IEEJ特別講演会 2014年5月27日

IPCC 第5次評価報告書の評価
第1～第3作業部会全体を通して

東京大学客員教授
RITE参与
山口光恒

IPCC報告書とは

- Policy relevant

  政策立案に役立つ情報の提供

- but not policy prescriptive

  特定の目標や政策を推奨することはない

IPCCと国際交渉(COP)の関係

- 1990年 IPCC第1次報告
- 1995年 IPCC第2次報告
- 2001年 IPCC第3次報告
- 2007年 IPCC第4次報告
- 2014年 IPCC第5次報告

- 1992年 気候変動枠組み条約(UNFCCC)採択(発効は1994年)
- 1997年 京都議定書締結(発効は2005年)
- 2001年 マラケッシュ合意(京都メカニズム確定)
- 2℃と世界排出半減論
- COP21(パリ) 2020年以降の枠組み交渉

IPCC報告書の影響が強くなりすぎた。

IPCC報告書に対する誤解

- 国際交渉 カンクンでのCOP17（後日訂正）

  "urges developed country Parties to increase the ambition of their economy-wide emission reduction targets, with a view to reducing their (GHG emissions) --- to a level consistent with that recommended by (IPCC 4th assessment report).

- 日本

  民主党政権当時 25%削減は科学（IPCC）の要請

- マスメディア

  海外、山口光恒編著「実現可能な気候変動対策」丸善出版第11章参照

  国内、コスト無し、コスト試算の条件無し、原子力と再エネ

IPCC第5次報告書の構成

- 第1作業部会　温暖化の科学 2013年9月
  政策決定者向け要約(SPM)、技術要約、各章
- 第2作業部会　影響、適応、脆弱性 2014年3月
  政策決定者向け要約(SPM)、技術要約、各章
- 第3作業部会　緩和 2014年4月
  政策決定者向け要約(SPM)、技術要約、各章
- 統合報告書 2014年10月

IPCC報告書の論点

- 温暖化問題の位置づけ

  --- “climate exceptionalism”, the notion that global warming is a problem like no other, is coming to an end. The Economist, April 5, 2014

- 温暖化による損害

  気温上昇と損害（Burning Embers)

  経済的損害

- 対策のコスト

  2℃目標：2010年に消費の3～11%　ただし理想的な条件

  費用便益分析は困難

- 今後の焦点は2℃目標からリスク管理へ

日経経済教室：2014.5.6付け

WG1の主たる内容

温暖化と人為的活動
気候感度の変更
累計排出量と気温上昇の関係

WG1報告書

- 温暖化は人為的なもの

  温暖化の主たる原因が人為的なものであることはExtremely Likelyである（95-100%）

- 気候感度の変更

  第3次報告 1.5-4.5 C (best estimate 2.5), 第4次報告 2.0-4.5 C (best estimate 3.0)
  第5次報告 1.5-4.5 C (no best estimate was shown)

- Hiatus（気温上昇の停滞）と懐疑論者

  1998–2012年の15年間気温上昇は停滞気味であるが長期上昇傾向は不変

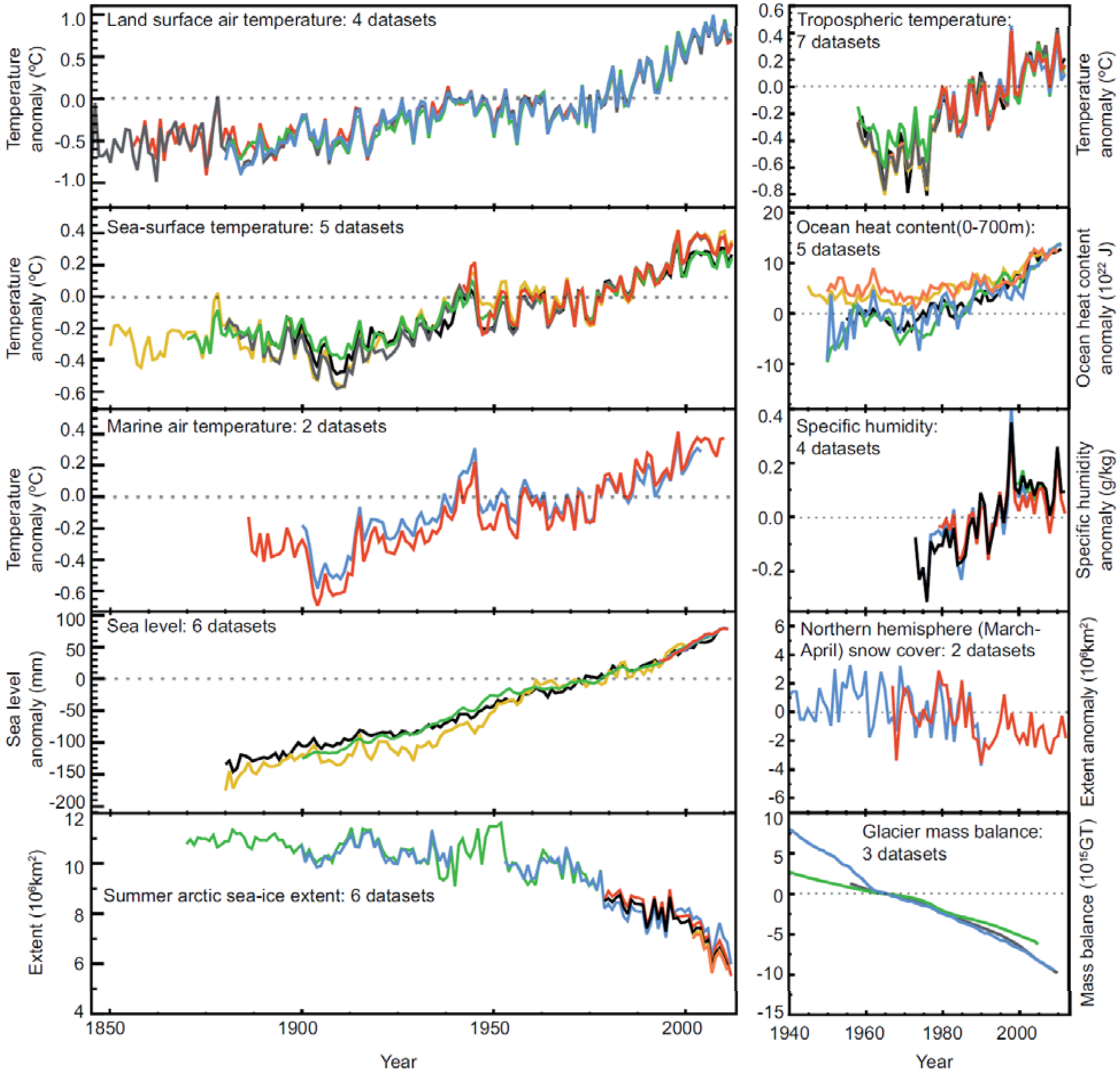
- 過去の気温上昇

  工業化以降1986-2005年までに0.61℃上昇、2003-2012年までなら0.78℃上昇

- 累積排出量の気温上昇はLinear（８枚目のスライド）

  気温上昇を工業化から2℃以内に抑える確率50%以上、66%以上とするのに必要なCO_2の累計排出量はそれぞれ 3010Gt、2900Gt。これに対して2011年までの累計排出量は1890Gt、従って今後の最大許容排出量はそれぞれ1120Gt、1010Gtである。2010年のCO_2排出量は37.2Gtなので、現在の排出量を続ける限り、前者では30年、後者では27年で排出を打ち切らねばならない。

Hiatus問題



AR5/WG1　Figure TS.1

The long-term climate model simulations show a trend in global-mean surface temperature from 1951 to 2012 that agrees with the observed trend (very high confidence). <u>There are, however, differences between simulated and observed trends over periods as short as 10 to 15 years</u> (e.g., 1998 to 2012).

<u>Due to natural variability, trends based on short records</u> are very sensitive to the beginning and end dates and <u>do not in general reflect long-term climate trends</u>

2014年5月掲載 禁無断転載

IPCC/WG1/SPM

累計CO2排出量と気温上昇には直線の関係がある

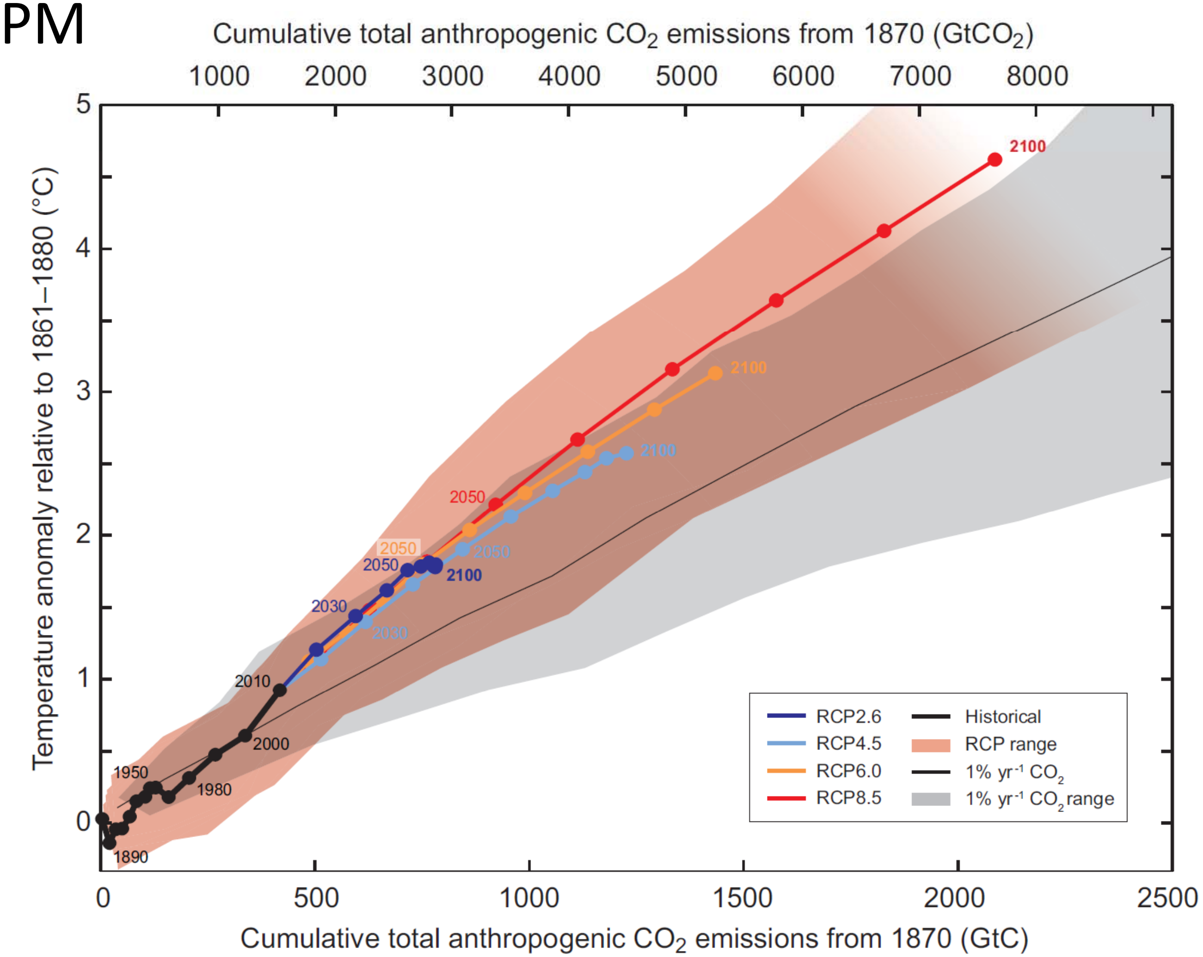


Figure SPM.10 | Global mean surface temperature increase as a function of cumulative total global CO_2 emissions from various lines of evidence. Multi-model results from a hierarchy of climate-carbon cycle models for each RCP until 2100 are shown with coloured lines and decadal means (dots). Some decadal means are labeled for clarity (e.g., 2050 indicating the decade 2040–2049). Model results over the historical period (1860 to 2010) are indicated in black. The coloured plume illustrates the multi-model spread over the four RCP scenarios and fades with the decreasing number of available models in RCP8.5. The multi-model mean and range simulated by CMIP5 models, forced by a CO_2 increase of 1% per year (1% yr^{-1} CO_2 simulations), is given by the thin black line and grey area. For a specific amount of cumulative CO_2 emissions, the 1% per year CO_2 simulations exhibit lower warming than those driven by RCPs, which include additional non-CO_2 forcings. Temperature values are given relative to the 1861–1880 base period, emissions relative to 1870. Decadal averages are connected by straight lines. For further technical details see the Technical Summary Supplementary Material. {Figure 12.45; TS TFE.8, Figure 1}

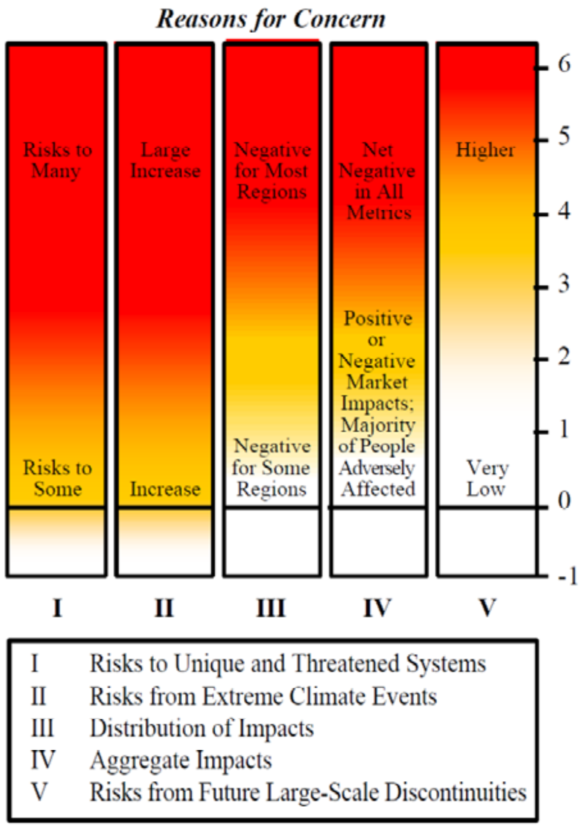
Limiting the warming caused by anthropogenic CO2 emissions alone with a probability of **>50%, and >66% to less than 2° C since the period 1861–1880,** will require cumulative CO2 emissions **to stay below 820 GtC and 790 GtC when accounting for non-CO2 gases. An amount of 515 (445- to 585) GtC was already emitted by 2011**.

WG2の主たる内容

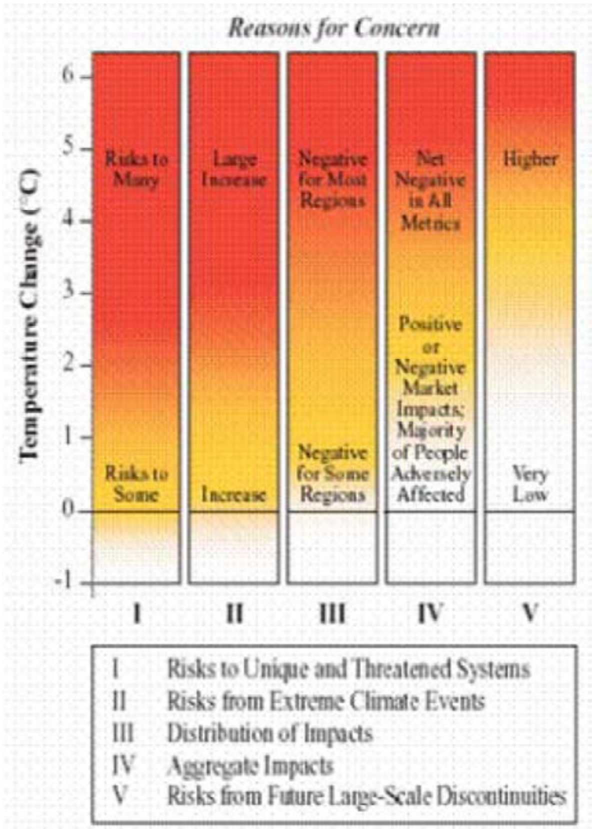
Burning Embers（RFC) の変化と
政策への影響
2.6℃上昇の損害は所得の0.2～2.0%

Burning Embersの変化 (1)

TAR SPM



AR4 Chapter 19 Draft



TARとAR4の間では大きな変更無し。但しAR4（ch. 19及びSPM）からは削除、Re: Stephen Schneider, Science as a contact sport参照）

第4次報告と幻のBurning Embers

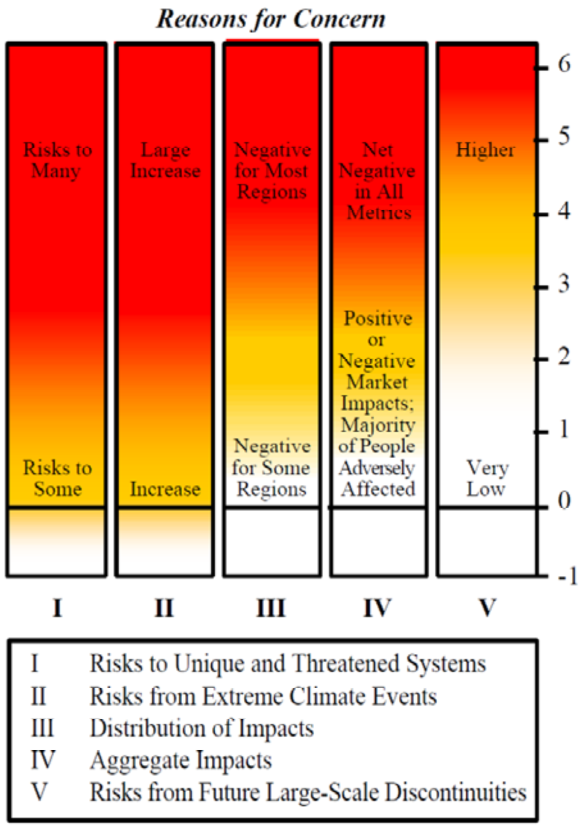
The US is still privately threatening to oppose the whole Chapter 19 in which all the supporting science for the “Reasons for Concern” and burning embers diagram is documented. It could get ugly, since I promised them I would tell all and expose them to public censure via the international media tomorrow if they try to get away with that pull-the-chapter stunt at the last minute. They may be the elephants in the room *during* Plenary, but after Plenary when the press is here, we are the elephants and they are the mice.

Stephen Schneider, “Science as a contact sport”. 2009

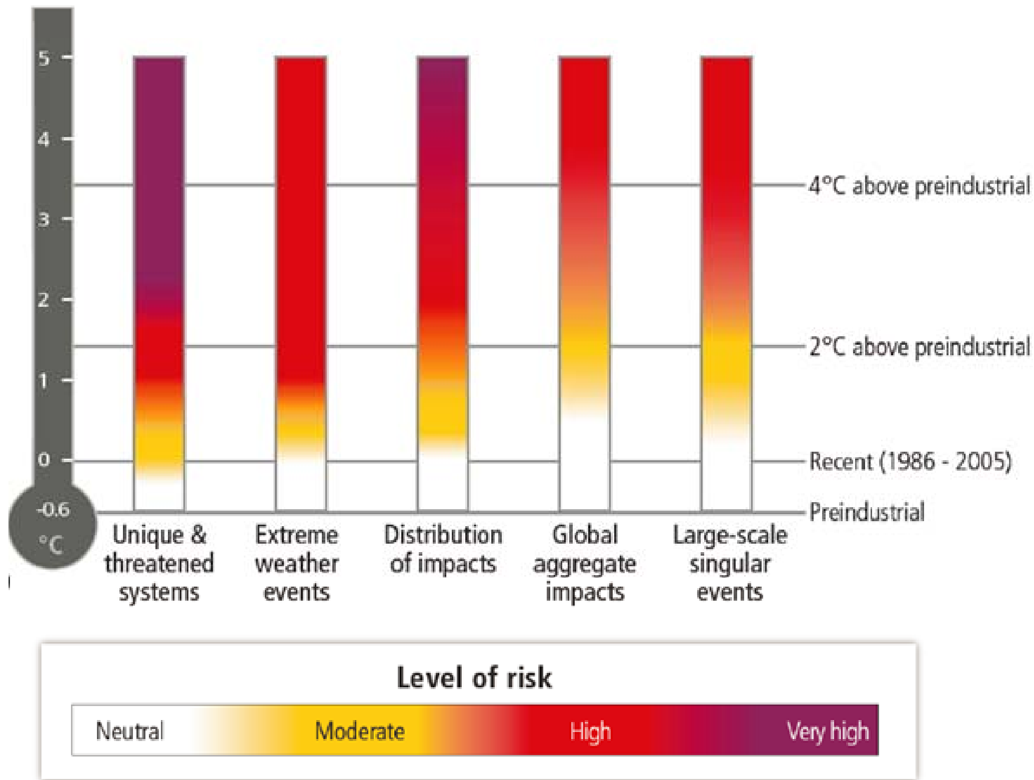
Burning Embersの変化 (2)

適応非考慮の脚注が消える

第3次報告



第5次報告



第3次報告と第5次報告の大きな相違 (expert judgment)

Burning Embersの変化 3
理由は何か

- 文献とexpert judgment による判断(SPM p.13）
- 大規模不可逆損害: --- 3℃を超えると氷床崩壊による不可逆な海面上昇の可能性によりリスクが高まる(SPM p.13 Box）
- 上記に伴い大規模不可逆損害のリスクは第4次報告の時よりも高くなっていると判断した。
- GISとWAISの崩壊で間氷期には海面が5-10メートル上昇したと考えられるが、このときは工業化からの気温上昇で見ると2℃以下であった。従って21世紀後半に一部似た状況である。

気温上昇と経済損害

- Difficult to estimate
- Depend on the number of assumptions, many of which are disputable, and many estimates do not account for catastrophic changes, tipping points etc.
- 上記の下で現在から2℃上昇の場合の世界の年間損害額は所得の0.2～2.0%（67%信頼区間）
- CLA R. Tolの反乱

損害額推定の根拠　WG2/第10章82頁

Table 10.B.1: Estimates of the welfare loss due to climate change (as equivalent income loss in percent); estimates of the uncertainty are given in bracket as standard deviations or 95% confidence intervals.

Study	Warming (°C)	Impact (%GDP)	Method	Coverage
(Nordhaus 1994b)	3.0	-1.3	Enumeration	Agriculture, energy demand, sea level rise
(Nordhaus 1994a)	3.0	-4.8 (-30.0 to 0.0)	Expert elicitation	Total welfare
(Fankhauser 1995)	2.5	-1.4	Enumeration	Sea level rise, biodiversity, agriculture, forestry, fisheries, electricity demand, water resources, amenity, human health, air pollution, natural disasters
(Tol 1995)	2.5	-1.9	Enumeration	Agriculture, biodiversity, sea level rise, human health, energy demand, water resources, natural disasters, amenity
(Nordhaus and Yang 1996)[a]	2.5	-1.7	Enumeration	Agriculture, energy demand, sea level rise
(Plamberk and Hope 1996)[a]	2.5	-2.5 (-0.5 to –11.4)	Enumeration	Sea level rise, biodiversity, agriculture, forestry, fisheries, electricity demand, water resources, amenity, human health, air pollution, natural disasters
(Mendelsohn et al. 2000)[a]	2.5	0.0	Enumeration	Agriculture, forestry, sea level rise, energy demand, water resources
(Mendelsohn et al. 2000)[a]	2.5	0.1	Statistical	Agriculture, forestry, energy demand
(Nordhaus and Boyer 2000)	2.5	-1.5	Enumeration	Agriculture, sea level rise, other market impacts, human health, amenity, biodiversity, catastrophic impacts
(Tol 2002)	1.0	2.3 (1.0)	Enumeration	Agriculture, forestry, biodiversity, sea level rise, human health, energy demand, water resources
(Maddison 2003)[a]	2.5	-0.1	Statistical	Household consumption
(Rehdanz and Maddison 2005)[a]	1.0	-0.4	Statistical	Self-reported happiness
(Hope 2006a)[a]	2.5	-0.9 (-0.2 to 2.7)	Enumeration	Sea level rise, biodiversity, agriculture, forestry, fisheries, energy demand, water resources, amenity, human health, air pollution, natural disasters
(Nordhaus 2006)	3.0	-0.9 (0.1) -1.1 (0.1)	Statistical	Economic output
(Nordhaus 2008)	3.0	-2.5	Enumeration	Agriculture, sea level rise, other market impacts, human health, amenity, biodiversity, catastrophic impacts
(Maddison and Rehdanz 2011)[a]	3.2	-11.5	Statistical	Self-reported happiness
(Bosello et al. 2012)	1.9	-0.5	CGE	Energy demand; tourism; sea level rise; river floods; agriculture; forestry; human health
(Roson and van der Mensbrugghe 2012)	2.3 4.9	-1.8 -4.6	CGE	Agriculture, sea level rise, water resources, tourism, energy demand, human health, labor productivity

[a] Results aggregated by (Tol 2013).

Richard Tolの論文

Survey, Targets for global climate policy: An overview, Tol et al.
Journal of Economic Dynamics & Control 37 (2013)

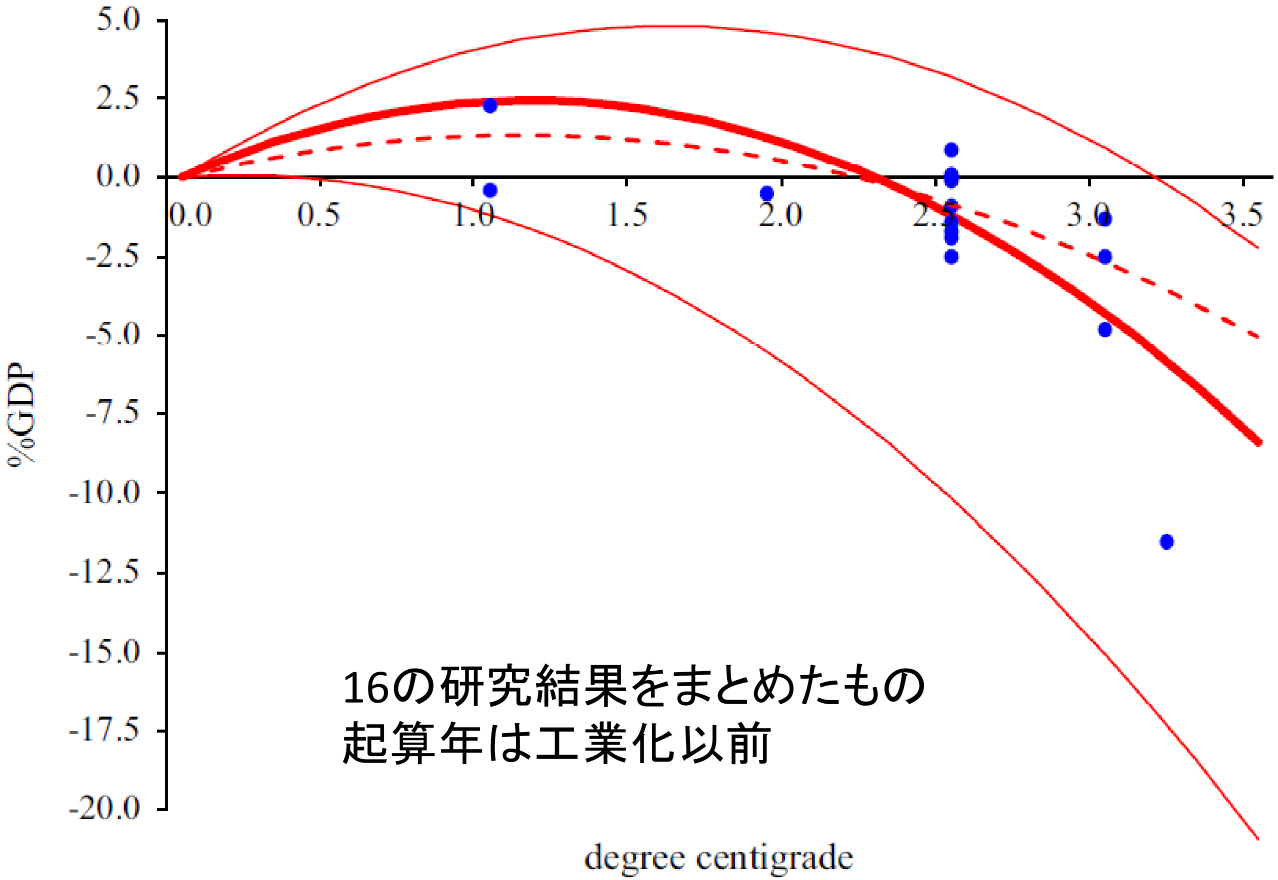
それぞれ用いている割引率(PRTP)は異なっているがGDP自体も同じ割引率で割り引いていれば%としては同じ

Table 1
Estimates of the welfare loss due to climate change (as equivalent income loss in percent); estimates of the uncertainty are given in bracket as standard deviations or 95% confidence intervals.

Study	Warming (°C)	Impact (%GDP)
Nordhaus (1994b)	3.0	−1.3
Nordhaus (1994a)	3.0	−4.8 (−30.0 to 0.0)
Fankhauser (1995)	2.5	−1.4
Tol (1995)	2.5	−1.9
Nordhaus and Yang (1996)[a]	2.5	−1.7
Plamberk and Hope (1996)[a]	2.5	−2.5 (−0.5 to −11.4)
Mendelsohn et al. (2000a)[a,b,c]	2.5	0.0[b] 0.1[b]
Nordhaus and Boyer (2000)	2.5	−1.5
Tol (2002a)	1.0	2.3 (1.0)
Maddison (2003)[a,d]	2.5	−0.1
Rehdanz and Maddison (2005)[a,c]	1.0	−0.4
Hope (2006)[a,e]	2.5	0.9 (−0.2 to 2.7)
Nordhaus (2006)	2.5	−0.9 (0.1)
Nordhaus (2008)	3.0	−2.5
Maddison and Rehdanz (2011)[a]	3.2	−11.5
Bosello et al. (2012)	1.9	−0.5

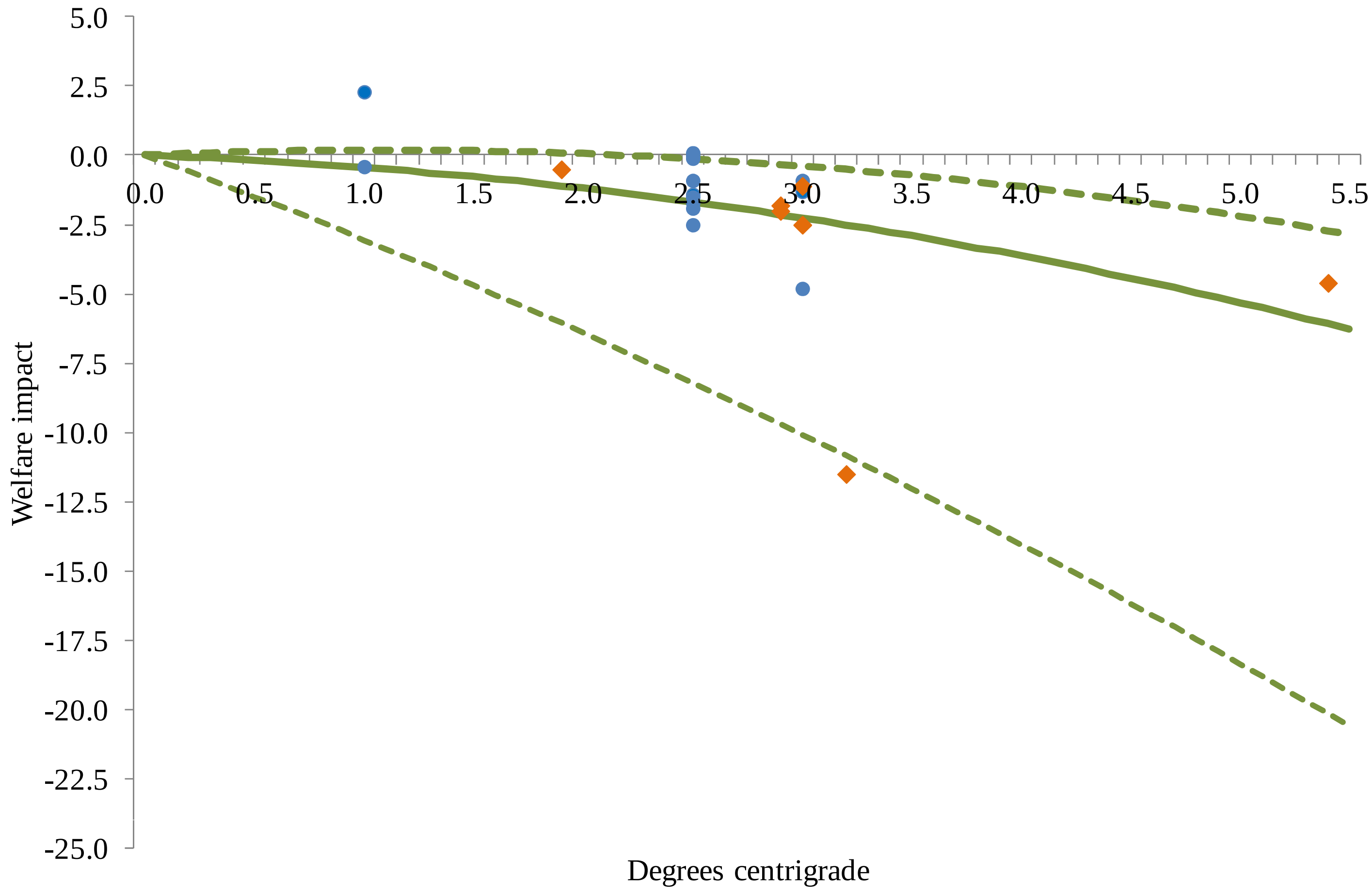
[a] Note that the global results were aggregated by the current author.
[b] The top estimate is for the "experimental" model, the bottom estimate for the "cross-sectional" model.
[c] Mendelsohn et al. only include market impacts.
[d] Maddison only considers non-market impacts on households.
[e] The numbers used by Hope are averages of previous estimates by Fankhauser (1995) and Tol (2002a); Stern et al. (2006) adopted the work of Hope.

気温上昇と所得損失 前頁R. Tolの論文より



Richard Tolからの最新データ

気温上昇と所得損失 21の研究結果



気温上昇の起算年は工業化以前

第2作業部会から見た意志決定

影響の程度と発生時期に関する不確実性、それに限られた適応手段の下で気候変動のリスクにどのように対処するか(WG2/SPM p.9)

しかし

- 対策無しの場合の損害推定値がない

  近年から気温が2℃（工業化から2.6℃）上昇した場合の

  損害は所得の0.2～2.0%程度とあるが、3℃以上の上昇に関しては文献がほとんど無い（SPM p.19)

- 上記に関してCataロスと非市場損害をどうみるか
- つまりWG3のコストと合わせた費用便益分析不能
- 炭素排出の社会的コストも数ドル～数百ドル

第3作業部会

難解になった
（気候感度、Overshoot、経過濃度）
政治に基づく科学
（政府レビュー）

WG3 第4次報告との主要変更点

スライド25及び26参照

- 「安定化」が消え、2100年の「経過」濃度と気温上昇にかわった

→ 第4次報告との連続性が途切れ、比較不能に

- 気候感度の変化の説明無し

→ 不親切かつ比較不能に

- Overshootシナリオの登場

→ そもそも2℃目標とは何か

第4次報告の表 世界半減目標の基の図

安定化

Table SPM.5: *Characteristics of post-TAR stabilization scenarios [Table TS 2, 3.10][a]*

Category	Radiative forcing (W/m²)	CO_2 concentration[c] (ppm)	CO_2-eq concentration[c] (ppm)	Global mean temperature increase above pre-industrial at equilibrium, using "best estimate" climate sensitivity[b), c)] (°C)	Peaking year for CO_2 emissions[d]	Change in global CO_2 emissions in 2050 (% of 2000 emissions)[d]	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

a) The understanding of the climate system response to radiative forcing as well as feedbacks is assessed in detail in the AR4 WGI Report. Feedbacks between the carbon cycle and climate change affect the required mitigation for a particular stabilization level of atmospheric carbon dioxide concentration. These feedbacks are expected to increase the fraction of anthropogenic emissions that remains in the atmosphere as the climate system warms. Therefore, the emission reductions to meet a particular stabilization level reported in the mitigation studies assessed here might be underestimated.

b) The best estimate of climate sensitivity is 3°C [WG 1 SPM].

c) Note that global mean temperature at equilibrium is different from expected global mean temperature at the time of stabilization of GHG concentrations due to the inertia of the climate system. For the majority of scenarios assessed, stabilisation of GHG concentrations occurs between 2100 and 2150.

d) Ranges correspond to the 15th to 85th percentile of the post-TAR scenario distribution. CO_2 emissions are shown so multi-gas scenarios can be compared with CO_2-only scenarios.

2℃→450ppmCO2e→2050年世界排出量半減（2000年比）

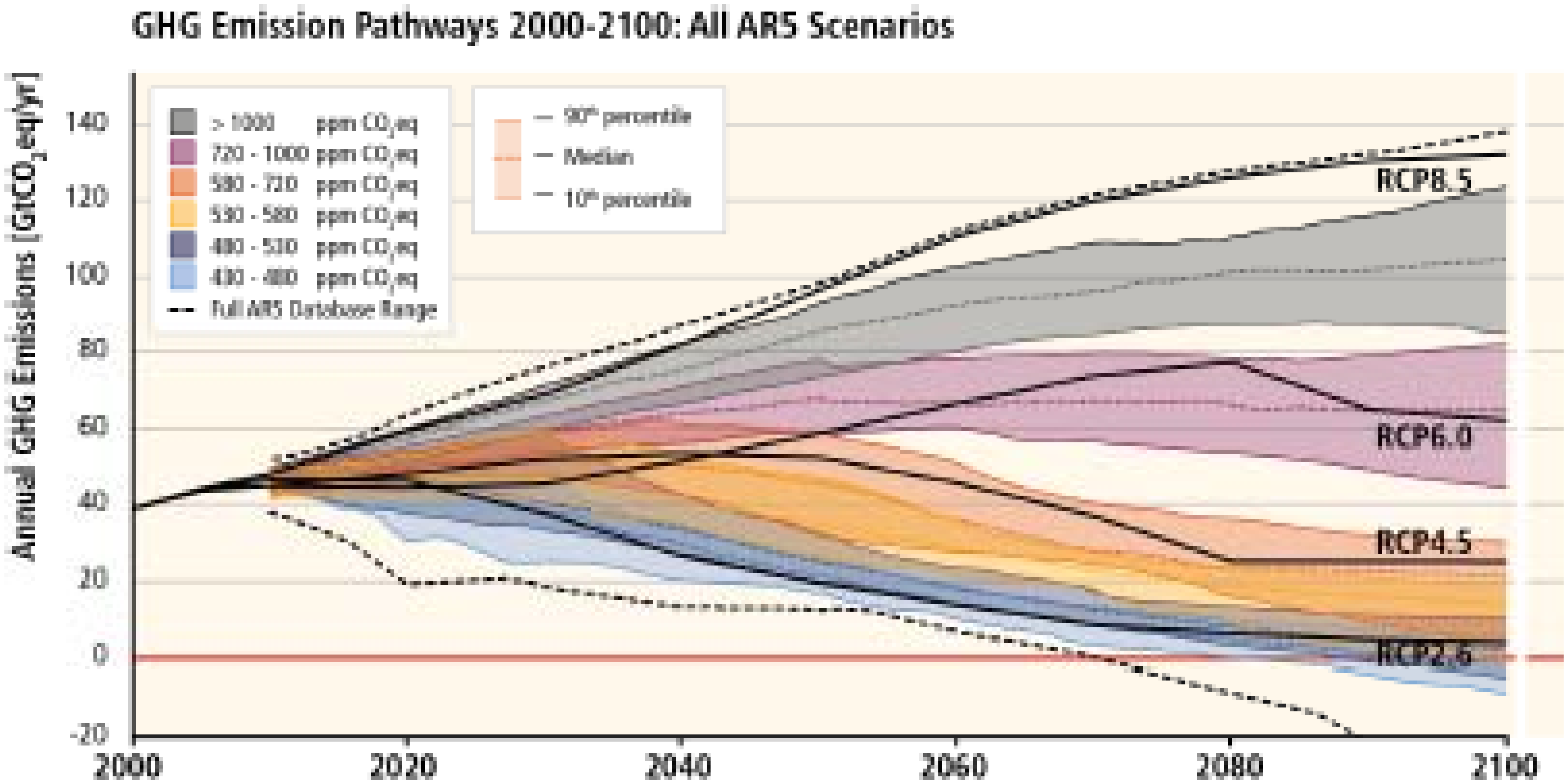
第5次報告書での表

極めて難解、AR4との比較不能

CO_2eq Concentrations in 2100 (CO_2eq) Category label (concentration range)	Subcategories	Relative position of the RCPs	Cumulative CO_2 emissions ($GtCO_2$) 2011–2050	Cumulative CO_2 emissions ($GtCO_2$) 2011–2100	Change in CO_2eq emissions compared to 2010 in (%) 2050	Change in CO_2eq emissions compared to 2010 in (%) 2100	Temperature change (relative to 1850–1900): 2100 Temperature change (°C)	Likelihood of staying below temperature level over the 21st century: 1.5°C	2.0°C	3.0°C	4.0°C
< 430	Only a limited number of individual model studies have explored levels below 430 ppm CO_2eq										
450 (430–480)	Total range [1,10]	RCP2.6	550–1300	630–1180	-72 to -41	-118 to -78	1.5–1.7 (1.0–2.8)	More unlikely than likely	Likely	Likely	Likely
500 (480–530)	No overshoot of 530 ppm CO_2eq		860–1180	960–1430	-57 to -42	-107 to -73	1.7–1.9 (1.2–2.9)	Unlikely	More likely than not		
	Overshoot of 530 ppm CO_2eq		1130–1530	990–1550	-55 to -25	-114 to -90	1.8–2.0 (1.2–3.3)		About as likely as not		
550 (530–580)	No overshoot of 580 ppm CO_2eq		1070–1460	1240–2240	-47 to -19	-81 to -59	2.0–2.2 (1.4–3.6)		More unlikely than likely[12]		
	Overshoot of 580 ppm CO_2eq		1420–1750	1170–2100	-16 to 7	-183 to -86	2.1–2.3 (1.4–3.6)				
(580–650)	Total range	RCP4.5	1260–1640	1870–2440	-38 to 24	-134 to -50	2.3–2.6 (1.5–4.2)				
(650–720)	Total range		1310–1750	2570–3340	-11 to 17	-54 to -21	2.6–2.9 (1.8–4.5)		Unlikely	More likely than not	
(720–1000)	Total range	RCP6.0	1570–1940	3620–4990	18 to 54	-7 to 72	3.1–3.7 (2.1–5.8)	Unlikely[11]		More unlikely than likely	
>1000	Total range	RCP8.5	1840–2310	5350–7010	52 to 95	74 to 178	4.1–4.8 (2.8–7.8)		Unlikely[11]	Unlikely	More unlikely than likely

- 安定化→2100年時点での濃度や気温へ（連続性無し）。なぜ変更したのか？
- どの気候感度を用いたのか
- 半減目標は2000-2050年、この表の必要削減割合は2010-2050年
- 450ppmCO2eで1.5-1.7℃上昇とあるがこれと2℃の関係は？

各種濃度に向けての排出経路



IPCC/AR5/Figure SPM.4の一部

対策コスト

	Consumption losses in cost-effective implementation scenarios				Increase in total discounted mitigation costs in scenarios with limited availability of technologies				Increase in mid- and long term mitigation costs due delayed additional mitigation up to 2030			
	[% reduction in consumption relative to baseline]			[percentage point reduction in annualized consumption growth rate]	[% increase in total discounted mitigation costs (2015–2100) relative to default technology assumptions]				[% increase in mitigation costs relative to immediate mitigation]			
									≤55 $GtCO_2eq$		>55 $GtCO_2eq$	
2100 Concentration (ppm CO_2eq)	2030	2050	2100	2010-2100	No CCS	Nuclear phase out	Limited Solar / Wind	Limited Bio-energy	2030–2050	2050–2100	2030–2050	2050–2100
450 (430–480)	1.7 (1.0–3.7) [N: 14]	3.4 (2.1–6.2)	4.8 (2.9–11.4)	0.06 (0.04–0.14)	138 (29–297) [N: 4]	7 (4–18) [N: 8]	6 (2–29) [N: 8]	64 (44–78) [N: 8]	28 (14–50) [N: 34]	15 (5–59)	44 (2–78) [N: 29]	37 (16–82)
500 (480–530)	1.7 (0.6–2.1) [N: 32]	2.7 (1.5–4.2)	4.7 (2.4–10.6)	0.06 (0.03–0.13)								
550 (530–580)	0.6 (0.2–1.3) [N: 46]	1.7 (1.2–3.3)	3.8 (1.2–7.3)	0.04 (0.01–0.09)	39 (18–78) [N: 11]	13 (2–23) [N: 10]	8 (5–15) [N: 10]	18 (4–66) [N: 12]	3 (-5–16) [N: 14]	4 (-4–11)	15 (3–32) [N: 10]	16 (5–24)
580–650	0.3 (0–0.9) [N: 16]	1.3 (0.5–2.0)	2.3 (1.2–4.4)	0.03 (0.01–0.05)								

- 2100年の消費ロス2.9～11.4%は大きいのか小さいのか（これによる回避される損害の金銭換算価値は不明）
- 理想の状況からの乖離（参加国、技術、世界単一炭素税）
- William Nordhausの参加遅延の図（次々頁）
- 目標を2℃→2.5℃に変えるだけでコストは1/3～2/3程度に下落
- 他の世界規模での重要問題とのバランスの考慮が必要

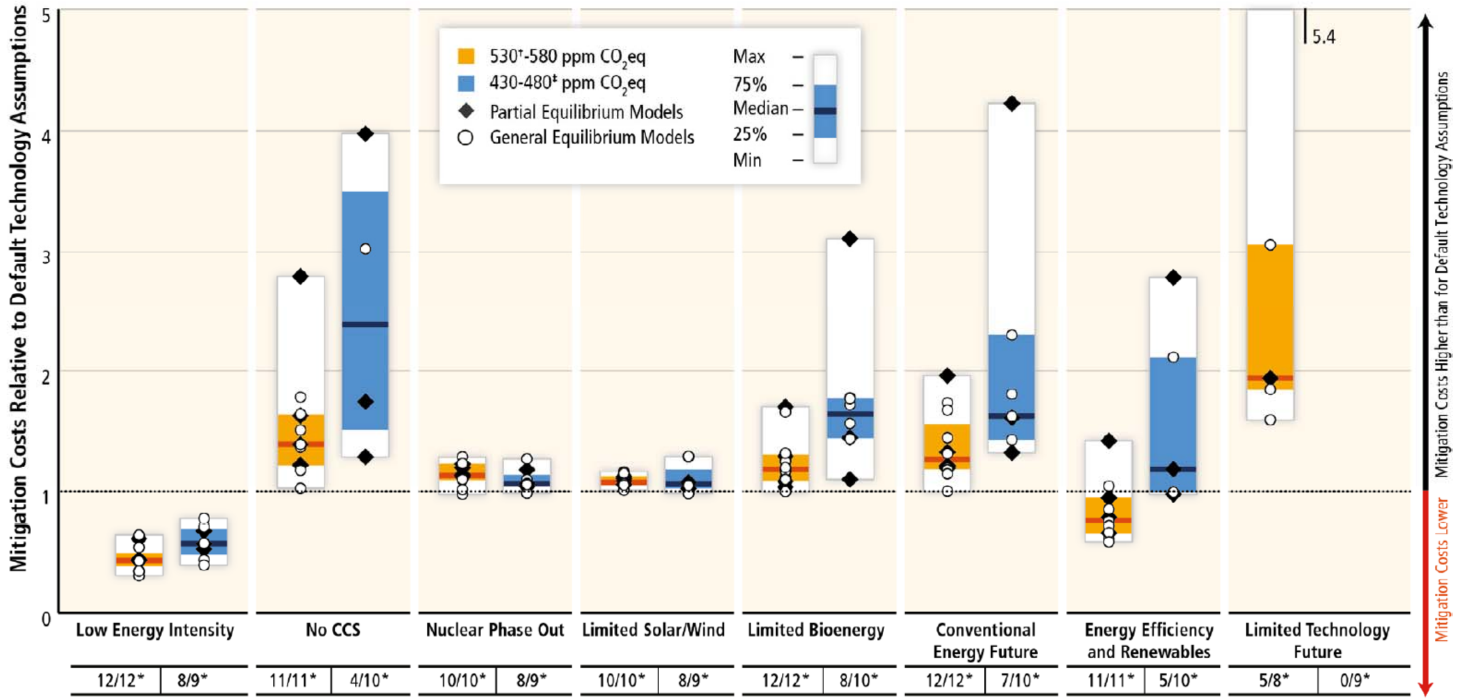


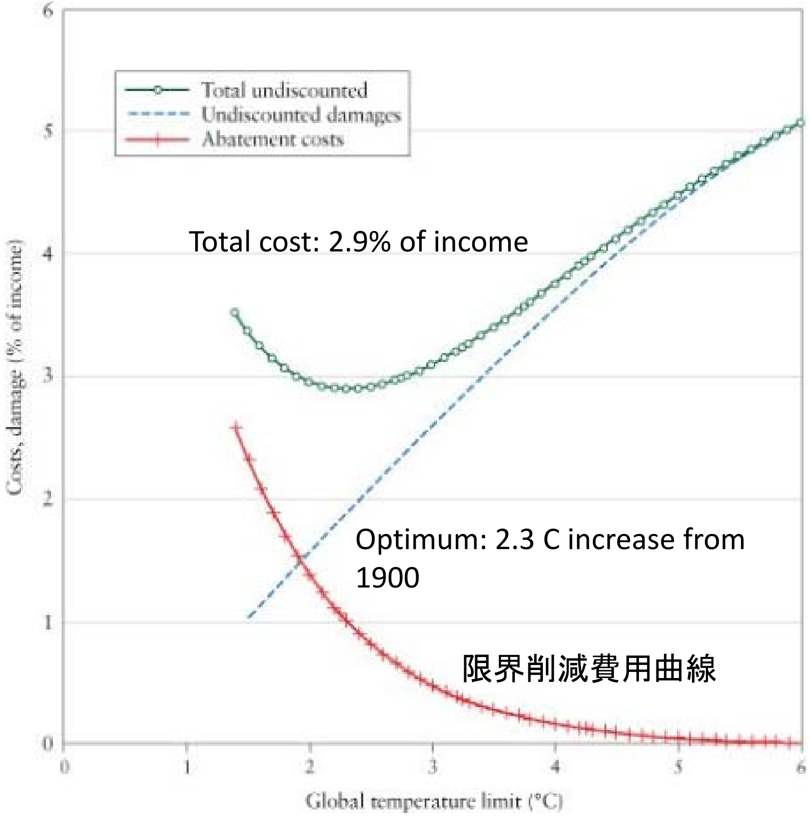
Figure 6.24. Relative increase of NPV mitigation costs (period 2015-2100, 5% discount rate) from technology portfolio variations compared to a scenario with default technology availability. Scenario names on the horizontal axis indicate the technology variation relative to the default assumptions: Low Energy Intensity = higher energy intensity improvements leading to energy demand reductions of 20-30% by 2050 and 35-45% by 2100 relative to the default baseline; Nuclear phase out = No addition of nuclear power plants beyond those under construction; existing plants operated until the end of their lifetime; Limited Solar/Wind = 20% limit on solar and wind electricity generation; Limited Bioenergy = maximum of 100 EJ/yr bioenergy supply; Conventional energy future = combining pessimistic assumptions for renewable energy (Limited Solar/Wind + Limited Bioenergy); Energy efficiency and renewable energy future = combining low energy intensity with non-availability of CCS and nuclear phase-out; Limited Technology Future = all supply side options constrained and energy intensity developing in line with historical records in the baseline. Source: EMF27 study, adapted from (Kriegler et al., 2014a). Only those scenarios from the EMF27 study are included that reached the 430-480 and 530-580 ppm CO_2eq concentration ranges or were close to it (see footnotes in the figure).

技術の使用可能性とコスト上昇度合い
第6章50頁

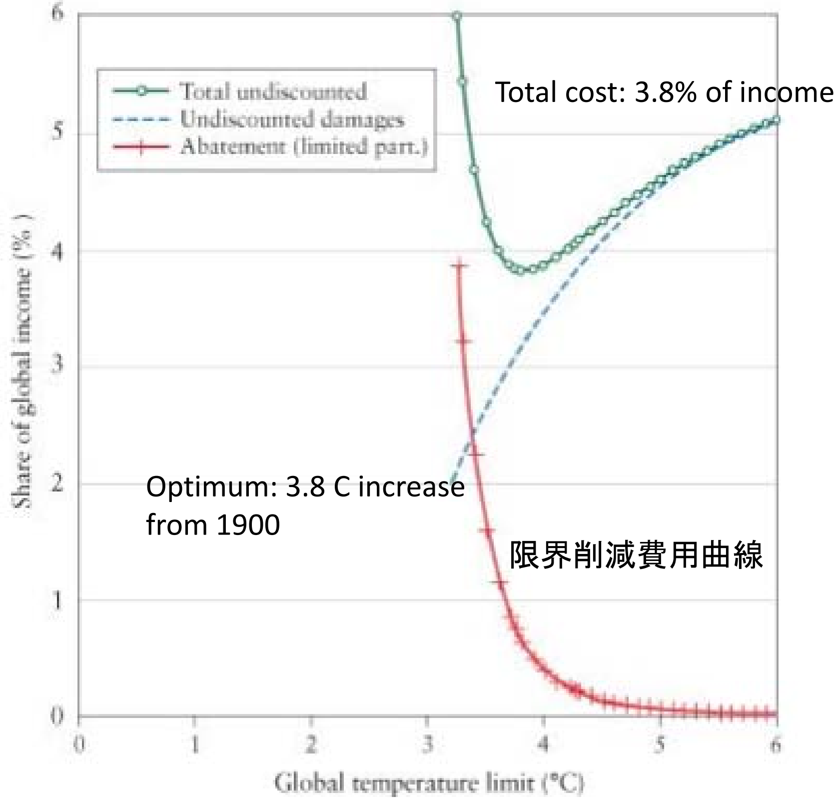
最適気温上昇

割引前、大災害未考慮 W. Nordhaus “The Climate Casino”

Full Participation

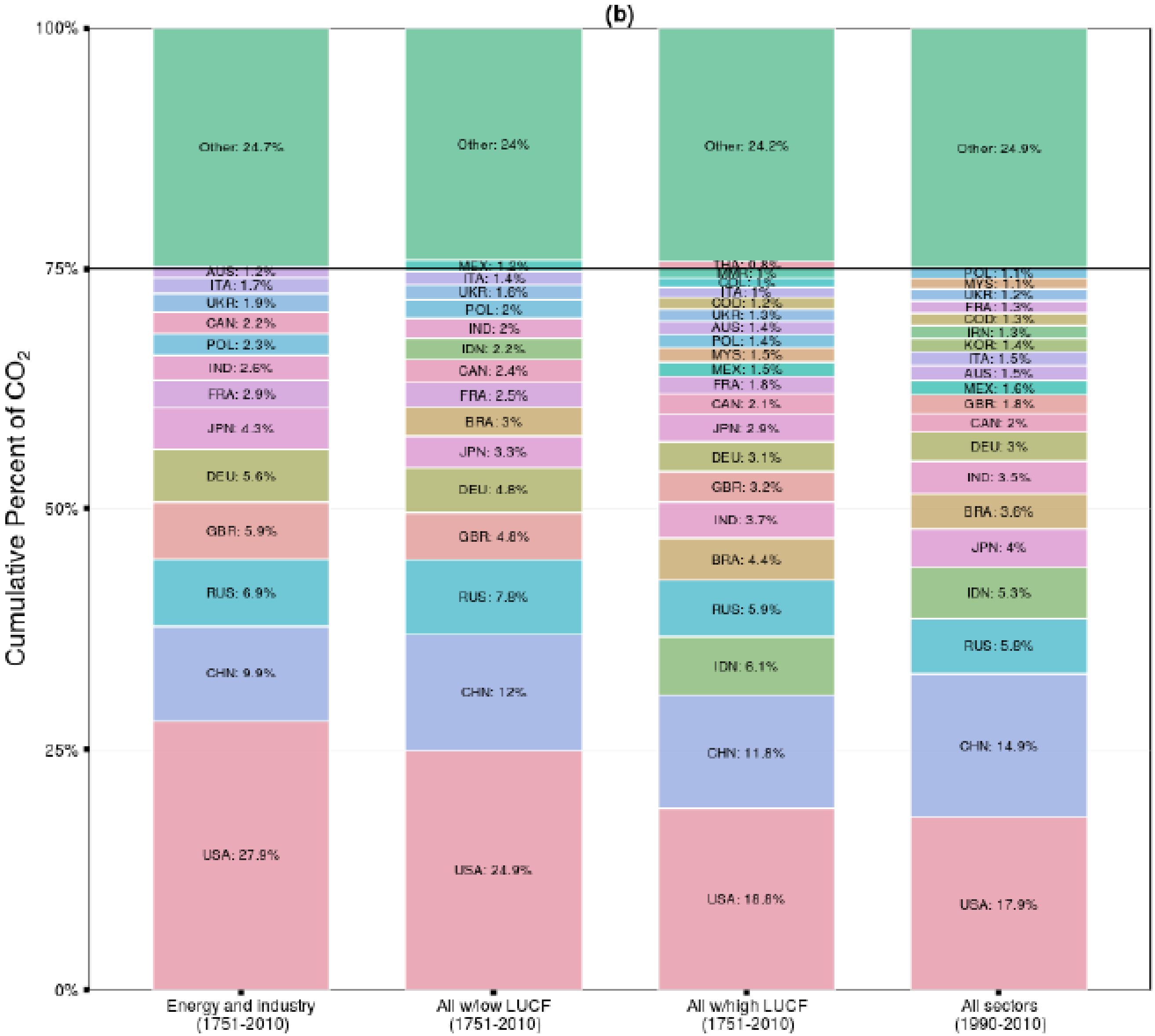


50% participation (emissions)

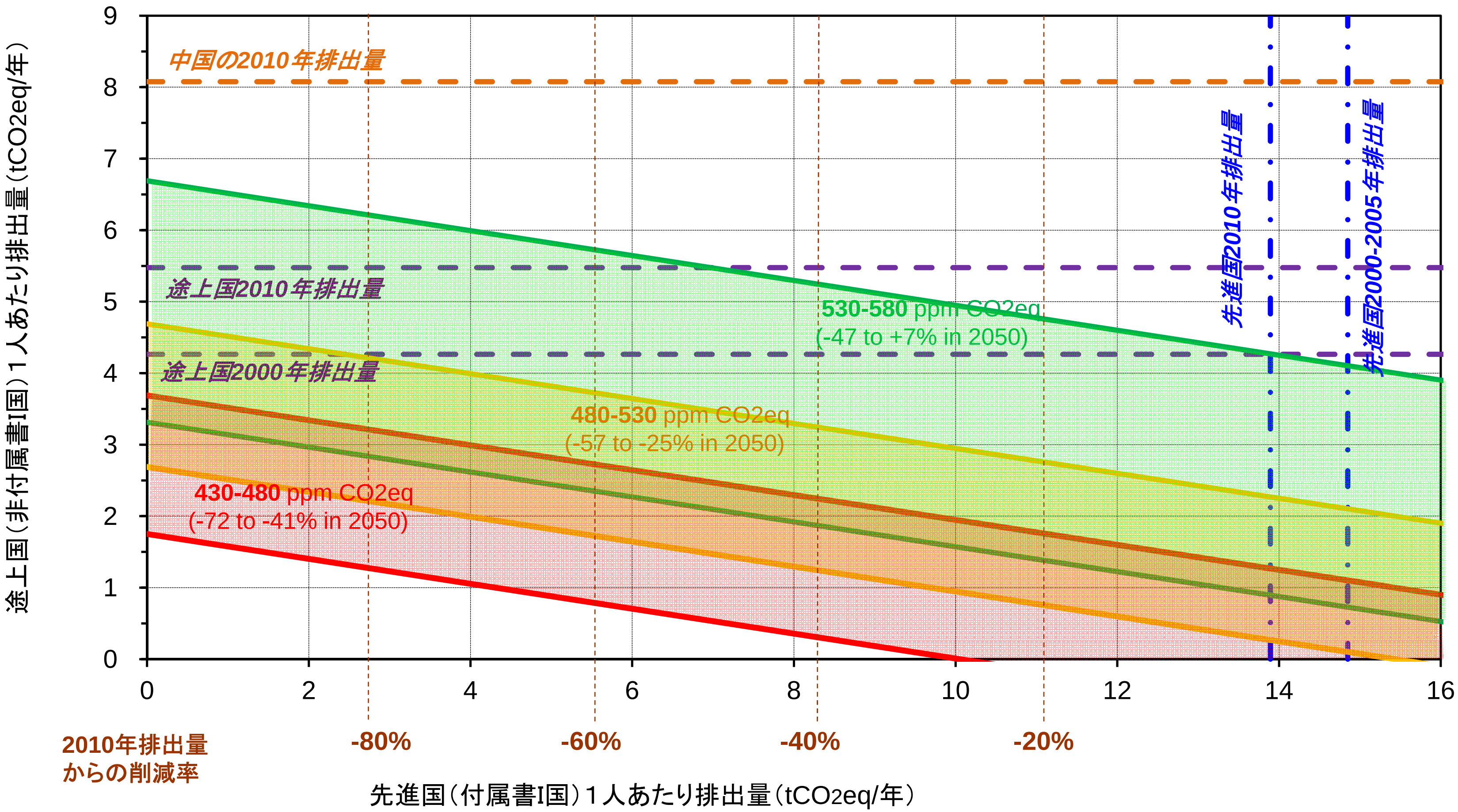


Assume tipping point is 3.5C and damage corresponds to 0.5% of income, and taking into various uncertainties, Nordhaus’s choice is 2.5C temperature limit where global average carbon price in 2050 is slightly higher than $160 with full participation.

共通だが差異ある責任参考資料（WG3第1章）



2℃目標の意味（その1）



資料提供：RITE秋元Group Leader

2℃目標の意味（その2）

2050年世界半減（2000年比） CO2＝CO2/GDP×GDP

CO2削減率とGDPロス

技術進歩率一定の場合、1971-2008で1.1%
(1971-2011年では0.96%）

CO2削減率 2050年	CO2削減率(%/yr)	GDP Loss (%) 2050年
0	0	**50.9**
10	-0.2	**55.8**
20	-0.4	**60.8**
30	-0.7	**65.7**
40	-1.0	**70.6**
50	-1.4	**75.5**

ここで技術進歩率はΔ（CO2/GDP)

GDPロスと技術進歩率

GDP Loss (%) 2050年	GDP成長率(%/yr)	CO2技術進歩率 %/yr
0	2.5	**3.91**
10	2.3	**3.70**
20	2.1	**3.46**
30	1.8	**3.20**
40	1.5	**2.89**
50	1.1	**2.52**
70	0.1	**1.50**
75	-0.2	**1.14**
80	-0.7	**0.69**

温暖化対策の焦点

- 従来は2℃目標の実現→見直しへ
  - しかしコストを考慮するとこれは極めて困難
  - カンクン合意はOn Trackでない
- その場合2℃以上となる可能性が増大し、それと共にCatastrophe Lossの可能性（Tipping Pointを超える可能性）が増大。但し適応の時間はある。最後の間氷期は1万3千年続いた（129000-116000年前）
- このリスクをどのようにマネージするかが焦点
- 温暖化以外の地球規模での重大問題とのバランスが重要

政府レビューについて

政府レビューとは

- 地域別排出量の伸びの図削除
- Evidence-based Policy vs Policy-based Evidence

  The Economist April 19, 2014
- Summary for PolicymakerからSummary by Policymakerへ、構造的問題提起

  Blog by Professor Robert Stavins April 2014

政治と科学のあるべき姿

今後の国際交渉

アメリカのSubmissionの内容

- Pledge (with review) with Review
- It could encourage ambition by including a consultative period after "draft" contributions were put forward. This would allow each Party to analyze other Parties' measures in light of both comparative effort.
- 実効性のある枠組み
- In the U.S. view, a critical lens through which mitigation ideas should be considered is whether they will promote real-world ambition. -- If the agreement reflects ambition on paper but countries do not join it, or they join it but do not implement it, then it will not be effective
- Pledgeの内容
- We consider that the agreement should provide for Parties to define their own mitigation contributions, taking into account national circumstances, capacity, and other factors

(ADP Work stream 1: 2015 Agreement, Submission of the United States, March 2013)

アメリカ提案(続き)

- 2℃目標維持

  --- with a view to advancing our collective goal to keep temperature rise below 2 degrees Celsius. いつからとは言っていない

  ADP Work stream 2: Mitigation Ambition, Submission of the United States, March 2013

- 共通だが差異ある責任の内容

  However, we would not support a bifurcated approach to the new agreement, articularly one based on groupings that may have made sense in 1992 but that are clearly not rational or workable in the post-2020 era.

- お互いの努力を比較する客観的な指標が必要

- アメリカ提案の背景

日本はどうすべきか

国際社会に向けた発信（勇気ある発言）

- Strong weak agreement is better than weak strong agreement that may collapse
- 出来ないことに固執しない。2℃目標棚上げ
- Pledge (with review) and Review提案 日本Original
- 各国のPledgeの衡平性比較方法の研究
- 持続可能な成長との関係の明確化

国内（来年3月までにPledge内容提出）

- エネルギー計画の策定
- 国際的に格好をつけない（王道を行く）
- 技術開発と普及
- 縦のバランス、横のバランス

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