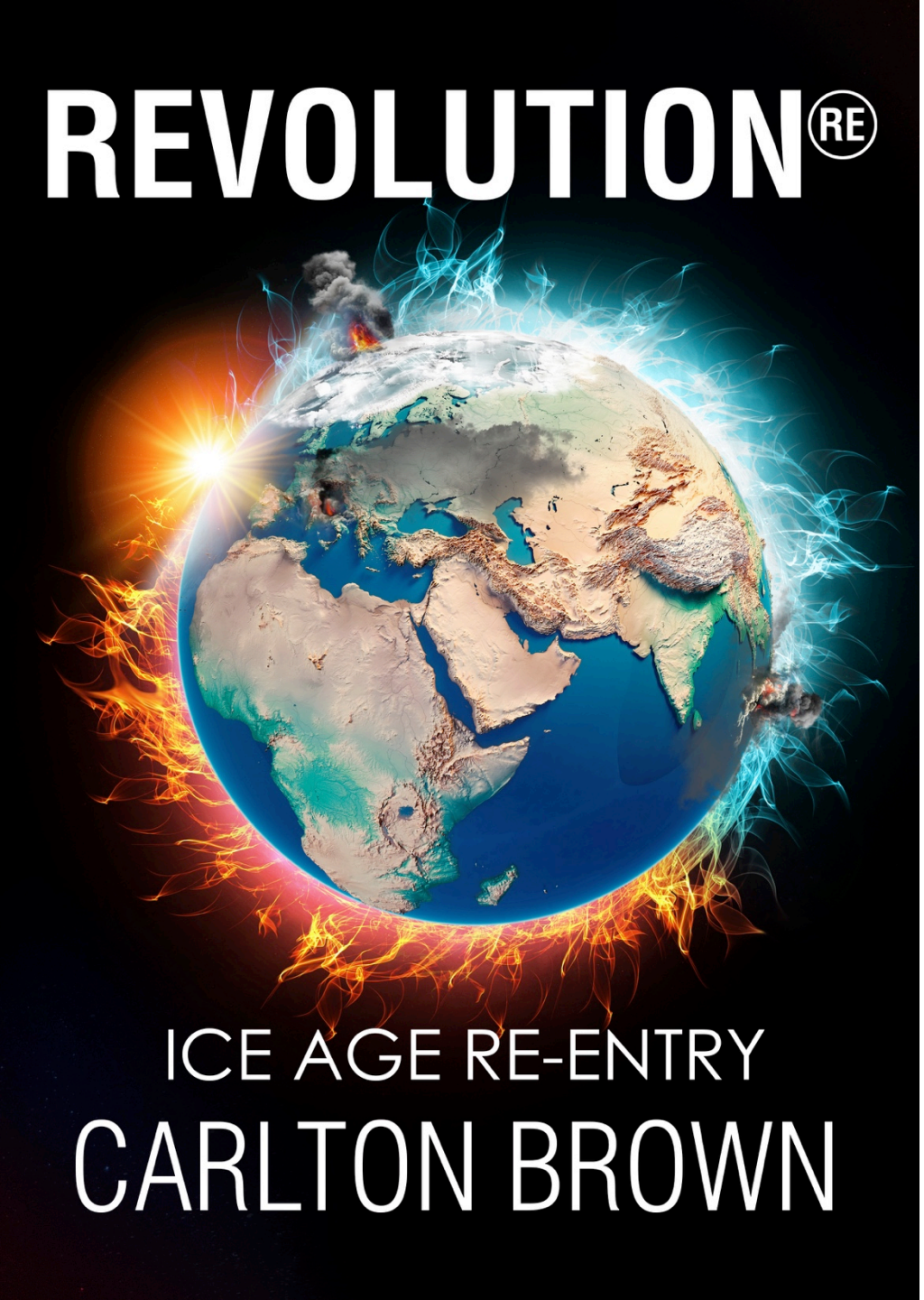


Revolution: Ice Age Re-Entry

A free eBook Composed of Two Parts

1) **Part A**: (i) Ice age entry millennia ago, our ice age re-entry during the 21st century, (ii) Scientific refutation of the IPCC's climate change key-risk assessment (5th Assessment Report), (iii) Natural climate change risks linked to (i & ii) and this grand solar minimum

2) **Part B:** Risk mitigation of the 21st century natural climate change risks dismissed by the IPCC (energy, water, food; central and local governments, communities, and at home)

By

Dr. Carlton Brown BVSc (Massey, NZ) MBA (London Business School)

Advocate/Activist for Natural Climate Change Risk-Mitigation: Switching to Renewable Energy, and Implementing Decentralized/Centralized Sustainable Development and Prepandemic Influenza Immunization (**Urgently**)
FreeBook: Amazon (https://amzn.to/2PyQsxV), Google Play (http://bit.ly/2JFHz08), Kobo (http://bit.ly/2F3DdRQ), and Researchgate PDF (http://bit.ly/2UnTBju)
LinkedIn: https://www.linkedin.com/in/carlton-brown-13b66232/
Website: http://grandsolarminimum.com
Twitter: https://twitter.com/Iceagereentry

Unmitigated 21st Century Natural Climate Change Risks

Ice age entry 8,000yrs (Arctic) and 10,500yrs ago (Antarctica) – after the Holocene Climate Optimum (HCO)

- Significant ice build up started 5 millennia ago and peaked during the Little Ice Age – subsequent melt initiation preceded hypothetical AGW.
- This ice age inception is the slowest to decline in temperature in 800,000yrs (Antarctica) and 2 million years (Global).

Expect a 21st century ice age re-entry (-2°C within 40 years, P-value <0.05)

- Outlier Arctic warming phases always switch to 'cold mode' and abruptly fall in temperature.

A grand solar minimum poses increased risk for: (i) a cold climate, (ii) climate-forcing volcanism, (iii) rapid climate change, (iv) pandemic influenza

High forecast inaccuracy refutes the IPCC's theory and invalidates its UNFCCC Article 2 dictated key-risk assessment

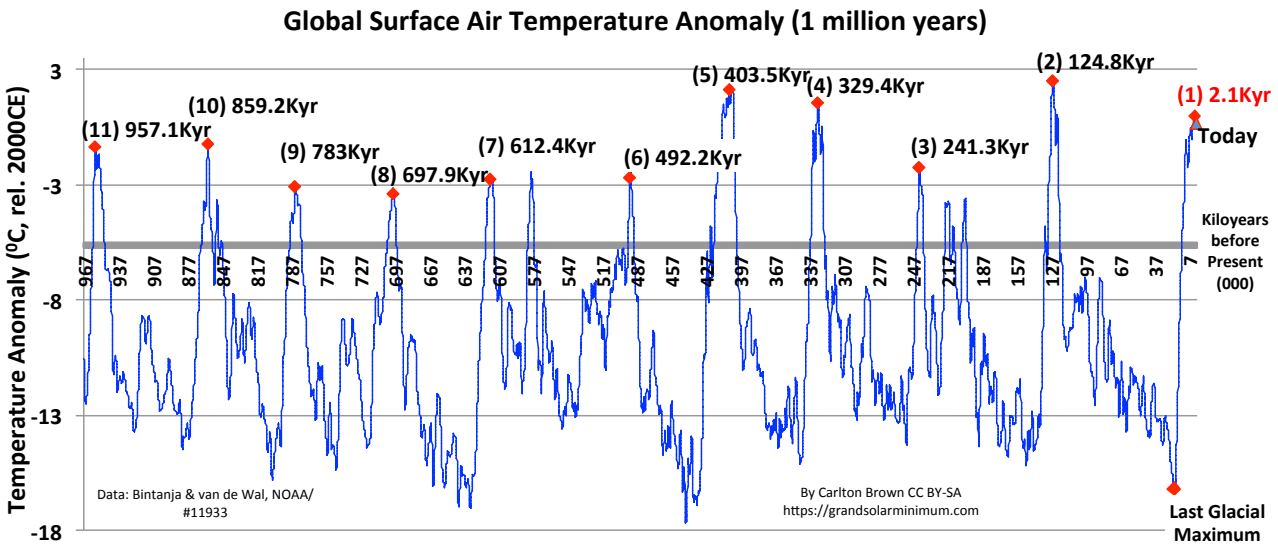
IPCC dismissed 21stC natural climate change risks and disoriented our glacial cycle bearing

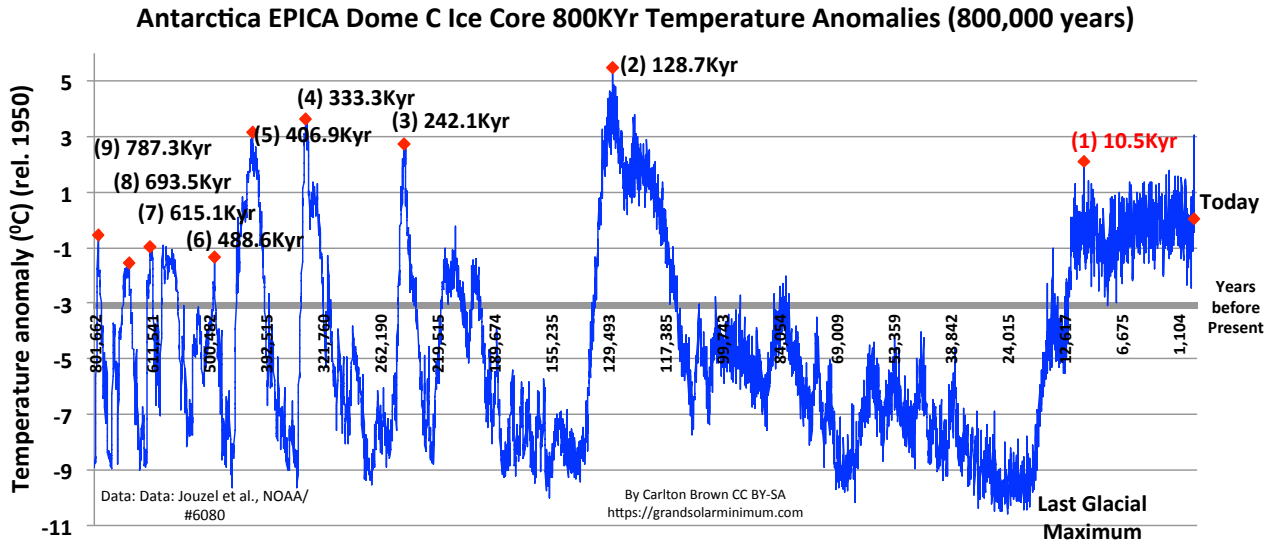
- Changed the ice age boundaries, failed to emphasize ice build up after the HCO, hijacked/rebranded a natural warming phase initiated in 1700.
- Used climate indices that were deceivingly altered to accentuate recent global warming.
- Global temperatures declined 0.47°C since early 2016's peak – falsifying AR5's 2016-2035's 0.3-0.7°C prediction.

21st century natural climate change risks have been left unmitigated (thanks to their dismissal/omission by the IPCC)

Hyperlinked publications associated with this presentation: https://grandsolarminimum.com/scientific-publication-hyperlinks/

Natural Climate Change
Preceded UNFCCC Article 1's Definition for Climate Change (1988)





Natural climate change = Temperature oscillations evident over multiple timescales with varying causations

- Epochs (137 million years), glacial cycles (93Kyrs), millennial, centennial, decadal, annual, seasonal, intra-seasonal, daily.

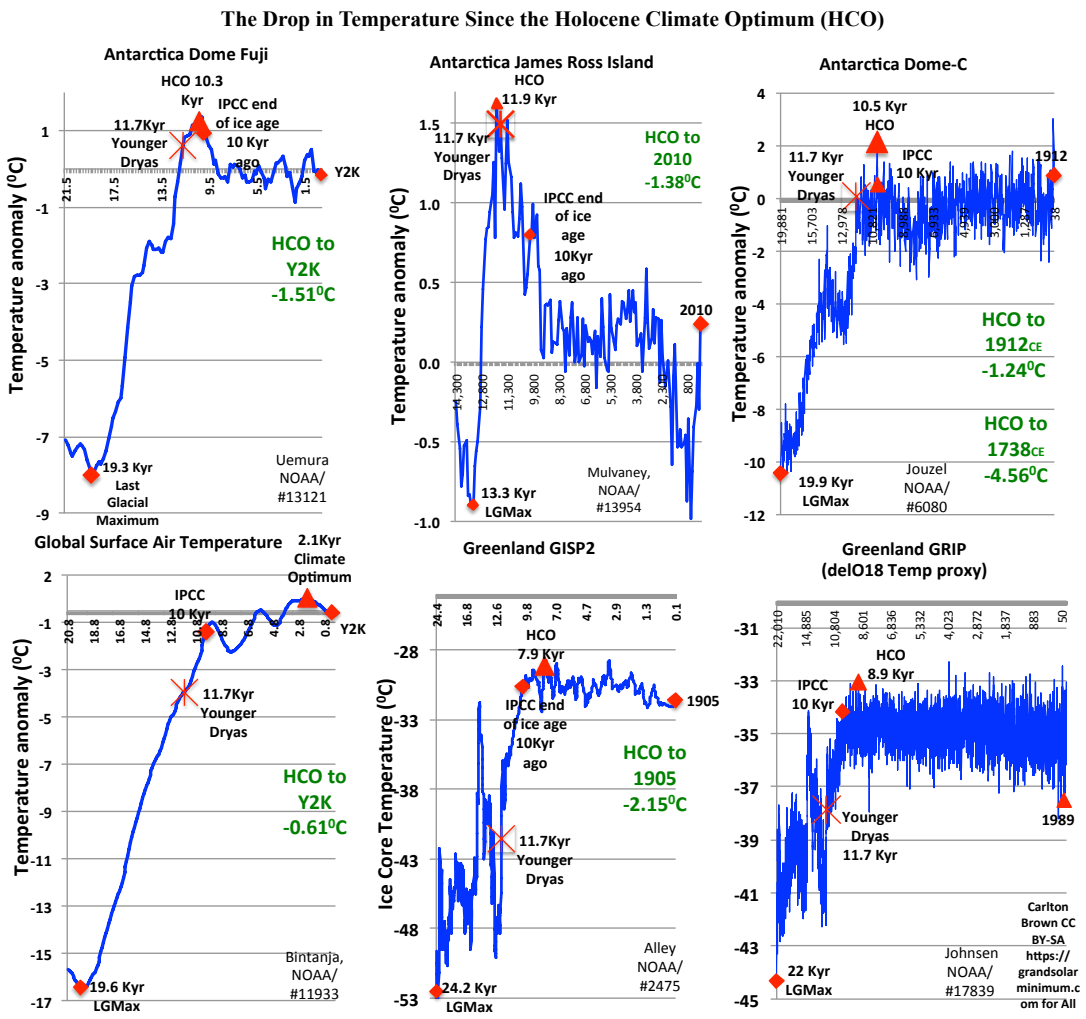
UNFCCC Article 1 definition of climate change hijacked/rebranded natural climate change 30 years ago

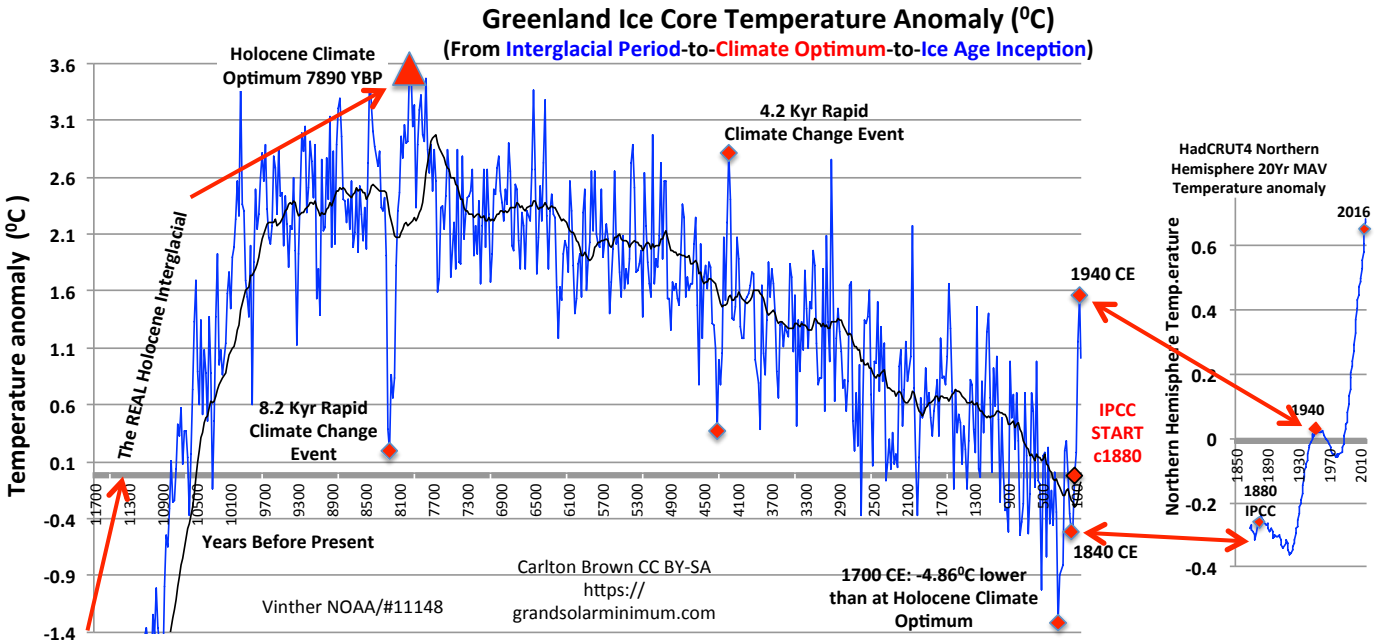
- "*Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.*" (page 7&9 http://bit.ly/2FIr16L.

Glacial cycles: ave. 93Kyr long, interglacial period 18Kyr, and rise 14°C and 120+m sea levels

- Climate Optimum peaks are specifically phased: Antarctic > Arctic > Global (IPCC 30Kyr ice age delay is statistically refutable – Slide 23).

The Ice Age Started Millennia ago after the Holocene Climate Optimum (HCO)





From the last glacial maximum 20Kyr ago to the HCO: The Arctic/Northern Hemisphere ice mass changes accounted for 87% of interglacial global sea level changes (Bintanja NOAA/#11933)

A new ice age started between 8Kyr (Arctic) and 10.5Kyr ago (Antarctic)

- Arctic: 4.86°C decline in temperature between 5980BCE and 1700CE i.e., 20% of an interglacial temp rise
- Antarctic: 4.56°C decline in temperature between 8577BCE and 1738CE

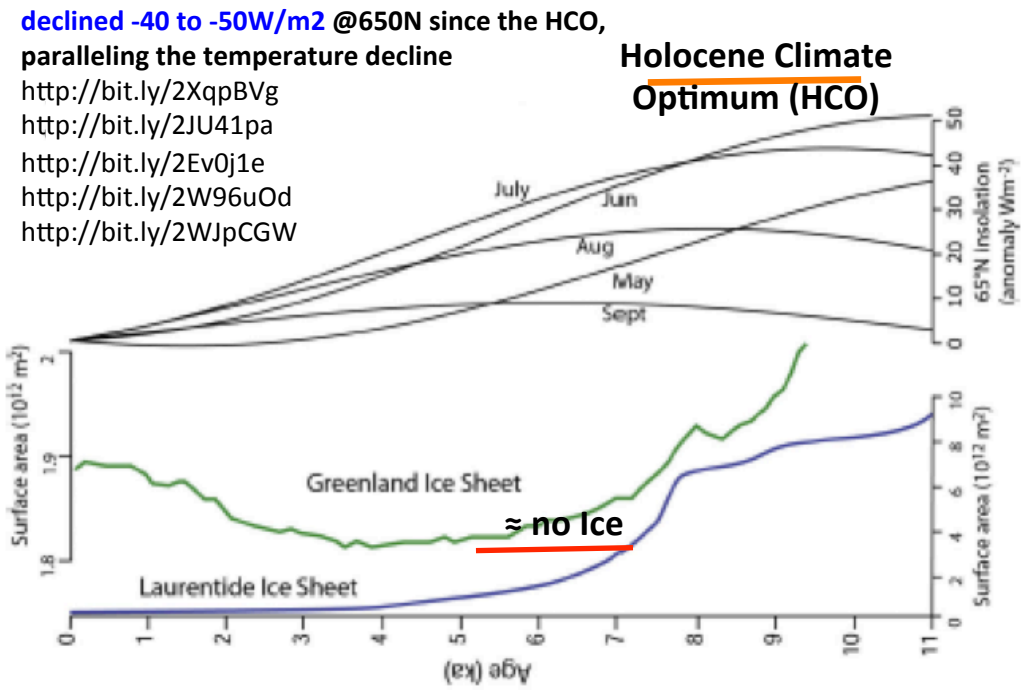
Publications: Precession modified solar irradiance declined 40 -50W/m2 @650N since the HCO, paralleling the temperature decline

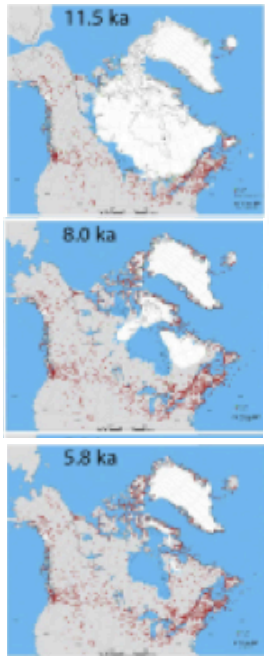
http://bit.ly/2XqpBVg
http://bit.ly/2JU41pa
http://bit.ly/2Ev0j1e
http://bit.ly/2W96uOd
http://bit.ly/2WJpCGW

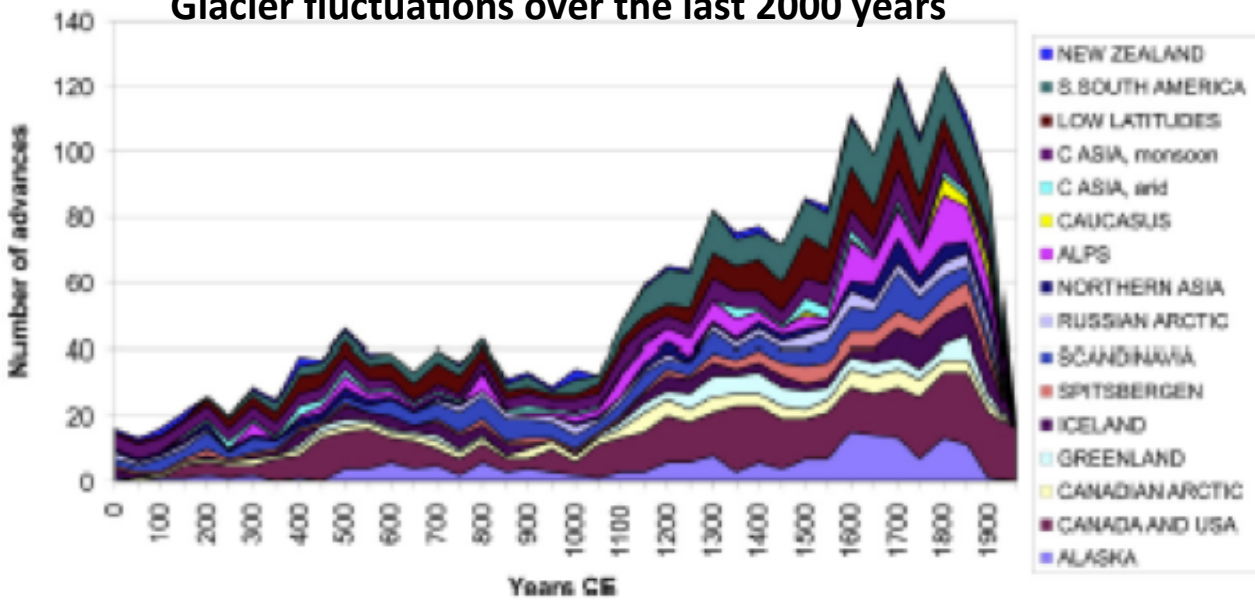
Northern Hemisphere temperature decline paralleled a 40-50W/m2 decline in solar irradiance since the HCO (@650N)

Ice expansion from 5Kyr ago - after the Holocene Climate Optimum (HCO) - Peaked during the Little Ice Age

Publications: Precession modified solar irradiance declined -40 to -50W/m2 @650N since the HCO, paralleling the temperature decline
http://bit.ly/2XqpBVg
http://bit.ly/2JU41pa
http://bit.ly/2Ev0j1e
http://bit.ly/2W96uOd
http://bit.ly/2WJpCGW







Right: O.N. Solomina et al., 2016, "Glacier fluctuations during the past 2000 years." Quaternary Science Reviews, 149, 61-90. DOI: 10.1016/j.quascirev.2016.04.008. Copyright protected.
Left & Middle: J.P. Briner et al., "Holocene climate change in Arctic Canada and Greenland." Quaternary Science Reviews (2016), http://dx.doi.org/10.1016/j.quascirev.2016.02.010 . Copyright protected.

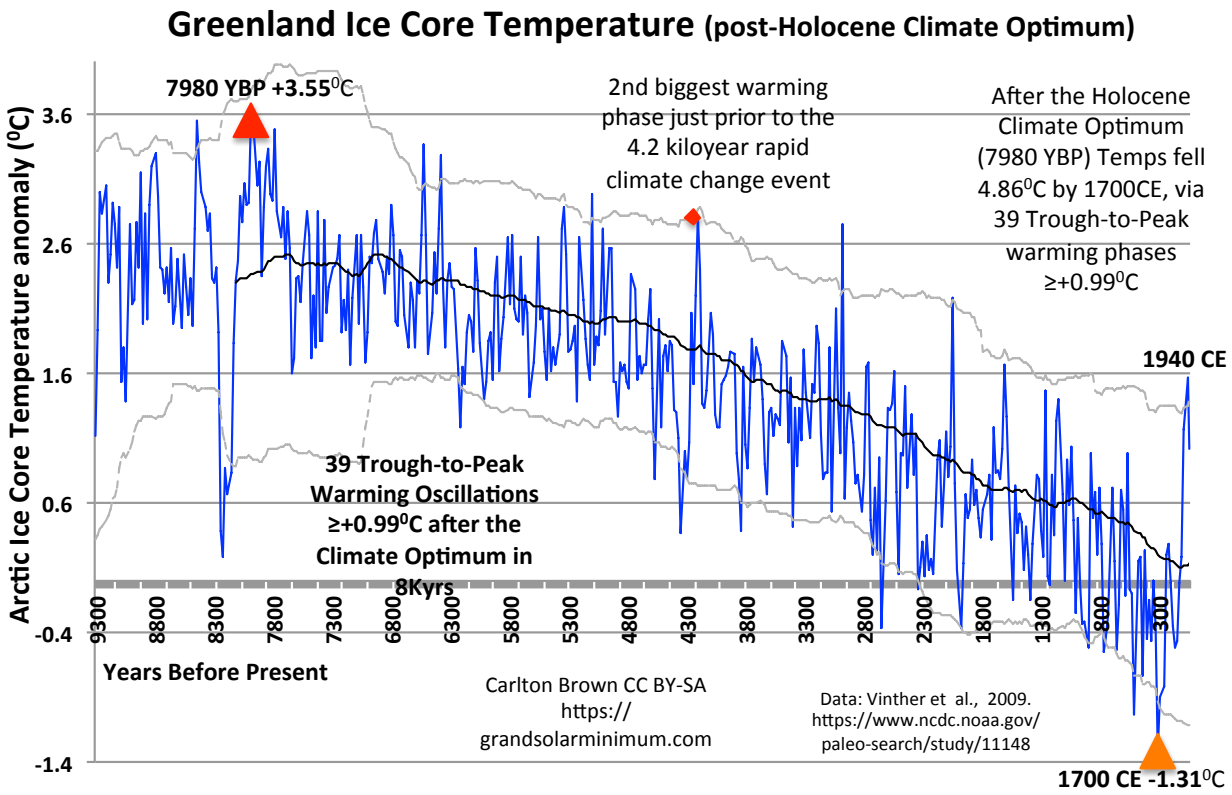
Holocene Climate Optimum (Arctic, Antarctic): Warmer than 2019

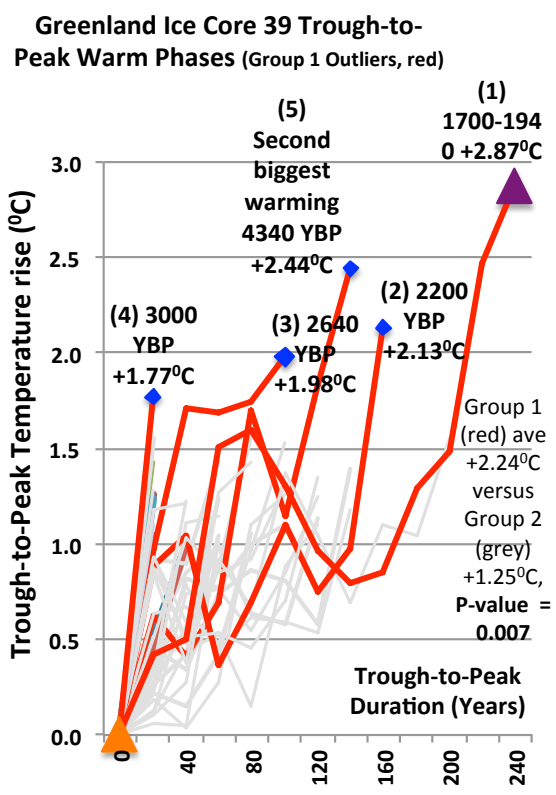
- Ice expansion accelerated in 2nd millennia CE - peaked during the Little Ice Age and its melt initiation preceded AGW
- Arctic: 2-4^{0}C higher and ice sheet margins behind today, LIA winter sea ice closed off Scandinavia-Greenland sea routes
- Antarctica: inner domes 100m higher today than at the HCO

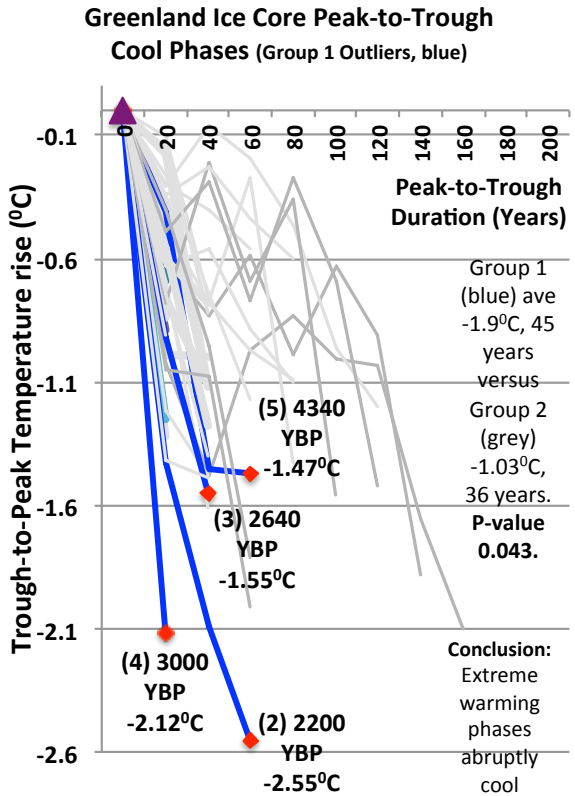
Ice accumulation paralleled the 40-50W/m2 decline in solar irradiance and NH-summer temperature

Publications: Polar Ice Changes since the HCO
http://bit.ly/2XnhuJl
http://bit.ly/2wCRgqd
http://bit.ly/2W96uOd
http://bit.ly/2WDoyEv
http://bit.ly/3189w8T
http://bit.ly/2JT6u37
http://bit.ly/2Xn1hUt
http://bit.ly/2HUxtJq
http://bit.ly/2Ifi3hJ
http://bit.ly/2QHNuFd
http://bit.ly/2Ks0yxt
http://bit.ly/2Z5r43K

Our Ice Age Re-Entry is assured (21st Century)
Arctic Centennial-scale climate oscillations hide clues (warm then cold phases)





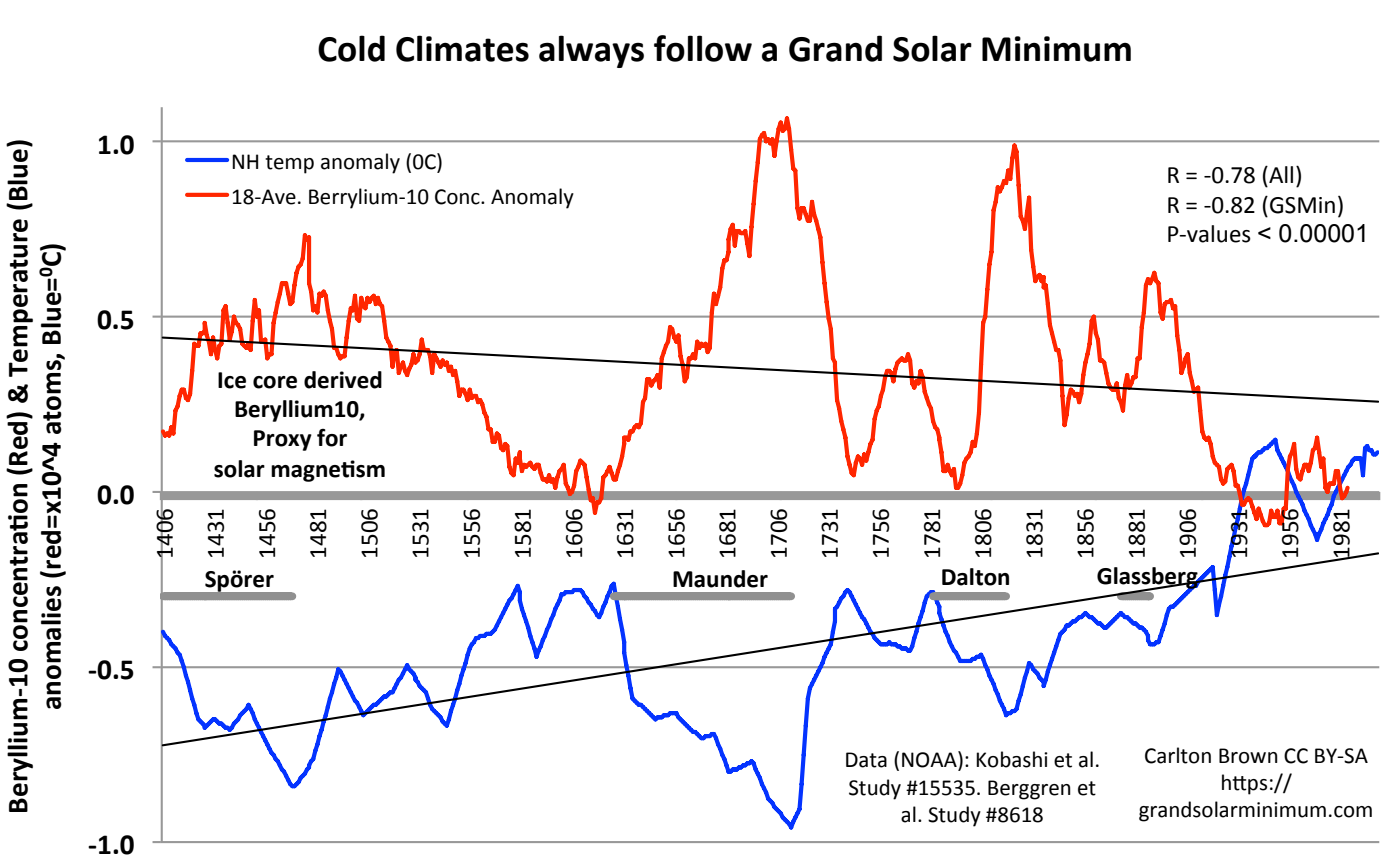


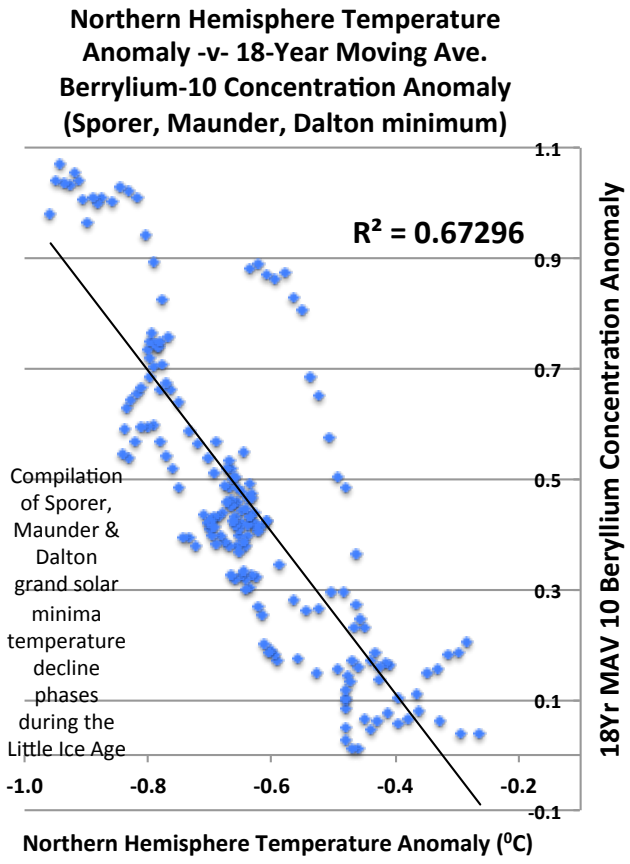
The Arctic warming phase initiated in 1700CE is the most extreme outlier in 8,000 years

- Cooling always follows warm phases: outlier Arctic warming phases decline 2°C (abruptly) within 4 decades (P-value <0.05)
- The second most extreme Arctic warming phase occurred just before the collapse of ancient Egypt's Old Kingdom, the Akkadian empire, and Indus Valley Culture (4.2 kiloyear rapid climate change event).

The Arctic region dominates glacial cycle sea level and ice changes – Key to 21stC climate predictions (ice age re-entry)

Our Ice Age Re-Entry is Assured this Grand Solar Minimum





Cold climates always follow a grand solar minimum period

- Northern Hemisphere temperature lags solar activity by ≈ one 11 year solar cycle

Grand solar minimum and volcanism synergize the cold (via atmospheric /ocean circulations, and multi-decadal Arctic ice expansion mechanism)

ARCTIC GLACIER ICE EXPANSION
Linked to low solar activity & volcanism
http://bit.ly/2HTIc6I
http://bit.ly/2ESyccl
http://bit.ly/2SXNgOM
https://go.nature.com/2VfXczV
http://bit.ly/2Xobq32
http://bit.ly/2ES3xM3

CLIMATE CHANGE DURING THE LITTLE ICE AGE & ITS LINK WITH SOLAR ACTIVITY

EUROPE
http://bit.ly/2IifQ5b
http://bit.ly/2We2EDp
http://bit.ly/2InqeJ5
http://bit.ly/2JWL0CA
http://bit.ly/2XrH7sa
http://bit.ly/2XnhuJl
http://bit.ly/31b09W0
CHINA
http://bit.ly/2WRd8x6
http://bit.ly/2WbZ4JT
http://bit.ly/2wBXEOL
http://bit.ly/2Z0Vgx4
http://bit.ly/2EShQAm
http://bit.ly/2WLnWg3
NORTH AMERICA
http://bit.ly/2MtzNLU
http://bit.ly/2Z8oERQ
INDIA
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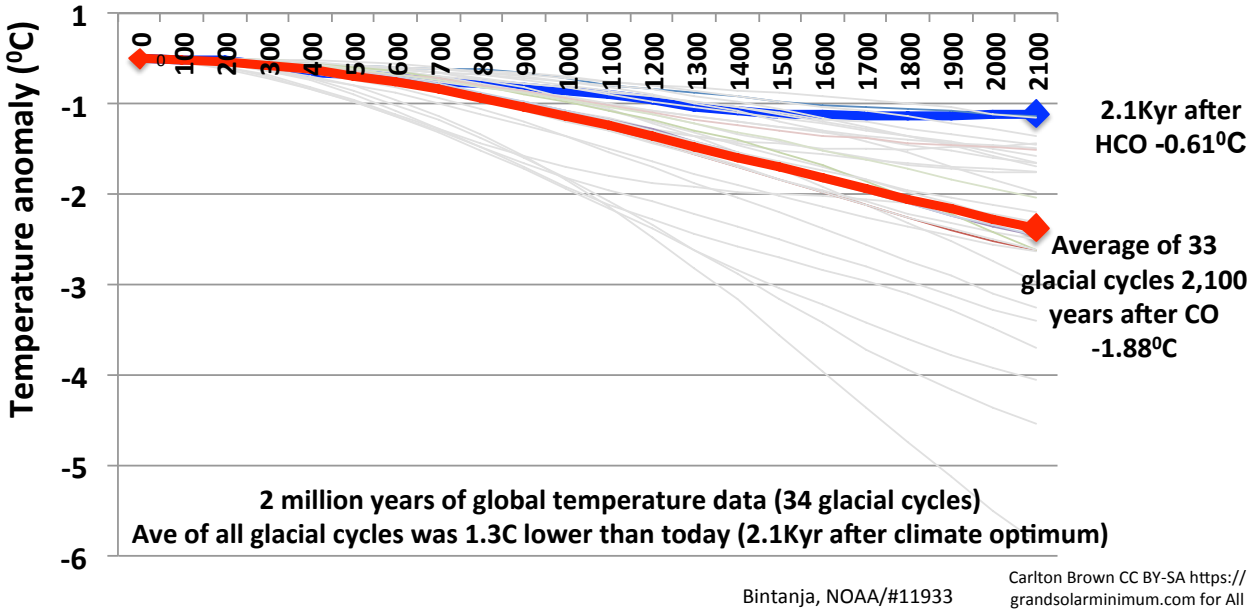
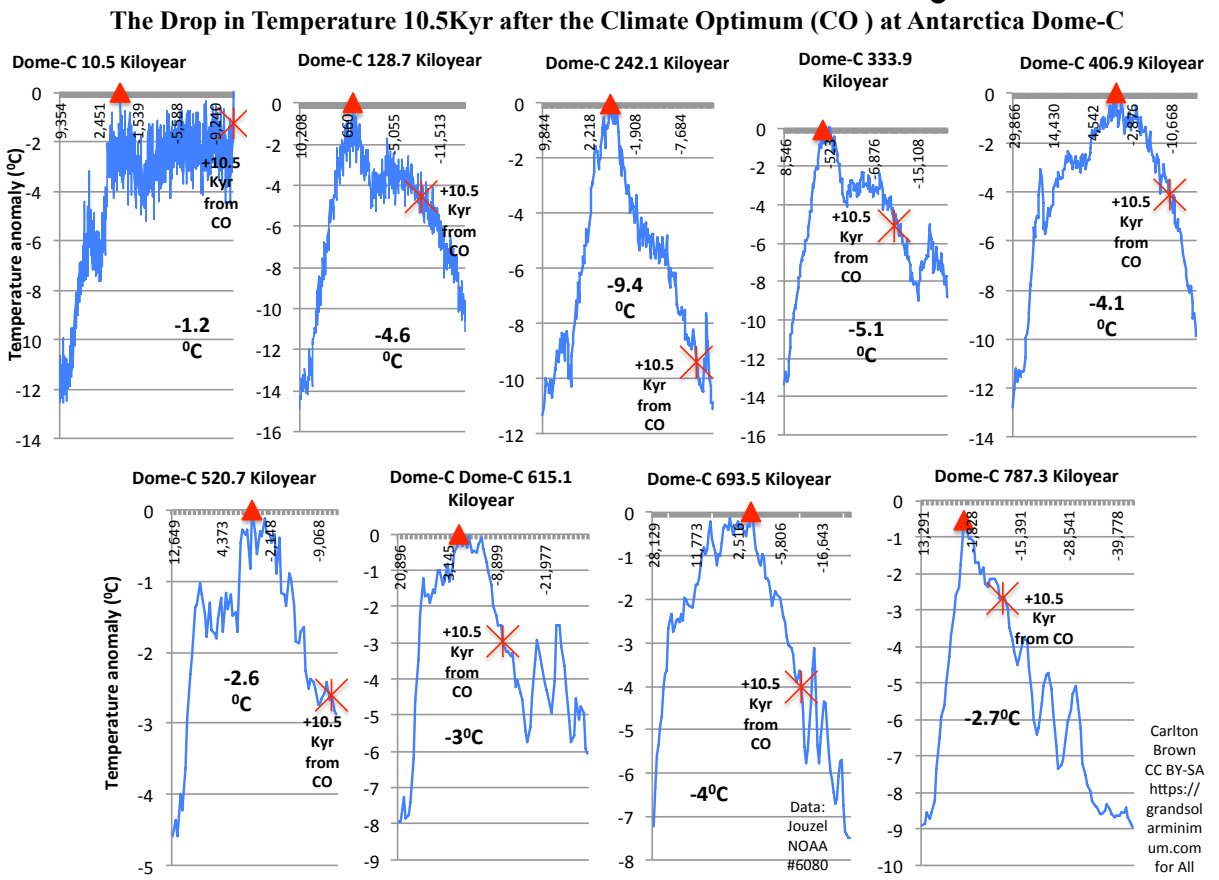
http://bit.ly/2HV4yow
http://bit.ly/2KrTSQ8
https://go.nature.com/2QItkuL
AFRICA
http://bit.ly/31aAHQL
https://go.nature.com/2WofdAT
http://bit.ly/2wyj67d
http://bit.ly/2Wpvw0w
LATIN AMERICA
http://bit.ly/2WLZhIa
http://bit.ly/2WpyxOo
https://go.nature.com/2Zd6GxT
http://bit.ly/31aBmld
http://bit.ly/2WaAGsg
http://bit.ly/2JW8Myw
http://bit.ly/2ESCeB8
http://bit.ly/2WIuGLt

Lowest Decline in Temperature after a Climate Optimum Compared with all Glacial Cycles in 800,000 & 2,000,000 years



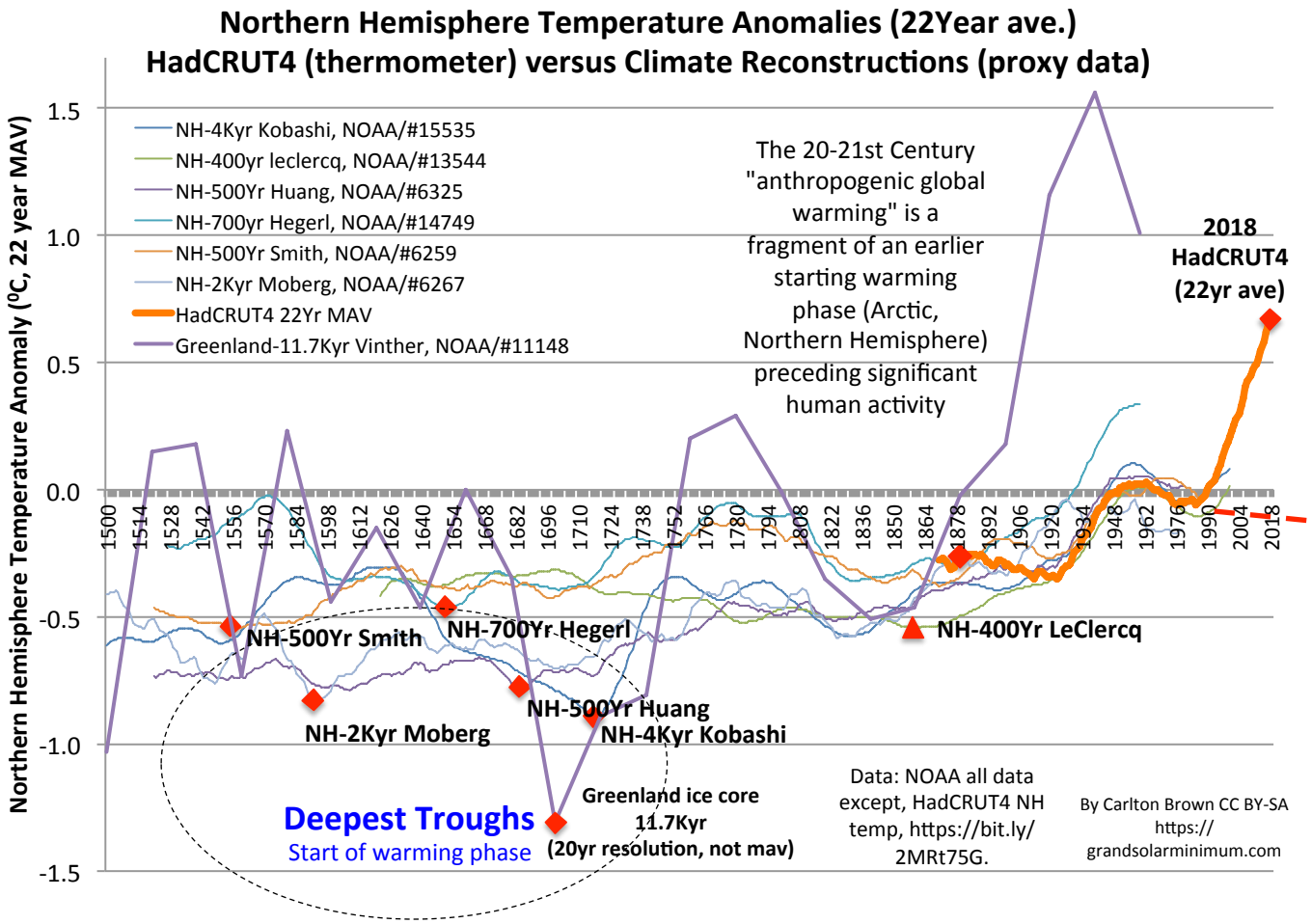


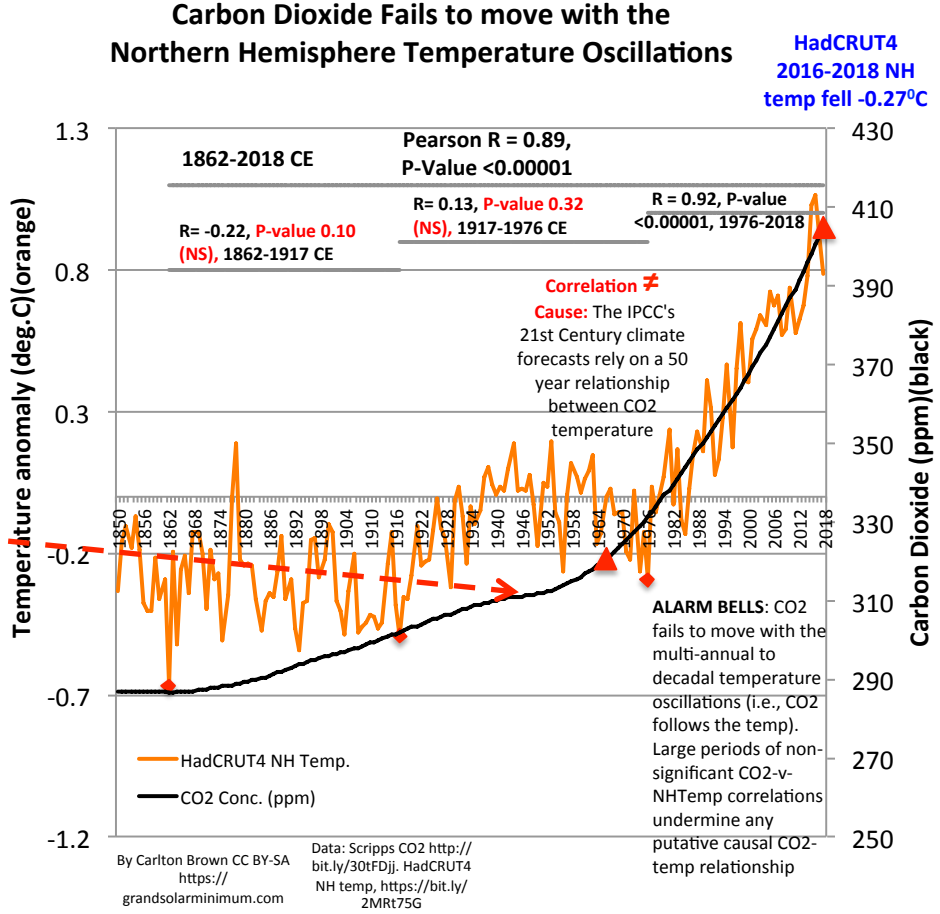
800Kyr Data: Antarctic temperate was on average 3.1degC lower 10.5Kyr after the Climate Optimum than today

The 21stC represents the lowest decline in temperature after the climate optimum of all glacial cycles in 800,000 years (Antarctica) and 2 million years (globally) – the slow ice age incpetion trajectory preceded putative AGW

Currently 1.3⁰C (global) to 3.1⁰C (Antarctic) higher than glacial cycle average T⁰ for this stage of our ice age inception

Anthropogenic Global Warming Hijacked Natural Climate Change



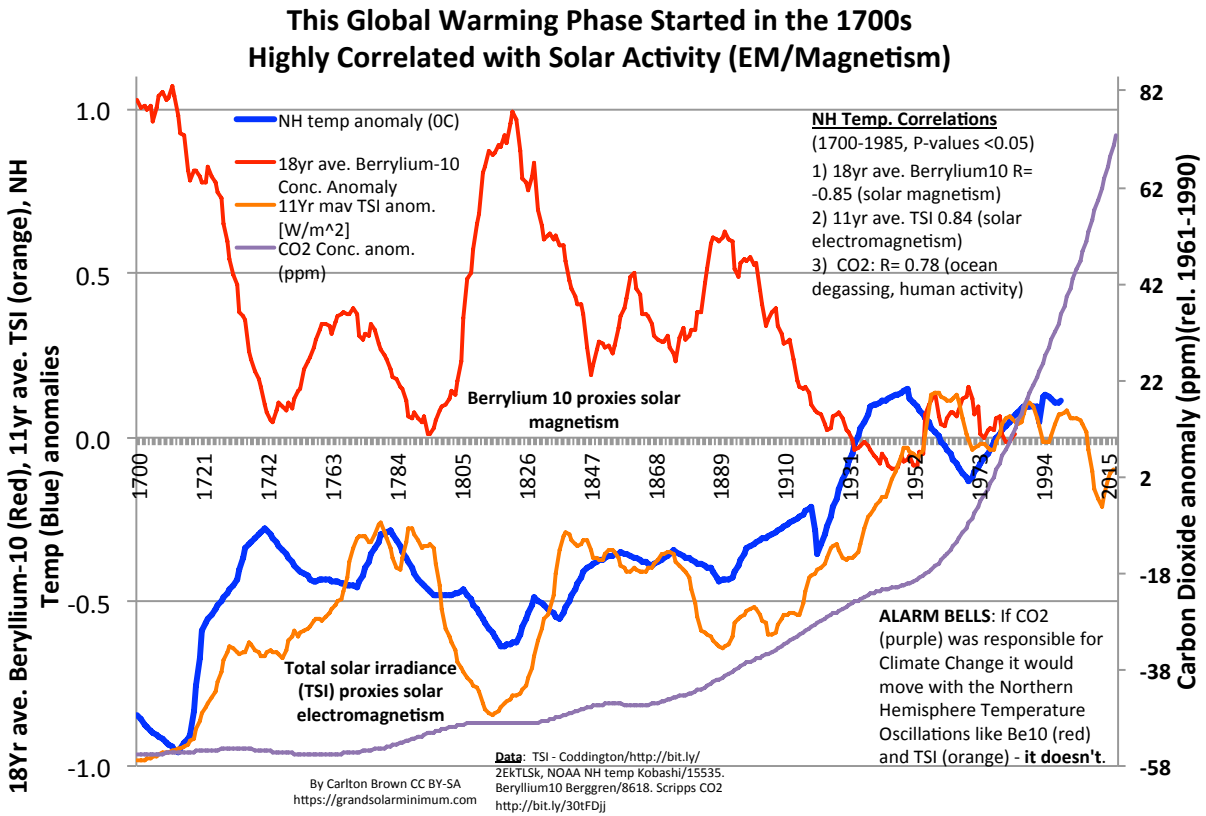


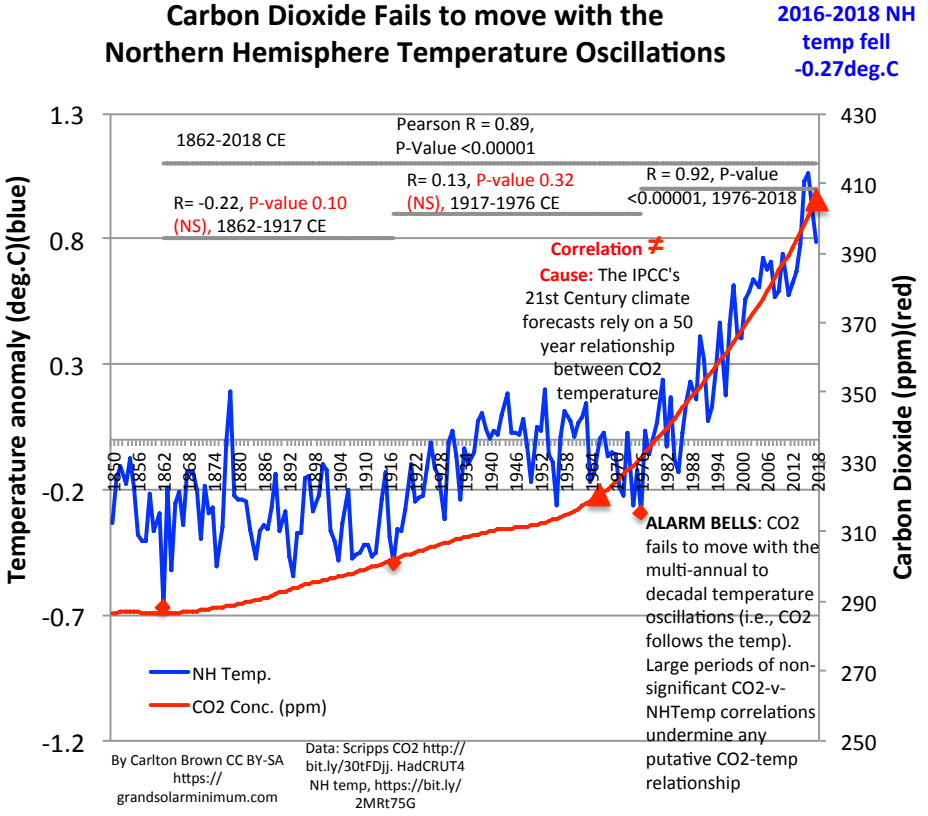
'Climate Change' since 1880 CE is a 'fragment' of an earlier starting Arctic / NH warming phase (starting 17-18th century)

Widespread thermometer use since c.1880CE is used as an excuse to ignore climate proxy data (supposed "Accuracy")

- Climate indices altered - accentuating global warming (Slide 21) - undermines the 'accuracy' of HadCRUT4, NASA, NOAA thermometer data

Climate follows Solar Activity, and CO2 Lags the Temperature





PUBLICATIONS: CO2 rise lags behind the temperature rise

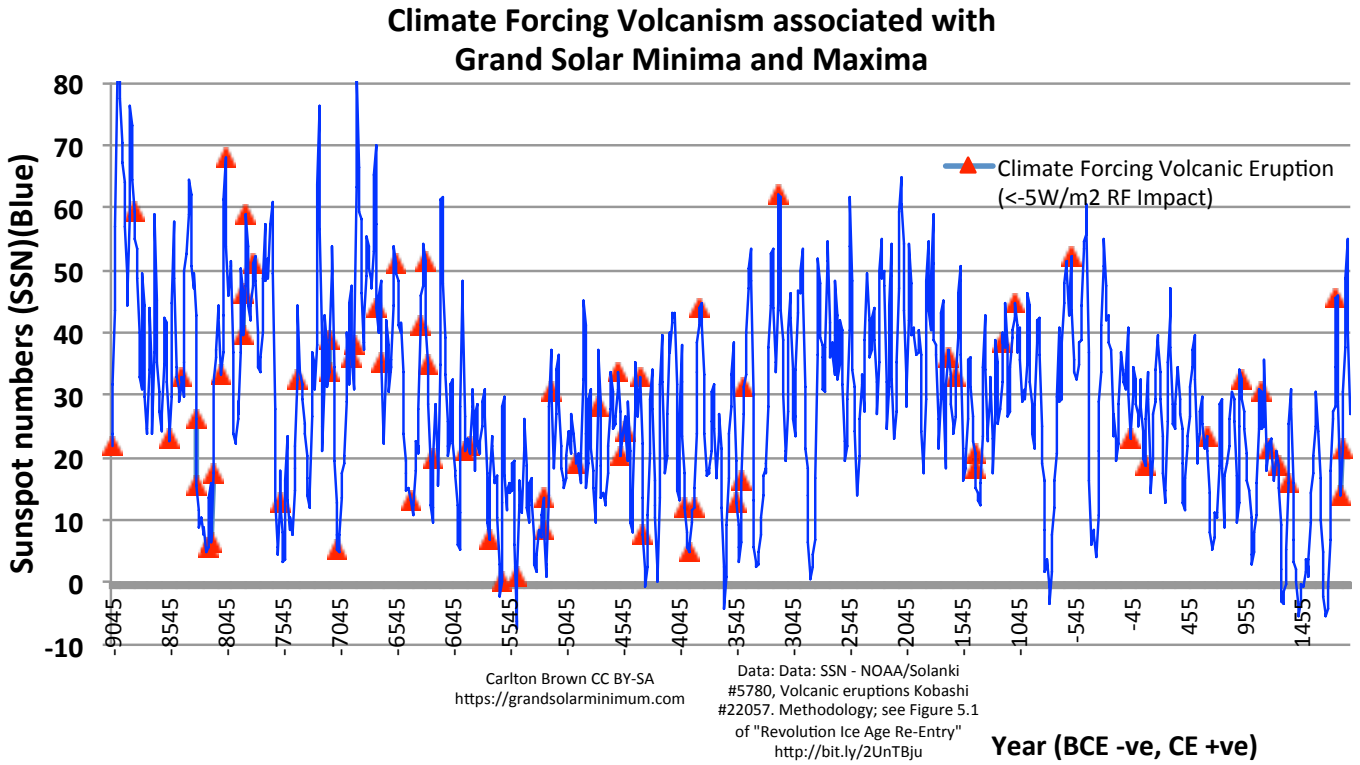
http://bit.ly/2F50Hnh
http://bit.ly/2MvWLlr
http://bit.ly/2WeIj0P
http://bit.ly/2wECuPX
http://bit.ly/2KsTiBn

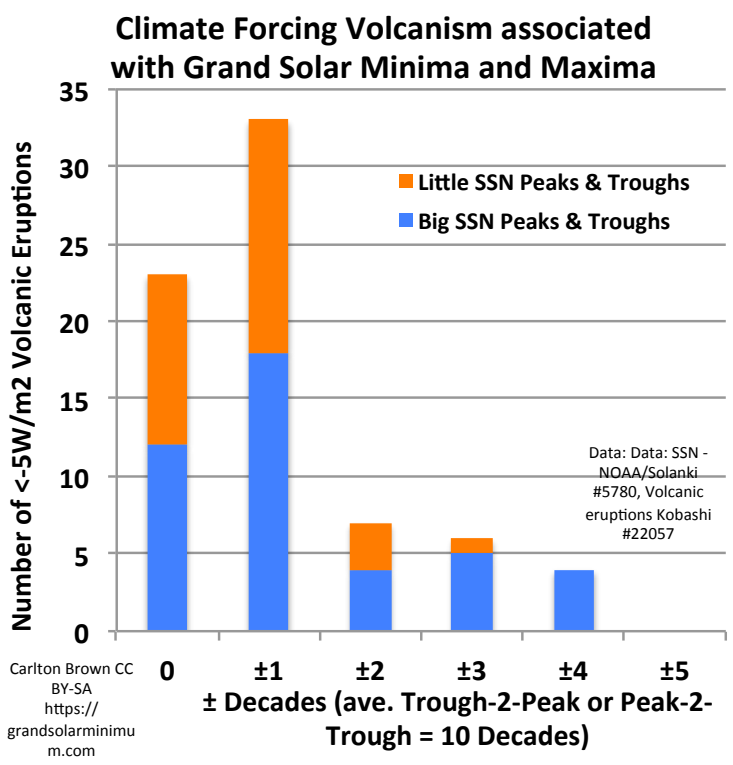
Northern Hemisphere temperature lags solar activity (Electromagnetism; TSI and Solar magnetized wind; Berrylium[10])

- Solar activity (magnetism) indirectly connects with atmospheric/ocean circulations via multiple mechanisms (hence the climate lag). Secular changes in solar irradiance impact earth's radiation budget (immediate) and ocean heat content (lagged)
- CO2 does not follow the temp oscillations - **no correlation analysis provided by the IPCC to justify its putative GMST-CO2 relationship**

Impact of solar magnetism and secular changes to solar irradiance on climate change were ignored/dismissed by the IPCC

Grand Solar Minimum Pose Climate-forcing Volcanism Risk (1)





VOLCANISM-RELATED PUBLICATIONS

Solar activity associations with Volcanism & Tectonics

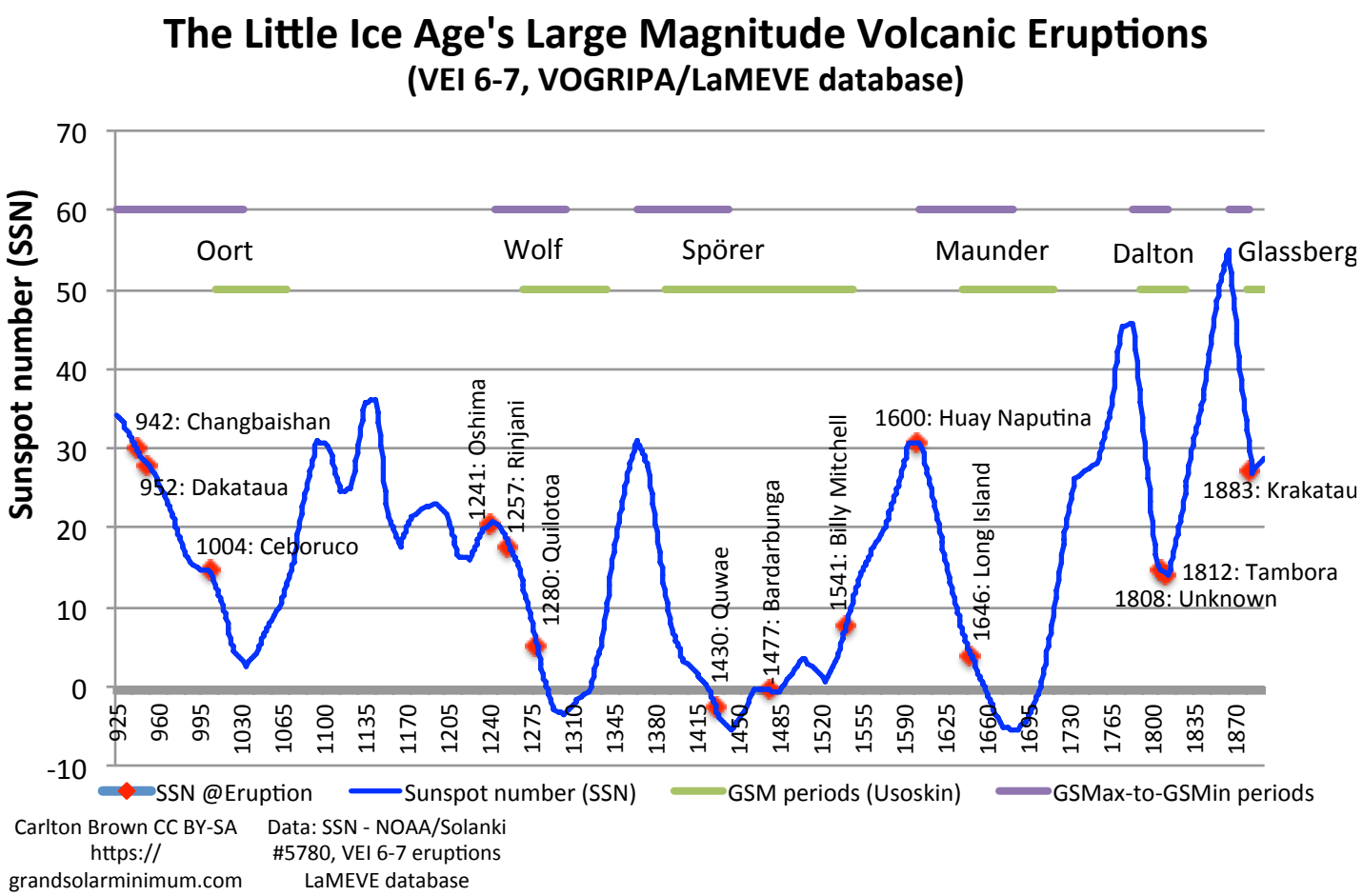
http://bit.ly/2Xodet3
http://bit.ly/2WI9Uf8
http://bit.ly/2Igy3jI
http://bit.ly/2WNCbRk
http://bit.ly/2JTG6WR
http://bit.ly/2Mu1WCn
http://bit.ly/2JXLPuT
http://bit.ly/2Iizkqr
http://bit.ly/2IgGXxK
http://bit.ly/314wGNy
http://bit.ly/2W8WbJT
http://bit.ly/2WmG9kv
http://bit.ly/317I6QD
http://bit.ly/2Z858Ff
http://bit.ly/2WibeRO

Grand solar minima and maxima of sunspot numbers pose an increased risk for climate-forcing volcanism

- 56/73 large eruptions (<-5W/m2) in 11,000 years occurred ±1 decade of a grand solar minimum or maximum (87% ±2 decades)
- Sunspot numbers derived from **terrestrial** tree rings measuring C14 (indicating a solar magnetism-related mechanism)

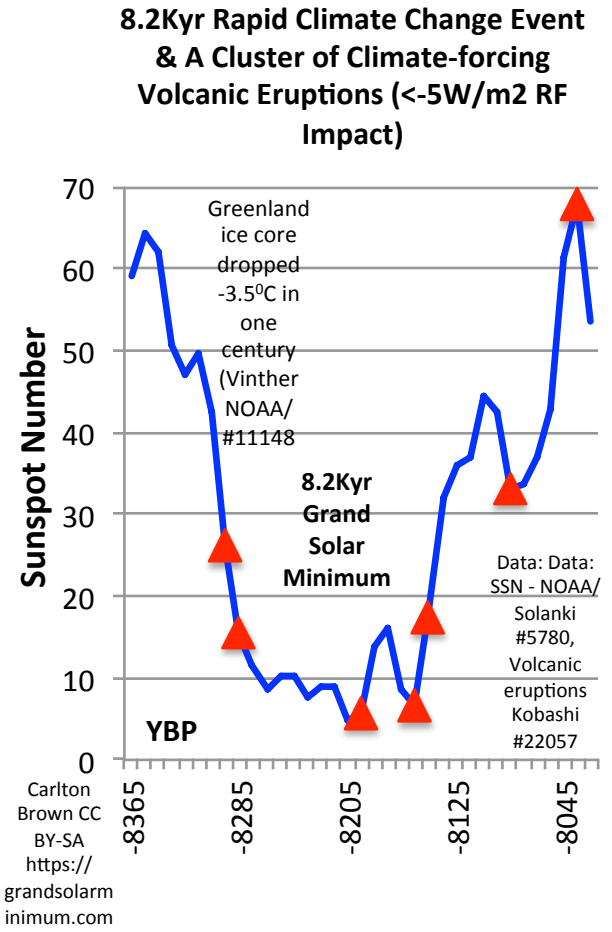
Grand solar extremes (i.e., magnetized solar wind) putatively act as a "climate oscillator" through volcanism (<-5W/m2)

Grand Solar Minimum Pose Climate-forcing Volcanism Risk (2)



Carlton Brown CC BY-SA https://grandsolarminimum.com

Data: SSN - NOAA/Solanki #5780, VEI 6-7 eruptions LaMEVE database



Carlton Brown CC BY-SA https://grandsolarminimum.com

Volcanism during GSMin periods – The Little Ice Age and 8.2kyr rapid climate change event

- Climate-forcing volcanism associated with grand solar minima (GSMin)/maxima or on entry into a GSMin
- Climate-forcing impact = immediate radiative forcing impact (aerosols), atmospheric blocking, Arctic ice expansion mechanism (multi-decadal to centennial-scale)

VOLCANISM-CLIMATE PUBLICATIONS

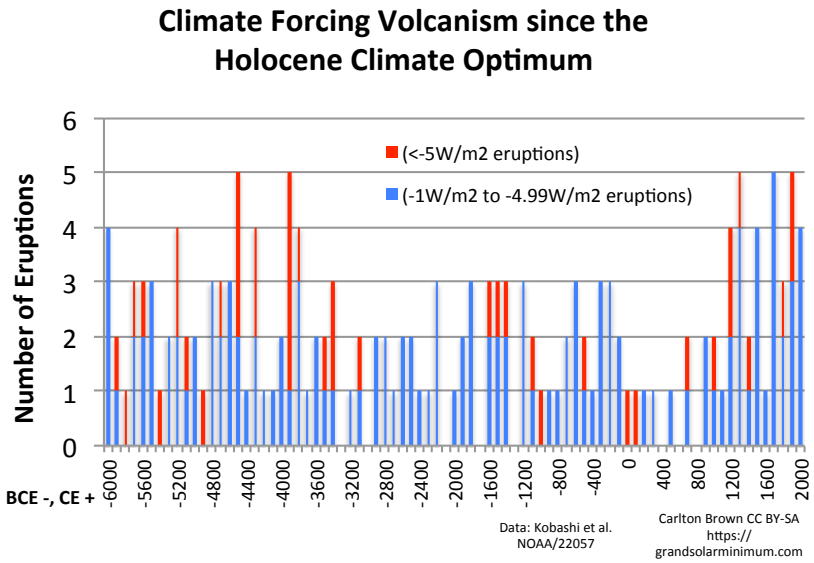
Arctic glacier expansion mechanism
http://bit.ly/2HTIc6I
http://bit.ly/2ESyccl
http://bit.ly/2SXNgOM
https://go.nature.com/2VfXczV
http://bit.ly/2Xobq32
http://bit.ly/2ES3xM3

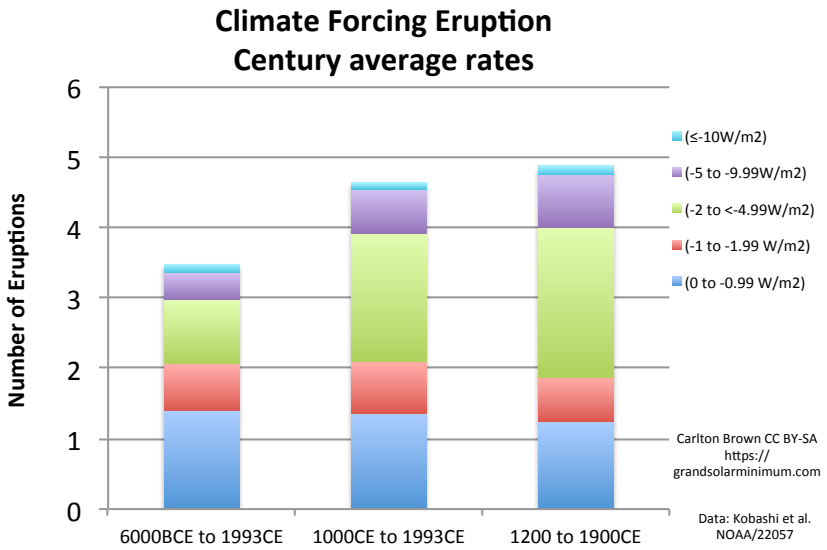
Climate change and volcanism
https://go.nature.com/2QJQDEs
http://bit.ly/2ERh1rv
http://bit.ly/2XoTkxT
https://go.nature.com/2Wl9Rq9
http://bit.ly/2Wg2J9v

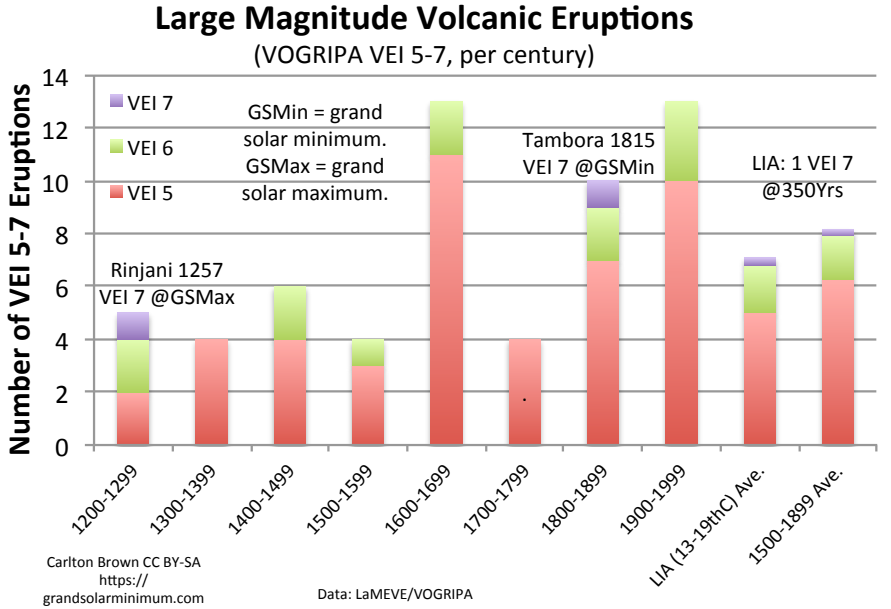
Non-cooling climate change impact
http://bit.ly/2XpWqSa
https://go.nature.com/2QItkuL
http://bit.ly/3168ri3
http://bit.ly/2XqgIv0
http://bit.ly/2Z7YPS5
https://go.nature.com/2QOMRKk
http://bit.ly/2MH7GJl
http://bit.ly/2Z75XxU
http://bit.ly/2Wow6eQ
http://bit.ly/2EQKUZ8
https://go.nature.com/2Z5fANO
http://bit.ly/318HV7K

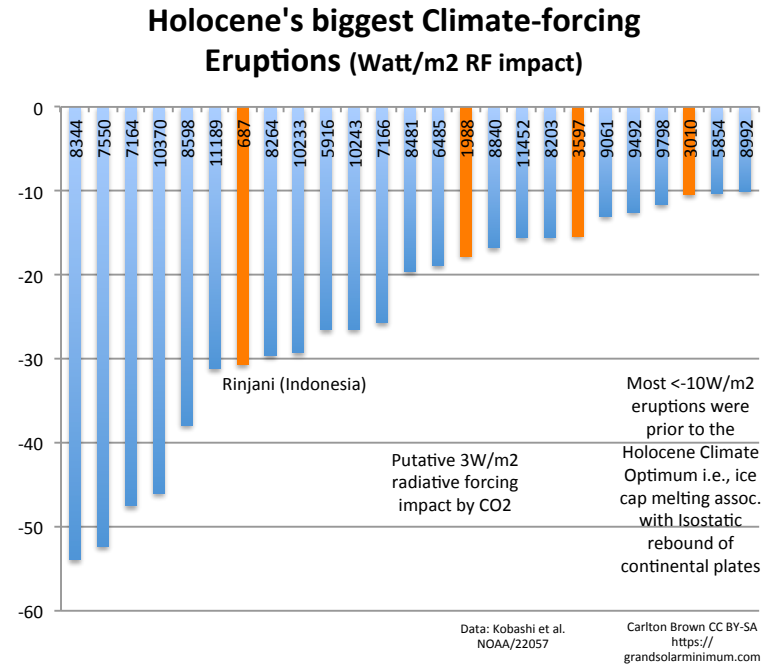
Solar activity & North Atlantic Oscillation
http://bit.ly/2HVoZSu
http://bit.ly/2XpKsbr
http://bit.ly/2Wc7cKH
http://bit.ly/2Z4701N
https://go.nature.com/31a8eu7
http://bit.ly/2ER649o
http://bit.ly/2HVYlsF
http://bit.ly/2W7U9ty
http://bit.ly/2QIW6eS

21st Century Climate-Forcing Volcanism Cannot be Dismissed (IPCC in AR5)









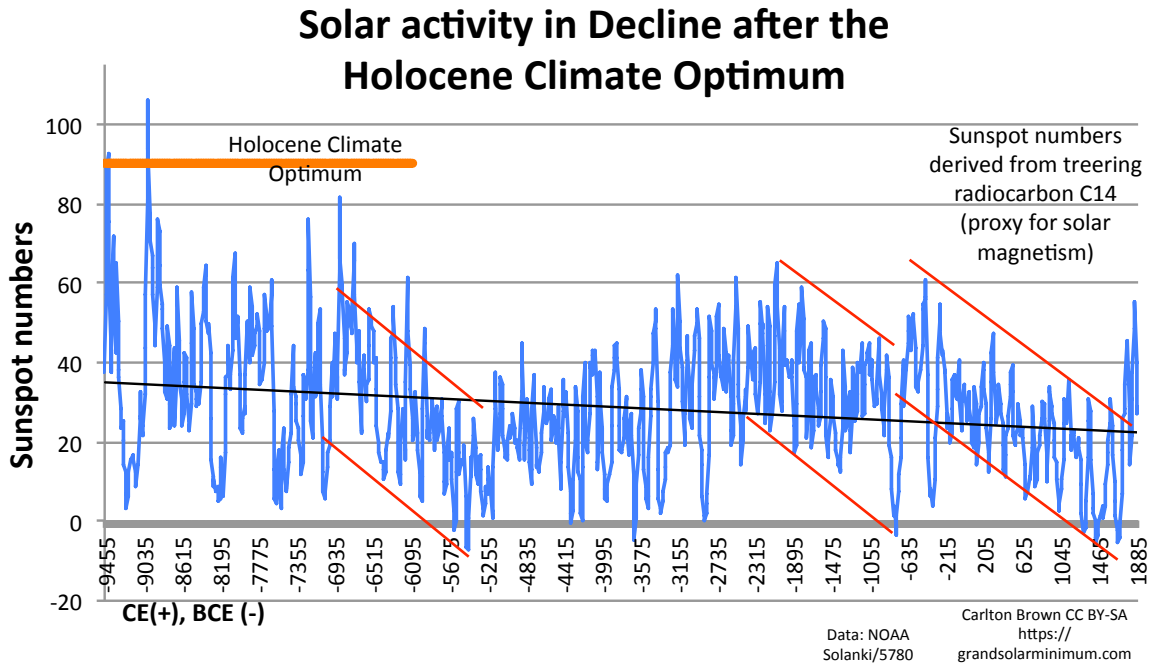
Climate forcing volcanism during the Little Ice Age intensified (Catastrophic)

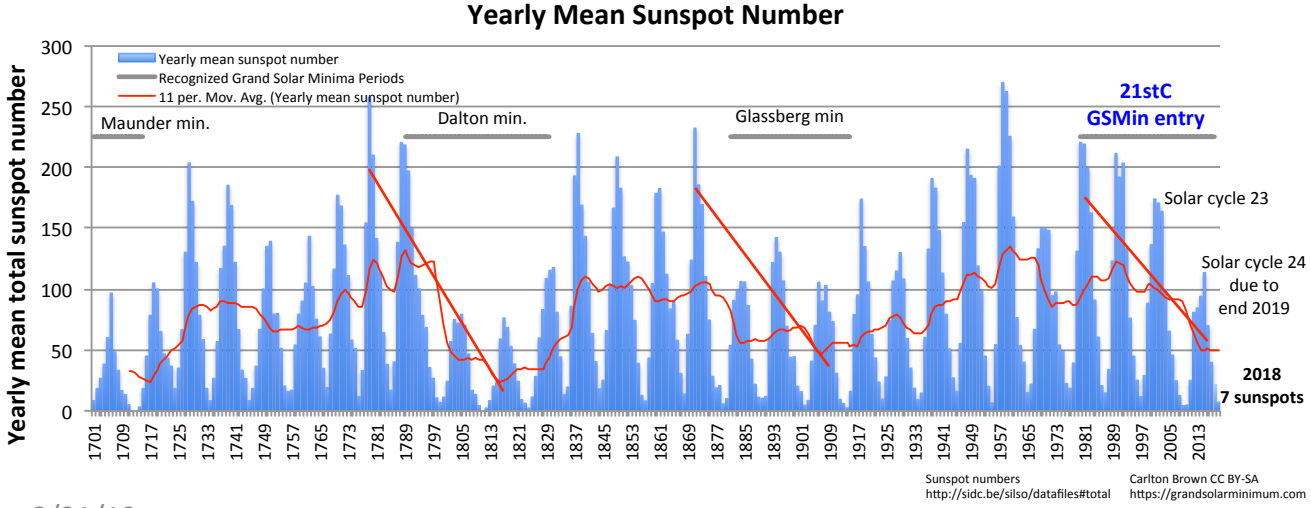
- **Disastrous for global agriculture**: cold (1-3yrs), ice (10-100yrs), drought and flooding (1-2yrs)
- VEI 7 / <-10W/m^2 can block the sun (1-2yrs), cool (2-10yrs), Arctic ice expansion (10s-100yrs)

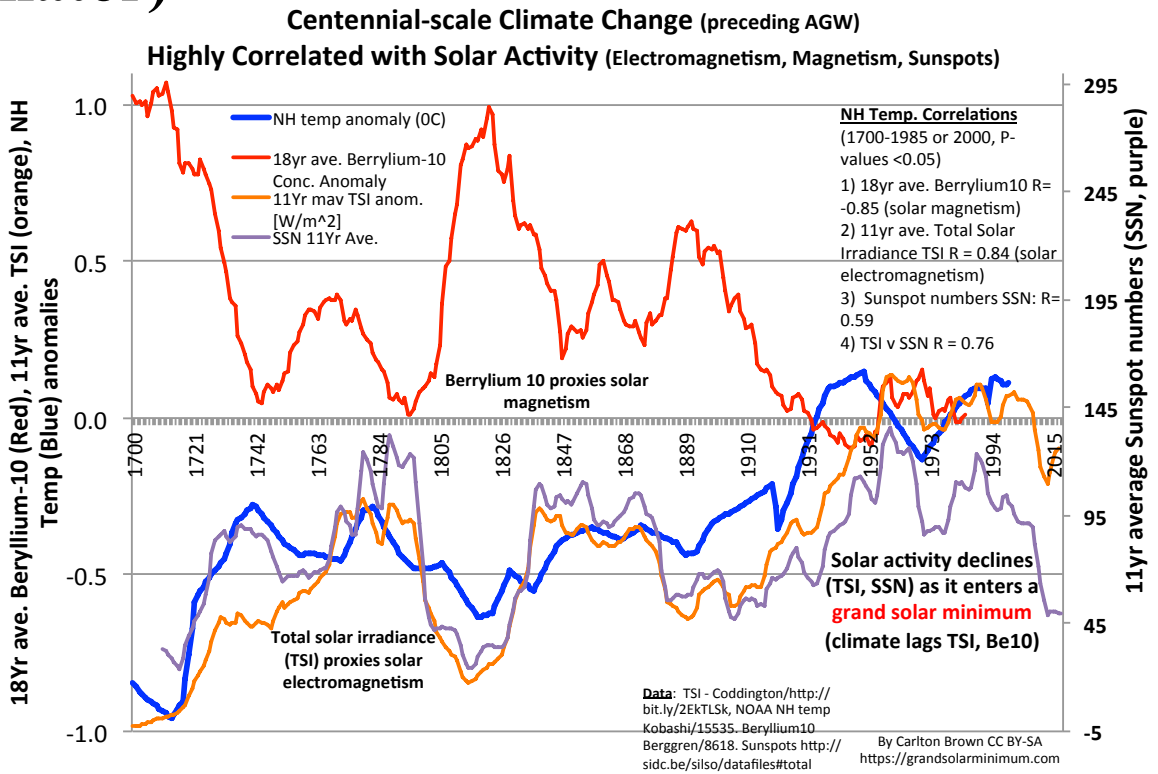
Climate-forcing volcanism is a 21stC key climate risk (IPCC dismissed its prospect)

- Kobashi data and LaMEVE/VOGRIPA data confirm climate-forcing volcanism can't be ignored

Grand Solar Cycles modify the 11 year Sunspot number cycle - Natural Climate Change (Oscillator)







Solar activity depicts 11yr and GSMin/max cycles

- Terrestrial C14 and Be10 proxy solar EM and magnetism

Solar activity drives centennial-scale climate change

- **Climate lags solar activity**: irradiance and Be10 mechanisms. Magnetism putatively linked to atmospheric/ocean circulations, climate-forcing volcanism (see publications https://grandsolarminimum.com/scientific-publication-hyperlinks/)

21st century Grand Solar Minimum & global cooling predictions ignored by the IPCC

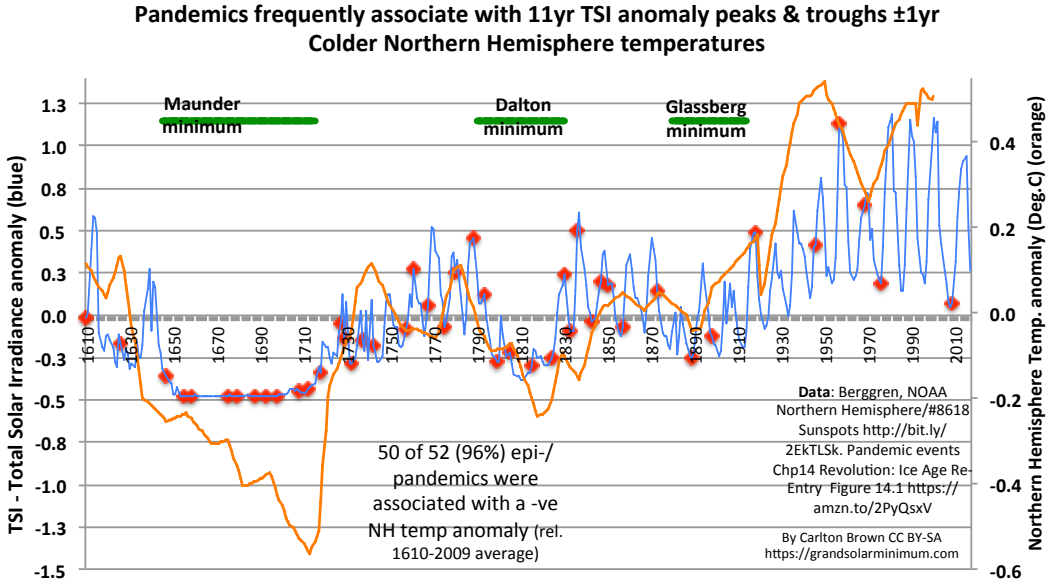
SCIENTIST	GRAND SOLAR MINIMUM TIMING	21st CENTURY CLIMATE PREDICTION	NOTES	REFERENCE LINK
Abdussamatov 2015	2043 ± 11 (solar cycle 27±1)	Deep Little Ice Age-like cooling by 2060 ±11 (45-65 years duration)	Empirical modeling of recurrent solar activity oscillations i.e., quasi-bicentennial TSI	http://bit.ly/2Z72X4W
Bonev 2004	Long-term solar minimum during 21st century	N/A	Empirical modeling of recurrent solar activity oscillations i.e., Gleissberg and De Vries cycles (210yrs)	http://bit.ly/2WmRukR
Herrera 2015	2004-2075 (or 2063)	N/A	Empirical modeling of recurrent solar activity oscillations in TSI-index	http://bit.ly/2QO28Ll
Landscheidt 2003	2030 and 2200 CE	Periods of cold comparable to the Little Ice Age's nadir (c.1670)	Empirical modeling of recurrent solar activity oscillations i.e., 83yr and 166yr (sun's motion around solar system center of mass and its impact on solar dynamo)	http://bit.ly/2HS3cLo
Lüdecke & Weiss 2017	N/A	Temperature decline to 2050 CE	Empirical modeling of recurrent global climate oscillations i.e., ~190 year periods i.e., De Vries/Suess cycle	http://bit.ly/2WJ5NiV
Mörner 2010	2040-2050 CE	Little Ice Age-like conditions by 2040-2050 for NW Europe, and Arctic ice expansion	Empirical modeling of recurrent solar activity oscillations i.e., Gleissberg and De Vries cycles on TSI	http://bit.ly/2KqJGHm
Salvador 2013	2018-2060 CE, extended low up to 2160 CE	N/A	Empirical modeling of recurrent solar activity oscillations. Tidal Torque theory and Jovian planet harmonic impact on the solar dynamo process	http://bit.ly/2QGzjjS
Sánchez-Sesma 2016	2050–2250CE (grand super minimum)		Empirical modeling of recurrent solar activity oscillations	http://bit.ly/2Z9ay2W
Scafetta 2012	2025-2043 CE Dalton-like solar minimum		Empirical modeling of recurrent solar activity oscillations i.e., 60yr and 115yr (Giant Planet tidal frequencies and their impact on the 11yr solar cycle)	http://bit.ly/2JWVams
Yndestad & Solheim 2015	2025-2050 (SSN) 2040-2065 (TSI). Dalton-like		Empirical modeling of recurrent solar activity oscillations linked to Jupiter and Neptune periods i.e., TSI, SSN, Solar orbit	http://bit.ly/2IkxYeP
Zharkova 2015	Solar cycles 26–27		Empirical modeling of temporal magnetic field variations, utilizing data from solar cycles 21–24	https://go.nature.com/2wDuT3Y

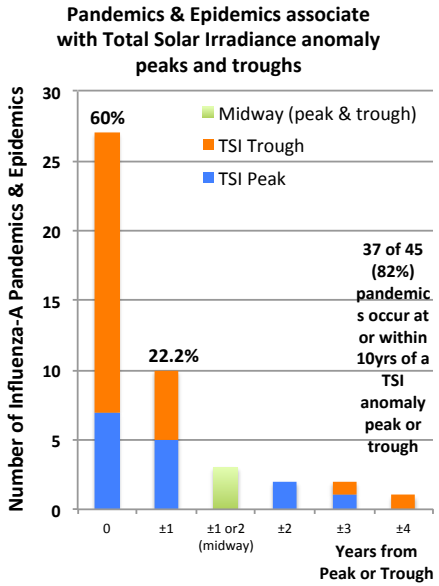
A 21st century Grand solar minimum and Little Ice Age-like climate predicted by numerous solar activity experts (omitted by IPCC in its key-risk assessment)

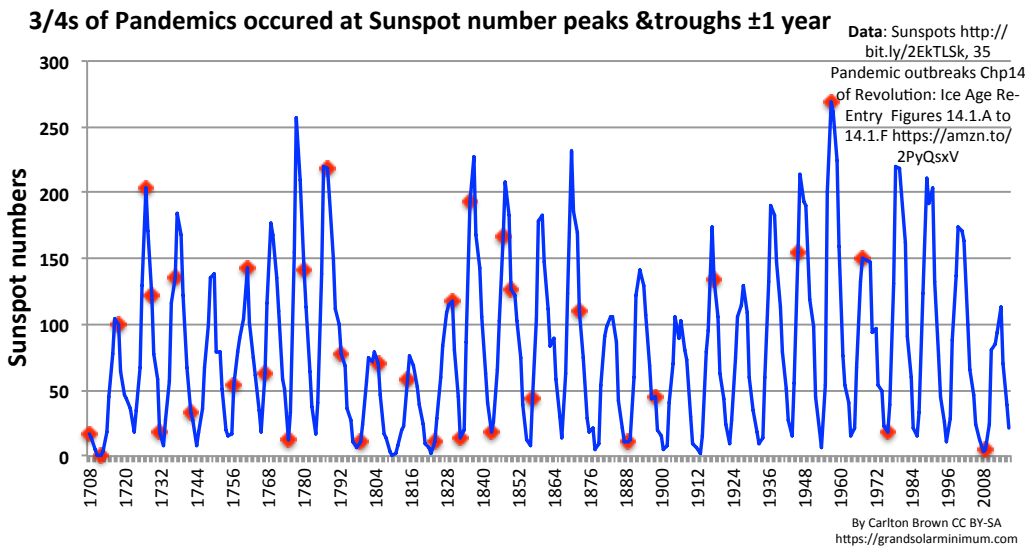
- Based on empirical modeling of solar activity cycle periodicities ± planetary impact on solar cycles ± shared climate periodicities
- Grand solar minimum range: 2020–2070 CE, associated with a Little Ice Age-like climate

Impact of GSMin associated climate forcing volcanism not included (Arctic ice expansion mechanism)

A Grand Solar Minimum 'plus' it's Cold Climate/Ice Expansion Represent a High Risk period for Pandemic Influenza Outbreaks

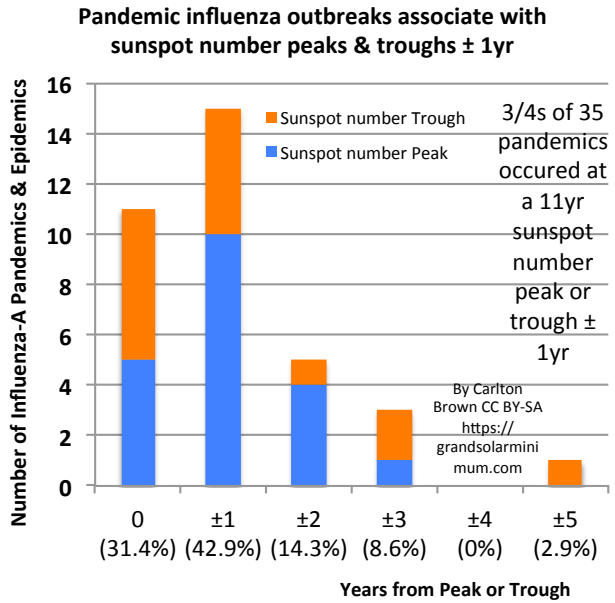






Pandemics bias peaks and troughs of sunspot numbers, total solar irradiance (TSI), and CRI (cosmic rays), plus colder Northern Hemisphere temperatures and Arctic ice expansion

- Pandemics at peaks and troughs: sunspot number (74% ±1yr), TSI (82% ±1yr), CRI (82% ±2yrs)
- Specific thresholds associated with pandemics: (-ve) NH and Greenland ice core T^{0s} & -ve TSI anomalies, and (+ve) CRI anomalies and Ice Accumulation rates
- Correlations (r>±0.9, P-values <0.05, 3-5 centuries): ave. pandemic interval per century or #pandemics/century, and the Greenland temp, Ice Accumulation Rate, Sea Ice Cover, NH temp, TSI, CRI



WHO promotes a global pandemic influenza vaccine strategy that leaves the world unnecessarily vulnerable to a pandemic

WHO/Govs/Industry can't equitably immunize the population before a pandemic peaks = an unnecessary problem

Prepandemic influenza vaccine prototypes using MF59C.1/AS03 adjuvants promote "broadly cross-reactive antibodies"

- Offers a counter to viral mutation with heterologous boosting (of CVVs), a flexible booster interval (up to 6yrs), removes much immunization off the critical path, and permits the stockpiling of herd immunity. **Reminder**: Vaccines are meant to be used before a disease outbreak.
- The need to wait for an influenza pandemic outbreak before immunizing people is **obsolete and ignores vaccine industry leaders' advice**
- Read Chapter 14 of "Revolution: Ice Age Re-Entry" to understand the keys issues

- Jesse L. Goodman; Investing in Immunity: Prepandemic Immunization to Combat Future Influenza Pandemics, Clinical Infectious Diseases, Volume 62, Issue 4, 15 February 2016, Pages 495–498, https://doi.org/10.1093/cid/civ957.
- Rino Rappuoli and Philip R. Dormitzer. Influenza: Options to Improve Pandemic Preparation. Science 22 Jun 2012: Volume 336, Issue 6088, pages 1531-1533. DOI: 10.1126/science.1221466.
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- Isabel Leroux-Roels, et al. Broad Clade 2 Cross-Reactive Immunity Induced by an Adjuvanted Clade 1 rH5N1 Pandemic Influenza Vaccine. PLOS. Published: February 27, 2008. https://doi.org/10.1371/journal.pone.0001665.
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- Lopez P, et al. Combined Administration of MF59-Adjuvanted A/H5N1 Prepandemic and Seasonal Influenza Vaccines: Long-Term Antibody Persistence and Robust Booster Responses 1 Year after a One-Dose Priming Schedule. Clinical and Vaccine Immunology : CVI. 2013;20(5):753-758. doi:10.1128/CVI.00626-12.
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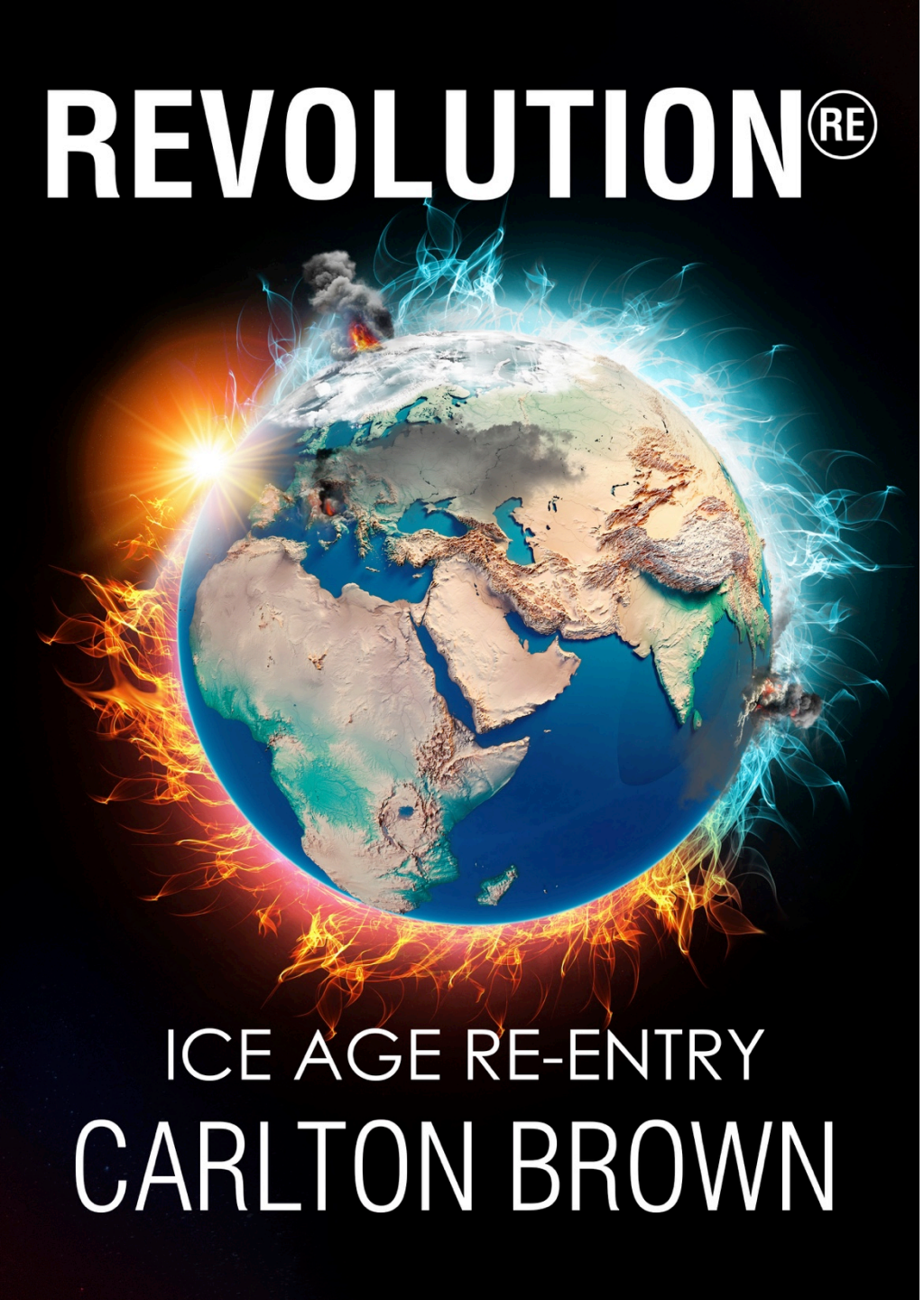


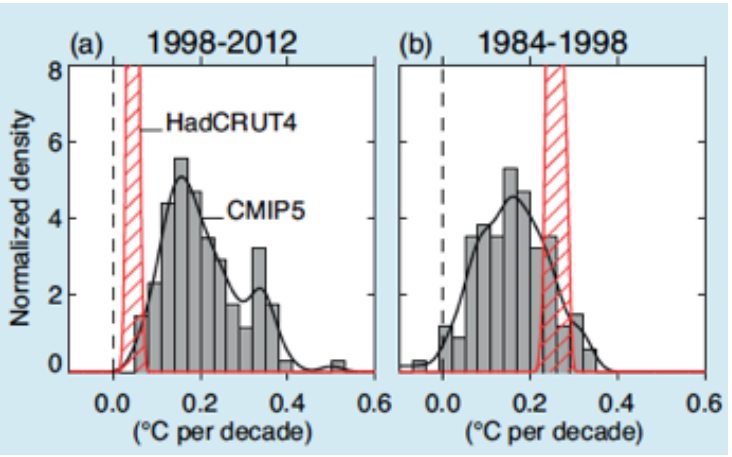
Incriminating IPCC Disclosures that undermine/invalidate its Key-Risk Assessment (5th Assessment Report)

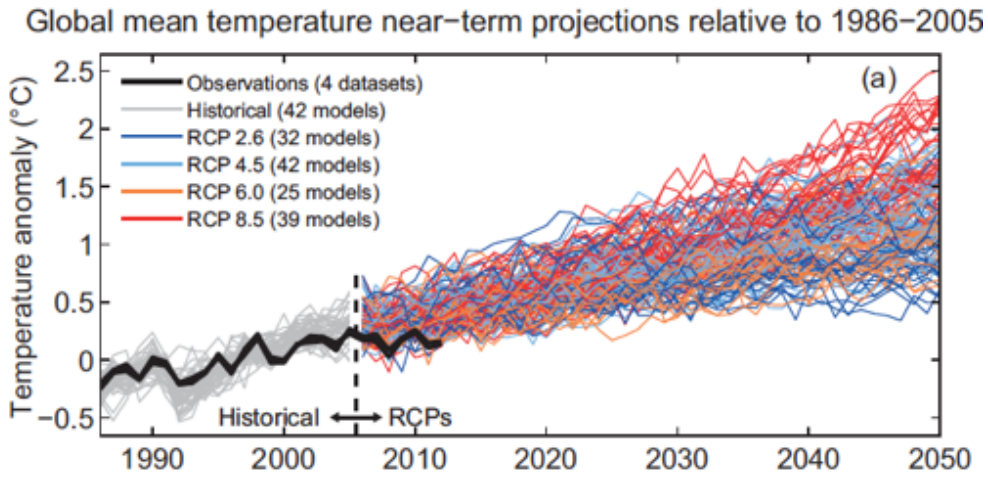
Exposes:

1) Highly inaccurate climate forecasts refute the IPCC's radiative-forcing theory, invalidating its Article 2 dictated key risk assessment (1984-2012, 2016-2035)
2) Government agencies altered the climate data indices to accentuate global warming (used by the IPCC to fear-monger)
3) The IPCC dismissed/omitted 21st century relevant catastrophic natural change risks from its key-risks
4) The IPCC erroneously changed the ice age boundaries (start and end) which veils catastrophic risks
5) Limited proven oil and gas reserves drives zero-emissions 2050

IPCC's Radiative Forcing Theory Refuted – Highly Inaccurate Forecasts

Undermines the validity of its Article 2 contrived-dictated Key Risk Assessment





Copyright owned by the IPCC 2013. AR5 **Physical Science Basis** reviewed IPCC forecast data inaccuracy on pages 63 & 87. 1998-2012 97% over-estimated GMST and missed the hiatus. 1984-1998 84% underestimated GMST. This IPCC copyrighted information is disclosed under Fair Use rules to expose the IPCC's theory refuting forecast inaccuracy and to invalidate its UNFCCC Article 2 contrived-dictated key-risk assessment.

Revisions were made to AR5 forecast inaccuracy analysis (attempting to change the conclusion). Key points to note:

- Revisions nigh eliminated the Hiatus
- Climate index comparators changed (both providers & versions)) (apples v oranges)
- Data comparators used base year comparators from different periods (apples v oranges)
- Ignores the 0.47°C decline in global temperature since the Q1-2016 peak
- See **Climate Lab Book** for revised graphic: http://bit.ly/2KL1o9z

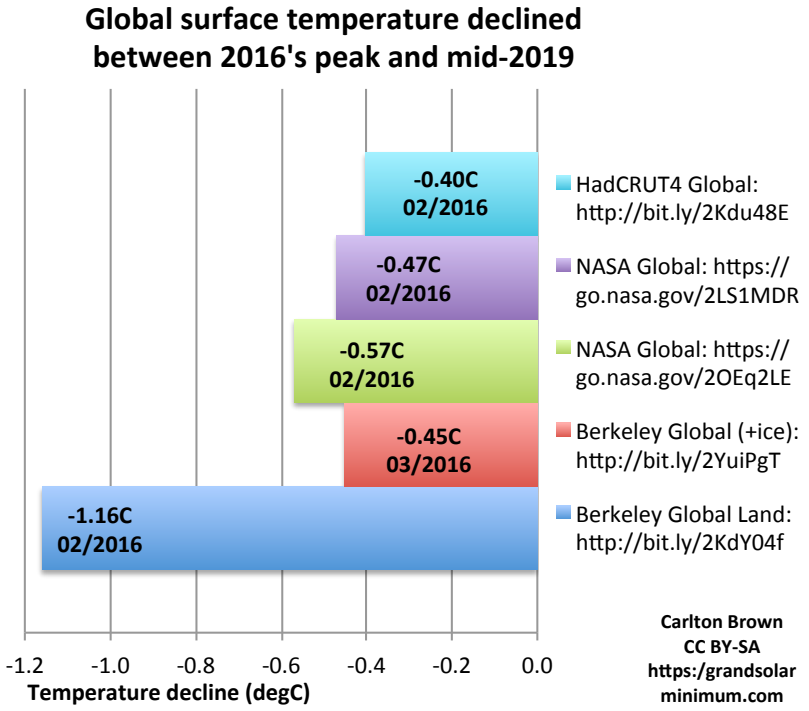
Climate forecasts are highly inaccurate (1984-2012, plus since 2016)

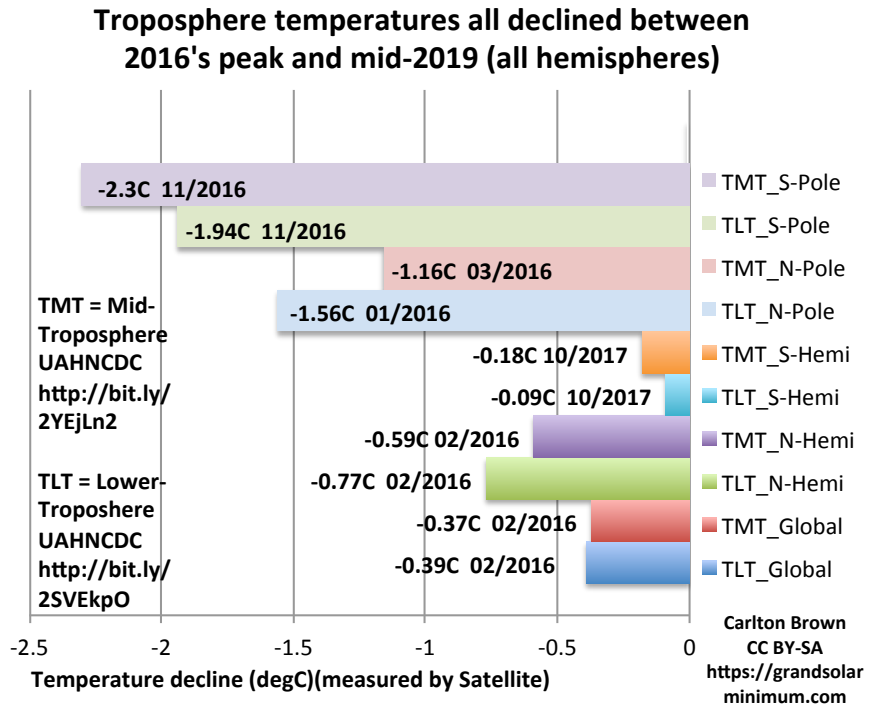
- **97% over-forecasted GMST 1998-2012**: "*an analysis of the full suite of CMIP5 historical simulations reveals that 111 out of 114 realizations show a GMST trend over 1998–2012 that is higher than the entire HadCRUT4 trend ensemble.*"
- **100% missed climate hiatus** 1998-2012 **while CO2 increased 8%**
- **84% under-forecasted GMST 1984-1998**: "*whereas during the 15-year period ending in 1998, it lies above 93 out of 114 modelled trends*"
- Explanation ignored natural climate change, while CO2 lagged the temperature rise by 9-12 months (1980-2011) (See **http://bit.ly/2YjlZ8c**)

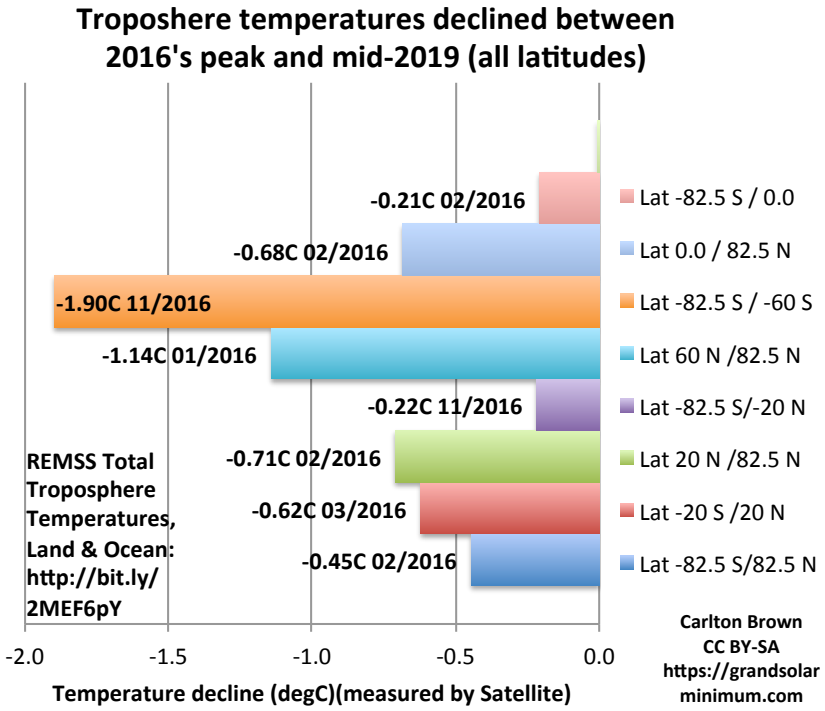
IPCC unable to forecast multi-annual to decadal scale climate oscillations – GMST declines while CO2 rises

- Correlation analysis does not support a CO2-GMST cause & effect relationship (see slides 9-10)

Temperatures have declined between 2016's peak and mid-2019
(Global, hemispheric, and all troposphere layers at all latitudes and at both Poles)







IPCC forecasted a 2016–2035 global mean surface temperature rise of 0.3°C to 0.7°C ("medium confidence" AR5)

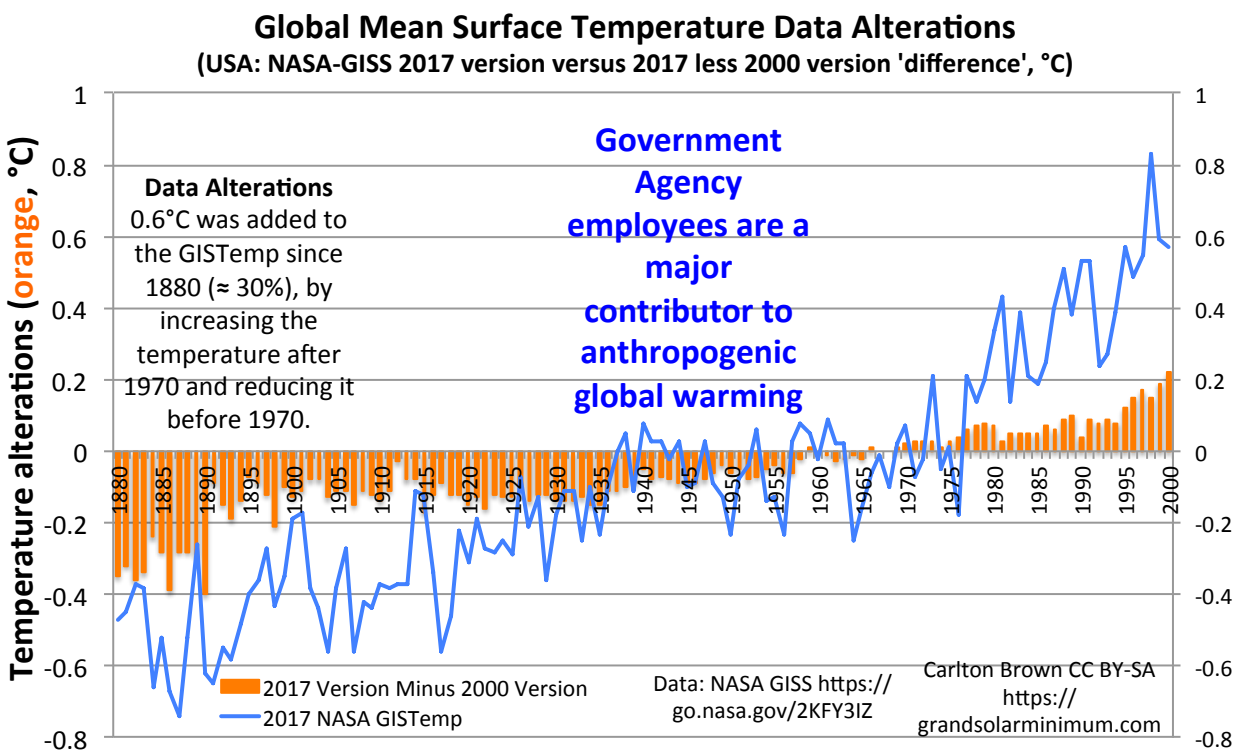
- IPCC unrealistically "*assumed there will* ***be no major volcanic eruptions or secular changes in total solar irradiance***."

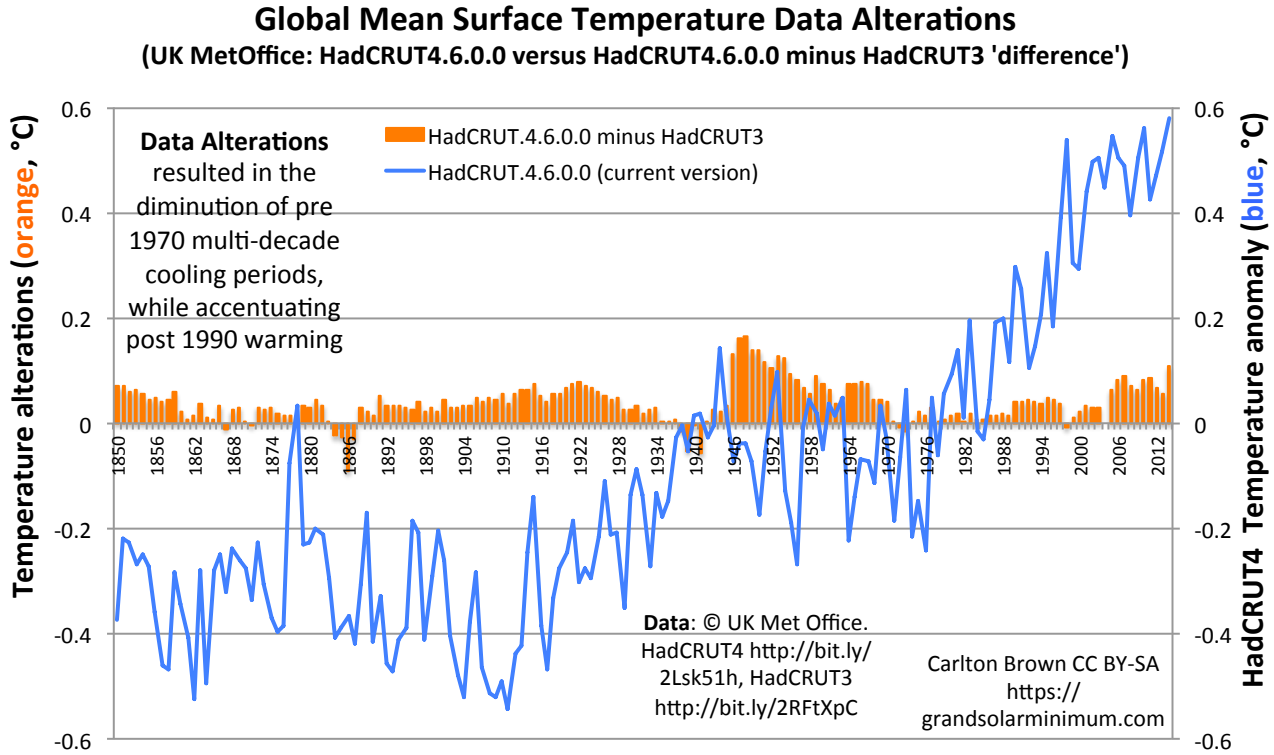
Since 2016 global surface temperatures decline 0.4-0.57°C while CO2 increased 2.8% (NOAA http://bit.ly/2MBpXWD)

- This post-2016 inaccuracy exacerbates the IPCC's 30 year legacy of high forecast inaccuracy (1986-1998 84%, 1998-2012 97%)

Government agencies altered climate indices - Accentuates global warming

Unfit for policy sensitive decision making (Heartland Institute)





Climate data cunningly altered between old and new versions (used by the IPCC in AR5)

- Switching to new datasets: significant changing of stations, time of observation, errors/missing data, population growth/heat island effect, site location (airports, oceans), new measuring technology etc.
- 1990: Major station dropout (75%), remaining 49% at airports, Urban bias (heat island) (**Audits**: http://bit.ly/2XeSQi0, http://bit.ly/2LsbHid)
- IMPACT : reducing pre-1970/40 and increasing post-1970 temps

Government agencies are the biggest cause of 'anthropogenic' global warming

IPCC Dismissed/Omitted/Veiled Natural Climate Change Risks in its Key Climate Risk Assessment (Eliminating any contestation to its 4RCP-linked forecasts)

5th Assessment Report 2014

High forecast inaccuracy (84-97%) refutes

- IPCC's AGW/Radiative forcing theory
- **Validity of the IPCC key-risk assessment**

Key Risks assessed only those relevant to Article 2 (100% AGW biased)

AGW key risk mitigation linked only to emissions reduction

Enforced our glacial cycle disorientation

- Unilaterally altered the ice age boundaries to eliminate AGW contestation (start and end)
- Focused on a post-1880 temperature fragment of a warming phase initiated in the early 1700s
- IPCC relies on climate indices cunningly altered, which accentuates global warming (HadCRUT, NOAA, NASA)
- Ice Age significance of Polar glacier expansion since the Climate Optimum omitted (peaked during the LIA)

The UNFCCC Article 1 & 2 enforced climate science dictatorship (1988)

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Limited 'proven' oil & gas reserves (drives zero emissions by 2050)

Dismissed or omitted near term rapid climate change from its climate change Key-Risk assessment

Dismissed/omitted 21stC relevant natural climate change Risks

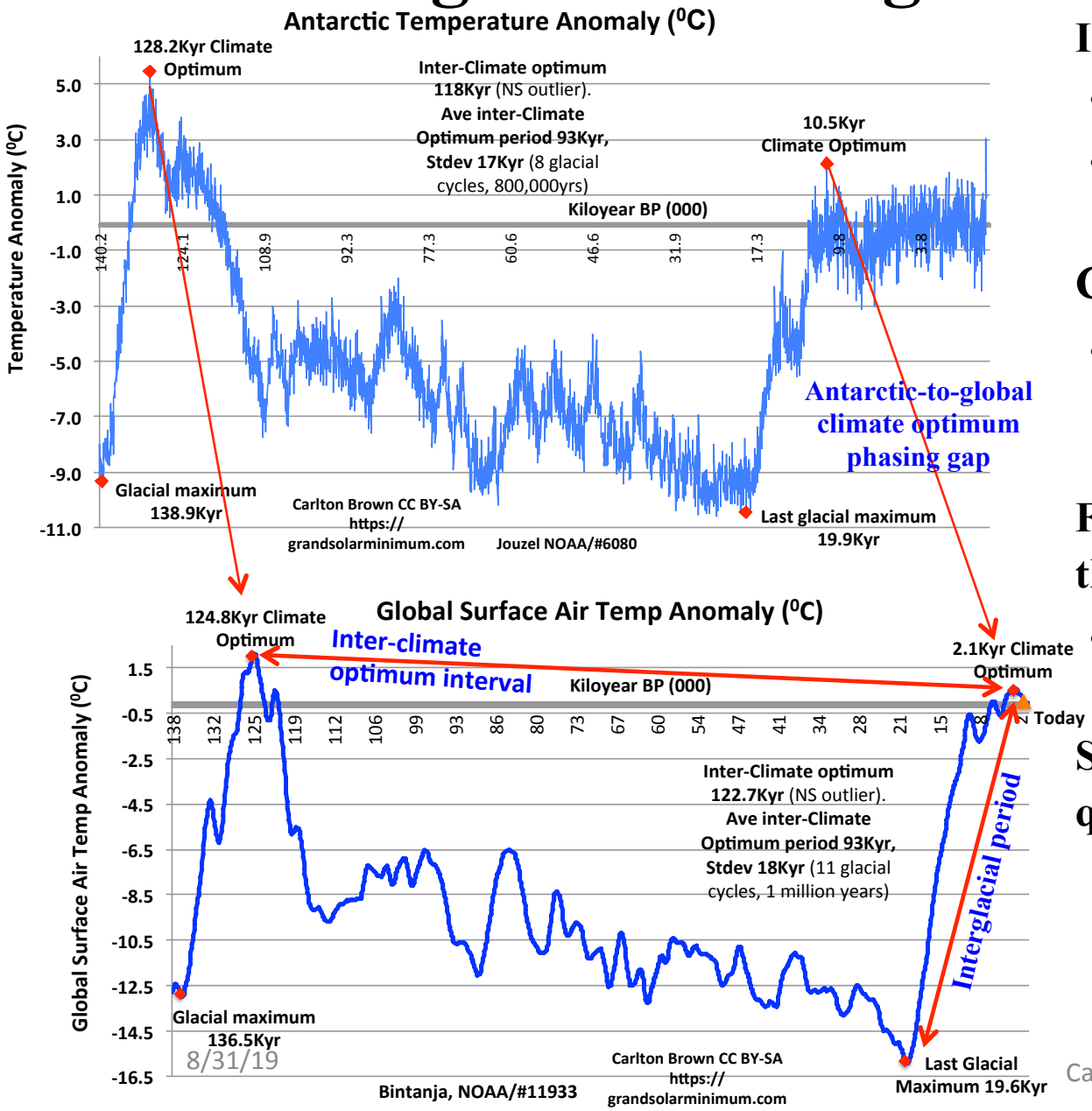
- Grand solar minimum-Cold, -Glaciation,
- Climate-forcing volcanism (Big eruptions)
- Rapid climate change
- Pandemic influenza

Dismissed the catastrophic history of the Little Ice Age and Rapid climate change events (lessons irrelevant for today)

Scientific refutation of IPCC Article 1 & 2 dictated key-risk assessment + Incriminating IPCC disclosures;

- **http://bit.ly/2zpSXbY**

IPCC Changed the Ice Age Boundaries (our 'systematic' glacial cycle disorientation)



IPCC delayed next ice age by 30,000 years (readily falsifiable)

- Creates statistically significant outliers & non-normal data distributions
- **Impacts**: inter-climate optimum interval, Antarctic-to-global climate optimum phasing gap, and interglacial duration (over 1-2 million years)

Claim the last ice age ended 'about 10Kyr ago' (incorrect)

- By 10Kyr ago sea levels had risen 80% (ice reduced 80%) and the global temperature risen 90% of its total Holocene Interglacial rise (NH/Arctic 87% contribution = importance of Arctic to climate change)

Focused on a post-1880 warming phase initiated in the 1700s that ignores the Polar 5⁰C decline between the HCO and 1700

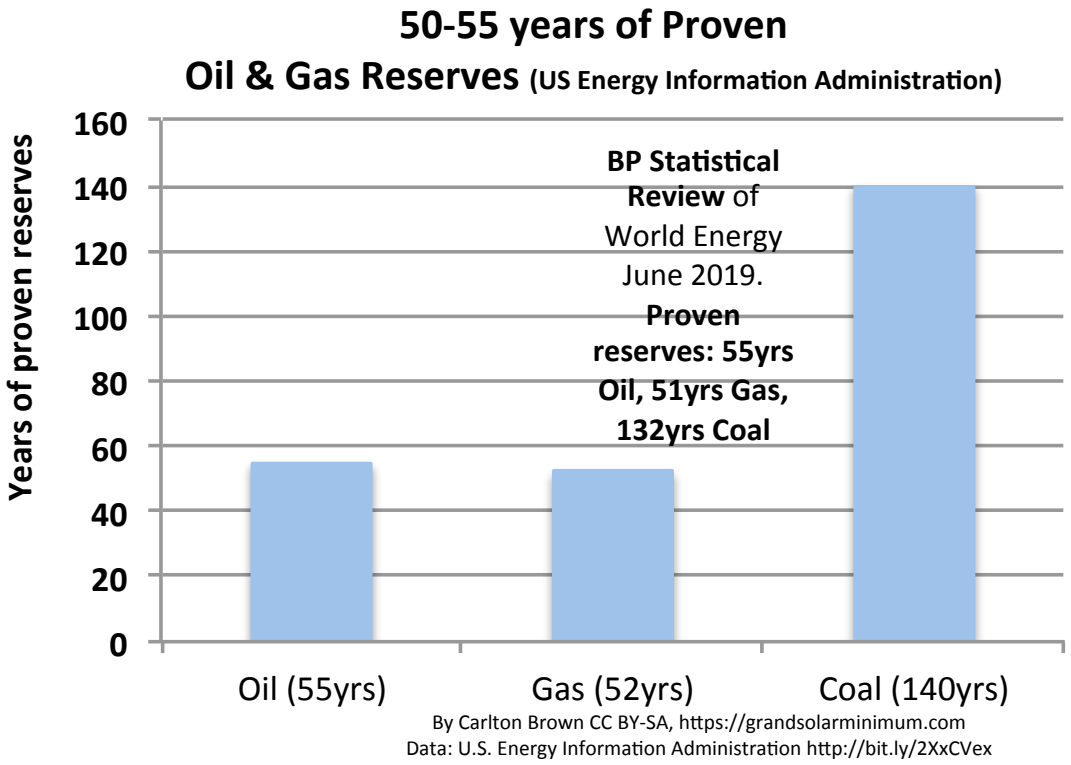
- HadCRUT/GISS/NOAA temperature index alterations versus paleoclimate data - which is more "accurate" (i.e., not fudged)…?

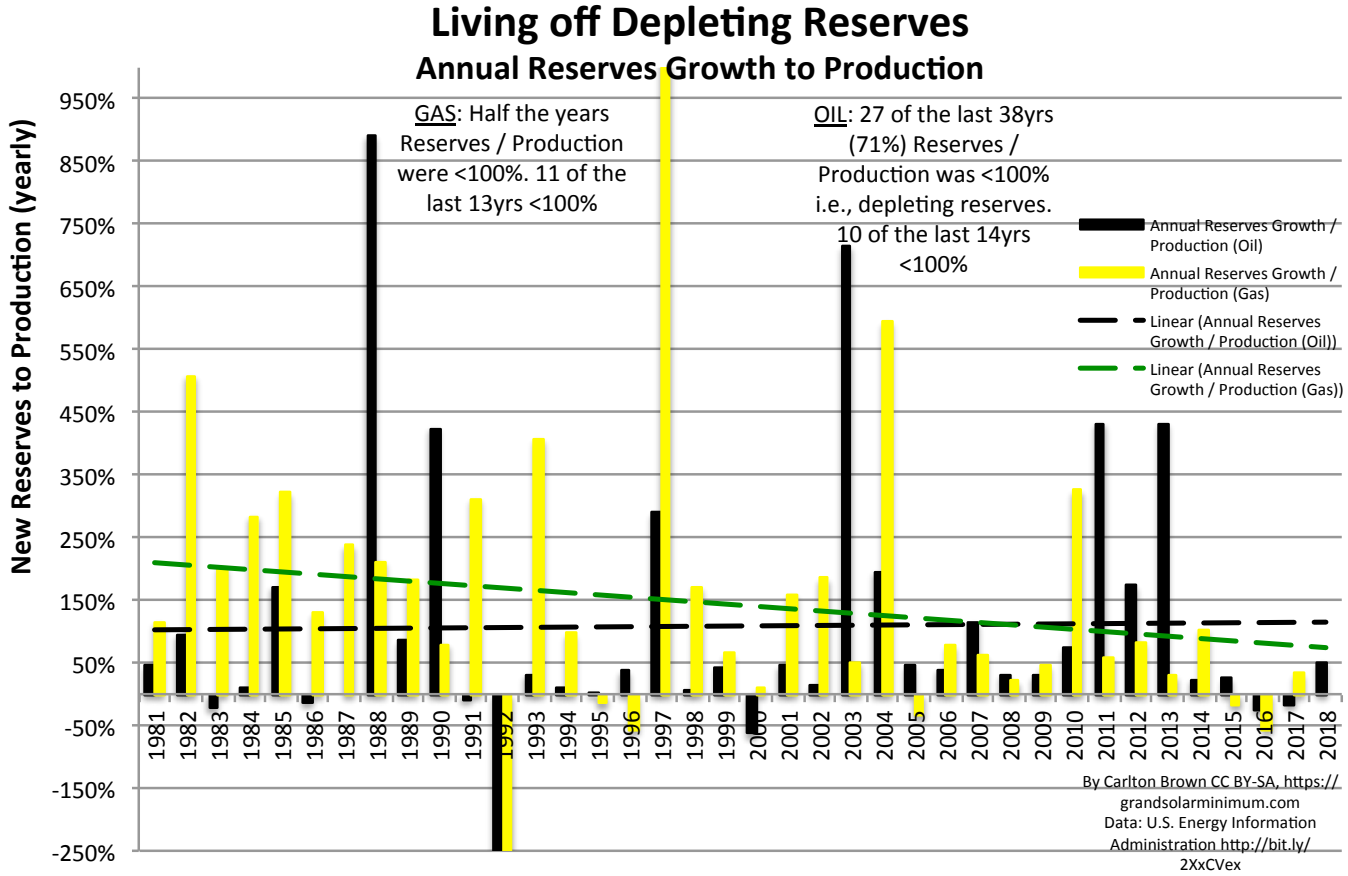
See email sent to the IPCC for refutations and endnote quotations (151-155, 161-167, 190-191 via http://bit.ly/2XCHj8f)

IPCC claimed **Robust Findings:** "*It is very unlikely that the Earth would naturally enter another ice age for at least 30,000 years.*" (false)

"It is virtually certain that orbital forcing will be unable to trigger widespread glaciation during the next 1000 years…" (false)

50 years of "proven" Oil & Gas Reserves drives Zero Emissions 2050





EIA and BP data tell the same story: 50-55 years of proven oil and gas reserves, 130-140 years of proven coal reserves

"Peak oil and gas discovery" is history: based on global Reserves-to-Production being <100% for most of the last 38 years

- Oil reserve depletion in progress: 27 of the last 38yrs and 10 of the last 14yrs the Reserves/Production ratio was <100% (i.e., depletion)
- Gas reserve depletion in progress: 19 of the last 38yrs and 11 of the last 13yrs the Reserves/Production was <100%

Unproven Reserves (if real) Might Double Oil & Gas Timelines

Unproven oil and gas reserves might double reserve timelines

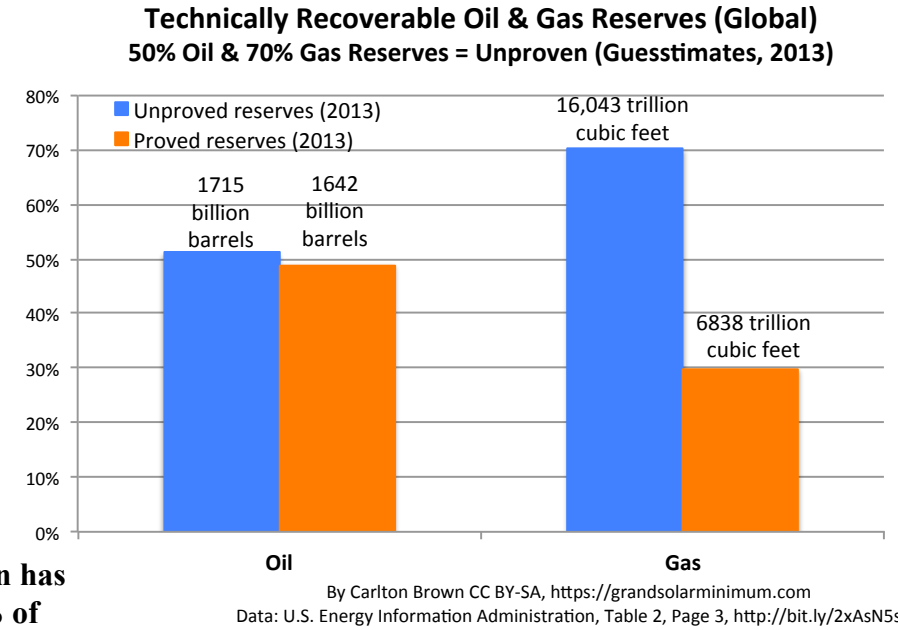
- Proven Oil 55yrs (unproven reserves +57yrs) – assumes no growth or cold.
- Proven Gas 50yrs (unproven reserves +120yrs) – ditto.

US Energy Information Administration (2013 update)

- **Global**: **50% of oil and 70% of gas reserves are "unproven"**
- Shale resources included (largely unproven): account for 1/3rd of world gas and 1/10th of world oil reserves.
- "technically recoverable resources" - apply historic US shale oil and gas recovery rates to foreign petroliferous basins with similar geophysical characteristics (i.e., guesstimated, unconfirmed by production tests).

Other reserve estimates

- Surprisingly sparse literature: shift from 'peak production' to 'adequacy of supply' - obfuscates a future energy crisis.
- IPCC stated reserves: 2007 ("decades") and 2014 (70 years) – Confirms. **they know our predicament (which drives Zero-emissions 2050)**
- Rystad Energy 2018: 70yrs oil (recoverable oil reserves 2092 billion bbl). Shale 1/3rd and off-shore 1/3rd of global reserves (requires higher prices)



Shale exploration has destroyed 80% of shareholder value making Renewables more attractive and less risky