

자유주의연구회 초청강의

기후 위기론과 탄소 중립의 불편한 사실



『불편한 사실』은 '민주주의의 생존', '진정한 과학의 부활',
'객관적 진리의 승리'를 위해 꼭 필요한 책이다.
훌륭한 자료조사, 명쾌한 문장, 멋진 시각적 표현,
그리고 무엇보다 모든 내용을 사실에 기초하고 있다.



크리스토퍼 뭉크톤(영국 언론인)

2021. 6. 3.



이화여대 환경공학과 교수 박석순
(전)국립환경과학원 원장

본 저작물은 저작권법 제25조 수업목적 저작물 이용 보상금제도에 의거 저작물의
재복제 및 수업 목적 외의 사용을 금지합니다.

강의 개요

1. 환경 비관론과 낙관론

2. 지구온난화의 등장

3. 기후 위기론의 과학적 허상

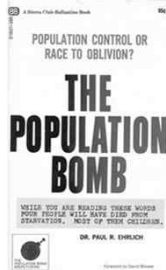
4. 이산화탄소와 화석연료 재평가

5. 기후 재난 거짓말

6. 정치사회적 현황과 전망

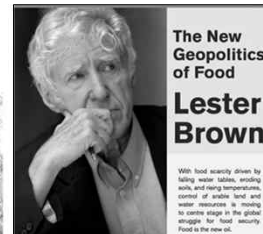
1. 환경 비관론과 낙관론

환경 비관론(Eco-Pessimism)

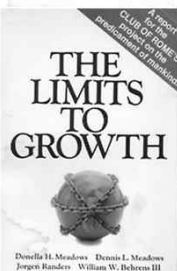


Paul Ehrlich's *Population Bomb* (1968)

- Neo-Malthusians: population growth will increase faster than food production
- Population growth causes famine and conflict
- Civilization would end by the end of the 20th century



1980년대가 되면 전 세계 40억 명(미국 6,500만 명)이 굶어 죽게 된다.

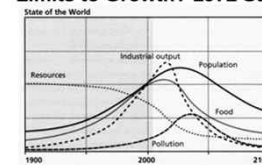


1992년 석유 고갈

2010~2030: 오염, 자원 부족, 식량 부족 → 산업 생산이 감소

Jorgen Randers, Jay Forrester, Donella Meadows, Dennis Meadows, and William W. Behrens III in 1972

Limits to Growth? 1972 Study



- BAU Computer Model for "World 3"
- Pollution and resource scarcity starts to impact ind. productn and then food in decades 2010-2030

산업문명은 인류에게 음울한 미래를 가져올 것이다.

1970년 지구의 날



The New York Times

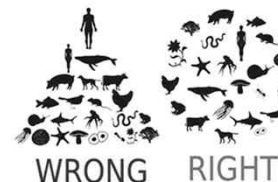
Millions Join Earth Day Observances Across the Nation



생태근본주의(Dep Deep Ecology)



“인구가 줄어야 지구가 산다”
1973년 아른 네스,
노르웨이 오슬로대 교수



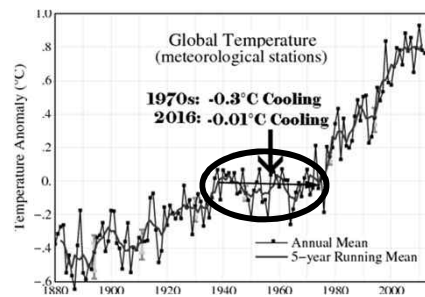
사회생태주의(Social Ecology)



- 머레이 북친, 미국 라마포드대 교수
- 사회주의 계획경제가 환경 우위다
 - 자유민주주의 시장경제는 파괴되어야 한다
 - 자본주의는 지구 생태계의 암적인 존재다



지구냉각화 소동(1970년대)



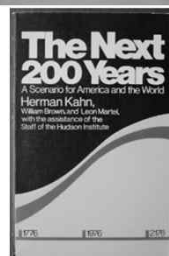
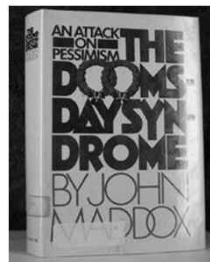
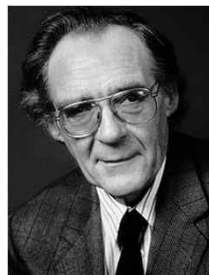
환경 낙관론(Eco-Optimism)

“과학과 기술의 발달과 법과 제도 개선으로 해결 가능”

존 매독스<종말의 날 증후군, 1972>

허만 칸 <다음 200년, 1976>

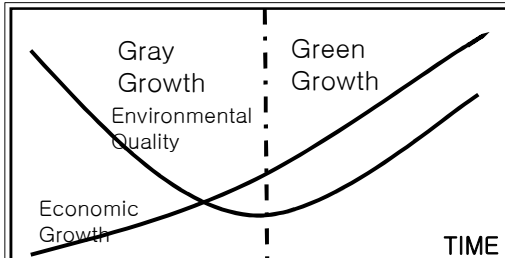
줄리언 사이먼<궁극적 자원, 1981>



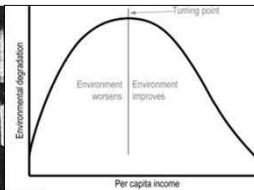
환경과학과 기술, 법과 제도 발달

2. 지구온난화의 등장

환경 낙관론의 승리



Simon Kusnetz(1901~1985)
1971년 노벨경제학상

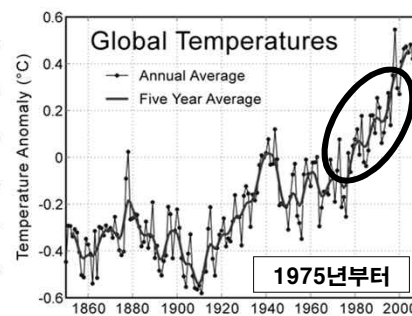
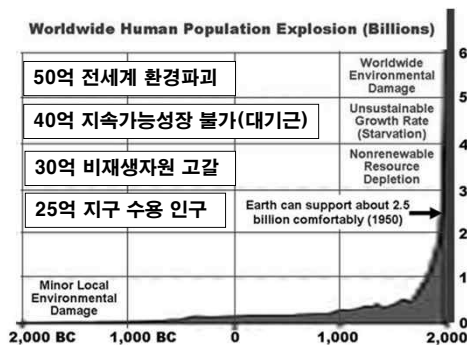


U-Turn 이론이 현실로 나타남



자유민주주의 시장경제의 승리

환경 비관론자들의 새로운 대상



NASA scientist
James E. Hansen
testifying in June 1988.

기온 측정
온도계 1659년부터(영국)
기상 기구 1950년대 중반
1979년부터 위성 측정



앨 고어의 불편한 진실(2006)

1000 Years of CO₂ and Global Warming

Temperature (Northern Hemisphere) CO₂ Concentrations

2000년 낙선

an inconvenient truth
the crisis of global warming

2006
Inconvenient Truth, a documentary starring vice president Al Gore, is released.

산업문명 → 이산화탄소 → 지구온난화 → 기후 대재앙

2007년 노벨평화상

2007년 아카데미 최우수 다큐멘터리상

우리가 지구를 구할 수 있는 시간은 10년밖에 남지 않았습니다. 지금부터 세어봅시다. 2006년 1월 27일

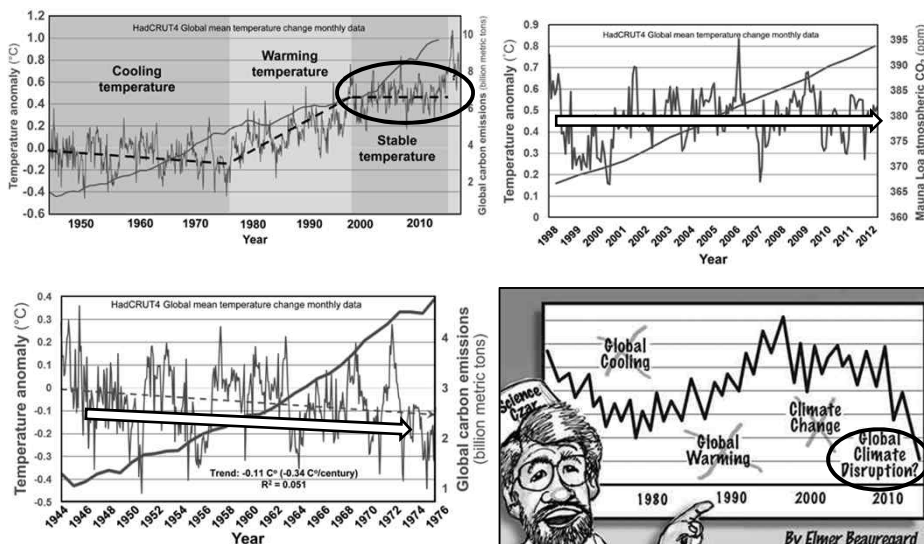
HIS DOOMSDAY CLOCK

EXPIRES JAN 27, 2016

"Al Gore says we have ten years left to save the planet from a scorching. Okay, we're going to start counting. We will begin the count, ladies and gentlemen."

Rush Limbaugh
January 27, 2006

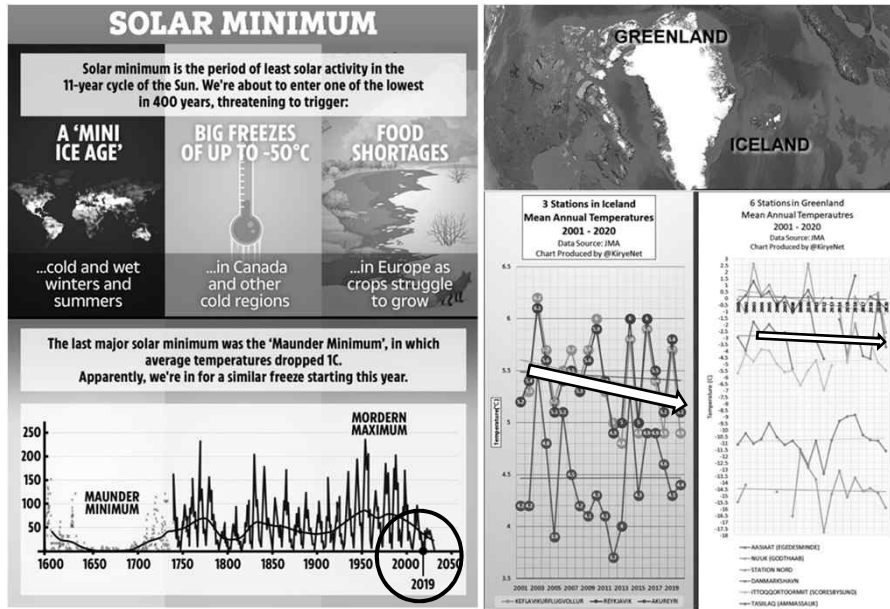
지구온난화의 중단(1998년부터)



지구온난화에서 기후변화로(2005년경)

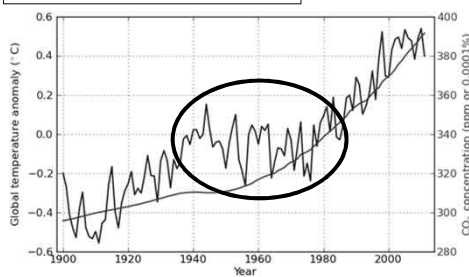
기후혼란?

소빙하기의 시작(2014년)

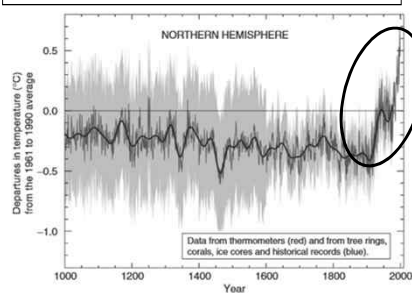


3. 기후 위기론의 과학적 허상

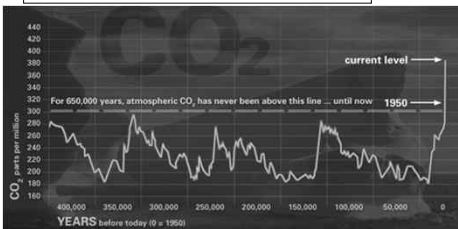
(1) 이산화탄소가 기온 상승 유발



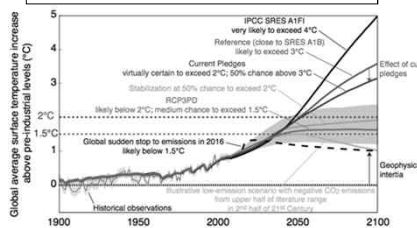
(2) 하키 스틱: 지금까지 유래 없는 기온 상승



(3) 이산화탄소 → 기온 상승 지난 65만년 동안 CO₂ < 300ppm



(4) 컴퓨터 모델 예측: 최대 6.4°C 증가



조작된 하키 스틱의 기후 게이트(2009년)

Temperature change (°C)

Medieval warm period

Little ice age

Modern warming began in the late 17th century

1000 1100 1200 1300 1400 1500 1600 1700 1800 1900

Climate Gate 1

Temperature anomaly (°C)

Medieval Warm Period

Vikings colonize Greenland

End of Vikings settlements

Little Ice Age

Most recent data 1949

0 200 400 600 800 1000 1200 1400 1600 1800 2000

Year

IPCC 1990 Figure 7c

HOTTER THAN NOW

Little Ice Age

Medieval Warm Period

"Mike's Nature trick" ... "Hide the decline"

[email from Phil Jones, UK CRU Director]

NATURE, 1998

IPCC, 2001

GONE!

HOCKEY STICK

Data from thermometers (red) and from tree rings (black), and from ice cores (grey)

Michael Mann explains how to read the tree-ring thermometer

Actual Medieval Warm Period

Climate Typing Error

GLOBAL TEMPERATURE RECORD

(2) 하키 스틱: 지금까지 유례 없는 기온 상승

2009년 이메일 해킹으로 밝혀짐

두 번째 기후 게이트

2017년 내부 고발 사건(Climate Gate 2.0)

The Mail ON SUNDAY

The Mail on Sunday today reveals astonishing evidence that the organisation that is the world's leading source of climate data rushed to publish a landmark paper that exaggerated global warming and was timed to influence the historic Paris Agreement on climate change.

A high-level whistleblower has told this

2015년 파리협약 직전 보고서

2017년 2월 4일 The whistleblower

Including Barack Obama and David Cameron

Data Science, Climate and satellites Consultant John J. Bates, who blew the whistle to the Mail on Sunday

uncovered by NOAA with a public relations campaign, and cited repeatedly by the media, and cited repeatedly by the media

top NOAA scientist with an impeccable reputation, has shown irrefutable evidence that the Pausebuster paper was based on misleading, unverified data.

Thomas Karl, Director NCEINCCDC

CLIMATEGATE2.0?

LIES

TRUTH

IT'S NOAA SCIENCE IT'S POLITICAL ACTIVISM

How NOAA MANIPULATED DATA TO GET RID OF THE 'PAUSE' IN GLOBAL TEMPERATURES

RSS global mean temperature change: 224 months May 1957 to December 2015

1/3 of all manmade forcings since 1750 arose after 1997, but ...

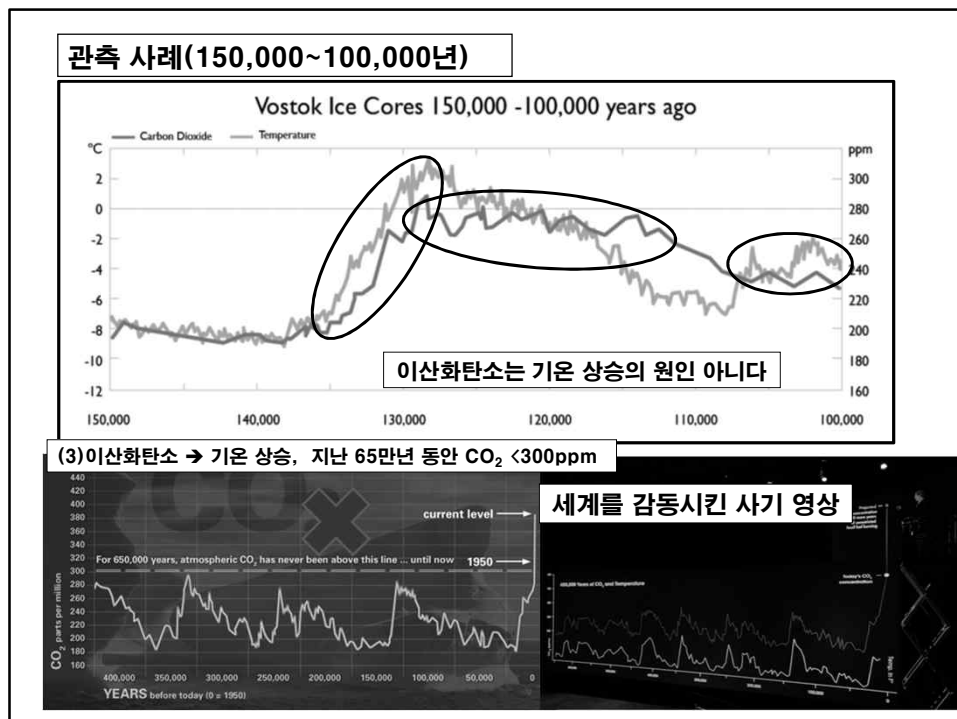
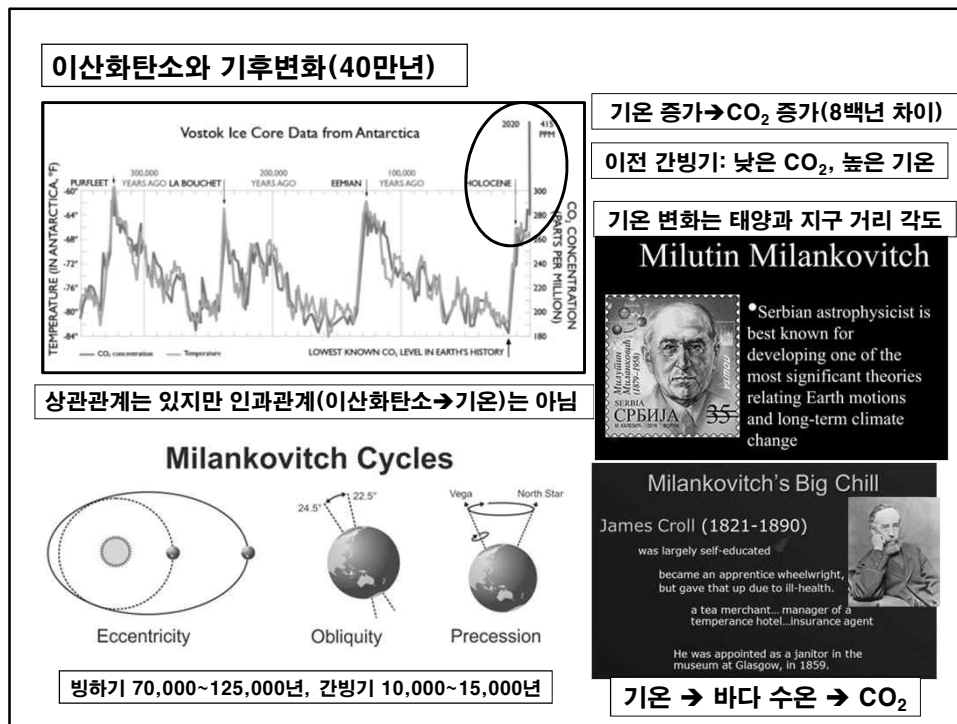
No global warming for 18 years 8 months

Trend: -0.01 °C / ±0.04 °C/century

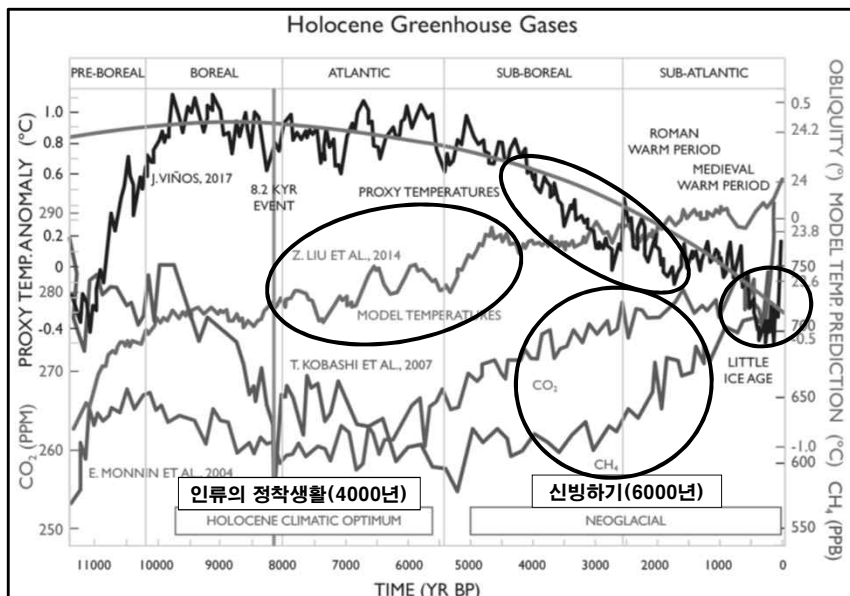
r² = 0.00

(1) 이산화탄소가 기온 상승 유발

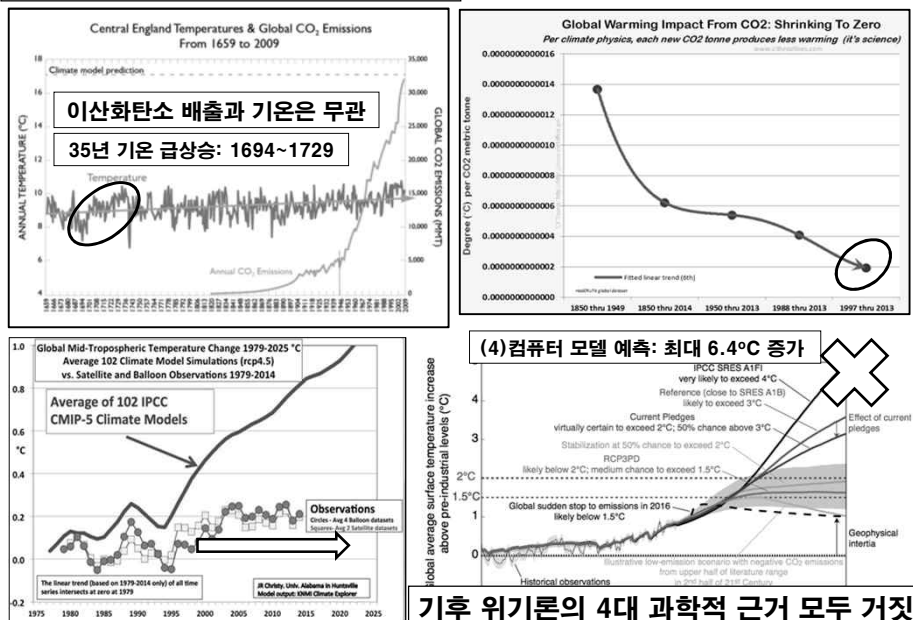
2009년 이메일 해킹으로 밝혀짐



홀로세 간빙기(11,600년, 인류문명)의 기후변화



온도계 관측 기온 및 예측 모델 결과

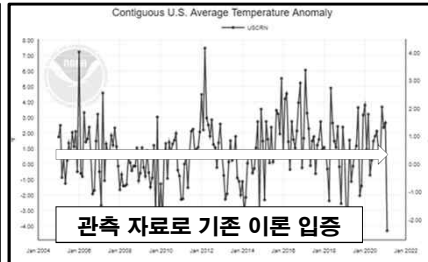
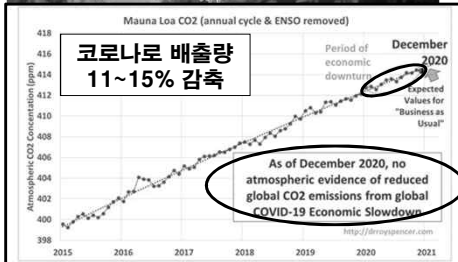
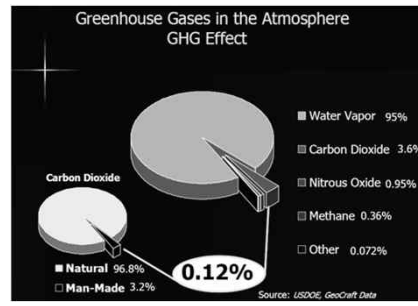


4. 이산화탄소와 화석연료 재평가

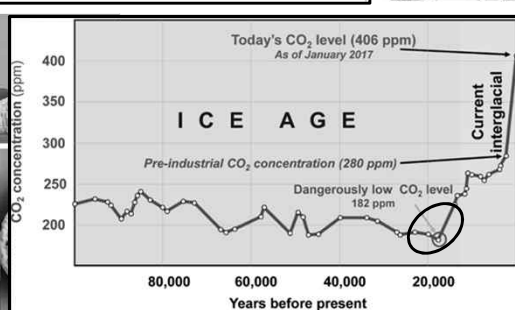
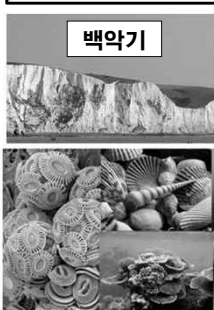
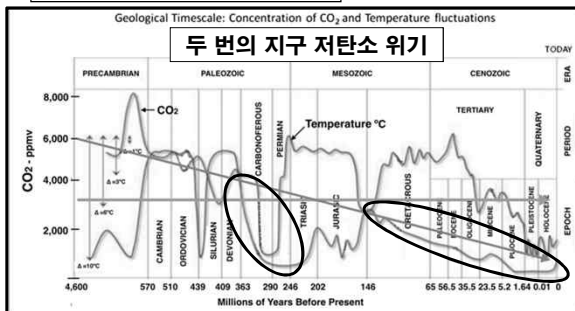
(1) 온실효과

이산화탄소 미약한 온실가스

인간에 의한 배출은 소량



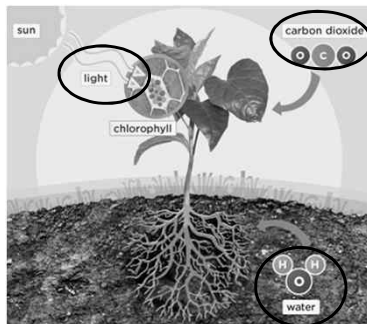
(2) 지금은 저탄소 시대



(3) CO₂ 상승 생태계 효과

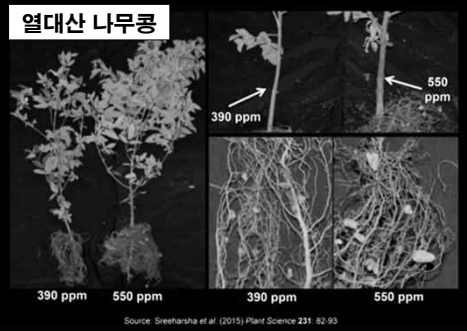
생명의 기초 이산화탄소

Carbon Dioxide (CO₂) Molecule



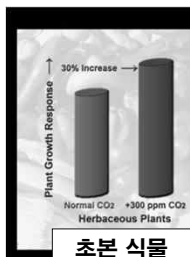
Response of Pigeon pea (*Cajanus cajan* L.) to Elevated CO₂

열대산 나무콩



Source: Sreeharsha et al. (2015) Plant Science 231: 82-93

모든 식물의 성장 촉진

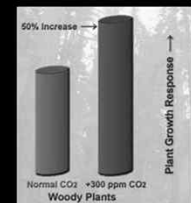


초본 식물

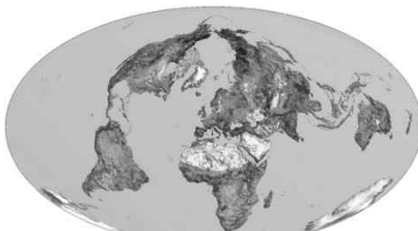
Elevated CO₂

- Increases the number of branches & tillers
- Produces more and thicker leaves
- Enhances roots
- Yields more flowers & fruit

Woody plant growth response to CO₂ enrichment is about 1.5 times that observed in herbaceous plant species

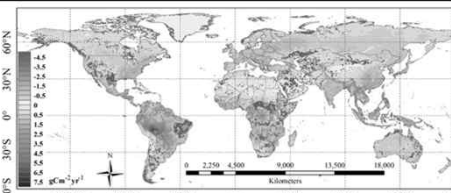


목본 식물



Change in leaf area, 1982 - 2015

Spatial Pattern of Trends in Gross Primary Production (1982-2015)

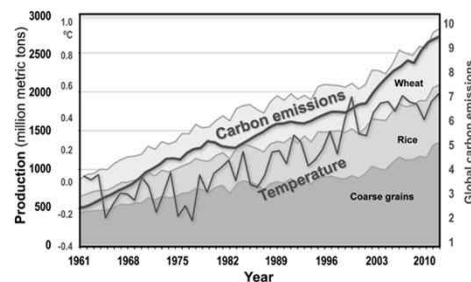
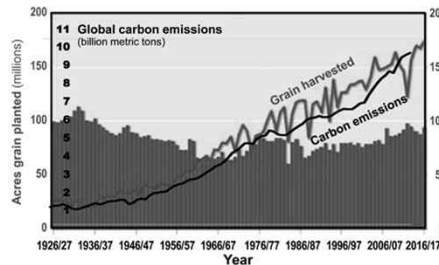


75% of the land area experienced positive increases in GPP. CO₂ accounted for 66% of the GPP trends.

Source: Sun et al. 2018, Ecology and Informatics 44: 116-135

증가된 이산화탄소와 기온 상승 덕분에 지구는 더욱 푸르게 변했다

(4) CO₂ 상승 식량 생산 효과



Carrots & turnips	+77.8%
Fresh fruit not elsewhere specified	+72.3%
Tropical fresh fruit not elsewhere specified	+72.3%
Grapes	+68.2%
Sugar beet	+65.7%
Dry beans	+61.7%
Oranges	+54.9%
Yams	+47.0%
Groundnuts with shells	+47.0%
Rapeseed	+46.9%
Soybeans	+45.5%
Bananas	+44.8%
Apples	+44.8%
Coconuts	+44.8%
Plantains	+44.8%
Cucumbers & gherkins	+44.8%
Pears	+44.8%
Millet	+44.3%
Watermelons	+41.5%
Pumpkins, squash & gourds	+41.1%
Fresh vegetables not elsewhere specified	+41.1%
Chillies & peppers	+41.1%
Eggplants	+41.0%
Cabbages & other brassicas	+39.3%
Rye	+38.5%
Sunflower seeds	+36.5%
Paddy rice	+36.1%
Mangoes, mangosteens & guavas	+35.9%
Tomatoes	+35.9%
Barley	+35.4%
Olive	+35.2%
Wheat	+34.9%
Oats	+34.1%
Sugar cane	+34.0%
Sweet potatoes	+33.7%
Potatoes	+31.3%
Tangerines, mandarins	+29.5%
Dry peas	+28.9%
Maize	+24.1%
Dry onions	+20.0%
Sorghum	+19.9%
Lettuce & chicory	+18.5%
Cassava	+13.8%
Pineapples	+5.0%
Other melons	+4.7%

Increase in crop biomass in response to 300 ppm increase in CO₂

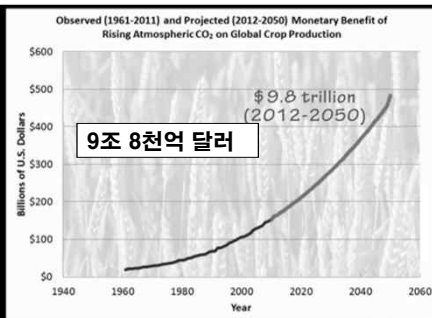
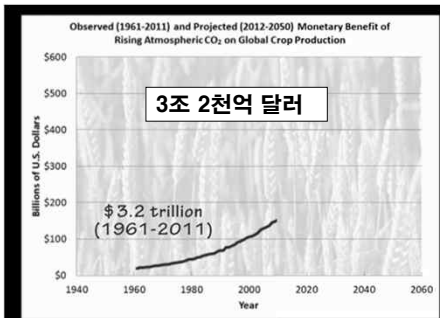
CO₂ 300ppm 증가로 인한 작물 증산량

CO₂ 증가로 50년 동안 3조 달러 효과

Cash benefit from CO₂ fertilization of crops, 1961 – 2010

\$150+ bn
\$100-149 bn
\$45-99 bn
\$30-45 bn
\$15-30 bn
\$0-15 bn

최고의 기아 해결책: 기온 상승과 이산화탄소 증가



Dr. Sylvan Wittwer

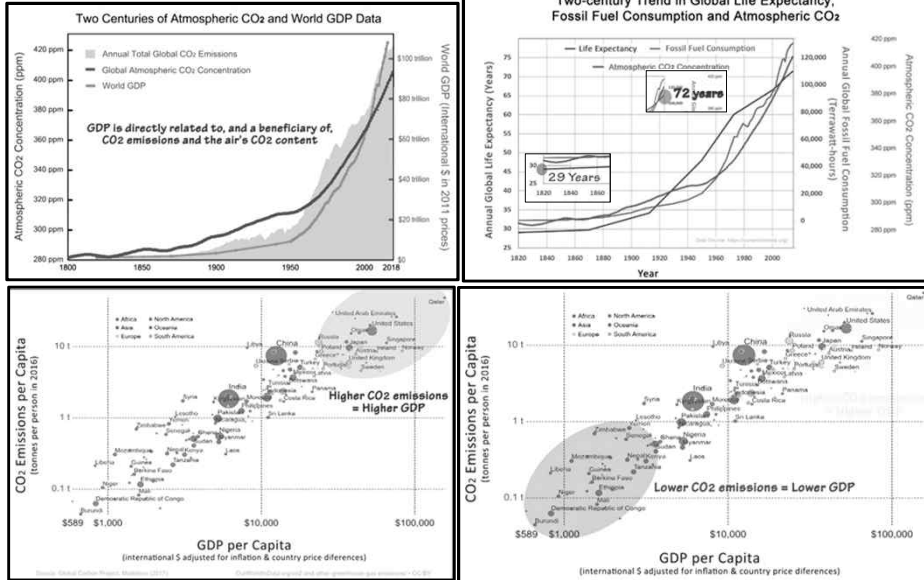
"it should be considered good fortune that we are living in a world of gradually increasing levels of atmospheric CO₂"

Dr. Sylvan H. Wittwer
Michigan State University

"the rising level of atmospheric CO₂ is a universally free premium, gaining in magnitude with time, on which we can all recon for the future"

이산화탄소 증가는 전 세계적으로 미래에 이르기까지 공짜로 얻은 행운이다.

(5) 화석연료 혜택



화석연료 덕분에 인류는 더 잘 살고 수명이 길어졌다.

5. 기후 재난 거짓말

[한정애의 내 인생의 책] ①2050 거주불능 지구 - 데이비드 월

러스 웰즈

한정애 | 한광우 | 장광

2021-05-09 21:03 발행 | 2021-05-09 21:03 수정

지구는 인간의 것이 아니다



1부 이것은 '자연재해'가 아니다
이미 이산화탄소 한계치를 넘어선 지구,
'자연재해'가 아닌 '대량 학살'의 위기,

2부 12가지 기후재난의 실제와 미래

1장 살인적인 폭염, 2장 빈곤과 굶주림, 3장 집어삼키는 바다

4장 치솟는 산불, 5장 '날씨'가 되어버릴 재난들

6장 갈증과 가뭄, 7장 사체가 쌓이는 바다

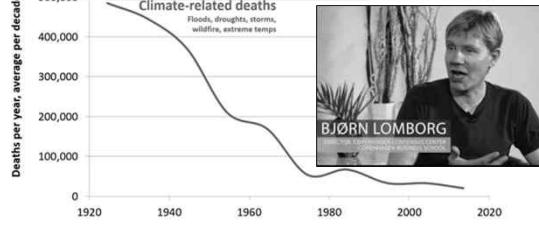
8장 마실 수 없는 공기, 9장 질병의 전파, 10장 무너지는 경제



New York Magazine 기자

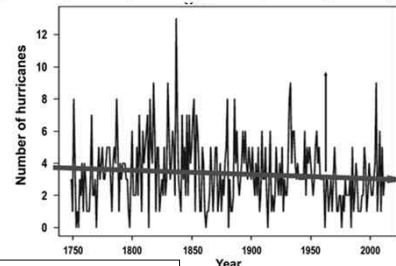
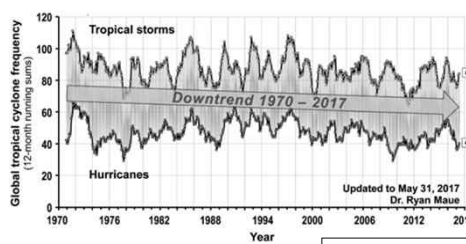
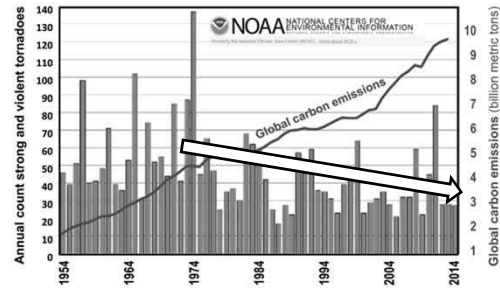
Deaths from Climate, 1920-2018

홍수, 가뭄, 폭우, 산불, 극한 기온



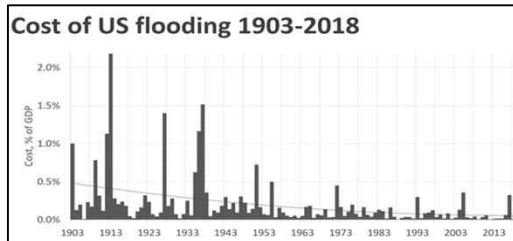
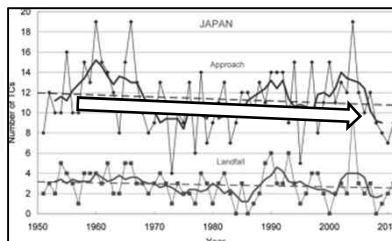
OFDA: OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE

(1)기상 이변이 자주 발생한다.

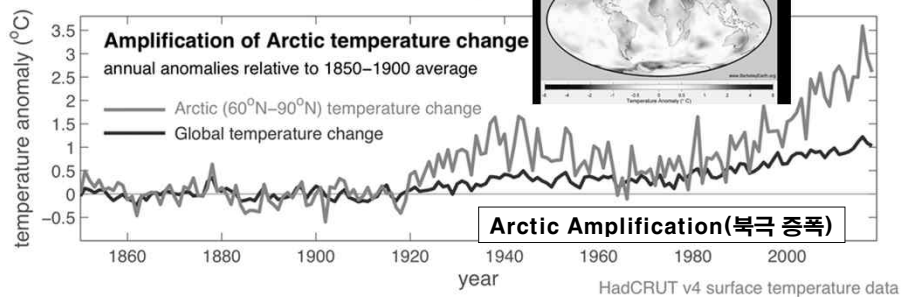


악기상 강도가 줄어들고 있다.

태풍과 홍수

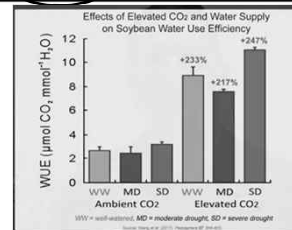
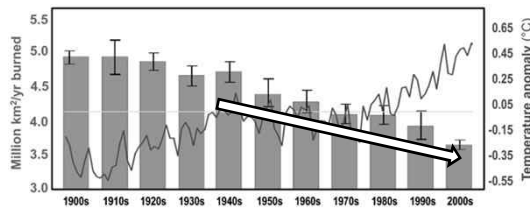
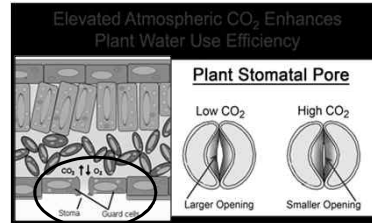
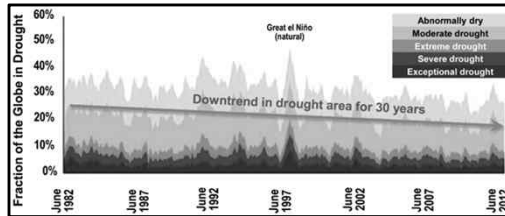


지구온난화로 기후 재난이 줄어드는 이유



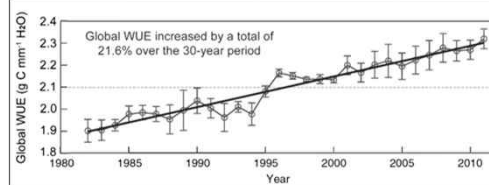
지구온난화로 인해 극지방이 더 빨리 더워진다(수분).

(2)가뭄과 산불이 증가한다.

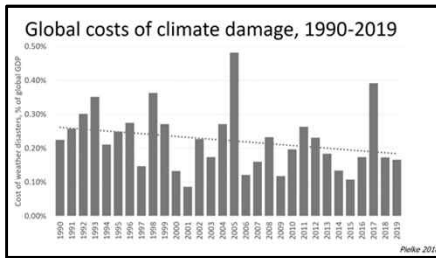
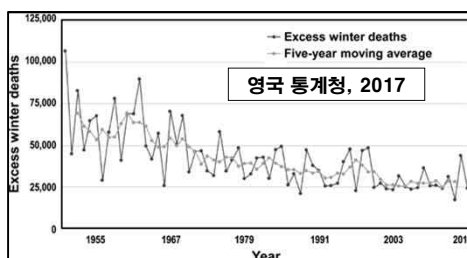
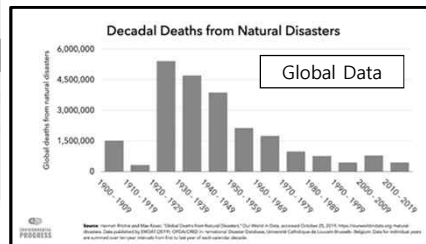
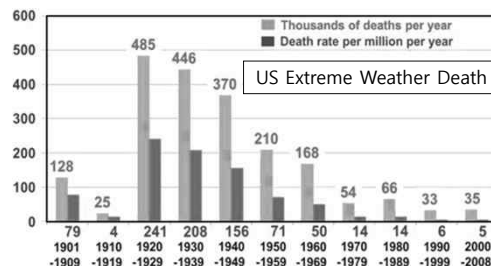


가뭄: 자연 생태계에서 식물 생존에 필요한 최소한의 물이 공급되지 않을 경우

물 사용 효율 증가로
가뭄과 산불이 줄어든다.



(3)기후 사망자 증가한다.



인간은 열대종, 불, 옷, 집을 사용하면서
지구 곳곳으로 이주하게 되었다.

더위는 생명을 주고,
추위는 죽음을 가져온다.

(4)해안 도시가 침수된다.

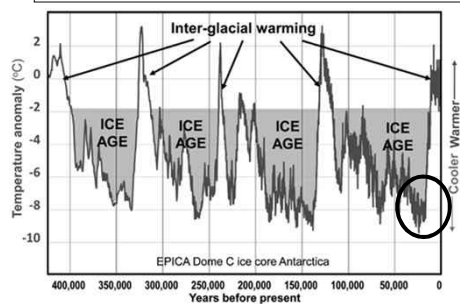
"That's the big thing – sea-level rise – the planet could become ungovernable." – Dr. James Hansen, former Director, NASA GISS



"We're talking about literally giving up on our coastal cities of the world and moving inland." – Dr. Michael Mann, Penn State



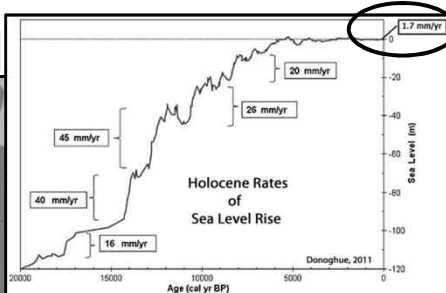
해수면 상승: 빙하기와 간빙기에 일어나는 현상



지난 빙하기 동안 해안선



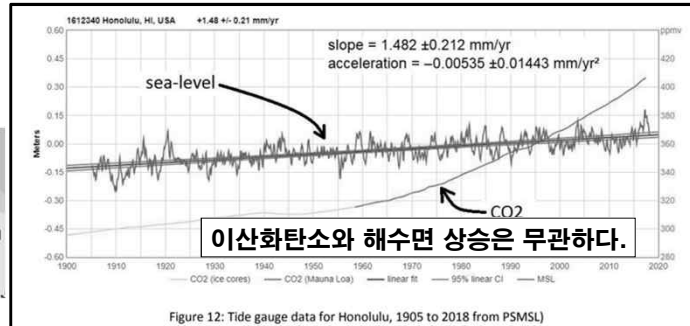
지난 빙하기 동안 아메리카와 아시아 연결



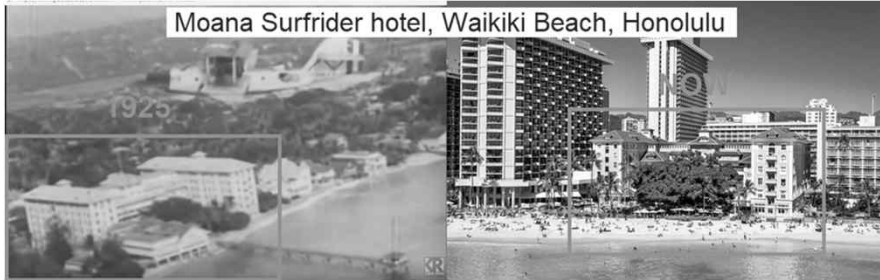
지금은 해수면 상승률이 가장 낮은 시기

관측 사례

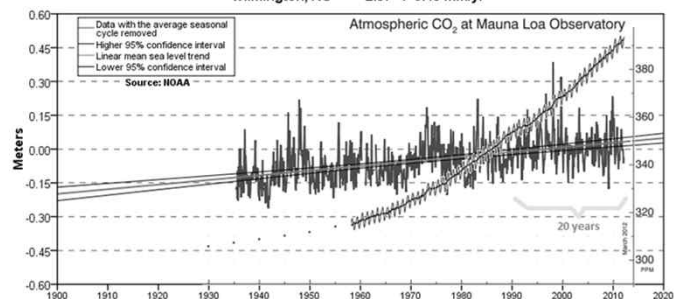
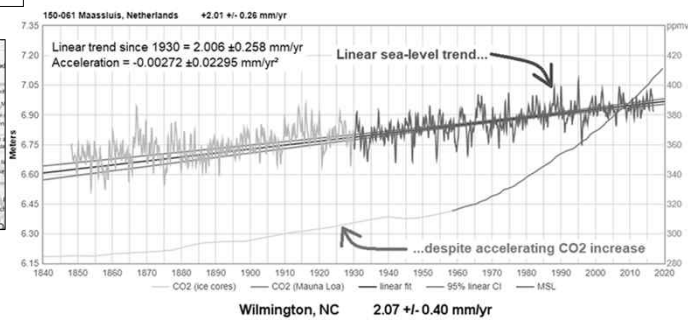
태평양 하와이

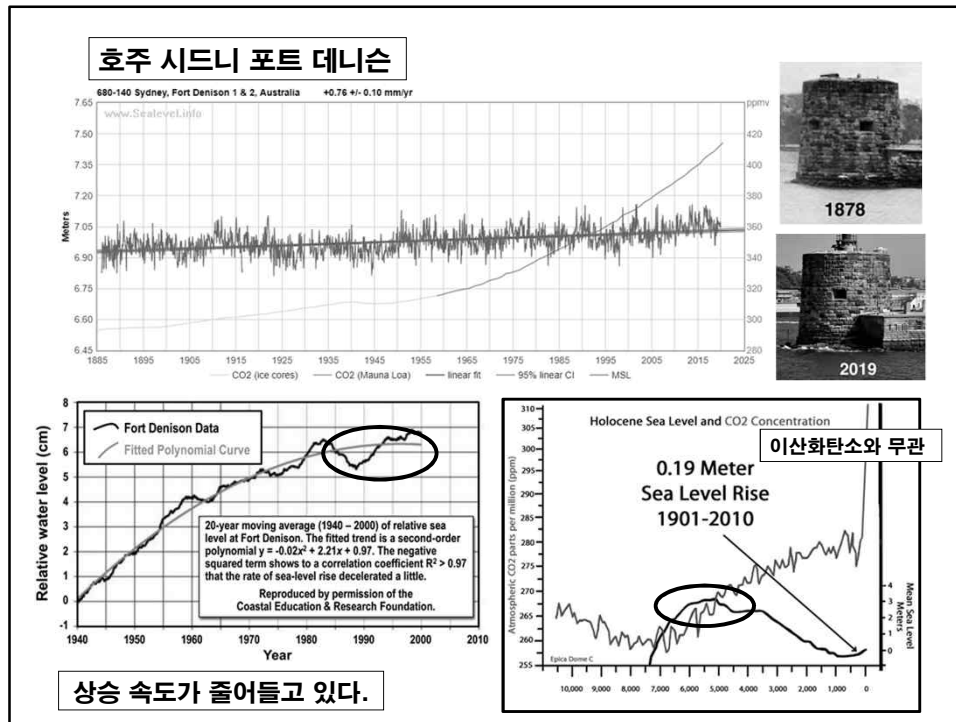


Moana Surfrider hotel, Waikiki Beach, Honolulu



유럽과 미국 대서양





(5)빙하와 북극곰이 사라진다.

In his 2007 Nobel Prize acceptance speech, Al Gore predicted that the polar ice cap would be gone by 2013.

In fact the, the north polar ice cap grew by 60% between 2012 and 2013 to its greatest extent since 2006.

"Their habitat is melting... beautiful animals, literally being forced off the planet. They're in trouble, got nowhere else to go."

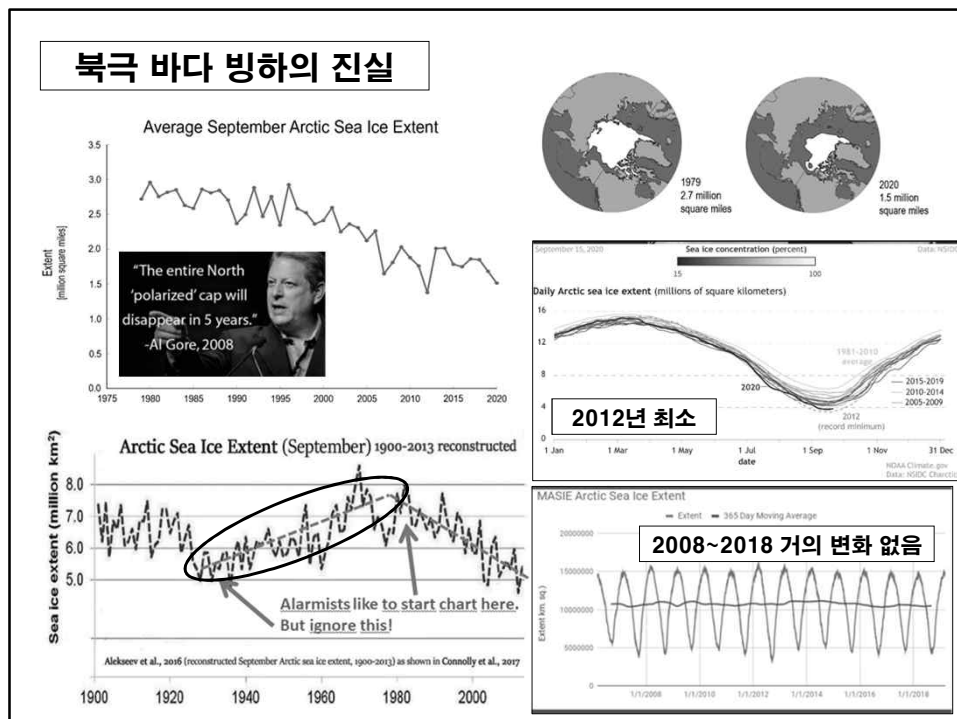
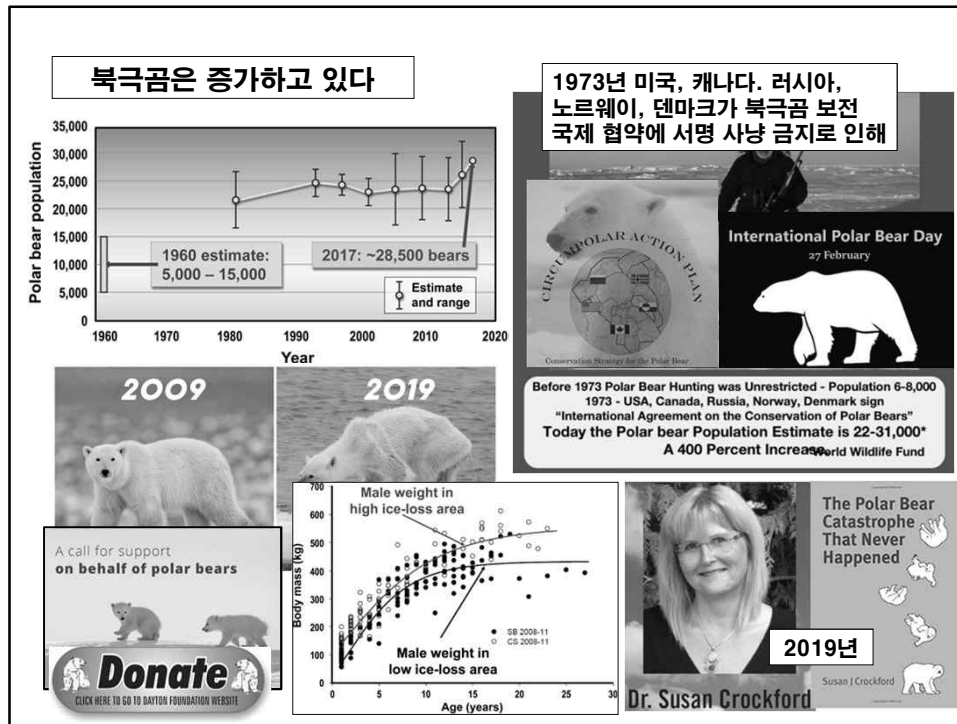
-Al Gore

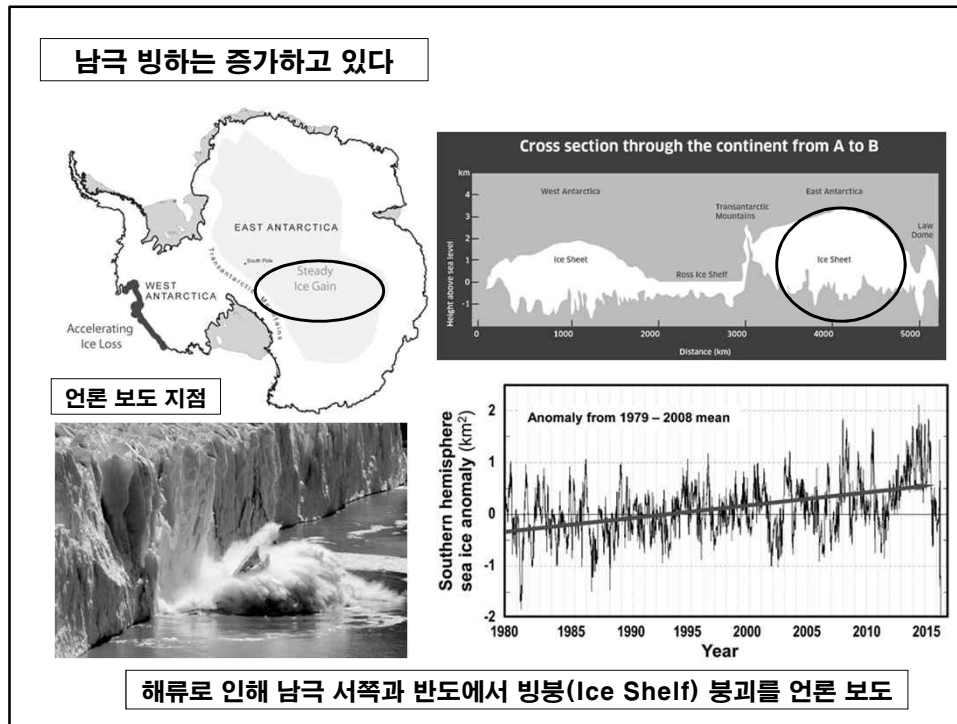
NO ICE NO BEARS

TAKE ACTION to protect polar bears now!

A call for support on behalf of polar bears

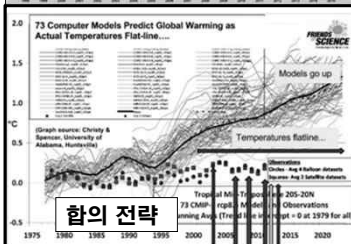
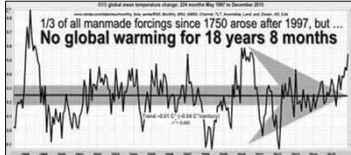
"This is What Climate Change Looks Like" - Nat. Geo. Dec. 2017





6. 정치사회적 현황과 전망

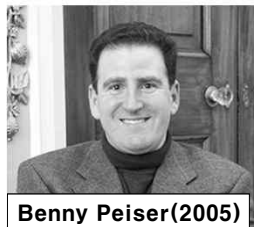
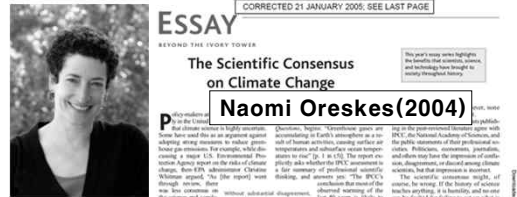
과학자 97%가 합의했다.



합의 전략



1993~2003년까지 10년



Benny Peiser(2005)

THE GLOBAL WARMING POLICY FOUNDATION

Director: Dr Benny Peiser

1126편 중 13편만 기후변화가 인간에 의한 것

Al Gore said zero scientists disagreed with manmade global warming. Peiser re-ran Oreske's research & showed only 13 of 1126, or ~1%, explicitly agreed – most had NO POSITION.

오바마의 97%(2013년)



Barack Obama @BarackObama

Ninety-seven percent of scientists agree: #climate change is real, man-made and dangerous. Read more:

May 16, 2013

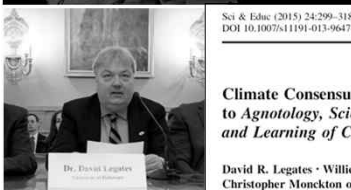


John Cook

2013년
Sci & Educ (2015) 24:299–318
DOI 10.1007/s11191-013-9647-9

Quantifying the consensus on anthropogenic global warming in the scientific literature
John Cook^{1,2,3}, Dana Nuccitelli⁴, Sarah A Green⁵, Mark Richardson⁶, Bartek Winkler⁷, Rob Painting⁸, Robert Way⁹, Peter Jacobs¹⁰ and Andrew Skuse¹¹

11,944편 조사
7,930편 No Opinion
4,014편 Opinion
3,896편 Some Warming
41편 Most Warming
3,896/4,014=97.1%(Cook)
41/11,944=0.003(Legates)



David Legates(2015년)

Climate Consensus and 'Misinformation': A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change

David R. Legates · Willie Soon · William M. Briggs · Christopher Monckton of Brenchley

Propaganda v. Science
Legates et al. (2013)
97% AGREEMENT
99.7%
of 11,944 climate science papers did not say recent global warming was mostly manmade.
Only 0.5% did.

Some(33%) → Most → Dangerous

과학과 합의(Science and Consensus)



The greatest scientists in history are great precisely because they broke with the consensus. There is no such thing as consensus science. If it's consensus, it isn't science. If it's science, it isn't consensus. Period.

— Michael Crichton —

과학이 하는 일은 합의라는 것과는 아무런 관련이 없다. 합의란 정치에서나 하는 비즈니스다. 과학이란 이것과는 반대로 정답을 아는 단 한 명의 연구자만을 필요로 한다. 역사상 가장 위대한 과학자들은 그들이 합의라는 것으로부터 단절했기 때문에 위대한 것이다. 합의라는 과학은 없다. 만약 그것이 합의된 것이라면 그것은 과학이 아니다. 만약 그것이 과학이라면 그것은 합의된 것이 아니다.

기후 위기론자들의 몰락



기후 위기론자들의 전향



On behalf of environmentalists everywhere, I would like to formally apologize for the climate scare we created over the last 30 years.

Climate change is happening. It's just not the end of the world. It's not even our most serious environmental problem.

MICHAEL SHELLENBERGER
Former Climate Alarmist
Author of "Apocalypse Never"



APOCALYPSE
NEVER
WHY ENVIRONMENTAL
ALARMISM HURTS US ALL
MICHAEL
SHELLENBERGER



Unsettled
?
WHAT CLIMATE SCIENCE
TELLS US, WHAT IT DOESN'T,
AND WHY IT MATTERS
Steven E. Koonin
FORMER UNDERSECRETARY FOR SCIENCE,
U.S. DEPARTMENT OF ENERGY
UNDER THE OBAMA ADMINISTRATION



미국의 파리기후협약 탈퇴

"GLOBAL WARMING
IS A TOTAL, AND
VERY EXPENSIVE,
HOAX!
— Donald Trump



Global Warming Petition Project

31,487 American scientists have signed this petition,
including 9,029 with PhDs

Oregon
Climate
Declaration



Donald J. Trump
@realDonaldTrump

Patrick Moore, co-founder of Greenpeace:
"The whole climate crisis is not only Fake News, it's Fake Science. There is no climate crisis, there's weather and climate all around the world, and in fact carbon dioxide is the main building block of all life."

The influence of mankind on climate is trivially true and numerically insignificant



Dr. Richard Linzen, CO2 Coalition Board of Directors
Professor Emeritus of Atmospheric Science at MIT
Alfred P. Sloan Professor of Meteorology at MIT (1983-2013)
Previous Professorships at Harvard and the University of Chicago

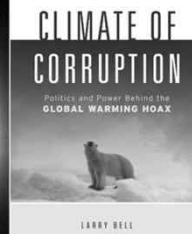
미국의 녹색 뉴딜



She was previously worked as a waitress and bartender before running for Congress in 2018.



Alexandria Ocasio-Cortez said "The world is going to end in twelve years if we don't address climate change."



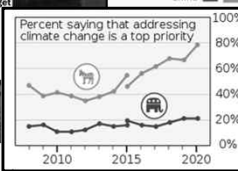
바이든 정부의 재가입

BIDEN TO REJOIN PARIS CLIMATE AGREEMENT



Democrats & Republicans Poles Apart On Global Warming

% saying global warming is a very serious problem



유엔 기후협약 전략



CLIMATE ACTION SUMMIT 2019

In 2020, a national survey found that one out of five British children was having nightmares about climate change



Greta Thunberg To World Leaders UN Climate Summit

GRETA THUNBERG GIVES TRUMP 'DEATH STARE'

기후 활동가에게 자폐는 수퍼 파워다

Media Manipulation LOOKS LIKE

Dr. Judith Curry

Climate Activist: Asperger's Is a Superpower

유엔 P4G



P4G
Partnering for Green Growth and the Global Goals 2030



YONHAP NEWS

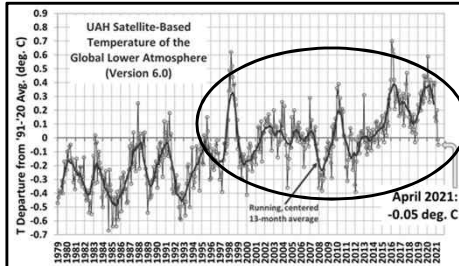
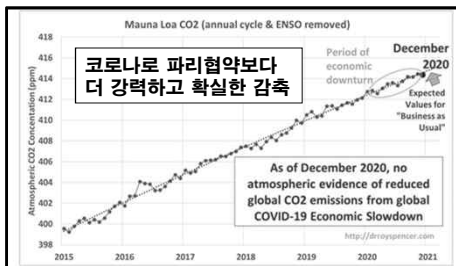
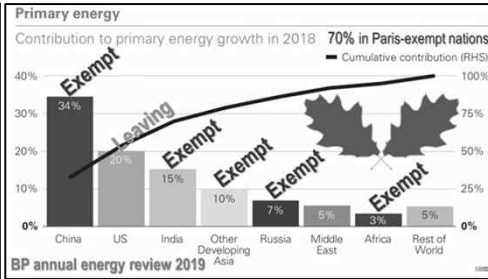
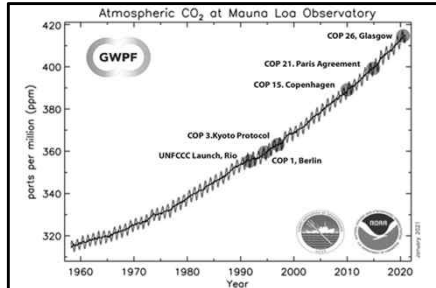
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS	THE GLOBAL GOALS For Sustainable Development

2021 P4G 서울 정상회의

2021년 탄소중립을 위한 새로운 발걸음을 내딛습니다



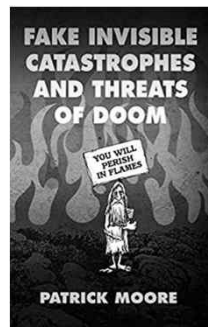
미래 전망



지구의 CO₂ 상승은 멈출 수도, 필요도 없다.

기후 대재앙은 낭설, 지금은 축복 받은 시기

-참고 자료-



지역도서관
'희망도서신청' 캠페인

우리 동네 도서관에
'불편한 사실: 알 고어가 몰랐던 지구의 기후과학'을
희망 도서로 신청해주세요

우리 아이들에게
올바른 지구의 기후과학을
알 수 있게 도와주세요.

※ 불편한 기후변화 지식으로
5명 중 1명의 어린이가 기후변화 위험을
두는 것으로 조사되었습니다
(2020년 영국 National Survey).

미국 최고의 종교교 기후변화 토론서

[신청방법]

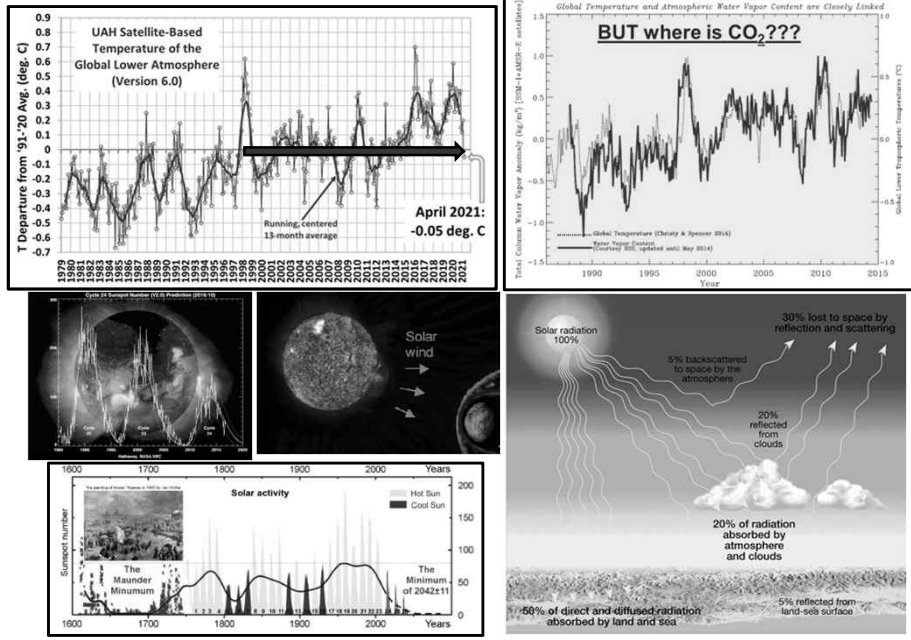
1. 거주지 도서관 홈페이지에 회원가입
2. 아이디 비밀번호로 로그인
3. 희망도서신청 페이지에서 책 제목 검색 후 신청 버튼 누름!
4. 거주지의 다른 구 도서관 홈페이지에서도
같은 방법으로 신청!

Get the new free
Inconvenient App from

GET IT ON
Google Play

Download on the
App Store

지구 기온 결정 요인



The influence of mankind on climate is trivially true and numerically insignificant



Dr. Richard Linzen, CO₂ Coalition Board of Directors
Professor Emeritus of Atmospheric Science at MIT
Alfred P. Sloan Professor of Meteorology at MIT (1983-2013)
Previous Professorships at Harvard and the University of Chicago

GREGORY WRIGHTSTONE



Inconvenient facts: CO₂ Coalition



The Heartland INSTITUTE

www.heartland.org

GWPF
The Global Warming Policy Foundation

www.thegwpf.org

The sun is the main driver of climate change.
Not you.
Not CO₂.

www.friendsofscience.org

FRIENDS OF SCIENCE.org

CO₂ COALITION

www.co2coalition.org

CO₂ SCIENCE

www.co2science.org

Institute for the Human Environment

www.human-environment.org

오바마의 97%(2013년)



Barack Obama @BarackObama

Ninety-seven percent of scientists agree: #climate change is real, man-made and dangerous. Read more:

May 16, 2013



John Cook

2013년

Quantifying the consensus on anthropogenic global warming in the scientific literature

John Cook^{1,2,3}, Dana Nuccitelli⁴, Sarah A. Green⁵, Mark Richardson⁶, Richard Winkler⁷, Bob Paolucci⁸, Robert Updegraff⁹, Peter Jacobson¹⁰ and Andrew Skusev¹¹

1. Global Change Institute, University of Queensland, Australia
2. School of Science, Queensland University of Technology, Australia
3. School of Psychology, University of Western Australia, Australia
4. Texas Tech University, Lubbock, Texas, USA
5. Department of Chemistry, University of North Carolina, USA
6. Department of Geography, University of Northumbria, UK
7. Department of Geography, University of Northumbria, Canada
8. Department of Environmental Science and Policy, George Mason University, USA
9. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA
10. York University, Toronto, Canada

11,944편 조사

7,930편 No Opinion

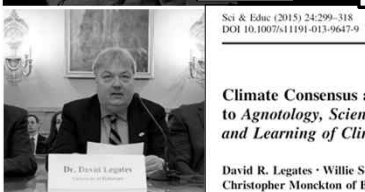
4,014편 Opinion

3,896편 Some Warming

41편 Most Warming

3,896/4,014=97.1%(Cook)

41/11,944=0.003(Legates)



David Legates(2015년)

Sci & Educ (2015) 24:299–318
DOI 10.1007/s11191-013-9647-9

Climate Consensus and ‘Misinformation’: A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change

David R. Legates · Willie Soon · William M. Briggs · Christopher Monckton of Bretnchley

Propaganda v. Science

Legates et al. (2013)

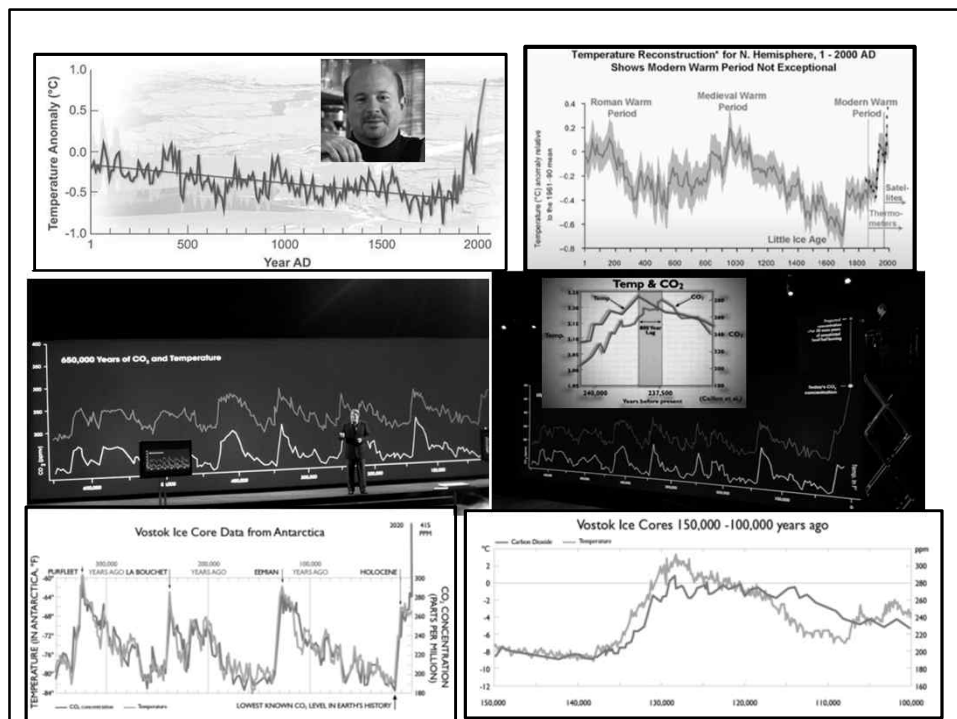
97% AGRE

99.7%

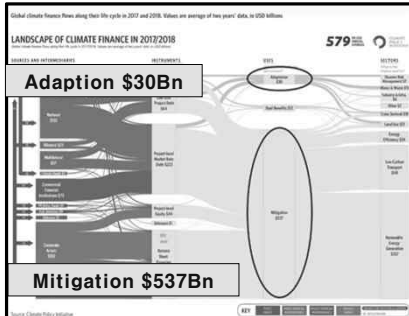
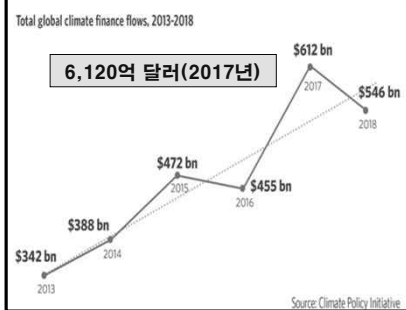
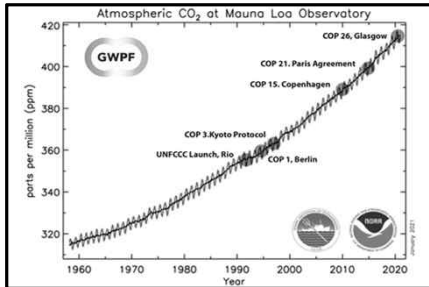
of 11,844 climate science papers did not say recent global warming was mostly manmade.

Only 0.5% did.

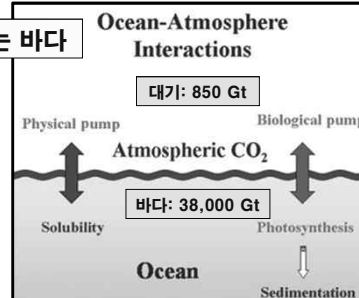
Some(33%) → Most → Dangerous



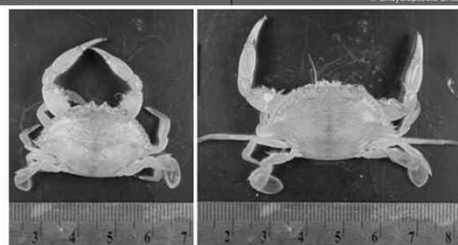
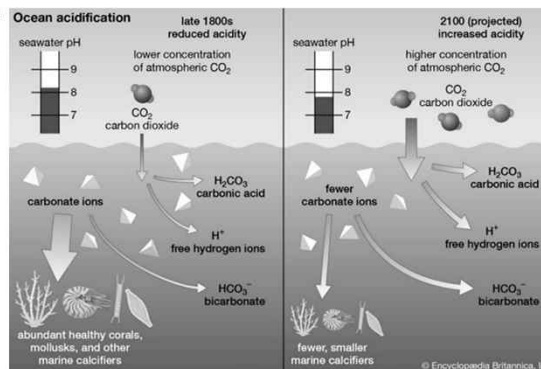
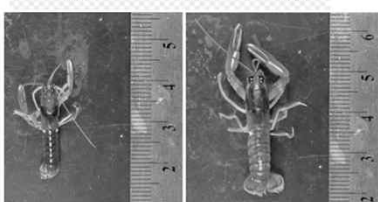
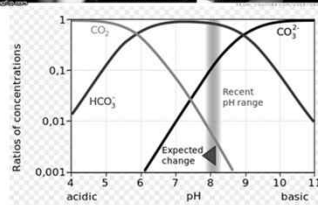
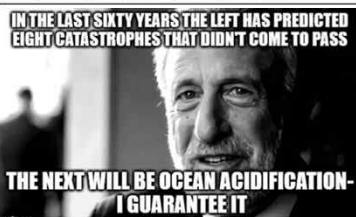
기후협약에 따른 온실가스 감축 효과는 0



이유는 바다



바다가 죽는다: 해양 산성화



박석순 교수의 발제에 대한 토론 요지

토론자: 김정호

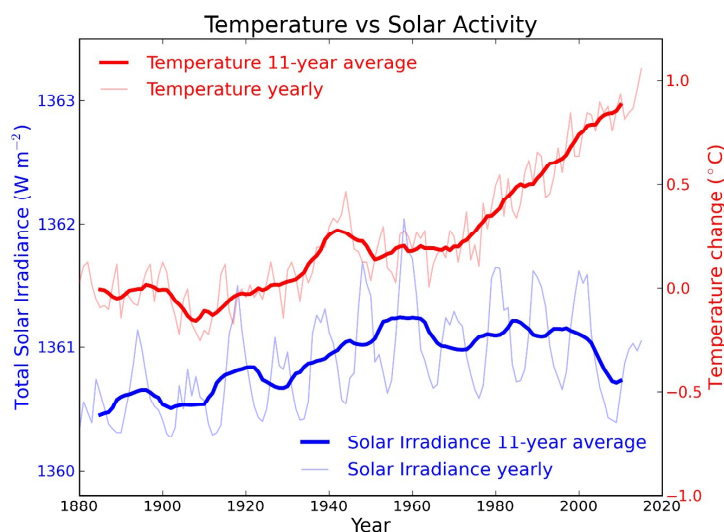
순서

1. 기존 Critical Review에 대한 입장은? 태양 흑점 효과 사례

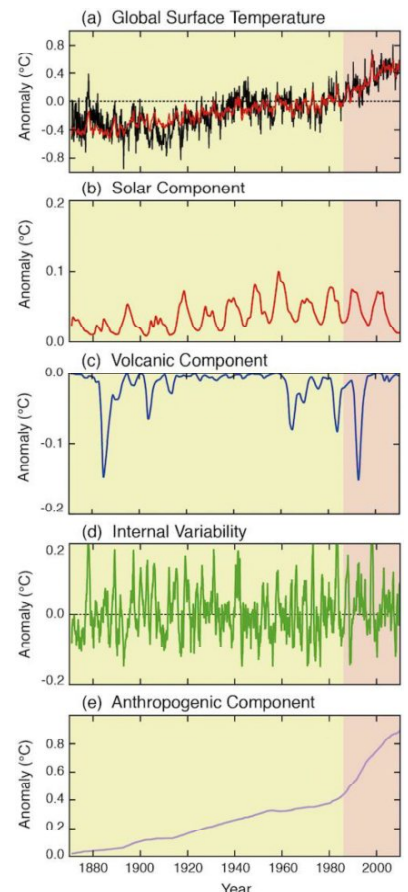
2. 진실과 무관한 인간심리-시장-정치: 저항 또는 적응, 어느 쪽이 나은가?

- ESG Investing-consumption
- Carbon Tax/tariff

지구 기온과 태양 활동

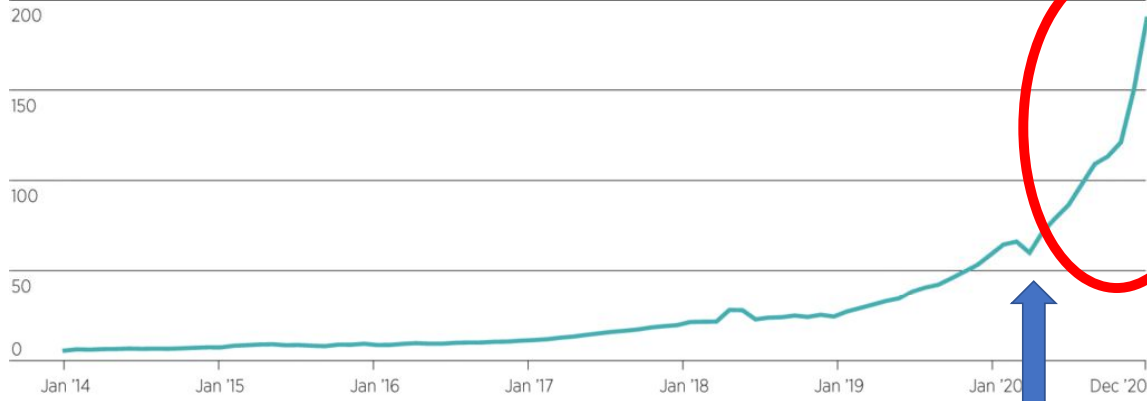


<https://skepticalscience.com/solar-activity-sunspots-global-warming.htm>



ESG ETFs: Last AUMs

\$bn



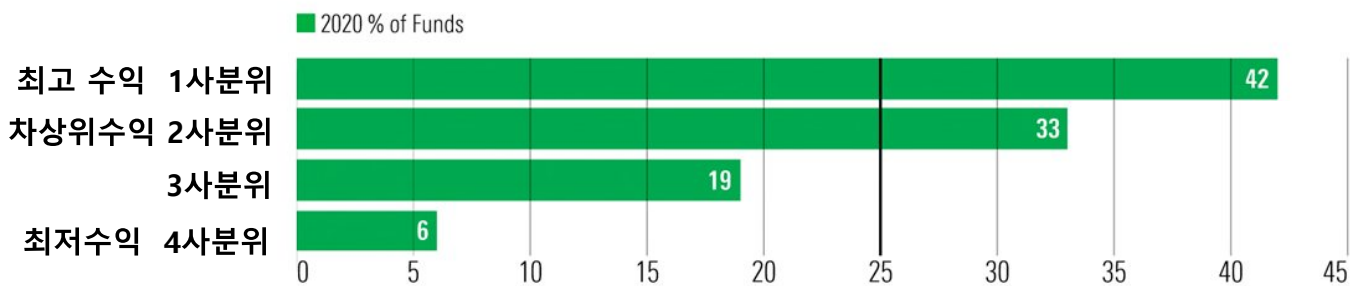
1890억달러
2020년말

연초 대비
223% 증가

코로나 사태 발발

<https://esgclarityasia.com/esg-etf-assets-surge-220-in-2020/>

ESG ETF 의 수익성 분포

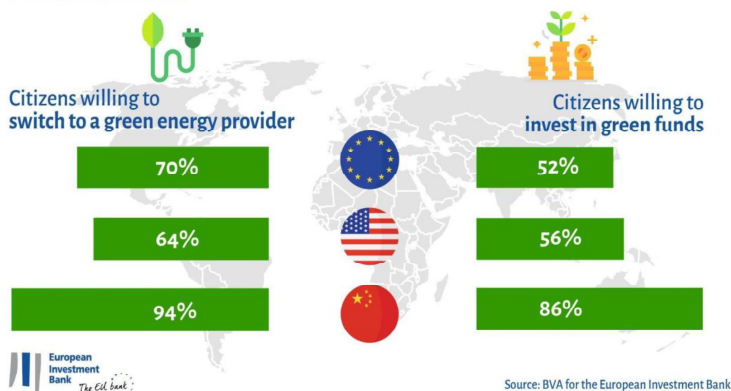


<https://www.morningstar.com/articles/1017056/sustainable-equity-funds-outperform-traditional-peers-in-2020>

코로나 이후 ESG 투자 급증 이유

1. 코로나 → 인류가 환경, 위생, 위험 등에 예민해짐
2. 투자자, 소비자들 ESG 기업 선호, 반ESG 기업 혐오
3. 신재생 에너지 등에 대한 정부 투자 및 지원금 급증
4. ESG 투자 수익률 상승

EIB Climate Survey



<https://www.eib.org/en/infographics/home-heating-and-climate-conscious-consumption>

조사시기: 2020년

EIB Climate Survey

Percentage of respondents in favour of stricter measures to fight climate change.

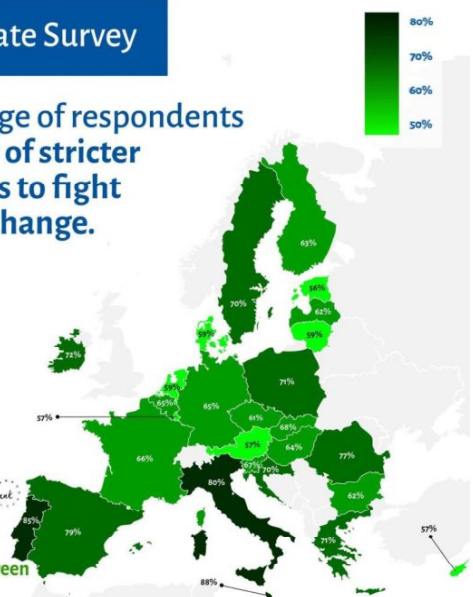


70%



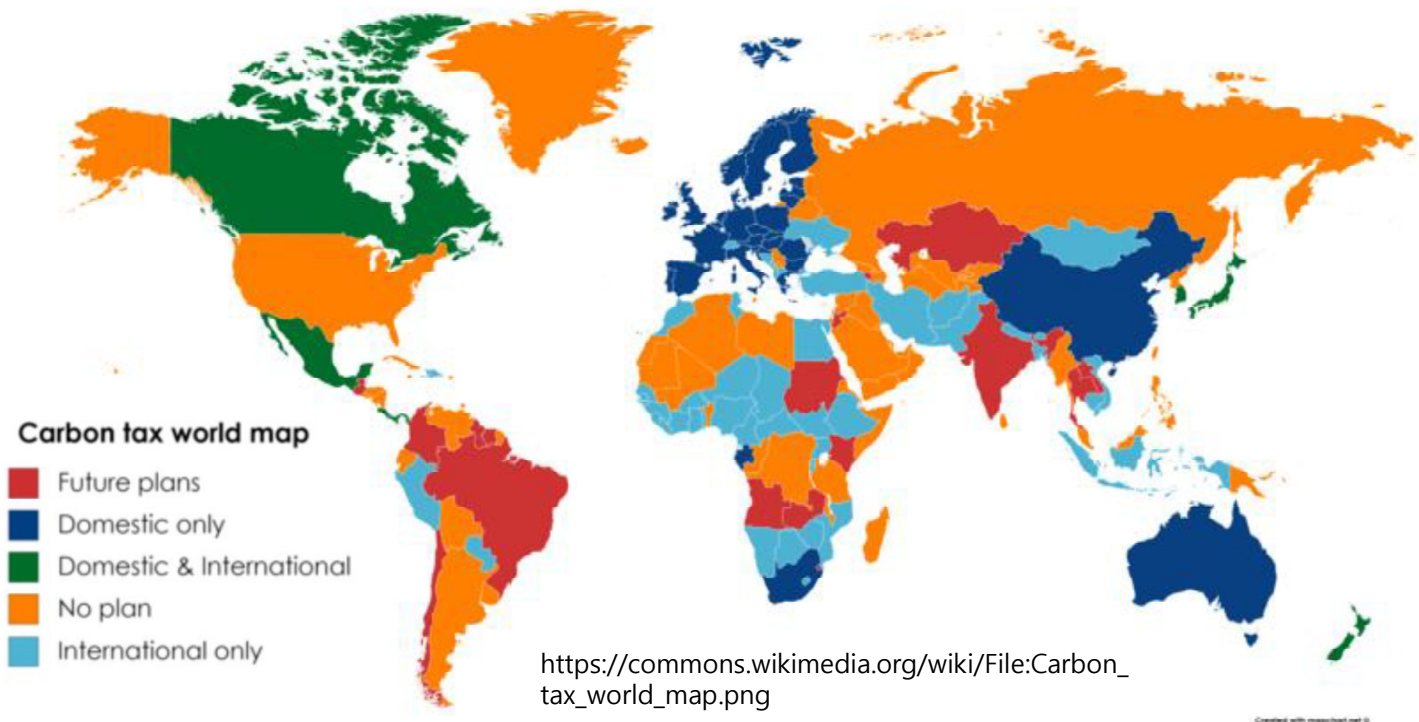
Source: BVA for the EIB

#TheFutureIsGreen



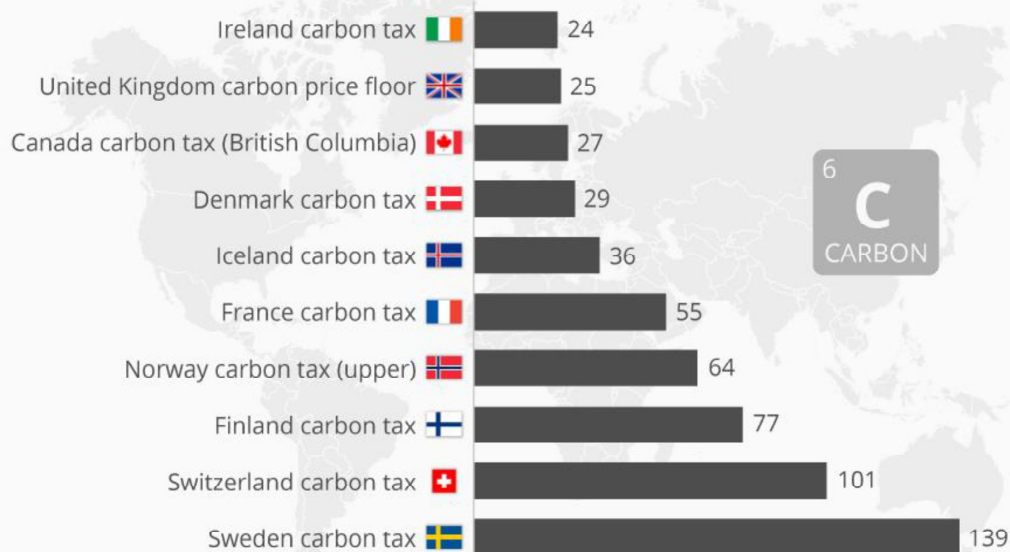
세계의 탄소세 상황.

어떻게 하나? 역행 또는 적응?



How the World Puts a Price on Carbon

Carbon pricing policies in selected countries (in U.S. dollars per metric ton of CO₂-equivalent)*



@StatistaCharts

* Nominal prices based on currency conversion from April 1st, 2018.
Sources: Ecofys, World Bank, Vivid Economics

statista

<https://www.statista.com/chart/17095/highest-carbon-taxes-in-the-world/>

