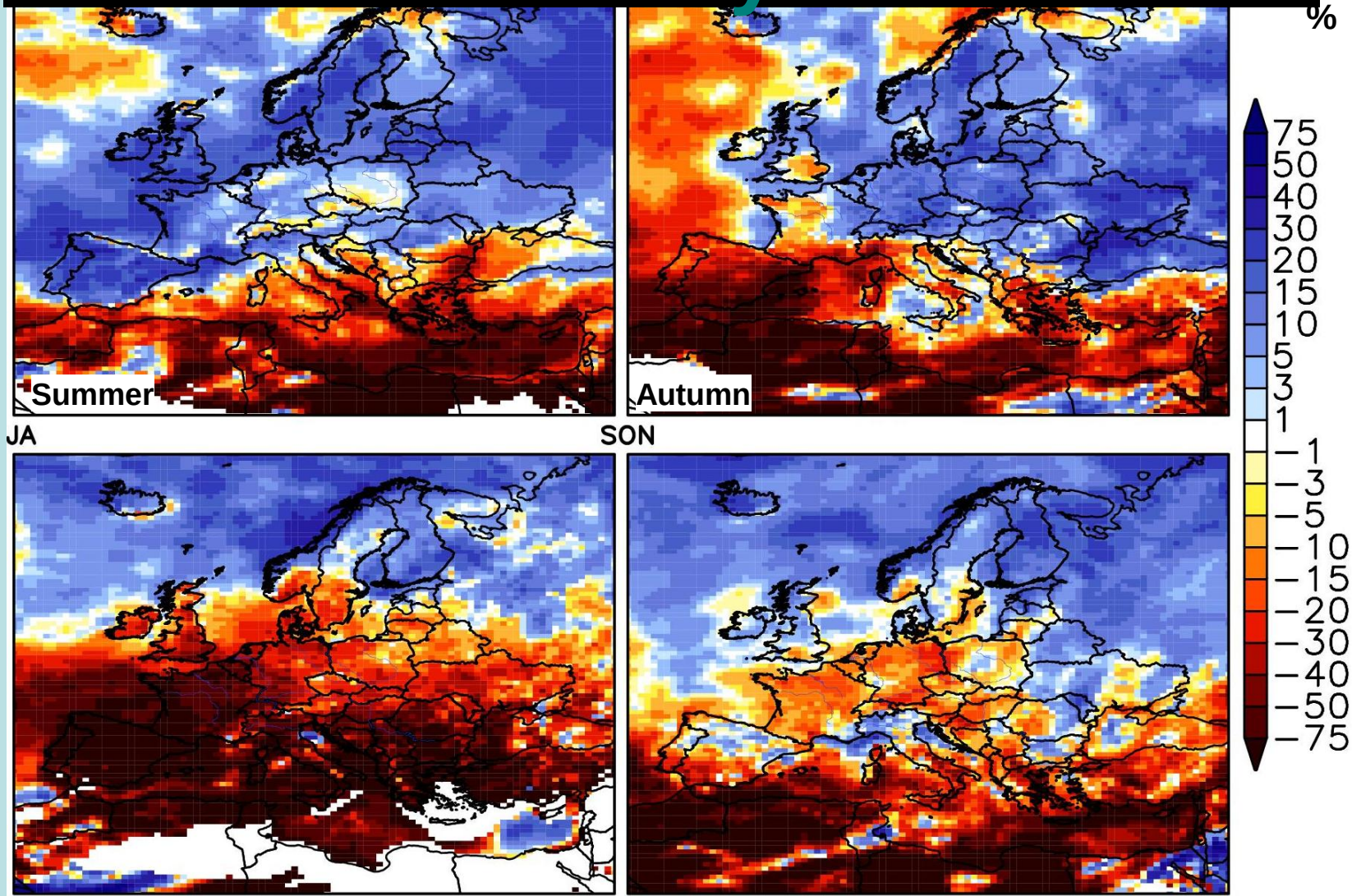


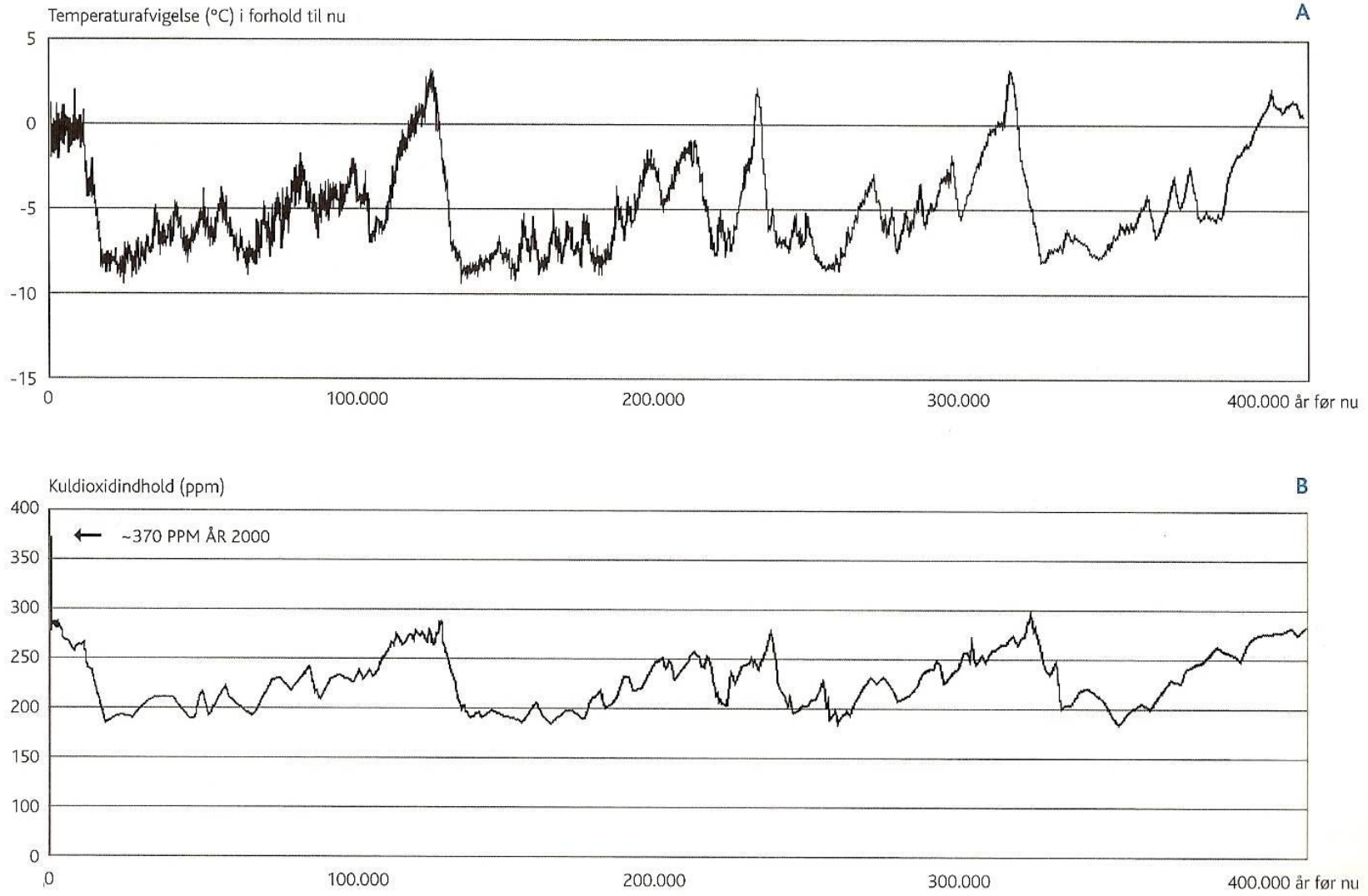
1. Større energibehov
2. Større ressource forbrug
3. Større koncentration
4. Risiko for vandmangel
5. Risiko for større katastrofer
6. Risiko for konflikter

Temperature changes (A1B), around 2050 compared to today



Precipitation changes (A1B), around 2100 compared to today





Der er en nøje sammenhæng mellem atmosfærens temperatur (A) og dens indhold af kuldioxid (B) gennem de sidste 400.000 år. Kurverne fortæller dog ikke, om det er CO_2-indholdet, som skaber de høje temperaturer eller omvendt. Oplysningerne stammer fra den antarktiske indlandsis.