Will it be warmer or cooler?
Just wait:
Time reveals Truth

Bob Foster, March 2007

River Thames in central London in 1677, showing stranded ice floes.
Abraham Hondius 1630-95 (Museum of London)

Will it be warmer or cooler?

fosbob@bigpond.com Bob Foster, 14 April 2007

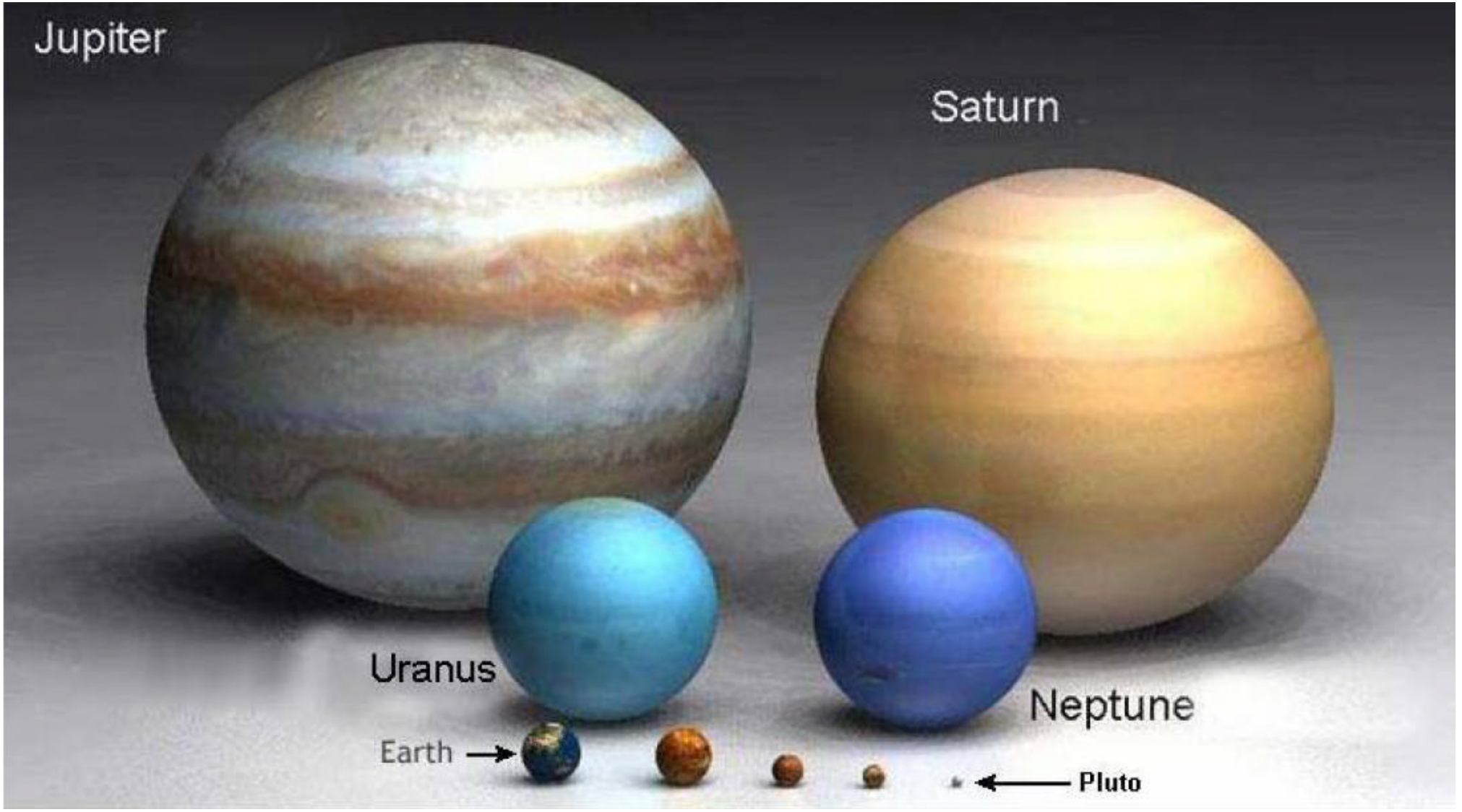
1. No-one knows the future. There are firmly-based, but mutually-exclusive, views on climate. The consensus supports the Royal Society's dogma that observed correlation between events on Sun and Earth is "mere coincidence". Thus, the Intergovernmental Panel on Climate Change is able to claim that people are driving a self-contained climate. But people like me accept the compelling observational evidence for a variable Sun-Earth connection as main climate-driver.

2. People-driven-climate hypothesis "projects" NO cool periods ahead. IPCC invokes a stable pre-industrial Arcadia – only now disturbed by humans burning fossil fuels. But a self-contained climate demands an autonomous Earth – traveling in an empty Universe! IPCC's infamous 'hockeystick' has 900 years of gentle cooling, now abruptly reversed by human-caused warming. (The Mediaeval Warm Period, and subsequent Little Ice Age cold periods, didn't happen.) Unless greenhouse gas emissions are much reduced, continued warming is inevitable. CSIRO foretells summer warming in 2030 for 10 regions of Australia. In every case, not even the bottom of the range foretells cooling. Can this be science?

3. Sun-climate-connection hypothesis predicts next cool period The irregular orbit of the Sun about the centre-of-mass of the solar system is driven by the combined angular momentum of the giant outer planets. Thus, widely-variable solar eruptive activity is the electromagnetic outcome of an inertial driver. Predicted return of a "quiet Sun" means the next Little Ice Age cold period should be fully-developed by 2030. The small inner planets orbit the Sun; and it is Mercury's 88-day year which orchestrates solar resonance. Thus, from the millennial to the quotidian, planets drive solar-wind blasts. The Pacific Decadal Oscillation is one outcome; and the next PDO cool-phase is due by 2008 – reversing the Great Pacific Climate Shift of 75/6. Change in cloudiness, and in Earth's ability to reflect little-varying solar irradiance, is another.

4. Bad and good news about carbon dioxide. IPCC finds CO_2 to be the main anthropogenic greenhouse gas, with an increased radiative forcing (warming effect) of 1.56 W/m^2 since 1750. Methane is 0.48 W/m^2; and CH_4 concentration has stabilised since demise of the Soviet Union. (IPCC allows the Sun but a minuscule 0.12 W/m^2 of extra forcing.) Coal is the main source of CO_2 from fuel-burning; and use grew 29% from 1990 to 2005. In China it **doubled** - accounting for 80% of world growth. Back in the Eocene abundance, when many of our plant families evolved, atmospheric CO_2 concentration was x5 that of today. This trace-gas is THE vital plant food; and plants also better utilise water – a limiting factor in growth –with more CO_2 in the air. Happily, global warming potential of CO_2 is logarithmic with concentration – a rise from 0.04 to 0.08% would have the same theoretical impact as did 0.02 to 0.04%. This is good news.

5. **Bad and bad economics**. For IPCC's low/high (B1/FI) scenarios, warming from 1990 is 1.1-6.4 ^{0}C by 2099 - invoking implausible/unimaginable Third World economic growth. A genuine low-end is absent. The impact of exaggerated per-capita GDP growth, eg. South Africa - most coal-intensive nation – (in 1990 US$ '000s: 2.8 in 1990 and 364-470 in 2100), is compounded in the 2006 *Stern Review*. Sir Nicholas Stern's base-case accepts 15 billion people in 2100! His proposal to spend 1% of world GDP (say, US$400 billion/yr) "fighting global warming" should be deferred. Until Time reveals Truth, we should plan for warming or cooling ahead. For now at least, (lesser) spending on health and education in deprived regions is the better way to go.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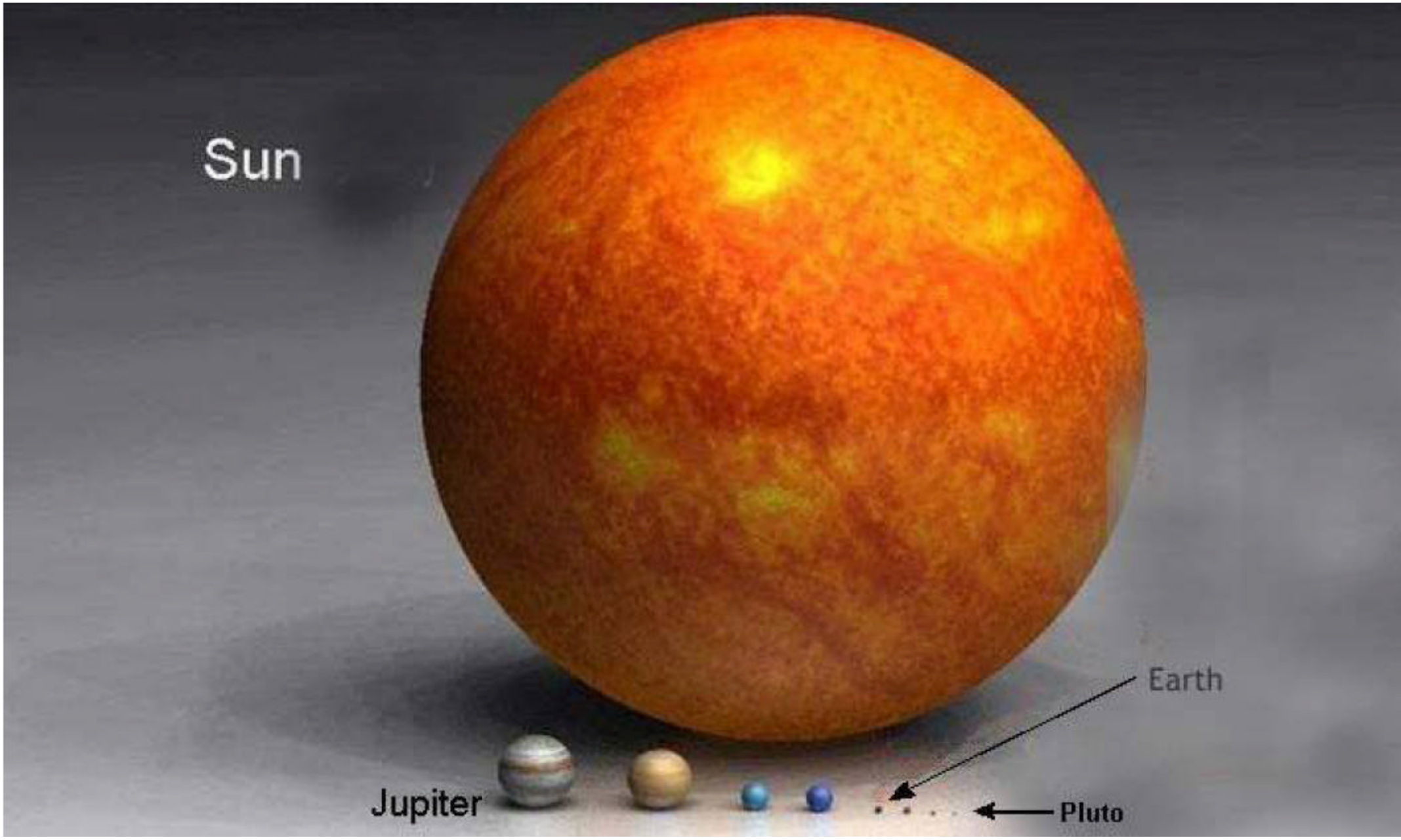
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WILL EARTH KEEP WARMING, OR TURN COLD? JUST WAIT – BECAUSE TIME REVEALS TRUTH

By Bob Foster
Victoria, Australia fosbob@bigpond.com bclim51, 6 March 2007

SUMMARY. Establishment or sceptic; our world remains imperfectly understood. Mainstream science **projects** only warming ahead; and its *people-driven climate* hypothesis suffers NO cold at all. The alternative *variable Sun-climate connection* **predicts** the next Little Ice Age cold period by 2030. Will it be warmth or misery? Just wait – because Time reveals Truth.

A. The UN's Intergovernmental Panel on Climate Change (IPCC) and the broader mainstream invoke a stable and benign pre-industrial Arcadia – now lost to people burning fossil fuels[1]. But a self-contained climate demands an autonomous Earth - travelling in an empty Universe! We unbelievers have a plausible alternative: The principal driver of our ever-changing climate is extra-terrestrial. Contrarians cannot proffer up a sworn statement from the Sun, of course; but we do offer compelling correlations between observed change on Sun and Earth.

B. Misleadingly, the mainstream acknowledges the Sun only in terms of its irradiance. Widely-variable inertial, resonant and electromagnetic influences are ignored[2]. But total solar irradiance varies only by fractions of a percent, and cannot alone explain the:
Roman Empire Warm Period (legionnaires grew wine-grapes in North Yorkshire).
Dark Ages (desperately-sun-seeking Germanics sacked Rome).
Mediaeval Warm Period (Norse grain-growers colonised Greenland).
Maunder Minimum 'Quiet Sun' of 1645-1715. This intermittent series of long and intensely-cold winters was the most-lethal of the Little Ice Age minima[3]. (It is said, a third of Europe's population died of famine, because of wars over food supplies, and plague.)
Modern Era Warm Period (English sit in deck-chairs on pebbly shores without going blue).

C. We are dealing with science, not ethics; but they were not always kept separate. Copernicus, and his *On the revolutions of the heavenly spheres*, started (1534) this debate. He (and Keppler) lived far from Rome, and their lives were not thus endangered; but Galileo was in the firing line.

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1. The editorial "Kyoto for consumers" in the last *Nature* for 2006 (v.444, p.971) begins: "Climate change, as we are now experiencing it, is predominantly the result of the lifestyles to which people living in the industrialized world have grown accustomed." But Arcadia has an entry-fee. "Consumption, mobility, global tourism and many other aspects of modern life are going to have to change if global warming is to be confronted effectively."

2. See Usoskin, Solanki and Korte 2006, "Solar activity reconstructed over the past 7000 years: The influence of geomagnetic field changes", *Geophys. Res. Lett.*, 33, GL025921. Their new study "allows the fraction of time to be estimated that the Sun spends in grand minima of activity. … about 6% or 430 years after 5000 BC with 320 of these years occurring during the last millennium." For grand maxima, "hyper-active episodes (similar to the modern episode) remain very rare … being between about 1% and 3% of all the time during the last 7000 years."

3. Of 1709, Nancy Mitford (*The Sun King: Louis XIV at Versailles*, Sphere Books 1969) tells us:
This year "was perhaps the most terrible that France has ever known. On 12 January the cold came down. In four days, the Seine, all the rivers and the sea on the Atlantic coast were frozen solid. The frost lasted for two months: then there was a complete thaw; as soon as the snow, which had hitherto afforded some protection to the land, melted away, the frost began again, as hard as ever. The winter wheat, of course, was killed as were the fruit, olive and walnut trees, and nearly all the vines; the rabbits froze in their burrows; the beasts of the field died like flies. The fate of the poor was terrible and the rich at Versailles were not to be envied …"

With his telescope, he saw the Aristotle/Ptolemy paradigm (Earth occupies a privileged central position in the Universe) was wrong. Mundanely, Earth orbits the Sun. The Society of Jesus was custodian of scientific ethics in the 1600s: and it demanded he recant, or suffer the 'Test of Faith'. Wisely, he swore: *I abjure, curse and detest the aforesaid errors and heresies*. (In 1611, *Revolutions* was placed on the *Index*. It was not removed until 1835!)

D. The 'New Jesuits' are the Royal Society. Solar observation has been continuous since those days, thanks to the telescope; and study of the Sun/Earth connection prospered until 1892. In that sad year, then Royal Society president, the Lord Kelvin, famously opined (remember the 'Kelvin Fallacy'?) on the basis of his own calculations:
This result, it seems to me, is absolutely conclusive against the supposition that terrestrial magnetic storms are due to magnetic action of the Sun; or to any kind of dynamical action taking place within the Sun, or in connection with hurricanes in his atmosphere, or anywhere near the Sun outside. … [W]e may also be forced to conclude that the supposed connection between magnetic storms and sun-spots is unreal and that the seeming agreement between the periods has been mere coincidence. WOW! Calculation trumped observation! Is this a scientific-first?

E. After 113 years, the Society has not resiled from Kelvin's ill-founded dogmatism. In its 13 April 2005 submission to the House of Lords inquiry *The Economics of Climate Change*, the Society (now under the Lord May of Oxford) included *A guide to facts and fictions about climate change*. This employed a series of *Misleading arguments* as 'straw-men'. Crucially: *The Earth is getting hotter, but not because of emissions of greenhouse gases from human activities. … Variations in the sun are more likely to be the cause of climate changing than increases in greenhouse gases.* As sure as night follows day - a swingeing rebuttal followed.

F. Implausibly, scientists revere consensus. Sir Robert May's *The Science of Climate Change* (18 May 2001 editorial, *Science* v.292 p.1261) was endorsed by 17 learned academies including that of Australia. His first paragraph is a dithyramb for a people-driven climate:
… We recognise the IPCC as the world's most reliable source of information on climate change and its causes; and we endorse its method of achieving this consensus. …
I promise I am not making this up: this very paragraph invokes "consensus" THREE times. Do scientists *really* believe that the advancement of scientific understanding is a matter of voting?

G. Angular momentum in the solar system is dominated by the outer planets (unlike the inner, they orbit its centre-of-mass - not the Sun). The torque applied by these giants drives the Sun's own irregular orbit, and hence its inertially-related eruptive activity. The consequent highly-variable outflow of charged solar particles is the major factor in climate at human-relevant time-scales. The great El Niño of 1997/8 may have made 1998 the warmest year during 1650-2050; and the 'Quiet Sun' should again be discernible by 2020. The Landscheidt Minimum will be mature by 2030 - but the cold won't last. Happily, we should be warm again by about 2050.

CONCLUSIONS. Pay no worship to scientists predicting Armageddon. Don't beggar the already-poor by diverting US$400B/yr (the UK Stern Review's proposed 1% of world GDP) to decarbonising the global economy - in a spurious "fight to confront global warming". Fight monomaniacal scientists instead! Our ever-changing climate will either warm or cool – naturally – and we must adapt. Planners should apply the precautionary principle to *cooling* too.

Attachment 1

OFF-MESSAGE ON CLIMATE CHANGE

Those who cast the votes decide nothing. Those who count them decide everything. Stalin.

On the reverse, is an abbreviation of the prescribed two-page Executive Summary submitted for the 29th Annual Conference of the International Association for Energy Economics. Dr Rajendra Pachauri, who succeeded Sir John Houghton as head of IPCC, is a former president of IAEE. Although a long-standing member, I was uncertain of the reaction to a presentation entitled "Global warming *or* cooling: it's still the Sun". I need not have worried.

Arriving at Potsdam Congress Hotel on 6/6/06, a letter to "Mr Bob Foster, Lavoisier Group" from "Prof Dr Georg Erdmann, Conference Chair" confirmed registration, and happily (paying for myself) my author's discount. The good news ends there. My paper was not in the 492-page book of Executive Summaries – neither was I granted a speaking slot in the 53-session program. The conference attracted academics and bureaucrats from around the world; and it had all the fervour of a revivalist meeting - but about carbon-credit trading, stack-gas geo-sequestration, personal carbon entitlements, hydrogen economy, etc. I was off-message.

Life is fraught, when not on-message. For instance, *The Guardian* columnist, George Monbiot, threatens us in his book "Heat: how to stop the planet from Burning", by fulminating:
When we've finally gotten serious about global warming, when the impacts are really hitting us and we're in a full worldwide scramble to minimize the damage, we should have war crimes trials for these bastards – some sort of climate Nuremberg …
MIT professor Richard Lindzen tells of last December's American Geophysical Union meeting:
We're in interesting times. Al Gore, at the San Francisco AGU, basically encouraged scientists to have the courage to conform, and to demand the freedom to suppress dissent. He did this to the rousing cheers of thousands of geophysicists. Even Orwell might have been shocked.

I went off-message when CSIRO and Commission for the Future brought 'greenhouse firebrand' Stephen Schneider to Australia, as lead-speaker for *Greenhouse Action '88*. I was one of three Australians honoured to share his platform (in Melbourne, linked to halls nationally). Schneider transfixed an eager audience by asserting the "strong opinion" of climatologists was that the atmosphere would warm as much in the next 50 years (32 still to go!) as in the past 15,000. I then told 800 ticket-buying souls not to worry - we palaeoclimatologists can report that the past 15,000 years include transition from the last Glacial to the current Interglacial. A kilometre of ice covered the site of Detroit back then (and sea-level was 100 metres lower); and the chance of equivalent further warming by 2038 is small indeed. Far from being reassured, the whole hall hissed! Those earnest folks <u>wanted</u> catastrophe. Unsurprisingly, I have not been invited to speak since on climate change at a mainstream forum.

CSIRO is Australia's "trusted scientific umpire", and endorsement by it is a high accolade. It endorses a people-driven climate; and its *Future climate change in Australia* poster - free to schools and libraries – says there will be <u>no cooling anywhere</u>. At my birth-place (Darwin), for instance, "Dec-Feb days above 35 ^{0}C" rise from one "now", to 2-13 in 2030. By 2070, it is dire – 5-79 days above 35 ^{0}C (in a 90-day quarter). Can this be science? Or is it taxpayer-funded scare mongering? The living is easier if you talk catastrophe, it seems. Just stay on-message!

Attachment 2

GLOBAL WARMING *OR* COOLING: IT'S STILL THE SUN

(Based on a 2-page 'Executive Summary' submitted by Bob Foster to IAEE Potsdam – June '06)

The 2001 'projection' by the Intergovernmental Panel on Climate Change (IPCC) of 1.4-5.8 ^{0}C global warming in 1990-2100, is built on implausibly-high Third World economic growth. Per-capita GDP for Australia in 1990 was US$17,000 (Market Exchange Rate basis); and in 2100, IPCC's "storylines" predict 55-61 (still MER US$ 1990 thousands) – compared to Afghanistan 69-78 and Zimbabwe 68-87. Not bad for them, eh? But wait. South Africa, with world-greatest coal-intensity (76% of its primary-energy is coal), does even better. In 1990, its per-capita GDP was a modest 2.8; but in 2100 it will be an almost-unimaginable 394-470! IPCC's high-end (A1FI) 'scenario' has world coal-use up by 37% over 1990-2000. In reality, it grew 22% in 1990-2004. Little of that growth was in South Africa – but 86% was in China.

Yes, IPCC's **PEOPLE-DRIVEN CLIMATE** hypothesis hypes Third World wealth; but a worse – and strangely passé – malady afflicts its science. The Earth/Space system is unacknowledged! Instead, IPCC invokes an autonomous Earth with a self-contained climate: Remember poor Galileo? He proved Earth does not occupy a preferred location at the centre of the Universe, and had to recant - or burn. Today's 'New Jesuits' still insist black is white:

1. The Mediaeval Warm Period and series of Little Ice Age cold periods didn't happen.
2. The atmosphere rules – despite the top 200 metres of ocean containing x30 more heat.
3. An unchanging climate is only now warming – because of people burning fossil fuels.
4. Unless we decarbonise the world economy, continued warming is inevitable.
5. Humanity *can* regain a stable climate – by 'doing the right thing' about energy-use.

But Earth does not travel in an empty Universe. Instead, we are exposed to inertial/resonant and electromagnetic influences – hence the **VARIABLE SUN-CLIMATE CONNECTION**:

1. Our ever-changing climate is linked primarily to widely-variable solar eruptive activity; and the Maunder Minimum "Quiet Sun" (1645-1715) was a killing solar-holiday.
2. The subsequent 300-year warming trend is unusual, because the modern high-activity solar episode has hardly been matched in the past 7,000 years.
3. In the 20th Century, global warming was in two roughly-equal tranches.
4. The first (1910-1940), pre-dates the big growth in fossil-fuel consumption.
5. Instead, the post-WW2 jump in usage marked the start of 30 years' global cooling.
6. Warming abruptly resumed with the Great Pacific Climate Shift of 1976/7. This inertial event involved a large reduction in upwelling of cold water in the equatorial eastern Pacific.
7. External influences, not people, are the principal driver of our ever-changing climate.
8. The collective angular momentum of the giant outer planets drives the Sun's irregular orbit about the centre-of-mass of the solar system - and their influence can be predicted.
9. The next Little Ice Age cold period will be discernible by 2020 - and full-blown by 2030.

IPCC's *people-driven-climate* yields unidirectional PROJECTIONS: no cooler intervals at all, just ever-more warming. The contrarian hypothesis of a *variable Sun-climate connection* offers PREDICTIONS. Planners need predictions. Because the Landscheidt Minimum is within the planning horizon of responsible governments, we must ask: How will governments keep people warm and fed at this time of potentially-great human misery?

Attachment 3

GDP IN AD2100 FOR IPCC'S HIGHEST/LOWEST SRES EMISSION SCENARIOS

(Thousands of 1990 US dollars per-capita, calculated on a market-exchange-rate basis)

	1990	2100 Markers	
	Actuals	High-end (A1)	Low-end (B1)
South Korea	6.5	653	201
South Africa	2.8	470	364
Malaysia	2.6	208	64
Italy	19.9	177	110
Russian Federation	6.9 (PPP basis)	170	103
Germany	21.1	168	105
Thailand	1.8	165	51
Argentina	5.8	152	90
Japan	27.0	132	93
United States	22 2	114	79
Brazil	2.7	112	68
Mexico	3 3	104	62
Canada	21 6	88	73
Zimbabwe	0.6	87	68
Cameroon	1.0	82	64
China (PRC)	0.3	78	39
Afghanistan	NA	78	69
Algeria	1.7	75	158
Venezuela	2.7	71	42
Indonesia	0.6	68	21
Philippines	0.7	66	20
Australia	**17.3**	**61**	**55**
Peru	1.0	38	23
India	0.3	36	32
Pakistan	0.4	25	23
Bangladesh	0.2	23	21
Turkey	1.9	12	87

Source: *Special Report on Emission Scenarios* at http://sres.ciesin.columbia.edu/tgcia/ website. Note: Ian Castles criticises IPCC's choice of market exchange rate rather than the widely-accepted purchasing power parity as its basis for GDP comparisons.

Warning: The per-capita GDP data for individual countries has been down-scaled by SRES from totals for the four regions comprising the world. However, it is only GDP for the regions which has formal IPCC approval; and the individual-country numbers are thus without official standing. It seems obvious, though, that any country for which GDP might be revised down must be matched by revising another up – and then, only if its carbon-intensity is the same. Otherwise the approved totals for emissions would change.

1990 "actuals": From *World Resources 1994-95: a guide to the global environment*, the World Resources Institute in collaboration with the UN Environment Program and the UN Development Program, Oxford University Press 1994, 400 p. This volume gives 1991 numbers; and I have used them as surrogate for IPCC's 1990 base-year.

Attachment 4

IS IT SUN *OR* PEOPLE DRIVING CLIMATE? WHO CARES? POLITICS RULES!

A mainly-scientific issue was transformed by scientist/politician Margaret Thatcher. The people-driven-warming hypothesis offered her two plums for picking. One was a prop for Britain's ailing state-owned nuclear power industry. By 1990, she was also in a fight to the finish with the Scargill-led (and Ghaddafi-supported) coal miners. She could offer reduced UK greenhouse gas emissions - by replacing Midlands coal with North Sea gas. Goodbye, trouble-making mine workers! Newly-unified Germany had its own albatross – the inefficient, and coal-powered, industries of the former DDR; and climate change also allowed their politically-painless closure

I am just speculating here. The collapse of the Soviet Union and Warsaw Pact removed the fear that glued the two sides of the Atlantic. Now, incipiently anti-American Western Europe needed a means of limiting the economic power of its energy-intensive chief competitor. Britain and Germany, by contributing deep cuts, enabled Europe to unite on the global warming issue – because it gave room for under-developed EU states to painlessly enter the fold. Not much noise is made about it, but under the EU umbrella, Spain (in 2005, a bigger energy-user than Australia) is permitted 2008-12 average GHG emissions of 115% its 1990 level - far above the (unratified) 108% for Australia. For smaller Greece and Portugal, it is 125/127%.

Thus, provided the EU Lilliputians can get their Kyoto-net over the United States behemoth, US economic dominance can be prevented. (The EU was not yet thinking of China and India as major competitors.) Why did the Clinton administration fall for this ploy? Speculating again; at the time of negotiating the treaty which became the Kyoto Protocol in 1997, the US saw carbon-credit trading as preventing the then-feared economic collapse of the Russian Federation. Otherwise, surely, there would have been no point in giving Russia a 100% allowance when actual emissions were far lower – and still heading south. Russia's primary energy consumption (BP figures, in million tonnes oil-equivalent) for 1990, 1997 and 2005 were 853, 611 and 680 respectively. It will be interesting if Russia sells too big a quantity of carbon credits to the EU, and thus overshoots. I pity the bureaucrat who then has to extract a big fine from Russia.

Save for President Bush and PM Howard, virtually all *The Great and the Good* in the developed West have sung the 'people-driven-climate' tune ever since Kyoto. The first notable defection was the Report by the House of Lords Select Committee in 2005: *The Economics of Climate Change* (v. I *Report*, 84 p. and v. II *Evidence*, 310 p.). Its abstract said, inter alia:
We have some concerns about the objectivity of the IPCC process, with some of its emission scenarios and summary documentation apparently influenced by political considerations.
There are significant doubts about some aspects of the IPCC emission scenario exercise, in particular, the high emissions scenarios.
The Government should press the IPCC for better estimates of the monetary costs of global warming damage and for explicit monetary comparisons between the costs of measures to control warming and their benefits.

Indeed, the UK government did respond – but with a comprehensive rebuttal rather than a follow-up, as recommended by the Select Committee report published in July 2005. In the same month the Stern Review on *The Economics of Climate Change* was commissioned.

This formidable document (550 p. plus) was launched in October 2006 - where PM Blair said:
… what is not in doubt is that the scientific evidence of global warming caused by greenhouse gas emissions is now overwhelming … [and] *… that if the science is right, the consequences for our planet are literally disastrous … what the Stern Review shows is how the economic benefits of strong early action easily outweigh any costs.*

At the initiative of David Henderson (former Head of the Economics and Statistics Department of OECD), a prompt analysis 'The Stern Review: A dual Critique" was sent to *World Economics* (2006, v.7 no.4 pp.165-232). Among the 15 authors are two Australians – in Pt I *Science*, Bob Carter, James Cook Uni (Townsville): in Pt II Economics, Ian Castles (formerly Head of the Australian Bureau of Statistics, now ANU Canberra). Among criticisms of the Review are:
On the basis of what it takes to be established science, together with its own distinctive analysis of the economic issues, it draws strong and confident conclusions for policy.
[But] *… first … it greatly understates the extent of uncertainty, for there are strict limits to what can be said with assurance about the evolution of complex systems that are not well understood. Second … its treatment of sources and evidence is selective and biased.*
Overall, our conclusion is that the Review is flawed to a degree that makes it unsuitable, if not unwise, for use in setting policy.
And a specific example:
… the Review selects IPCC scenario A2 as its base case. This … projects global population in 2100 at 15 billion. … the A2 estimate for 2100 is more than 50% above the UN's latest median population scenario and 7% above its high scenario. This inflated population estimate inflates emissions and, more important, the numbers at risk for each of the climate-sensitive hazards examined in the review, and hence the consequences and costs of dealing with them.

Knowledgeable cautions like that in *World Economics* are exceptions; and the people-caused-climate-change juggernaut rolls on unimpeded. A recent triumph for catastrophism is the announcement on 13 February 2007 (yet again invoking 'consensus') by US Senators John McCain and Joe Lieberman:
There is now a broad consensus in this country, and indeed in the world, that global warming is happening, that it is a serious problem, and that humans are causing it.
[And] *… if we fail to start substantially reducing greenhouse gas emissions in the next couple of year , we risk bequeathing a diminished world to our grandchildren. Insect-borne diseases such as malaria will spike as tropical ecosystems expand; hotter air will exacerbate the pollution that sends children to the hospital with asthma attacks; food insecurity from shifting agricultural zones will spark border wars; and storms and coastal flooding from sea-level rise will cause mortality and dislocation.*

The American Association for the Advancement of Science remains a trenchant people-caused-warming Jeremiah. For instance, an editorial in its journal *Science* of 16 February 2007 (v.315, p.913), by IPCC chairman R.K. Pachauri, says:
Economic progress achieved since the advent of industrialization has resulted largely from advances in science and technology. … [But] *… the current path of economic growth deviates from the objectives of sustainable development. …* [And] *among the negative externalities created by human activities, the cumulative emissions of greenhouse gases have had by far the most serious consequences in terms of global climate change.*

Attachment 5

NATURE DISSECTS THE NEW IPCC REPORT – AND AUSTRALIA'S PM TOO

The words "**CLIMATE CHANGE 2007: The IPCC report dissected**" appear on the cover of *Nature* for 8 February 2007, referring to the release on the 2nd of the *Summary for Policymakers* of "Climate Change 2007: The Physical Science Basis". Its main conclusions are:
Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations. For the next two decades a warming of about 0.2 ^{0}C per decade is projected for a range of SRES emission scenarios. Even if concentrations of all greenhouse gases and aerosols had been kept constant at year 2000 levels, a further warming of about 0.1 ^{0}C per decade would be expected. It then explains that best estimates of warming for 2090-2099 (relative to 1980-1999 are: Low Scenario (B1): 1.1 to 2.9 ^{0}C; and High Scenario (A1FI): 2.4 to 6.4 ^{0}C[1].

Inside the journal (v.445 p.567), is an editorial "Light at the end of the tunnel":
The release of the 2007 report of the Intergovernmental Panel on Climate Change last Friday marks an important milestone. Following the scientific consensus [There is that word again!] *that has been apparent for some time, a solid political consensus that acknowledges the problem finally seems to be within reach. But achieving this outcome brings its own risks.*
Until quite recently (perhaps even until last week), the general global narrative of the great climate-change debate has been deceptively straightforward. The climate-science community, together with the entire environmental movement and a broad alliance of opinion leaders from Greenpeace and Ralph Nader to Senator John McCain[2] and many US evangelical Christians, has been advocating meaningful action to curtail greenhouse gas emissions. This requirement has been disputed by a collection of money-men and some isolated scientists, in alliance with the current president of the United States and a handful of like minded ideologues such as Australia's prime minister John Howard.
The IPCC report, released in Paris, has served a useful purpose in removing the last ground from under the climate-change sceptics' feet, leaving them looking marooned and ridiculous[3].
And then, later:
In a sense, twenty years of frustrating trench warfare with the sceptics has prevented a rational discussion about what needs to be done from even taking place.
And:
The fundamental difficulty here is that it has been politically impossible to accept that fighting global warming may involve some economic sacrifice, at least while the sceptics were in the picture. As these are vanquished, it becomes possible …
In case you doubt the veracity of this quote, let me reassure you: These vile words are indeed from an editorial in the world's leading science journal.

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1. The much-criticised SRES scenarios are unchanged from TAR of 2001. Ian Castles (ANU) says that projected Third World economic growth out to 2100 is "implausibly high" in (low-end) scenario B1, and "unimaginably high" in (high-end) A1FI.
2. On 13 February, US senators John McCain and Joe Lieberman declared:
There is now a broad consensus in this country, and indeed in the world, that global warming is happening, that it is a serious problem, and that humans are causing it.
3. The words here underlined were repeated on the same page, as a block – IN RED.

Attachment 6

IPCC'S SUMMARY FOR POLICYMAKERS – CAN YOU FIND THE *BIG LIE*?

Adolf Hitler's *Mein Kampf* hypothesised the "Big Lie" as a means of attracting a naive and credulous public to his view; and Dr Goebbels brought the technique to malevolent fruition. I absolutely am not likening those at IPCC to either of them – although some IPCC supporters (*think* Al Gore) describe us sceptics as "deniers", albeit not "holocaust deniers". No, I am only talking here of techniques for winning-over "policymakers".

Second Assessment Report

IPCC's *Second Assessment Report* (SAR) "Climate Change 1995: the science of climate change" underpinned the treaty developed at Kyoto in 1997. However, there is little chance that policymakers around the world - be they politicians or bureaucrats - would have read this intensely-scientific 572-page Report, before they began negotiating the Protocol. Doubtless, they would have relied on its *Summary for Policymakers*.

To reach the *Summary*, policymakers would have passed a brief introductory statement, which (misleadingly) asserted that the Report *presents a comprehensive, objective, and balanced view of the subject matter.* Then, over the page, they would have encountered the *Preface* - containing but a single reference to climate-change science: … *that observations suggest "a discernible human influence on global climate", one of the key findings of this report, adds an important new dimension to the discussion of the climate change issue.*

This attention-getting statement is repeated almost verbatim, and quite without elaboration, in the subsequent *Summary for Policymakers* (p.5). However, policymakers seeking more detail on this "key finding" would have been disappointed. The relevant chapter is much less forthright. It says (p.439): *Finally, we come to the difficult question of when the detection and attribution of human-induced climate change is likely to occur.*

And it continues only briefly – without offering the supporting evidence: *The body of statistical evidence … when examined in the context of our physical understanding of the climate system, now points towards a discernible human influence on global climate. Our ability to quantify the magnitude of this effect is currently limited by uncertainties in key factors .*

After release of SAR, the man who became the principal representative of the United States (Clinton/Gore) Administration at Kyoto, Timothy Wirth, Under Secretary of State for Global Affairs, is quoted in *Nature* on 25 July 1996 (v.382, p.267):
Wirth described as a 'remarkable statement' the conclusion of the IPCC's latest report on climate change, that 'the balance of evidence suggests that there is a discernible human influence on global climate'. He said the administration took the report 'very seriously'.
And, as a reminder of the scientific climate prevailing at that time:
Wirth described the IPCC's critics as 'naysayers and special interest groups bent on belittling, attacking and obfuscating climate change science'.

Only after release of SAR, were details published: Santer, B.D. *et al* 2006, "A search for human influences on the thermal structure of the atmosphere", *Nature* v.382, pp.39-46.

We now know what was done: Michaels, P.J. and P.C. Knappenberger 1996. "Human effect on global climate?", *Nature* v.384, pp.522-3. It turns out that IPCC had relied on a short (25-year) run of observed atmospheric temperatures, encompassing the 1963-87 interval. The years selected *did* show a warming trend as required. But that is not the whole story. Available at that time was a 37-year run of data, including 5 earlier years back to 1958, and 8 later years up to 1995. When the full run is used, the warming trend disappears! Peer review had failed to assure quality – even to science-undergraduate level.

IPCC chose a starting year which was cooled by the Mt Agung eruption, and finished in the warmth of the 1987/8 El Niño. If it had come further, IPCC would have been caught by the cooling which followed on from the Mt Pinatubo eruption of 1991. **IPCC's warming trend was an artefact of the limited set of years chosen.** Why did this dissembling not create a stir when exposed? Because the issue related strictly to climatology; it was in-house - within the scientific specialty championing the human-caused-warming hypothesis.

Third Assessment Report

IPCC's *Third Assessment Report* (TAR) "Climate Change 2001: the scientific basis" dropped the SAR "key finding", and proffered up a totally-unrelated replacement. The 'Mann hockeystick' (Figure 1b in the *Summary for Policymakers*, and repeated several times thereafter) presented 900 years of relatively invariant climate in the Northern Hemisphere, followed by abrupt warming during the past century.

Unwisely, IPCC had crossed from climatology (numerical modelling) into palaeoclimatology (observation/correlation), and triggered an outcry - which continues. Palaeoclimatologists have abundant pre-thermometer proxy evidence that climate in Europe and North America fluctuated widely over the past millennium. These fluctuations have the same timing on both continents - correlating with proxy (ie. pre-sunspot-count) evidence of solar variability.

Damage control ensued. Dr Michael C. MacCracken[1], an IPCC Lead Author, evaluated the Sun/climate connection, as "Uncertainties emphasised by special interests", thus:

Twentieth century warming is primarily a recovery from the Little Ice Age and results largely from natural changes in solar output (or changes in cosmic rays, or solar field strength, or the lengths of sunspot cycles, or whatever curve one can construct) rather than the increase in greenhouse gas concentrations. Most of these claims are based on little more than correlations rather than on causal mechanisms supported by high quality, or even any quantitative, data. Some claims require small changes in a solar parameter to magically have large effects on the climate while insisting that much larger changes in energy due to increasing concentrations of greenhouse gases will only cause small changes in temperature. A number of these results would require overturning all that science has learned about global and planetary energetics while failing to explain how the Sun possibly knows to initiate its unique changes at exactly the same time that human activities start having an influence. In these arguments, The Skeptics glory in reporting the uncertainties described by IPCC about greenhouse gases and climate sensitivity while the same uncertainty is waved away in presentations that would make a revivalist preacher proud.

1. President of the International Association of Meteorology and Atmospheric Sciences - in a paper "Uncertainties: how little do we really understand?" to a Science and Technology Conference at Rice University in November 2003.

Fourth Assessment Report

The *Summary for Policymakers* of IPCC's *Fourth Assessment Report* (AR4) "Climate Change 2007: the physical science basis" was released in early February. The 'hockeystick' appears no longer to be with us. Good, you say? Not so fast! The Sun has NOT been reinstated - but demoted to the point of irrelevance. Changes in solar irradiance since 1750 are estimated to cause a natural forcing of +0.12 Wm^{-2}, which is less than half the estimate given in the TAR.

On the other hand, the globally averaged net effect of human activities since 1750 has been a warming, with a radiative forcing of +1.6 Wm^{-2}. Who needs a Sun? If it were not for humans, there would be no perceptible difference between climate in 1750 and now. In addition (and here, I agree): *Volcanic aerosols contribute an additional natural forcing but are not included in this figure due to their episodic nature*. Ours is indeed a people-driven climate.

The *only* good news is the demise of the 'hockeystick': *Some recent studies indicate greater variability in Northern Hemisphere temperatures than suggested in the TAR, particularly finding that cooler periods existed in the 12th to 14th, 17th, and 19th centuries. Warmer periods prior to the 20th century are within the uncertainty range given in the TAR.*

To refer only to "some recent studies", is being economical with the truth. George H. Denton, and Wibjörn Karlén 1973, "Holocene climatic variations – their pattern and possible cause", *Quaternary Research*, v.3 pp.155-205, triggered a flow of papers which has never stopped. And now that IPCC has declared the Sun *hors de combat*, what variability caused those "cooler periods"? Is IPCC *really* interested in science – or only when it gets caught out?

What should happen now?

There are several extra-terrestrial influences on climate which are as yet too little understood to justify dismissal without further study. Henrik Svensmark, in "The Antarctic climate anomaly and galactic cosmic rays", arXiv:physics/0612145v1 14 Dec 2006, makes the point that clouds provide a net cooling effect on Earth of some 15 Wm^{-2}; and that a reduction in cloud cover of only 8% would warm the globe by almost 2 ^{0}C. He continues:… *a chain of evidence appears to be complete, which links low-level clouds to the well-known modulation of galactic cosmic-ray intensity by solar magnetic activity, to the detected influence of galactic cosmic rays on cloudiness, and also to experimental evidence that electrons set free by passing muons help to make aerosols the pre-cursor to cloud condensation nuclei at low altitudes. The roles of cosmic rays and clouds as active players in climate change therefore merit closer attention*

Is he right? I don't know; particle physics is not my field - but it sounds interesting. All we can ask is that those supporting climate change research keep an open mind when allocating funds.

But the auguries are discouraging - catastrophism is endemic in science. Remember the 1970s Global Cooling scare? John Bender collected quotes: *The continued rapid cooling of the earth since WWII is in accord with the increase in global air pollution associated with industrialization, mechanization, urbanization and exploding population.* – Reid Bryson, "Global Ecology: Readings towards a rational strategy for Man", (1971). Also: *This cooling has already killed hundreds of thousands of people. If it continues and no strong action is taken, it will cause world famine, world chaos and world war; and this could all come about before the year 2000*. – Lowell Ponte "The Cooling", (1976).

The Cooling World

There are ominous signs that the earth's weather patterns have begun to change dramatically and that these changes may portend a drastic decline in food production—with serious political implications for just about every nation on earth. The drop in food output could begin quite soon, perhaps only ten years from now. The regions destined to feel its impact are the great wheat-producing lands of Canada and the U.S.S.R. in the north, along with a number of marginally self-sufficient tropical areas—parts of India, Pakistan, Bangladesh, Indochina and Indonesia—where the growing season is dependent upon the rains brought by the monsoon.

The evidence in support of these predictions has now begun to accumulate so massively that meteorologists are hard-pressed to keep up with it. In England, farmers have seen their growing season decline by about two weeks since 1950, with a resultant over-all loss in grain production estimated at up to 100,000 tons annually. During the same time, the average temperature around the equator has risen by a fraction of a degree—a fraction that in some areas can mean drought and desolation. Last April, in the most devastating outbreak of tornadoes ever recorded, 148 twisters killed more than 300 people and caused half a billion dollars' worth of damage in thirteen U.S. states.

Trend: To scientists, these seemingly disparate incidents represent the advance signs of fundamental changes in the world's weather. The central fact is that after three quarters of a century of extraordinarily mild conditions, the earth's climate seems to be cooling down. Meteorologists disagree about the cause and extent of the cooling trend, as well as over its specific impact on local weather conditions. But they are almost unanimous in the view that the trend will reduce agricultural productivity for the rest of the century. If the climatic change is as profound as some of the pessimists fear, the resulting famines could be catastrophic. "A major climatic change would force economic and social adjustments on a worldwide scale," warns a recent report by the National Academy of Sciences, "because the global patterns of food production and population that have evolved are implicitly dependent on the climate of the present century."

A survey completed last year by Dr. Murray Mitchell of the National Oceanic and Atmospheric Administration reveals a drop of half a degree in average ground temperatures in the Northern Hemisphere between 1945 and 1968. According to George Kukla of Columbia University, satellite photos indicated a sudden, large increase in Northern Hemisphere snow cover in the winter of 1971-72. And a study released last month by two NOAA scientists notes that the amount of sunshine reaching the ground in the continental U.S. diminished by 1.3 per cent between 1964 and 1972.

To the layman, the relatively small changes in temperature and sunshine can be highly misleading. Reid Bryson of the University of Wisconsin points out that the earth's average temperature during the great Ice Ages was only about 7 degrees lower than during its warmest eras—and that the present decline has taken the planet about a sixth of the way toward the Ice Age average. Others regard the cooling as a reversion to the "little ice age" conditions that brought bitter winters to much of Europe and northern America between 1600 and 1900—years when the Thames used to freeze so solidly that Londoners roasted oxen on the ice and when iceboats sailed the Hudson River almost as far south as New York City.

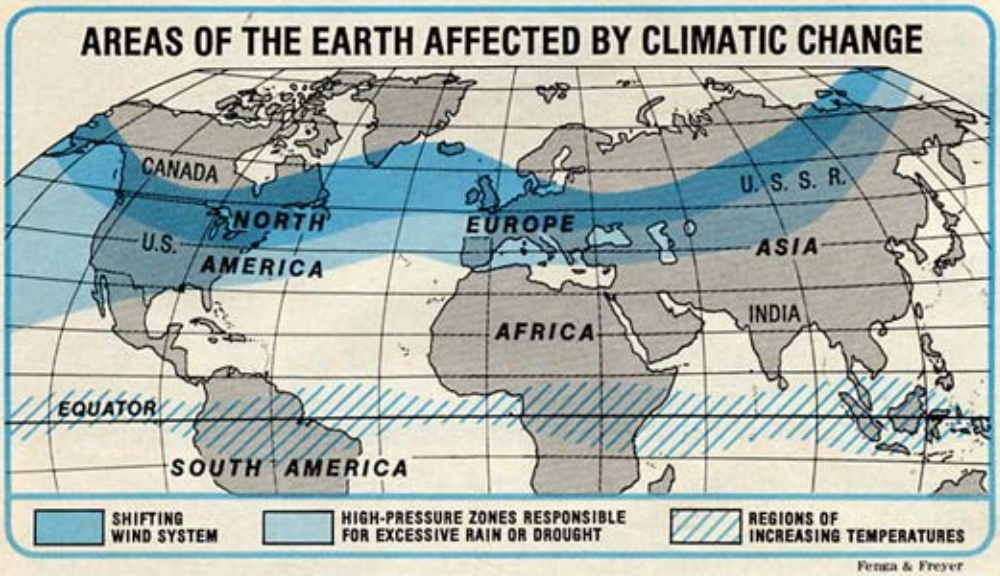
Just what causes the onset of major and minor ice ages remains a mystery. "Our knowledge of the mechanisms of climatic change is at least as fragmentary as our data," concedes the National Academy of Sciences report. "Not only are the basic scientific questions largely unanswered, but in many cases we do not yet know enough to pose the key questions."

Extremes: Meteorologists think that they can forecast the short-term results of the return to the norm of the last century. They begin by noting the slight drop in over-all temperature that produces large numbers of pressure centers in the upper atmosphere. These break up the smooth flow of westerly winds over temperate areas. The stagnant air produced in this way causes an increase in extremes of local weather such as droughts, floods, extended dry spells, long freezes, delayed monsoons and even local temperature increases—all of which have a direct impact on food supplies.

"The world's food-producing system," warns Dr. James D. McQuigg of NOAA's Center for Climatic and Environmental Assessment, "is much more sensitive to the weather variable than it was even five years ago." Furthermore, the growth of world population and creation of new national boundaries make it impossible for starving peoples to migrate from their devastated fields, as they did during past famines.

Climatologists are pessimistic that political leaders will take any positive action to compensate for the climatic change, or even to allay its effects. They concede that some of the more spectacular solutions proposed, such as melting the arctic ice cap by covering it with black soot or diverting arctic rivers, might create problems far greater than those they solve. But the scientists see few signs that government leaders anywhere are even prepared to take the simple measures of stockpiling food or of introducing the variables of climatic uncertainty into economic projections of future food supplies. The longer the planners delay, the more difficult will they find it to cope with climatic change once the results become grim reality.

—PETER GWYNNE with bureau reports



2100 High-end - 5.8 ^{0}C •

Figure 1

MAINSTREAM MESSAGE

A. Little past climatic variation. Gentle cooling for 900 years since 1000 AD, followed now by 100 years of abrupt warming (the "Mann hockey stick").

B. Ever more warming in the Century ahead - with NO cold periods:

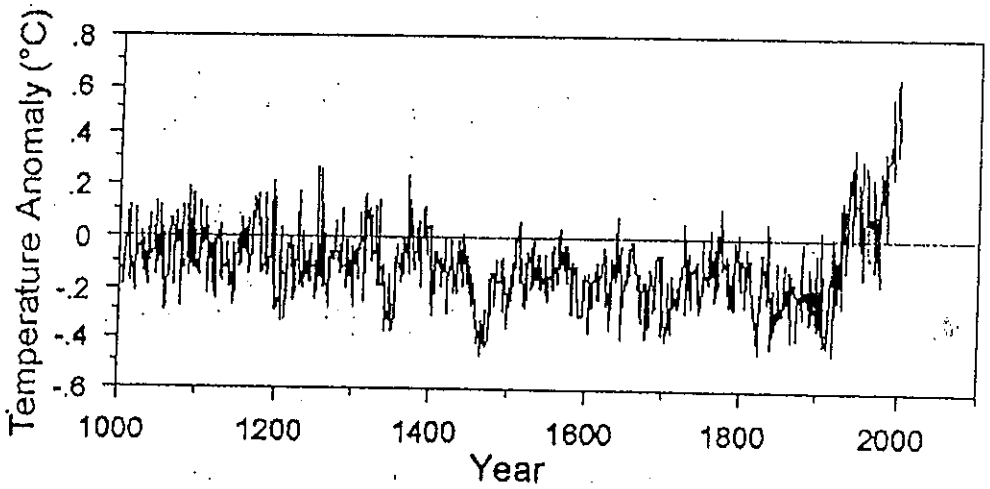
1). Storyline adopting implausibly high Third World economic growth, yields 1990-2100 warming of 1.4 ^{0}C.

2). Storyline adopting almost-unimaginably high Third World economic growth, yields 1990-2100 warming of 5.8 ^{0}C.

(IPCC's *Fourth Assessment Report* of 2007 has unchanged economics.)

2100 Low-end - 1.4 ^{0}C •

NORTHERN HEMISPHERE TEMPERATURE RECONSTRUCTION



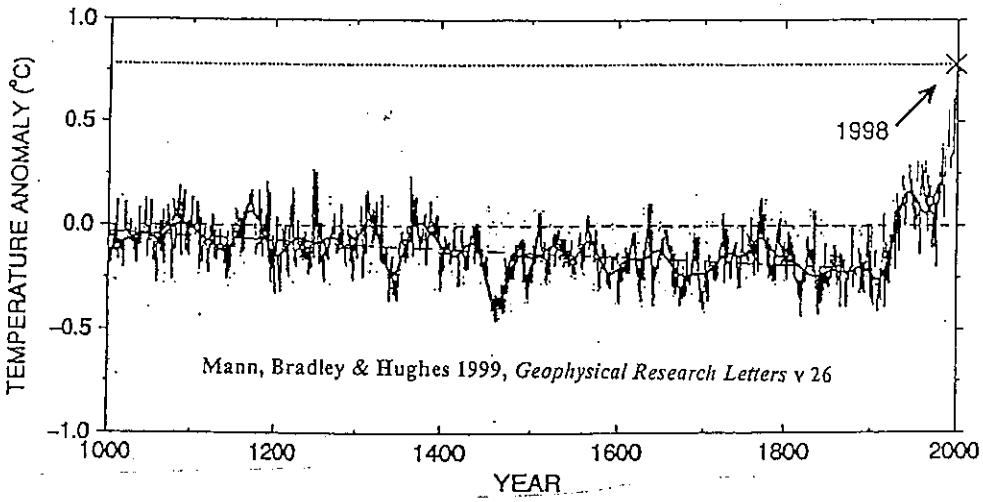
Mann's famous "hockey stick" graph showing reconstructed temperatures for the past 1,000 years. The IPCC's scenario of the 5.8°C warming by 2100 is off the charts. Literally. That's it up there near the right-hand corner of this page.

http://www.greeningearthsociety.org/climate/v6n12/hot1.htm

(Adapted from IPCC's "Climate Change 2001: the scientific basis", *Summary for Policymakers* Figure 1 (b) the past 1000 years)

Figure 2

RECONSTRUCTED NORTHERN HEMISPHERE TEMPERATURE TREND
(IPCC's 'MANN HOCKEYSTICK')



CONTRADICTED BY WARMING-TREND IN LONG THERMOMETER RECORDS

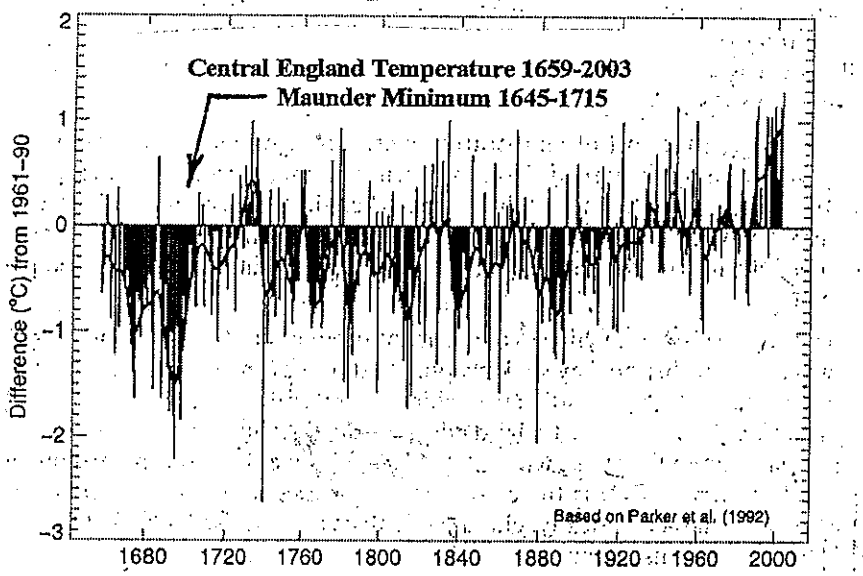
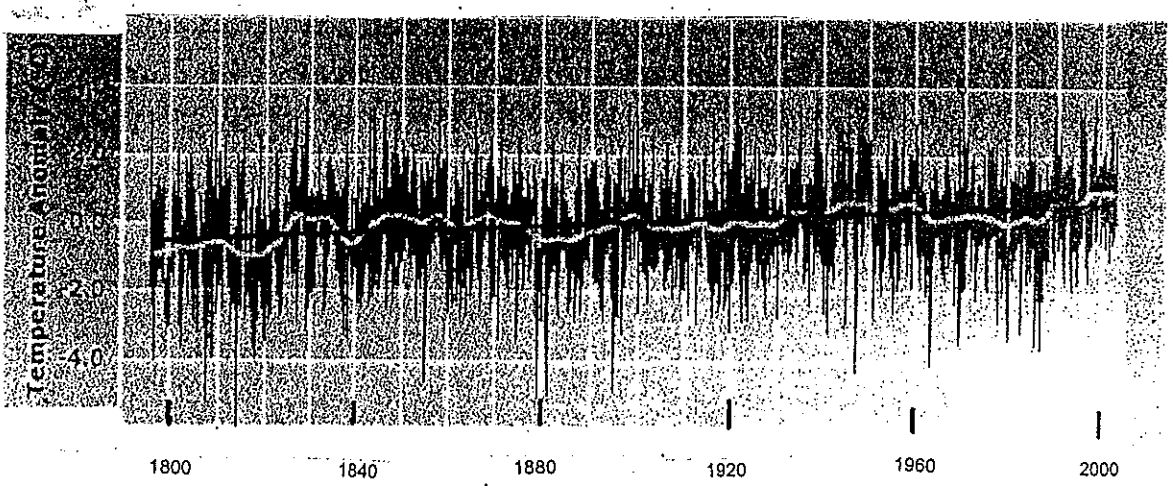


Figure 3

Met Office Hadley Centre for Climate Prediction and Research

Armagh Observatory Temperature 1796-2002



GLOBAL TEMPERATURE ANOMALY (^{0}C)

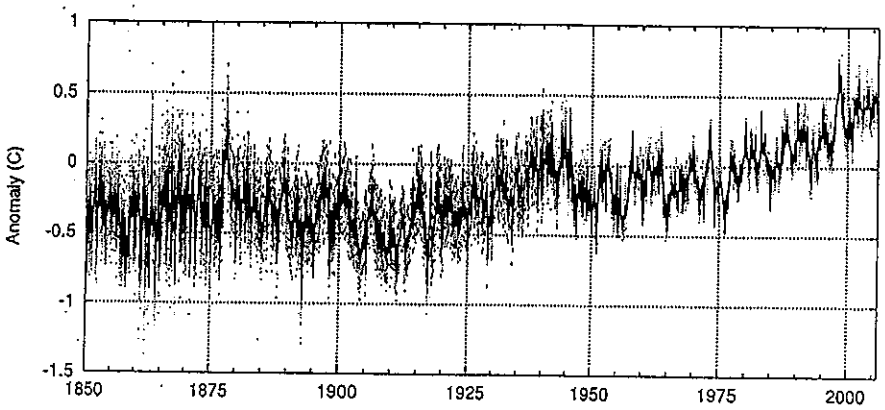


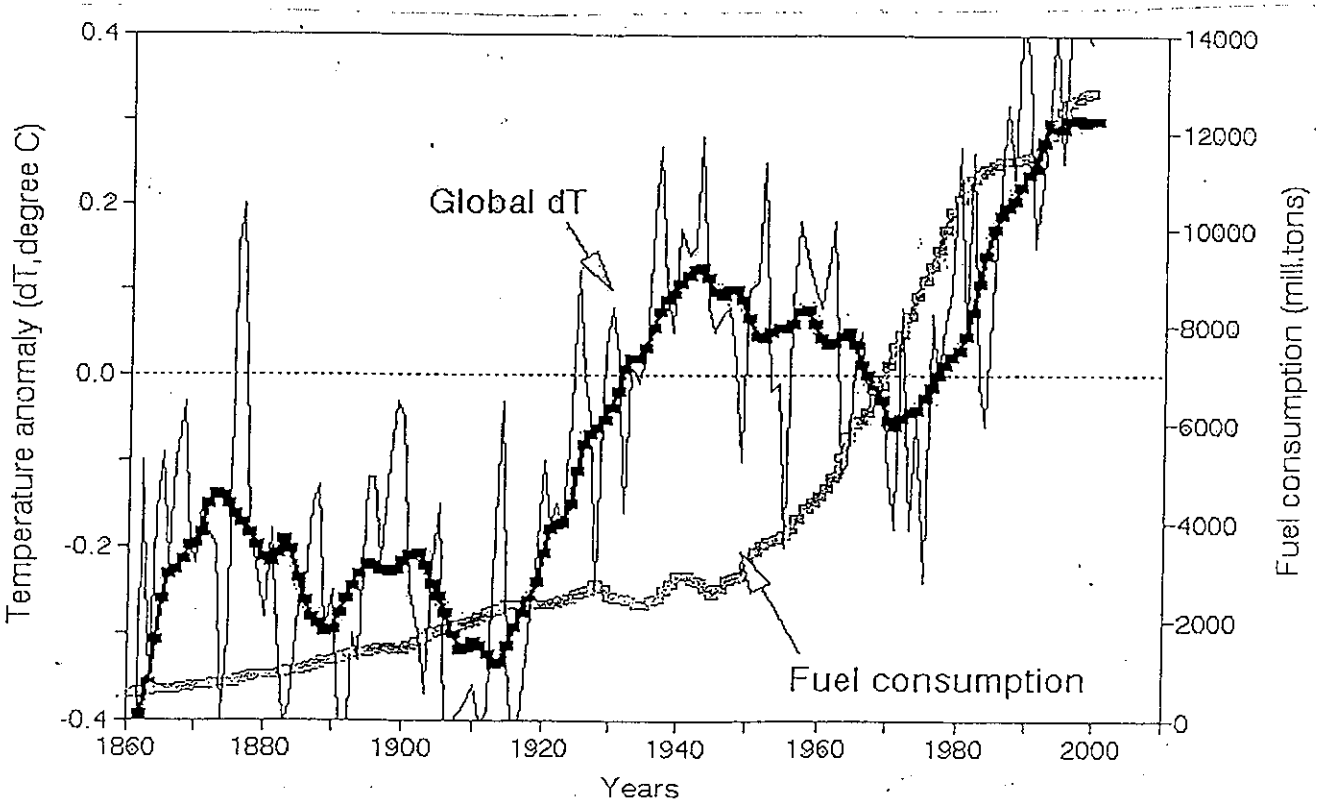
Figure 4

Note two tranches of warming - pre and post 1950 – separated by the cool phase of the Pacific Decadal Oscillation from early 1940s. The PDO warm phase returned with the Great Pacific Climate Shift of 1976/7. It still prevails.

Brohan, Harris, Tett & Jones 2006, "Uncertainty estimates in reional and global observed temperature changes: A new data set from 1850", *J. Geophys. Res.* V.111, D12106.

Figure 5

PRE-1950 WARMING *ANTICIPATED* THE FUEL-USE SAID TO BE ITS CAUSE



Klyashtorin and Lyubushin 2003, "On the lack of coherence between dynamics of the world fuel consumption & global temperature anomaly", *Energy & Environment* v.14/6.

(FOR A MORE-COMPELLING CORRELATION, GO TO FIGURE 6)

What the *Great and the Good* didn't tell us

SOLAR MAGNETIC CYCLE LENGTH MATCHES TEMPERATURE CHANGE

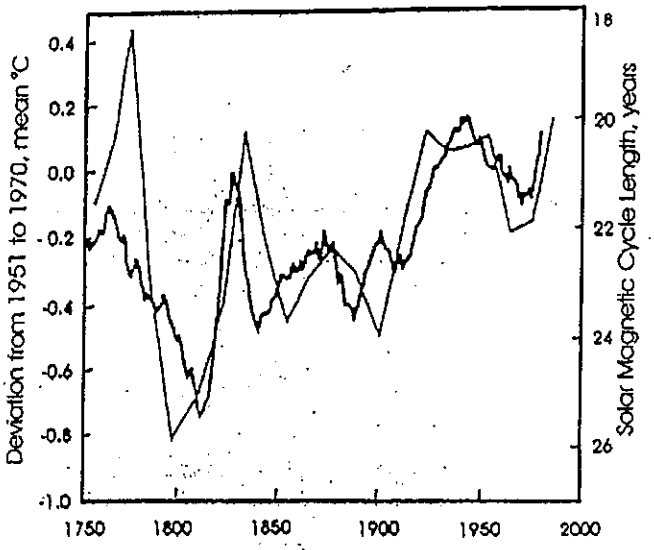


Figure 6

Moving 11-year average terrestrial temperatures (Northern Hemisphere) shown as deviations in °C from the 1951–1970 mean value (*left vertical axis and thick line*) and the solar magnetic cycle lengths (*right vertical axis and thin line*).

Khilyuk and Chilingar 2006, "On global forces of nature driving the Earth's climate. Are humans involved? *Environmental Geology* v.50 pp.899-910 (Figure 1).

NOTE: The solar magnetic field reverses subsequent to the peak of each (Schwabe) sunspot cycle of ca. 11 years. Hence, the Sun's complete magnetic (Hale) cycle is twice as long – ca. 22 years.

Y.A. Nagovitsyn 2000, "Solar activity during the last two millennia: Solar Patrol in ancient and medieval China", *Geomagnetism and Aeronomy* v.41/5, pp.680-8, provide an insight:

"The characteristic feature of solar activity – cyclicity – shows up in its main mode as quasi-periodic oscillations of the solar magnetic flux with an average period of 11 years. Individual oscillations range from 7 to 17 years, and the values of the parameters at the maximum can differ by a factor of three or four from one cycle to another. The short cycles are, on the average, higher than the long ones."

SOLAR VARIABILITY EXPLAINS THE 300-YEAR WARMING TREND

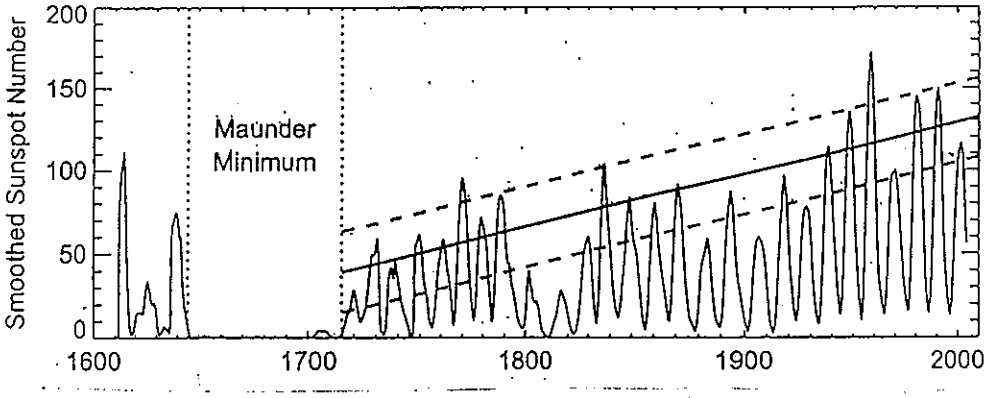


Figure 7

David H. Hathaway and Robert M. Wilson 2004, "What the sunspot record tells us about space climate", Solar Physics, v.224, pp.5-19.

Linear increase in cycle amplitude since the Maunder Minimum. The smoothed Group Sunspot Numbers are shown with the thin line. The linear trend is shown with the thick line. This linear trend is the most significant long-term variation in the sunspot cycle amplitude.

Sea level fluctuates at all time scales - naturally

GLACIAL/INTERGLACIAL DIFFERENCE IS 100 METRES OR MORE

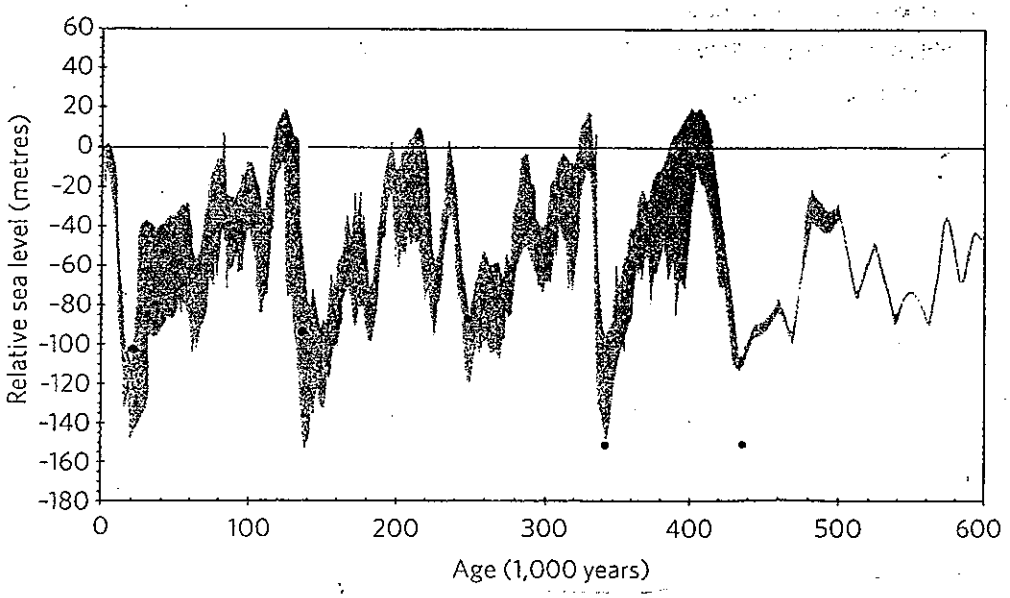


Figure 8

Marina Rabineau et al 2006, *Earth Planet. Sci. Lett.* – as reported in *Nature* v.444 p.404:
"After correcting for the effects of tectonic movement and sediment build up, they conclude that sea levels were around 100 metres lower than today during the three most recent glacial periods, and around 150 metres during the earlier two."

SEA LEVEL RISE IN THE 20TH CENTURY WAS *GREATER* IN ITS FIRST HALF

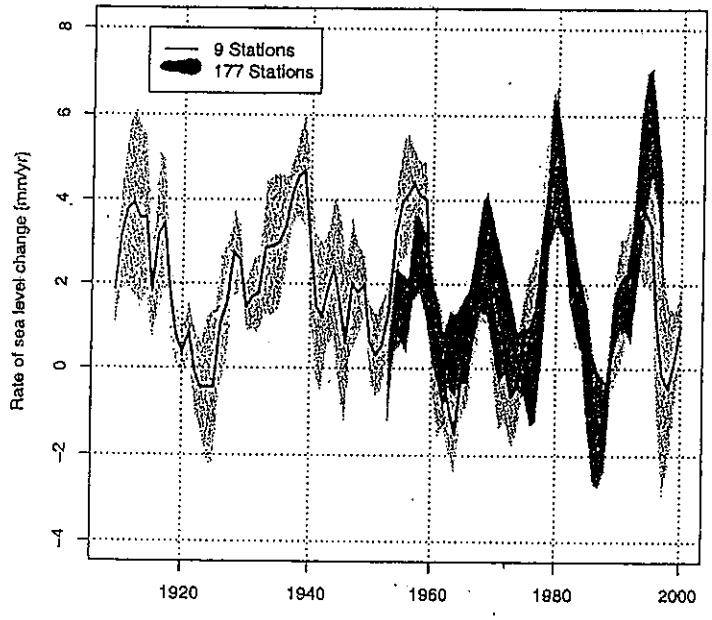


Figure 9

S. J. Holgate 2007, "On the decadal rates of sea level change during the 20th century", *Geophys. Res. Lett.* L01602.
"Despite the high decadal rates of change in the latter part of the 20th century, it is found that the first half of the record (1904-1953) has a higher rate of rise overall (2.03 +/- 0.35 mm/yr) than the 1954-2003 period which had a rate of 1.45 +/- 0..34 mm/yr."

Past atmospheric CO_2, and global temperature

About 50 My ago, the warm, wet, ice-free world began a decline ending in the Pleistocene Ice Age of long Glacials and short Interglacials. Breaching the Andean/Antarctic Cordillera about 40 My ago was crucial. (Foster 1974, "Eocene echinoids and the Drake Passage", *Nature* v.249, p. 751) The new circum-polar current was the 'refrigerator'; and the bolide shower of 35 My, and its 'nuclear winter', became the 'switch' (Foster 2000, "The global refrigerator – and now a switch?", *PESA News* No. 46, pp. 56-8) The East Antarctic continent iced-over, and then didn't melt, and Earth has never recovered. The final step was emergence of the Isthmus of Panama 3.5 My ago - stopping the circum-equator current. Our present Ice Age is a tectonic artefact.

THE 50 MILLION-YEAR DECLINE IN GLOBAL TEMPERATURE

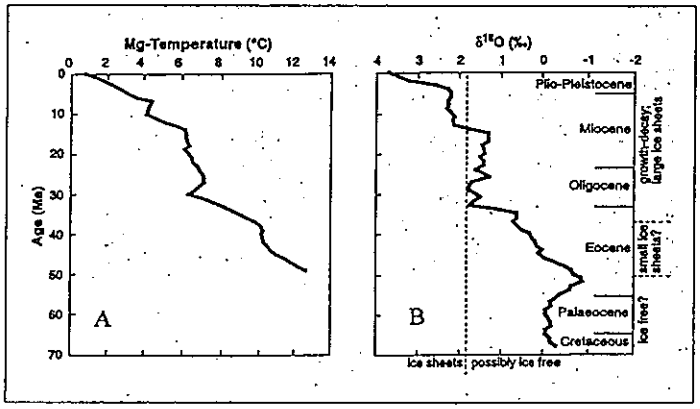


Figure 10

Fig. 1. (A) Magnesium-based temperature record obtained from composite Mg/Ca data for benthic foraminifera from deep-sea sites. (B) Cainozoic composite benthic foraminiferal record of oxygen-isotope differences from Atlantic cores. (Reprinted with permission from: Lear, C.H., H. Elderfield & P.A. Wilson 2000, "Cenozoic deep-sea temperatures and global ice volumes from Mg/Ca in benthic foraminiferal calcite", Science 287 269-72.

Prior to the opening of Drake Passage, atmospheric CO_2 concentration was up to 4000 ppm; and, subsequent to its decline, it has not yet recovered to 400 ppm. One plausible hypothesis has the CO_2 collapse also tectonically driven. Collision of the north-drifting Indian plate with Asia uplifted the vast Tibetan plateau and its associated mountains – with much-increased erosion. Resultant ready availability of calcium in the then-warm ocean, led to unprecedented shallow-marine shelly productivity - thus locking up the CO_2 as biogenic carbonate sediments.

HIGH AND LOW ATMOSPHERIC CO_2 CONCENTRATION

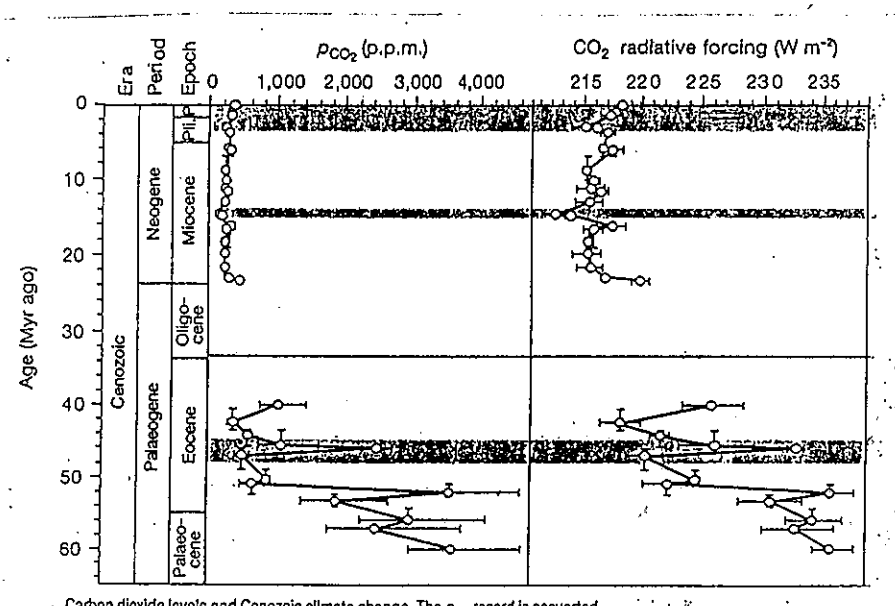


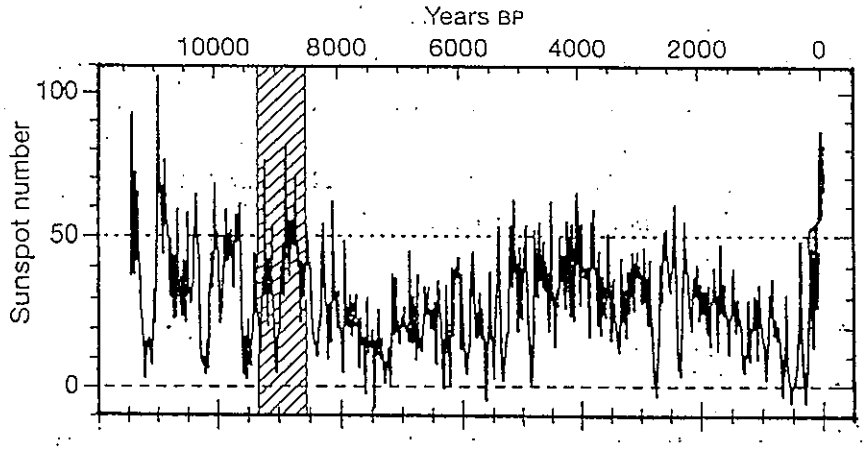
Figure 11

Carbon dioxide levels and Cenozoic climate change. The p_{CO_2} record is converted to radiative forcing (a measure of global warming)

Pearson and Palmer 2000, *Nature* v 406

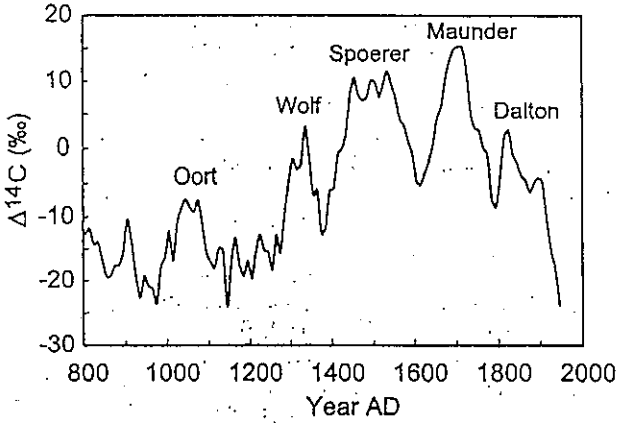
Pre-industrial Variability

DERIVED SUNSPOT COUNT AS PROXY FOR SOLAR ERUPTIVE ACTIVITY



Solanki *et al* 2004, *Nature* v. 431 pp. 1084-7

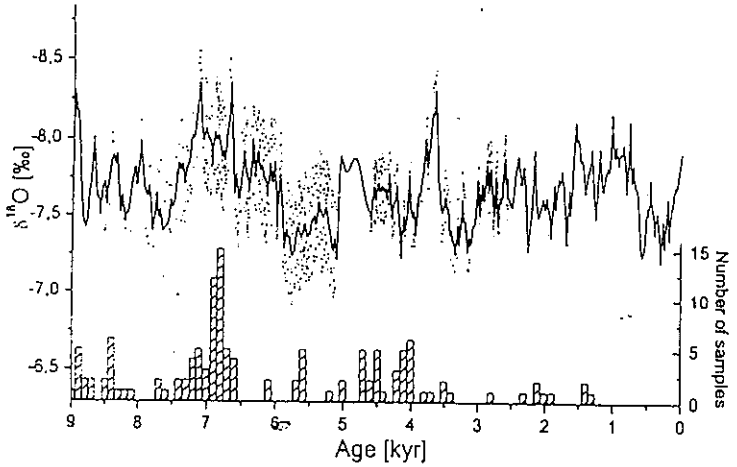
MORE COSMOGENIC CARBON WHEN SUN IS 'QUIET'



Decadal carbon 14 content in tree rings [*Stuiver et al.*, 1998]. Periods of high concentration correspond to the "grand solar minima," named as noted above the peaks.

Miyahara et al 2006. J. Geophys. Res. 111, AO3103

HOLOCENE ALPINE STALAGMITE RECORD



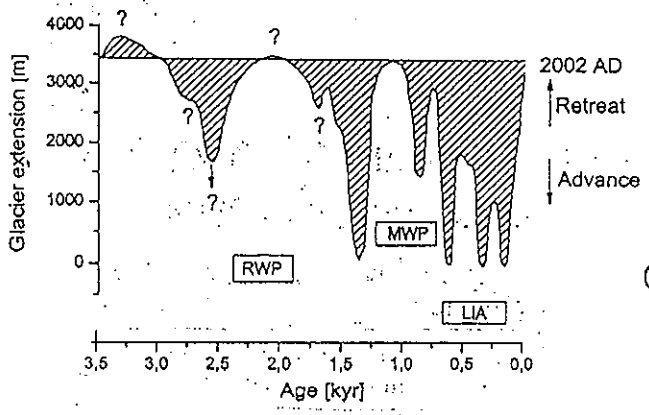
Vollweiler et al 2006, Geophysical Research Letters, v. 33 L20703

Note low oxygen isotope values between 7.5 and 5.9 kyBP (Holocene Climate Optimum), 3.8 and 3.6, and 1.2 and 0.7 (Mediaeval Warm Period).

Note also, high values between 7.9 and 7.5, 5.9 and 5.0, 3.5 and 3.0 kyBP; and 600-150 years BP (Little Ice Age).

Hannibal crossed the Alps in 218 BC.

GLACIAL ADVANCE AND RETREAT IN SWITZERLAND



Great Aletsch Glacier showing Roman Warm Period, Mediaeval Warm Period and Little Ice Age

Vollweiller et al 2006, Geophys. Res. Lett. 33, GL027662

Figure 12

Global temperature tracks length-of-day – which mirrors changes in the Sun's orbital motion

ZERO PHASES IN THE SUN'S MOTION ABOUT THE SOLAR SYSTEM'S CENTRE-OF-MASS - PLOTTED AGAINST RATE-OF-CHANGE OF LENGTH-OF-DAY

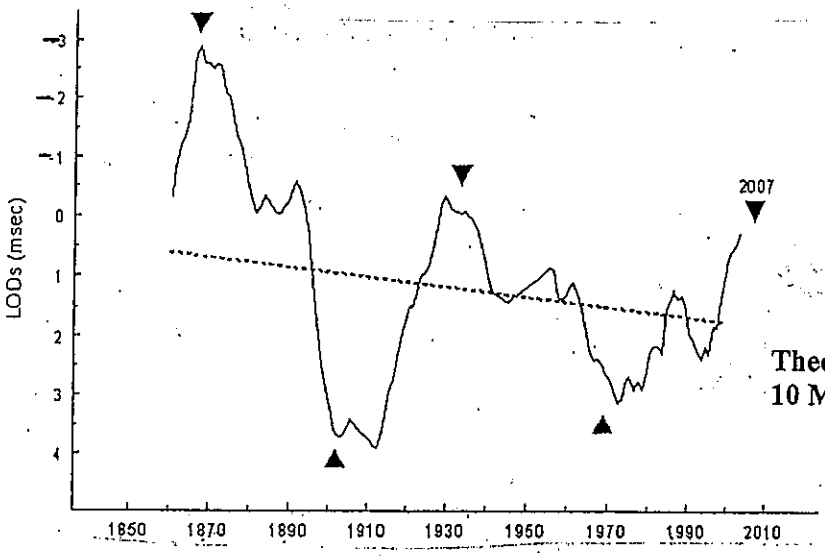
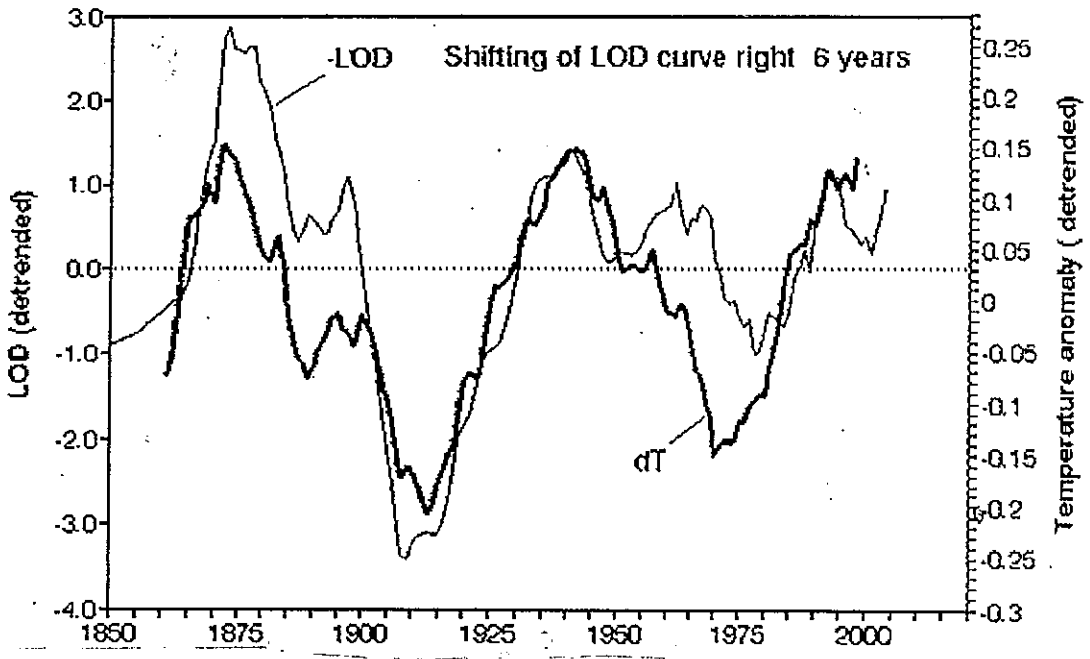


Figure 13

Theodor Landscheidt group com.
10 March 2004

Figure 14

DETRENDED GLOBAL SURFACE TEMPERATURE ANOMALY PLOTTED AGAINST DETRENDED (NEGATIVE) LENGTH OF DAY ANOMALY



http://www.fao.org/docrep/005/y2787e/y2787e03b.htm

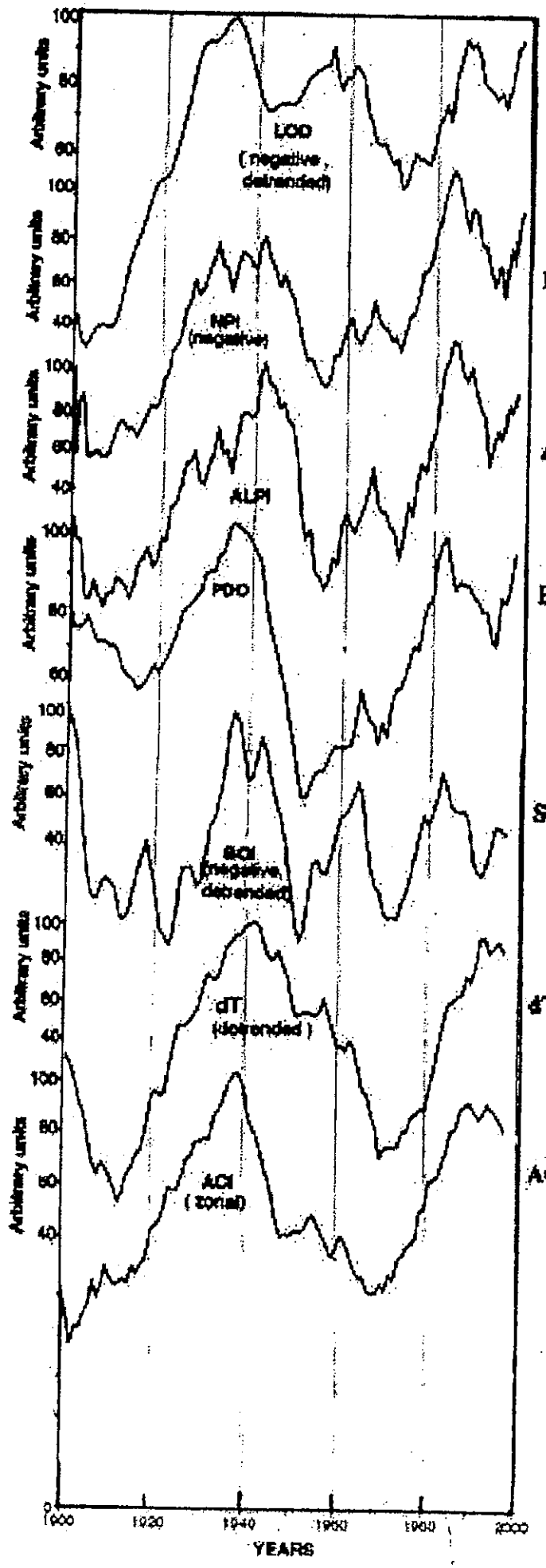
Klyashtorin, L.B. 2001, "Climate change and long-term fluctuations of commercial catches: the possibility of forecasting", FAO Fisheries Paper T410, 86 p.

Spectral analysis of the time series of the global surface air temperature anomaly (dT) and Length of Day (LOD) estimated from direct observations (110-150 years) showed a clear 55-65 year periodicity. There is a similar periodicity in catch statistics for commercial fish species during the past 50-100 years.

An LOD reversal in 2007, if it happens, could mean a temperature-trend reversal in 2013.

INDICES ILLUSTRATING CYCLIC 20TH CENTURY CLIMATE

Figure 15



LOD - Length Of Day - index of changes in the Earth Velocity Rotation.

NPI - North Pacific Index - averaged sea level atmospheric pressure over the North Pacific. (smoothed by 13-years averaging)

ALPI - Aleutan Low Pressure Index - area (in sq. miles) bordered by isobar 100.5 kPa over the North Pacific (smoothed by 11-years averaging)

PDO - Pacific Decadal Oscillation - long term change of sea surface temperature for the North Pacific (smoothed by 13-years averaging)

SOI - Southern Oscillation Index - East-West atmospheric pressure difference along the equator, measured between Darvin and Tahiti (smoothed by 13-years averaging)

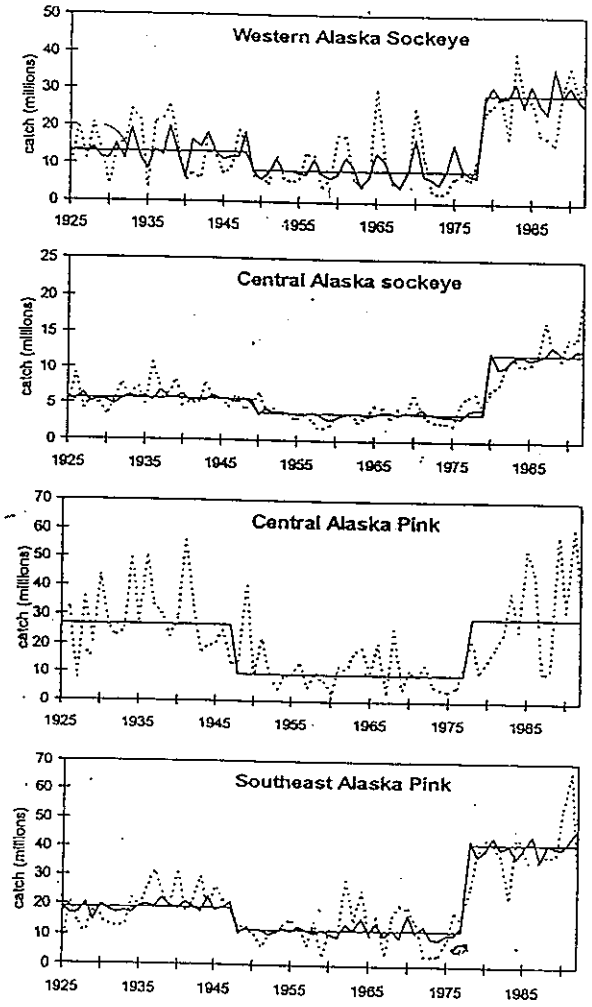
dT - Global air surface temperature anomaly, smoothed by 13-years averaging

ACI - Atmospheric Circulation Index - long term dynamics of "zonal" atmospheric circulation

Klyashtorin 2001, FAO Fisheries Technical Paper No. 410

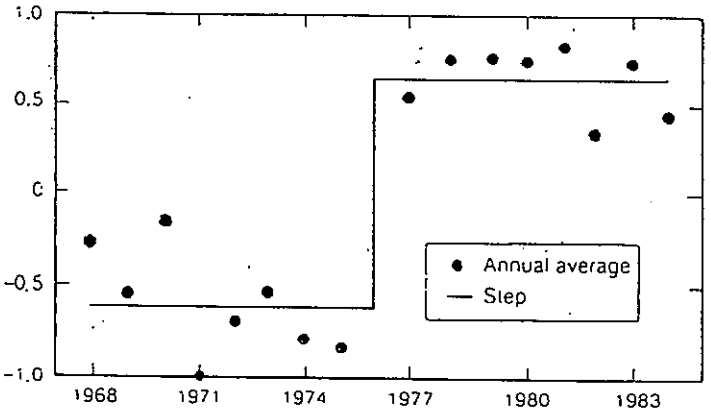
CYCLIC 20TH CENTURY BIOLOGICAL INDICATORS

VARIATION IN ALASKAN SALMON CATCHES



Francis *et al* 1998, *Fish. Oceanogr.* v 7 (after Hare & Francis, 1995)

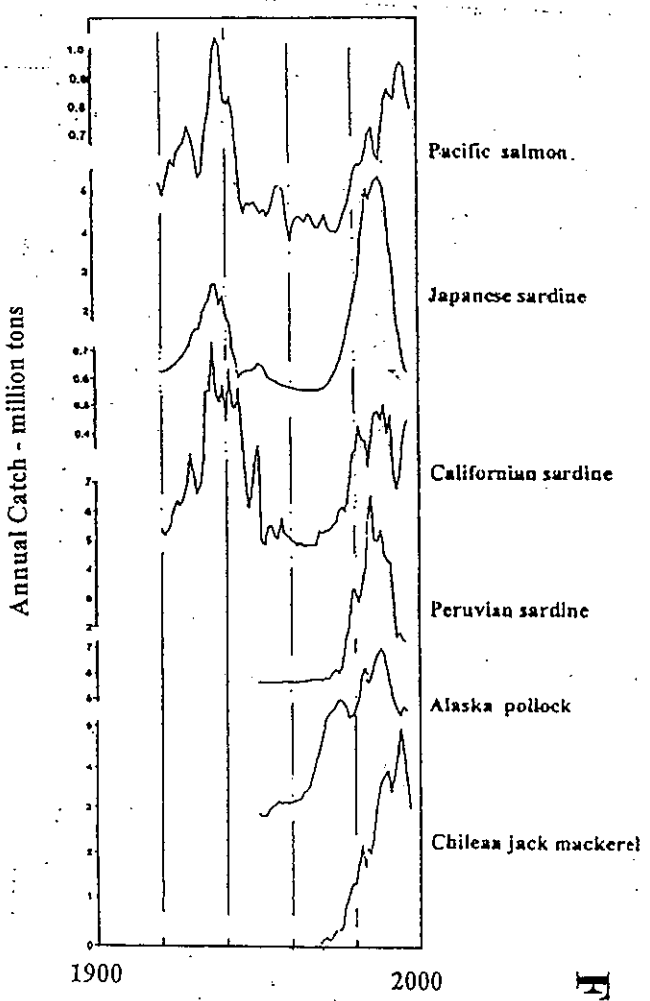
"Unmasking a Shifty Climate System"



Something sudden in the Pacific. *A composite of 40 environmental variables jumped to a new state after 1976.*

Richard A. Kerr 1992, *Science* v 255 p 1608 (after Ebbesmeyer *et al*)

FISH CATCH IN THE EASTERN PACIFIC

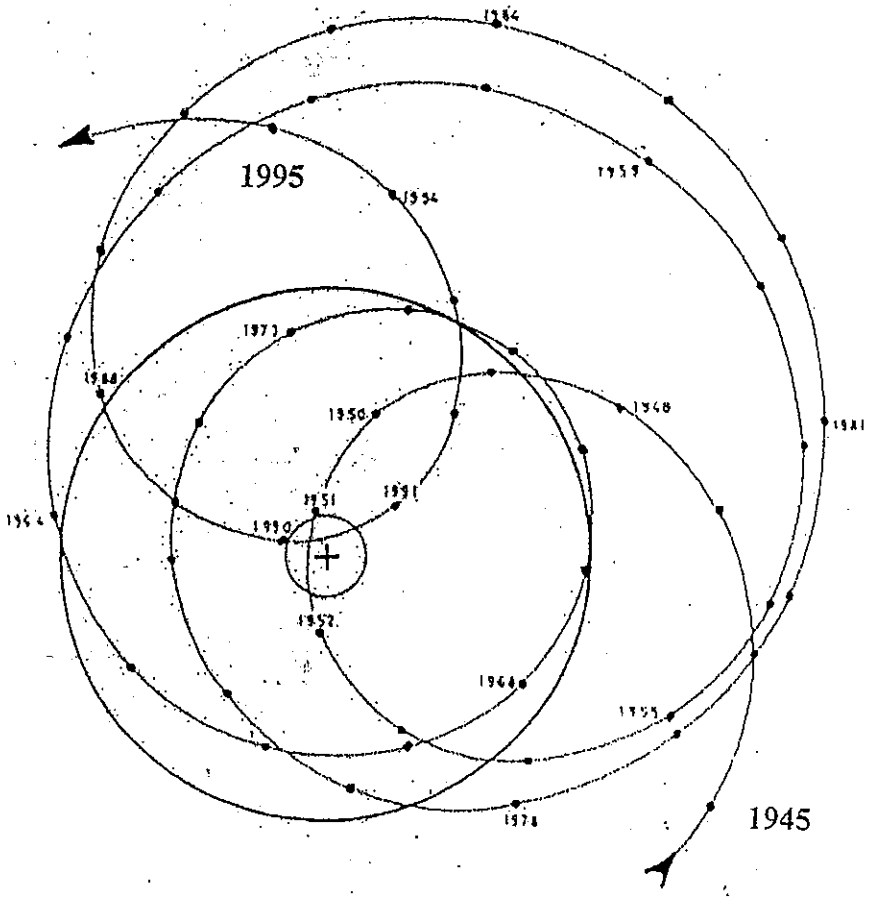


Leonid B. Klyashtorin 2001, FAO
Fisheries Technical Paper 410

Figure 16

Figure 17

IRREGULAR OSCILLATION OF THE SUN ABOUT THE CENTRE-OF-MASS OF THE SOLAR SYSTEM IN A HELIOCENTRIC PERSPECTIVE



Landscheidt, Theodor 2003, *Energy & Environment*, v 14 no 2/3, pp 327-50

http://mitosyfraudes.8k.com/images-3/Fig8L.jpg

Note circle depicting the Sun's limb, and cross depicting its centre. Dots represent relative position of the system's center-of-mass in respective years. The strong variations in the physical quantities defining the Sun's orbital motion form cycles of different length, but similar function, in solar-terrestrial relations.

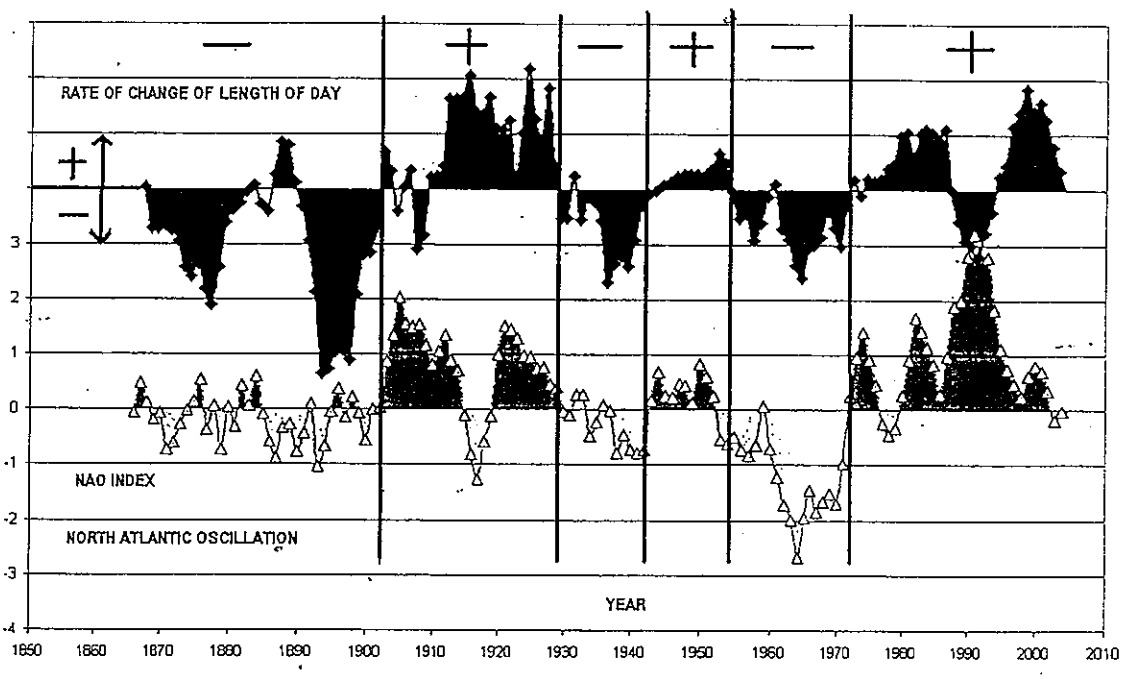
The giant outer planets (Jupiter, Saturn, Uranus, Neptune) hold most of the solar system's angular momentum. It is collective changes in their inertial forcing which drive the Sun's highly variable orbit – and hence its highly variable eruptive activity. The small inner plants (Mercury, Venus, Earth, Mars) orbit the Sun – and, along with the giants, have a collective resonant impact on solar activity.

New Australian research – and not by CSIRO

Both this Figure and the next (19) are the as-yet-unpublished work of Queensland (Astronomy) Dr Ian Wilson. He confirms it may be reproduced – conditional on proper acknowledgement.

Figure 18

LENGTH-OF-DAY (LOD) & NORTH ATLANTIC OSCILLATION (NAO) CHANGE



"The top graph shows the time rate of change of the Earth's length of day (LOD) between 1865 and 2005, derived from data that was kindly provided by Dr N. Siderenkov of the Hydrometcentre of the Russian Federation in Moscow. The plotted data points are a five year running mean of the time rate of change data. (Note: The LOD data is in arbitary units for easy comparison with the NAO Index. "Positive" means that LOD is increasing compared to its standard value of 86,400 seconds – and hence, Earth is slowing down.)
The bottom graph shows the North Atlantic Oscillation (NAO) Index, between 1864 and 2006, from: http://www.cgd.ucar.edu/cas/hurrell/Data/naodjfmindex.asc.
The plotted data points of the NAO Index are a five year running mean of the raw data.

The North Atlantic Oscillation directly affects the livelihood and wellbeing of over a billion Europeans and North Americans. For these people, its mood (or phase) determines whether or not next year's winter will be wet and mild or bitterly cold and dry. Few people realise small changes in the rate of Earth's rotation play a crucial role in determining the mood of the NAO." Ian Wilson

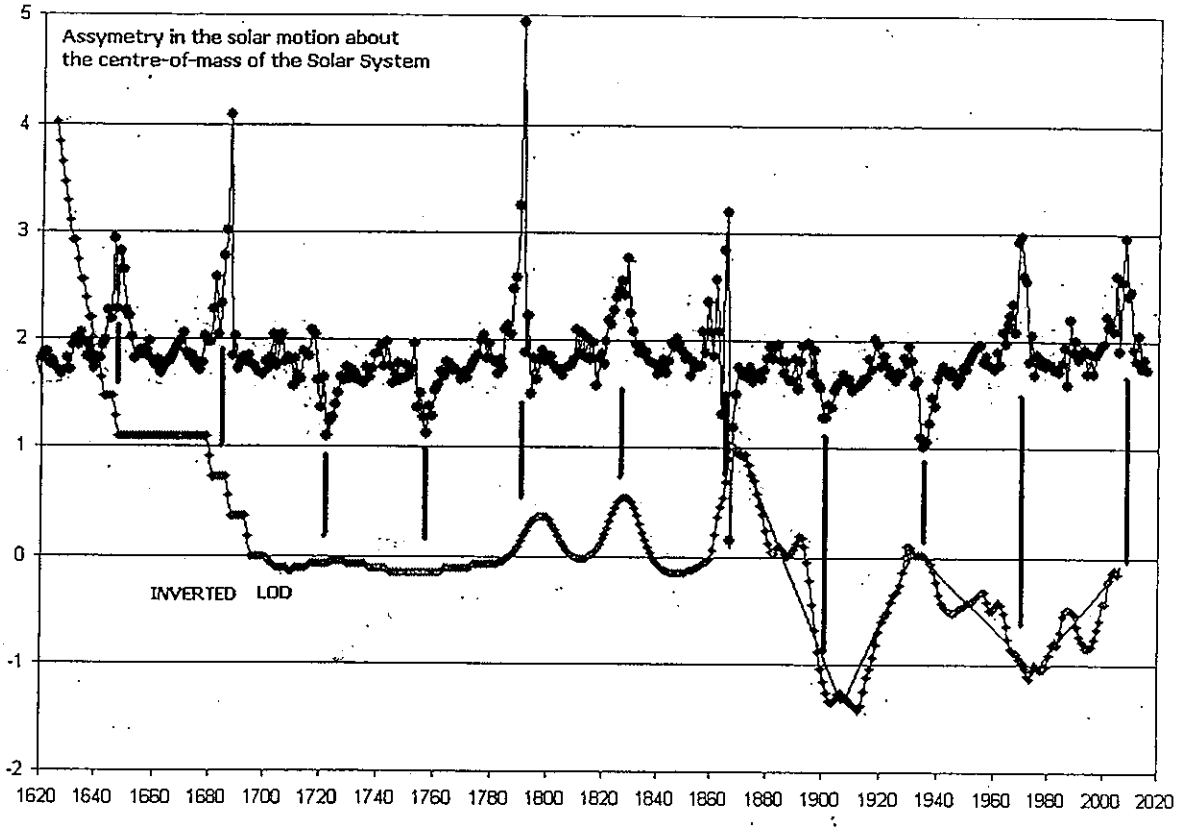
Bob Foster now talking. The paper Hu and Huang 2006, "On the significance of the relationship between the North Atlantic Oscillation in early winter and Atlantic sea surface temperature anomalies", J. Geophys. Res. 111, D12103, 13 p., explains the NAO in simple terms:
"The variability of the North Atlantic Oscillation is traditionally represented by several indices, which are usually defined in terms of the pressure gradient between two regional means or between two stations in low and high latitudes over the North Atlantic basin, or as a time series of a related orthogonal function pattern of sea level pressure or geopotential height at 500 hPa." Is that clear now?

New Australian research – and not by CSIRO

(Dr Ian Wilson confirms this graph may be copied – conditional on proper acknowledgement.)

Figure 19

EARTH'S LENGTH-OF-DAY - AND SUN'S IRREGULAR ROTARY MOTION



"This graph shows the rate of change of the Earth's length of day (LOD) between 1623 and 2005, as published at http://www.iers.org/MainDisp.csl?pid=95-103 **by the International Earth Rotation and Reference System Service (IERS). Superimposed on this plot is a graph showing the level of asymmetry in the Sun's orbital motion about the centre-of-mass (CM) of the solar system. The level of asymmetry in the solar trajectory is represented by the rate of change of the instantaneous radius of curvature of the Sun's orbit about the system's centre of mass. For comparison purposes, the LOD scale has been inverted and solar asymmetry data has been placed on an arbitrary scale.**

A close inspection of these two graphs shows that every time there is an abrupt change in the instantaneous radius of curvature of the Sun's orbit about the CM of the solar system, there is an inflection point in rate of change of the Earth's LOD."
Ian Wilson

Bob Foster now talking. The above graph (Figure 19) shows an imminent inflection point in the rate of change of curvature of the Sun's orbital motion . Landscheidt (see Figure 13) does the same. Klyashtorin (Figure 14) finds a correlation between detrended global temperature and length of day – with a six-year LOD lag. This suggests a reversal from warming to cooling at about 2013. Time will tell!

Looking ahead – variable Sun, not CO_2, drives!

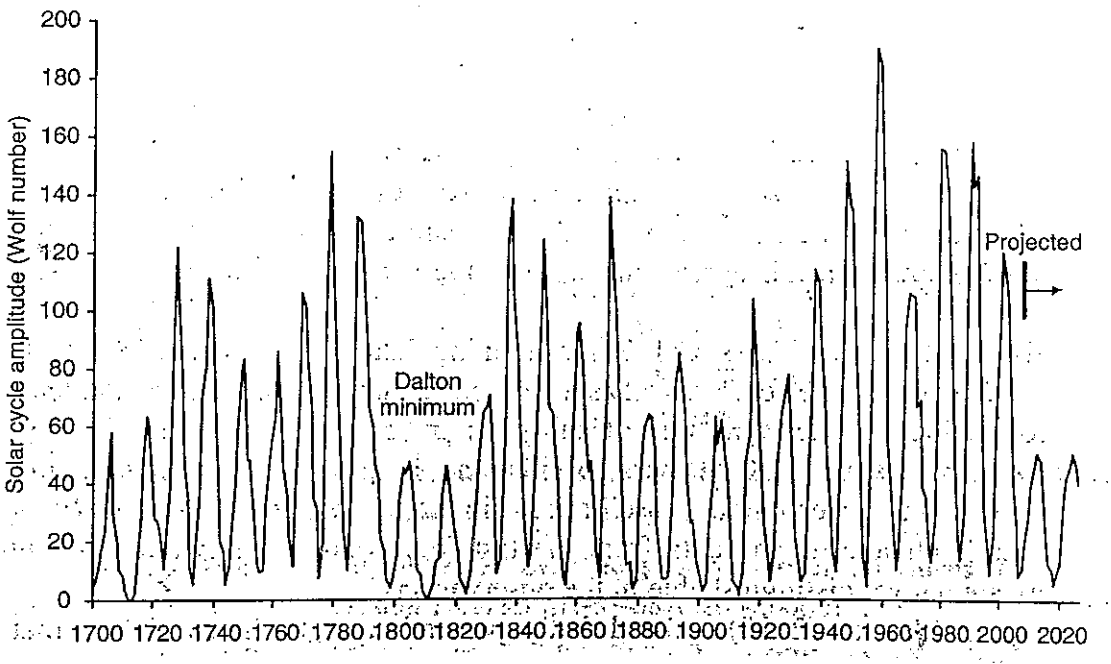
IPCC's infamous "Mann Hockeystick" (Figure 2), purports to show a relatively invariant, and gently-cooling, pre-industrial climate in the Northern Hemisphere; but Figure 12 demonstrates the contrary – a highly-variable climate, with a solar driver. During the 20th Century, there is a mismatch (Figure 5) between global warming and the use of fossil fuels; both Figures 6 and 14 show a far better correlation – with two solar-activity-related variables.

The longest available thermometer records (Figure 3), broadly supported by both proxies and historical records, make a compelling case for a warming trend (with over-printed fluctuations - see Figure 15 for an illustration) since the Maunder Minimum (1645-1715) of the Little Ice Age. This trend correlates with increasing solar activity, for which sunspot numbers (Figure 7) offer an accessible – albeit generalised - proxy. Anthropogenic CO_2 does not appear to be the primary driver of our ever-changing climate.

What of the future? Is another Little Ice Age cold period coming?

Figure 20

TREND-REVERSAL: MORE LITTLE ICE AGE COLD IMMINENT?



Past Solar Cycles with a Projection of Solar Cycles 24 and 25

Bádalyan, Obridko and Sykora's projection of a solar cycle 24 maximum of approximately 50 is shown with the solar cycle activity back to the end of the maunder Minimum. Solar cycle 25 is also expected to be weak. The rise in amplitudes prior to the Dalton Minimum mimics the rise in amplitude from the late nineteenth century to the end of the twentieth century.

David C. Archibald 2006, "Solar cycles 24 and 25 and predicted climate response", Energy & Environment, v.17 no. 1, pp. 29-35.

Looking ahead: variable Sun but mixed messages

Archibald predicts an amplitude of 50 for cycle 24 (23 has just finished); there are other views. J. Javariaih 2007, "North-south asymmetry in solar activity: predicting the amplitude of the next solar cycle", *Mon. Not. R. Astron. Soc.*, printed 31 January, is somewhat less pessimistic: "Using (this relationship) it is possible to predict the amplitude of a sunspot cycle about 9-13 years in advance. We predicted 74 +/- 10 for the amplitude of the upcoming cycle 24." NASA goes very much further in http://science.nasa.gov/headlines/y2006/21dec_cycle24.htm. David Hathaway and Robert Wilson said this at the AGU meeting in San Francisco: "...the next Solar Maximum should peak around 2010 with a sunspot number of 160 plus or minus 25. This would make it one of the strongest solar cycles in the past 50 years – which is to say, one of the strongest in recorded history." HOT! But here are two longer-term predictions:

SOLAR TORQUE FLUCTUATIONS *cf* CLIMATIC EVENTS

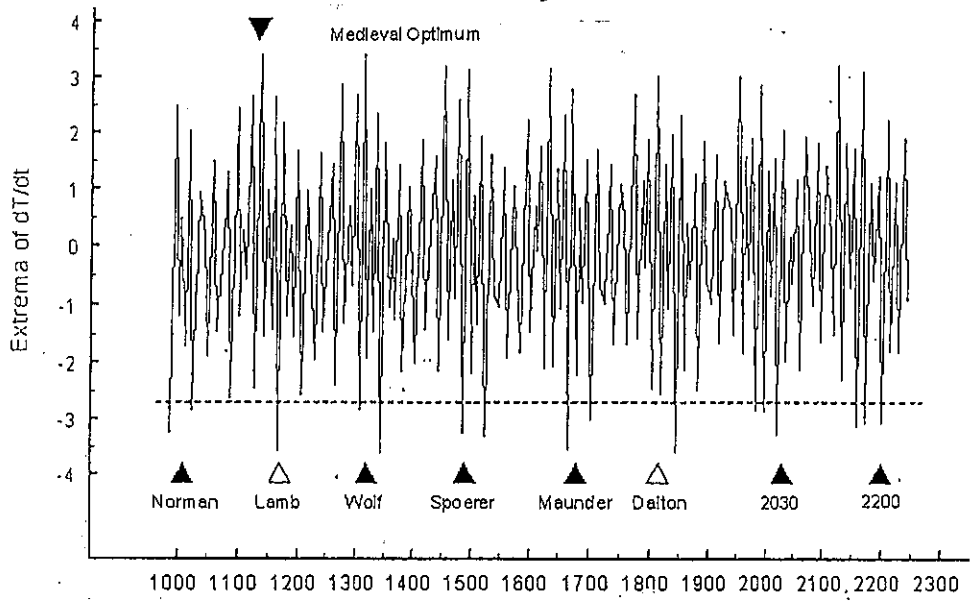


Figure 21

Theodor Landscheidt 2003, "New Little Ice Age instead of Global Warming", *Energy & Environment* v. 14 no. 2&3, pp. 327-50.
http://mitosyfraudes.8k.com/images-3/Fig11L.jpg

EXPECT COOLING, WARMING AGAIN, THEN MORE COOLING

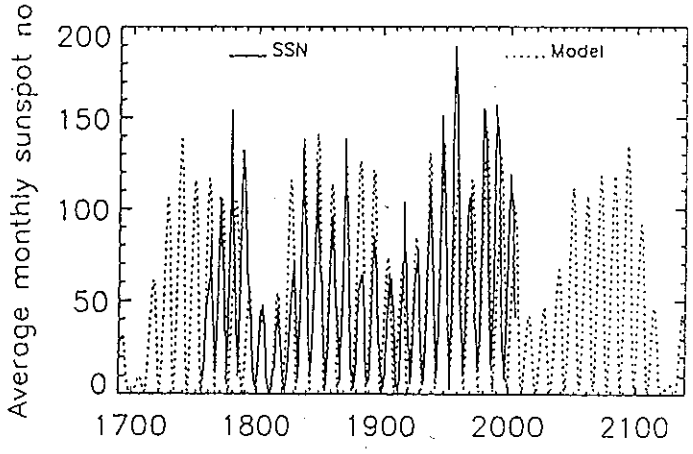


Figure 22

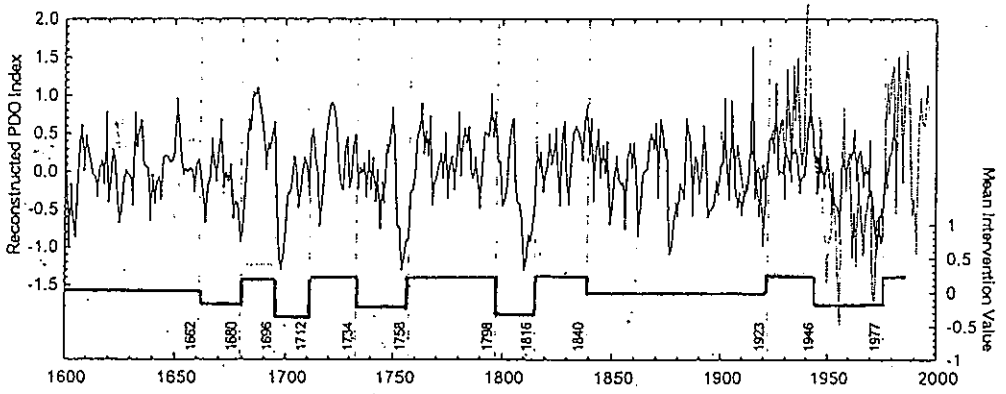
Clilverd et al 2006, "Predicting Solar Cycle 24 and beyond", *Space Weather* 4, S09005.

PDO & ENSO recognised, but what drives them?

The Great Pacific Climate Shift of 1976/7 was the most-recent reversal of the Pacific Decadal Oscillation (PDO). This reduction in the upwelling of cold/deep water in the equatorial eastern Pacific was the contra to increased upwelling from the mid 1940s (Do you remember the 1970s "Global Cooling" scare? See Attachment 6.) When de-trended to eliminate the warming trend since the Maunder Minimum, PDO dominates climate (see Figure 15) well beyond the Pacific. Overprinted on PDO is the El Niño/Southern Oscillation (ENSO). During warm PDO phases – such as that since 1977 (see Figure 16) – the world warms, because of a preponderance of El Niño (reduced upwelling) ENSO events. During the preceding cool phase, La Niña dominated.

Figure 23

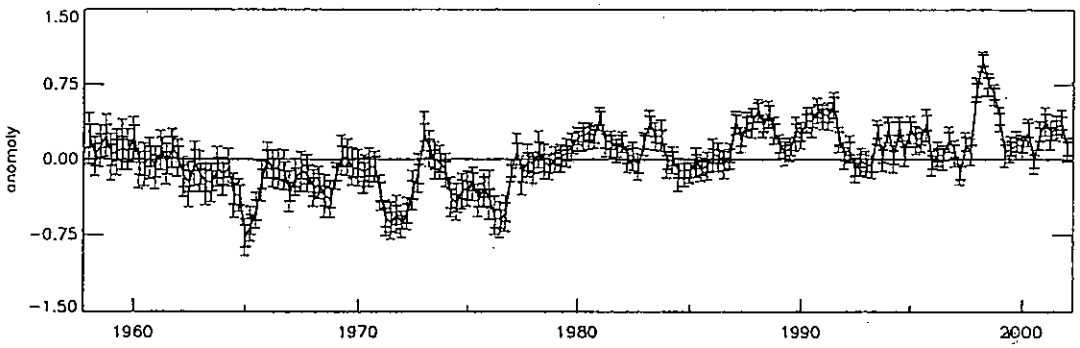
RECONSTRUCTED PACIFIC DECADAL OSCILLATION (PDO) INDEX



Gedalof & Smith 2000, *Geophysical Research Letter,* v.28 no.8, p.1516

Figure 24

RADIOSONDE GLOBAL 1958-2002 TROPOSPHERIC TEMPERATURES



Thorne *et al* 2005, *Journal of Geophysical Research* v.110, D18105

"The ENSO event of 1997/98 is the most prominent feature in the global series at 500 hPa. ... In addition there are other interseasonal to interannual timescale variations, some of which correlate with ENSO and volcanic events. The warmth in the late 1950s/early 1960s is primarily a Northern Hemisphere effect. There is some evidence for a systematic shift to a warmer regime in the mid to late 1970s ... In the tropics, the evidence for this shift is more pronounced."

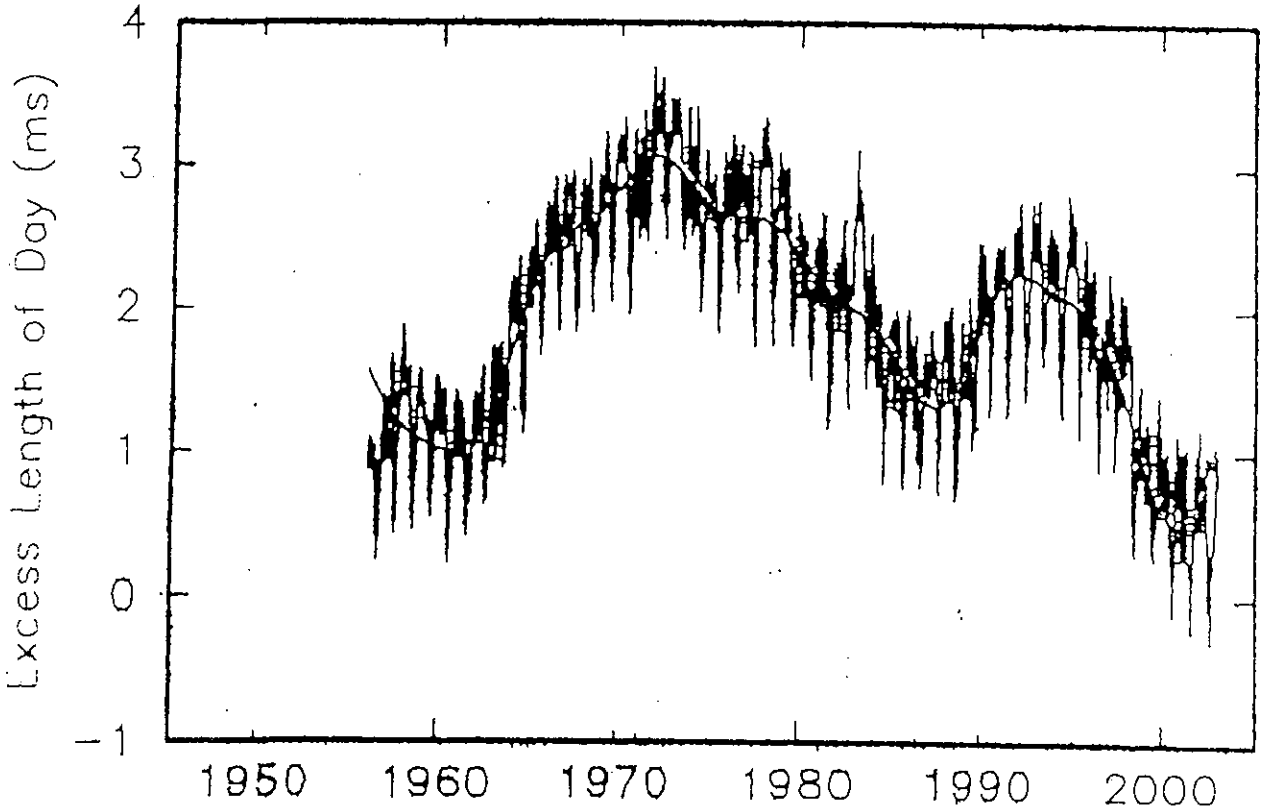
Three major volcanic eruptions during 1958-2002 were Agung (1963), El Chichón (1982, with its subsequent cooling masked by a concurrent El Niño warming), and Pinatubo (1991, with its subsequent cooling also partly masked).

PDO & ENSO exhibit an inertial driver

The 'mainstream' paper by A.V. Federov et al 2003, "How predictable is El Nino?", *Bull. American Meteorological Soc.* V.84 No.7, pp.911-9, puts it like this: "Why are various El Niño episodes so different, and so difficult to predict? The answer involves the important role played by random atmospheric disturbances in sustaining the weakly damped Southern Oscillation, whose complementary warm and cold phases are, respectively, El Niño and La Niña.". To the contrary, Theodor Landscheidt (http://www.john-day.com/sun-enso/revisit.htm) enjoyed success in predicting ENSO events several years in the advance – on the basis that their principal driver is both non-random, and external to the climate-system. (Note below, the prominent LOD and AAM signatures of the 1982 and 1997/8 El Niño events.)

Figure 25

1970s INFLECTION POINT IN LOD RECORD (TIME OF PDO REVERSAL)



1970s CHANGE IN ATMOSPHERIC ANGULAR MOMENTUM REGIME

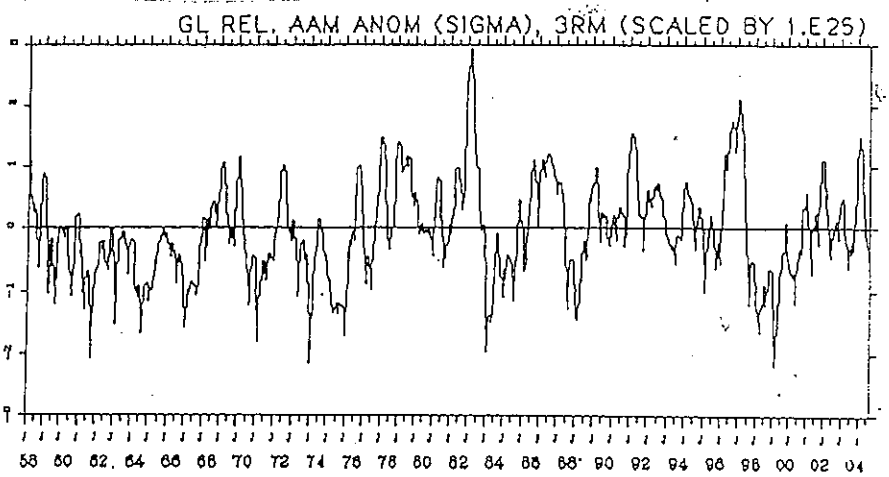


Figure 26

http://www.cdc.noaa.gov/map/images/reanalysis/aam.sig1-21.58-curr.reanal.gif

An external ENSO driver (almost) confirmed

Mainstream science failed to predict the giant 1997/8 El Niño – called "the climate event of the century". Theodor Landscheidt did (pers. com.): "I predicted the investigated El Niño in 1995, years before the event ... I also correctly forecast the following El Nino in 2002 three years ahead of the event. ... It is a sad fact that ideology is in our age stronger in science than facts. ... It is another sad fact that peer reviewed journals like *Nature* do not accept papers that present new ways of successful long range forecasts." Below (Fig. 27), the 97/8 El Niño stands out like a dinosaur in a swamp. But the remarkable feature of this event was not its power *per se*, but its abrupt demise (Fig. 28). It grew throughout 1997, and held its extreme level for the first third of 1998. Then, in the last two weeks of May '98, equatorial sea surface temperature plunged by a remarkable 6 ^{0}C. People again? No; this was a major inertial event – the resumption of (cold) upwelling in the eastern Pacific. On 12 May 1998, ALL planets were on the same side of the Sun – with Earth last (Kenneth W. Dickman 2006, "Short and longer-term planetary effects on Sun and Earth", *Energy & Environment*, v.17 no.1, pp.63-73 - see Fig.3). Here is a likely driver.

GLOBAL LOWER TROPOSPHERE MSU TEMPERATURES (IN ^{0}C)

(Departures derived from satellite-borne microwave sounding units)

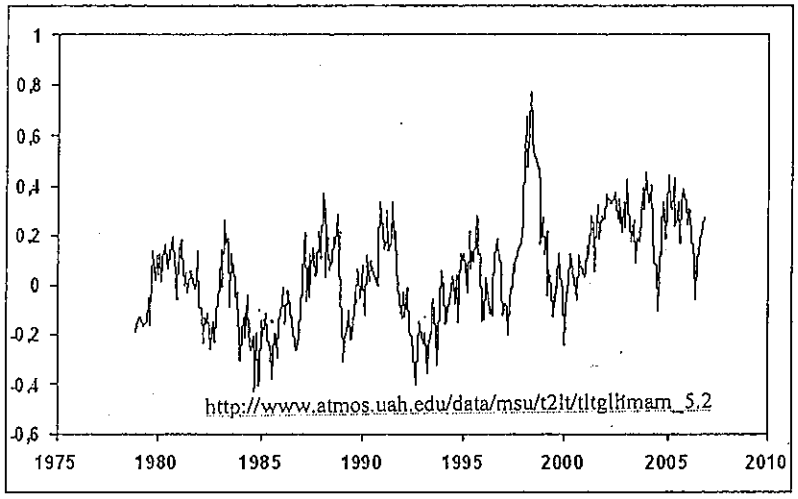


Figure 27

SEA SURFACE TEMPERATURE ON THE EQUATOR AT 125^0 W LONGITUDE

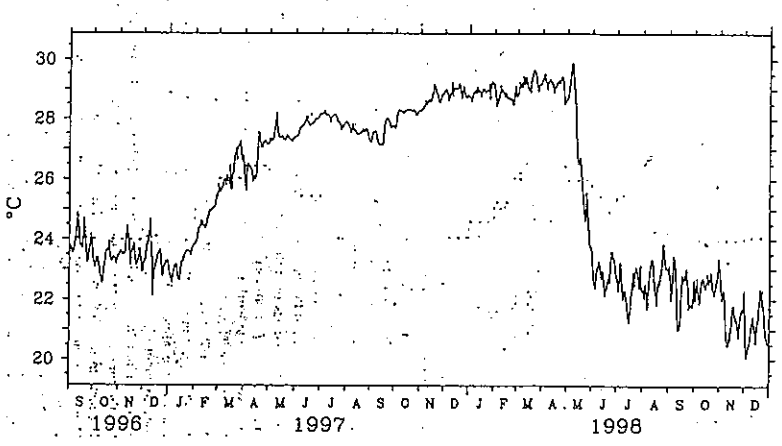


Figure 28

Michael J. McPhaden 2002, "El Niño, La Niña, and the climate swings of 1997-98: A review" pp.25-30, in "La Niña and its impacts: Facts and speculations" edited by Michael H. Glantz, UN University Press 271 p.

Variable cloudiness; a giant awakens - at last

Mainstream science long ignored evaporation rates (where Prof. Graham Farquhar of ANU has been a leader). Despite global warming, rates fell for decades – global dimming was indicated. Dimming/brightening is news at last; and a review - Gerald Stanhill 2007, "A perspective on global warming, dimming, and brightening", *Eos* V.88 No.5, p.58 – notes IPCC's uninterest:

An analysis of many reports of global dimming over the land surfaces of the Earth yielded a total reduction of 20 W m^2 over the 1958-1992 period. This negative shortwave forcing is far greater than the 2.4 W m^2 in the positive longwave radiative forcing estimated to have occurred since the industrial era as a result of fossil and biofuel combustion. This longwave heating caused by increased concentrations of the so called greenhouse gases is what provides the consensus explanation of global warming

And:

The omission of references to changes in (solar radiation at the Earth's surface) *in the IPCC assessments brings into question the confidence that can be placed in a top-down, 'consensus' system that ignores such a major and significant element of climate change. A separate and more fundamental question is whether scientific understanding of climate change is now sufficient to produce a useful consensus view.*

QUANTITY OF SOLAR RADIATION RECEIVED AT EARTH'S SURFACE

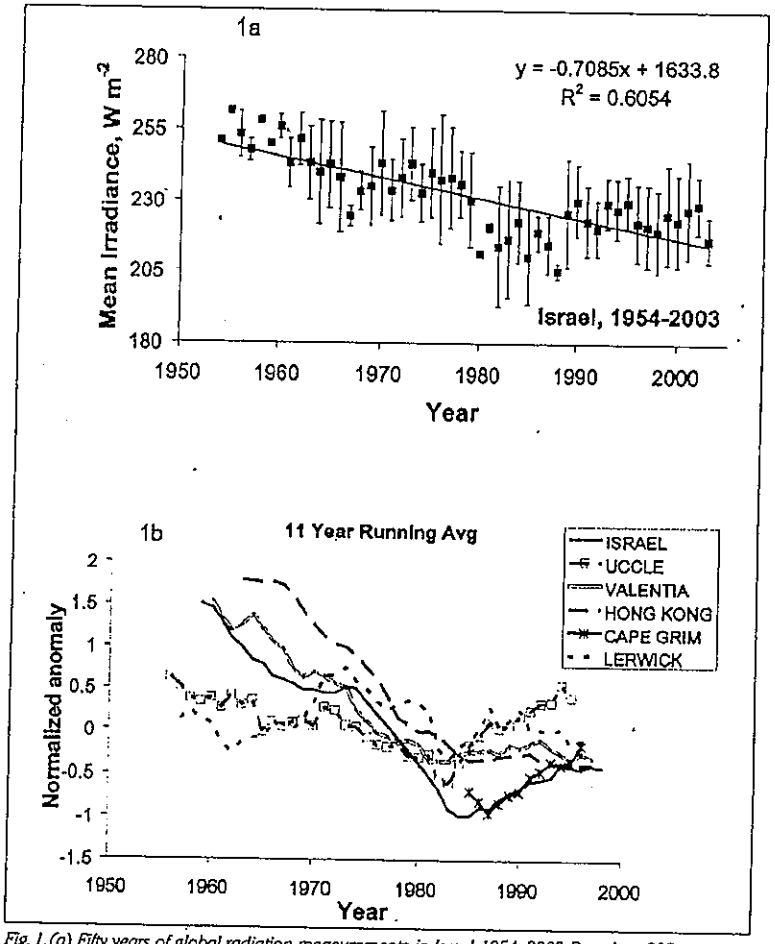


Figure 29

Fig. 1. (a) Fifty years of global radiation measurements in Israel, 1954–2003. Based on 233 mean annual values of E_s measured with calibrated thermopile pyranometers at 20 sites, the spatial variation around the mean annual values is indicated by vertical bars representing ±1 standard deviation, W m^2. (b) Eleven-year running mean of normalized anomalies of annual means of E_s measured with calibrated thermopile pyranometers at Israel, 1954–2003; Uccle, Belgium, 1951–2000; Valentia, Ireland, 1955–2002; Hong Kong, China, 1958–2000; Cape Grim, Australia, 1980–2001; and Lerwick, United Kingdom, 1952–2002. Data courtesy of national meteorological services.

May 1,000 flowers bloom – but no monoculture!

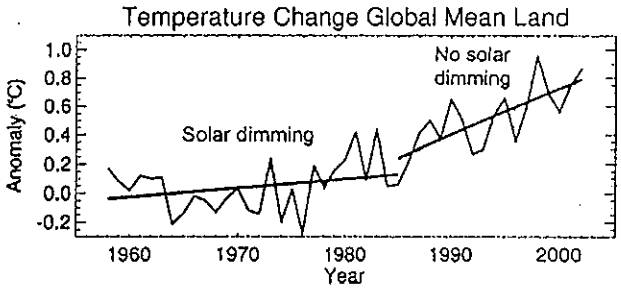
Scientists revere consensus. Australia is no exception, and our Academy of Science, and of Technological Sciences and Engineering, are no different. (ATSE has promoted a people-driven climate for two decades.) But the advancement of scientific understanding needs contention, not consensus. Therefore, a paper putting views opposite to those of Stanhill (above) is welcome: **Wild, Ohmura & Makowski 2007, "Impact of global dimming and brightening on global warming", *Geophys. Res. Lett.*, v.34 L04702, 4p.** These authors conclude:
Our analysis showed that the decadal changes of land mean surface temperature ... are in line with the proposed transition in surface solar radiation from dimming to brightening during the 1980s and with the increasing greenhouse effect. This suggests that solar dimming , possibly favoured by increasing air pollution, was effective in masking greenhouse warming up to the 1980s, but not thereafter when the dimming disappeared and atmospheres started to clear up. The temperature response from the mid-1980s may therefore be a more genuine reflection of the greenhouse effect than during the decades before, which were subject to solar dimming.

I think they are wrong on two counts. In Fig. 30, I contrast Wild et al's Fig.1 with my redrawing in line with reduced upwelling in the Pacific at 1976/7 – this temperature-inflection-point marks an externally-driven inertial event. In Fig 31 over the page, it can be seen that cooling-pollution to the mid-80s as a mask for warming, and its subsequent clean-up as unmasking it, is not in accordance with observations. (Angell data was also used in SAR to assert a discernible human influence on climate.) Anthropogenic CO_2 has an atmospheric mean residence time of decades, and is well mixed; but for aerosol pollution it is only days, and most stays in its own hemisphere. About 90% of these "cooling" aerosols were emitted in the Northern Hemisphere – but the cooler hemisphere in the 60s/70s was the Southern. Likewise, although Europe and North America have cleaned up their emissions since, a vast increase in coal-use in China/India has negated that. There are still far more "coolers" north of the equator. Does pollution <u>really</u> cool?

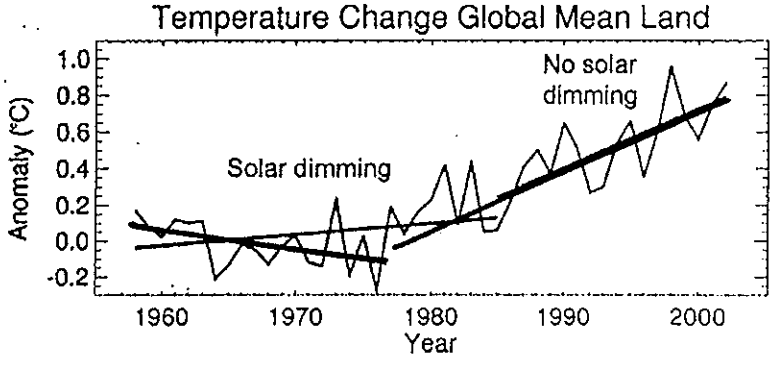
Figure 30

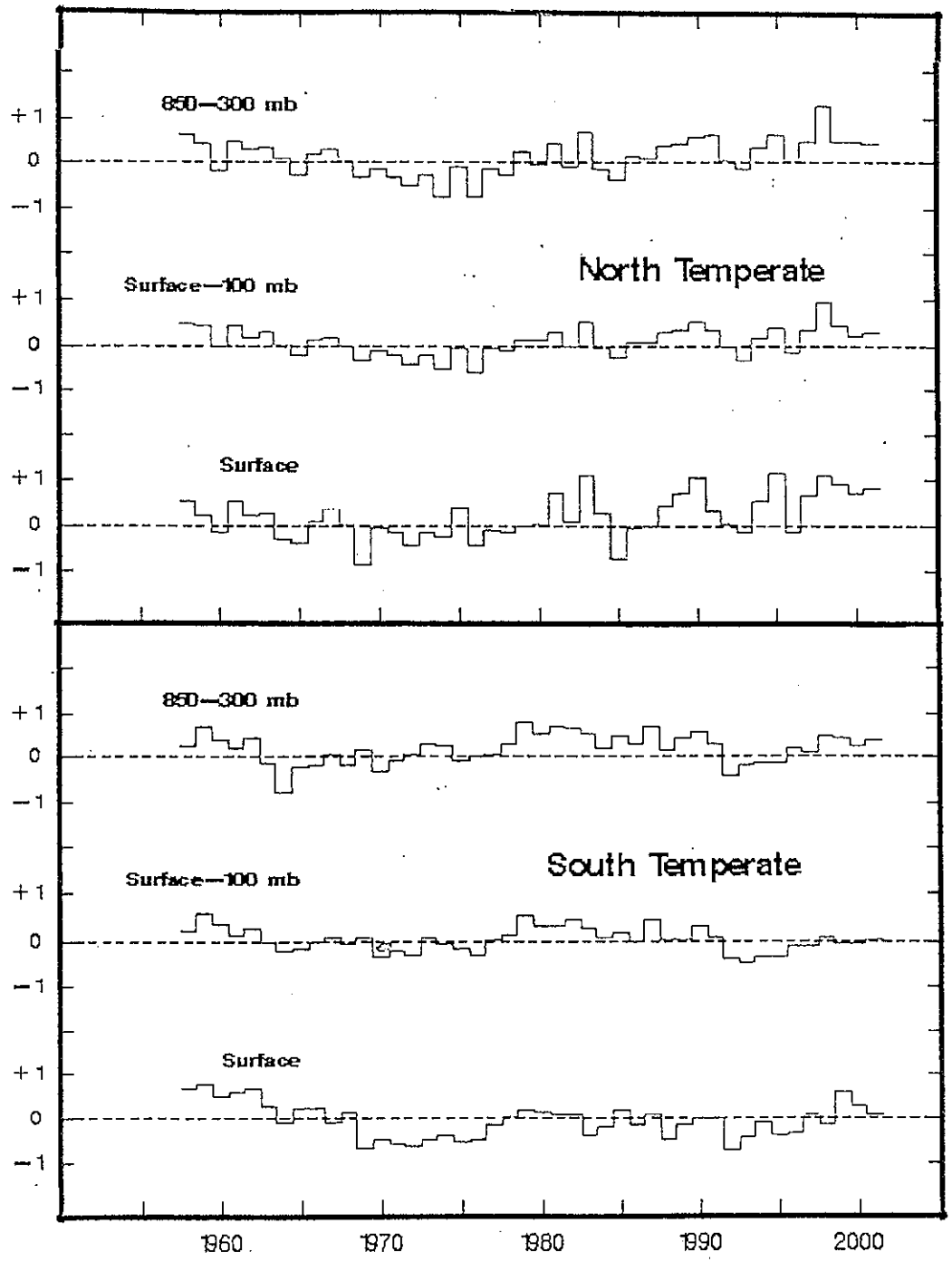
IS THE INFLECTION POINT *REALLY* IN THE MID '80s – OR THE MID '70s?

Figure 1. Temperature change over global land surfaces from 1958 to 2002 with respect to 1960. While the temperature rise during the period of solar dimming from the 1960s to the 1980s is moderate, temperature rise is more rapid in the last two decades where dimming was no more present.

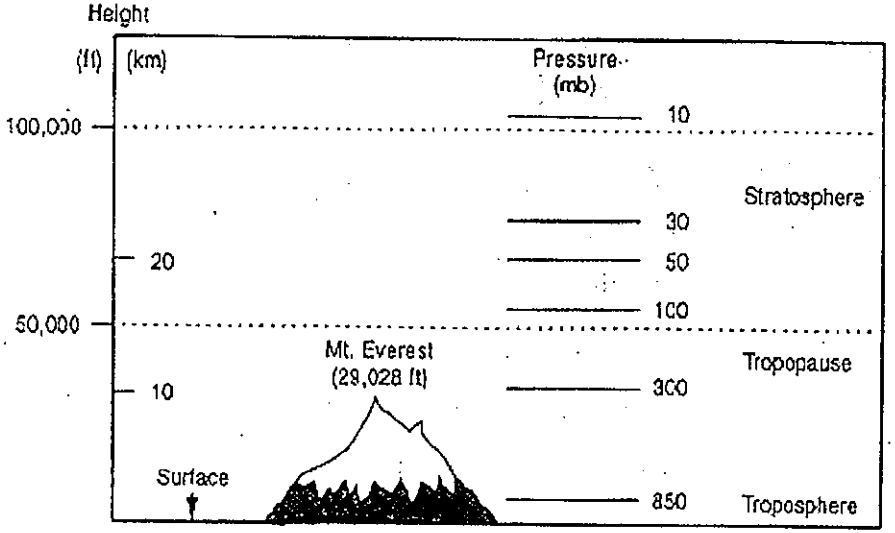


PDO-based revision





BALLOON-BORNE THERMOMETER RECORD
1958-2001 ANGELL DATA
ANNUAL TEMPERATURE DEVIATIONS, ^{0}C



http://cdiac.esd.ornl.gov/trends/temp/angell/angell.html

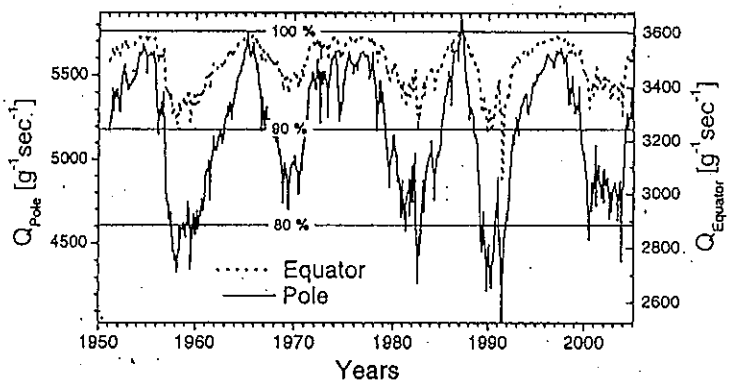
Figure 31

Atmospheric ionisation by galactic cosmic rays

Usoskin and Kovaltsov (2006) find that by taking into account both the amplitude of the 11–year sunspot cycle, and (slower) variations in geomagnetic activity, they can replicate the observed incidence and distribution of galactic cosmic rays penetrating Earth's atmosphere. Cosmic ray induced ionisation of the atmosphere was proposed by Ney in 1959; and this new model "allows evaluation of the atmospheric effect of cosmic rays, on different timescales and under different solar/heliospheric conditions." Fig. 30 shows the variation across the solar cycle, and between equator and pole; and Fig. 31 shows the long-term trend since the Maunder Minimum.

Figure 32

CLOUD-PROMOTING COSMIC RAY INDUCED IONISATION (CRII)



Time profiles of the monthly CRII (ion pairs per gram per second) since 1951 at the atmospheric depth $x = 700$ g/cm^2 (about 3 km altitude). Solid curve (left axis) corresponds to the polar regions, and dotted curve (right axis) corresponds to the equator. Thin horizontal lines denote the percentage with respect to the values for May 1965 (100%).

DECLINING CRII TREND SINCE MAUNDER MINIMUM 'QUIET SUN'

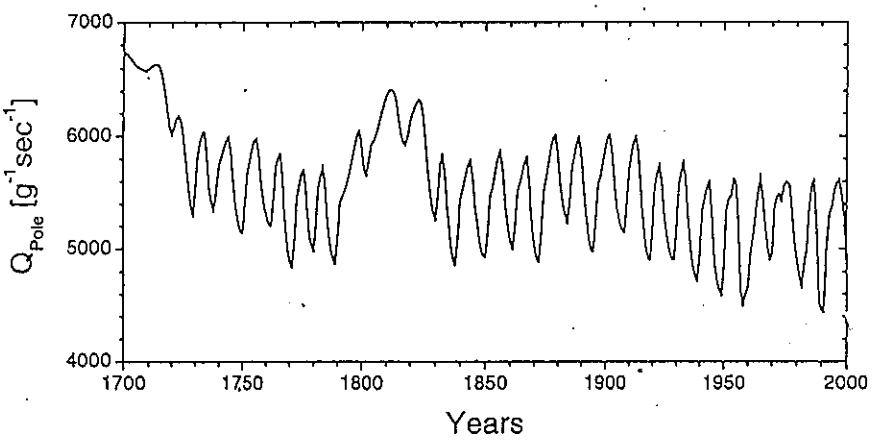


Figure 33

Time profile of the yearly CRII (ion pairs per gram per second), computed after 1700 AD using the cosmic ray flux reconstruction [*Usoskin et al.*, 2002]. The curve corresponds to the CRII at the atmospheric depth $x = 700$ g/cm^2 (about 3 km altitude) in the polar region.

Ilya Usoskin and Gennady Kovaltsov 2006, "Cosmic ray induced ionisation in the atmosphere: Full modelling and practical applications", *J. Geophys. Res.*, v.111, D21206, 9p.

Galactic cosmic rays – Svensmark builds his case

In Attachment 5, under "What should happen now?", I quote from Svensmark's 12/2006 paper "The Antarctic climate anomaly and galactic cosmic rays". Now, here is the abstract:

It has been proposed that galactic cosmic rays may influence the Earth's climate by affecting cloud formation. If changes in cloudiness play a part in climate change, their effect changes sign in Antarctica. Satellite data from the Earth Radiation Budget Experiment are here used to calculate the changes in surface temperatures at all latitudes, due to small percentage changes in cloudiness. The results match the observed contrasts in temperature changes, globally and in Antarctica. Evidently clouds do not just respond passively to climate changes but take an active part in the forcing, in accordance with changes in the solar magnetic field that vary the cosmic-ray flux.

Fig. 34 shows counter-cyclicity in Antarctic temperatures cf. rest of the world (ROW). Clearly, variation in atmospheric CO_2 concentration didn't do that. Svensmark sees cloudiness as the driver – and the reverse impact in Antarctica occurs because the ice-sheet on this continent has such a high albedo (reflectance) that it cools better than clouds. Observation/correlation-based science here defies the people-driven-climate consensus view!

Figure 34

ANTARCTIC WARMING/COOLING IS COUNTER-CYCLIC TO REST OF WORLD

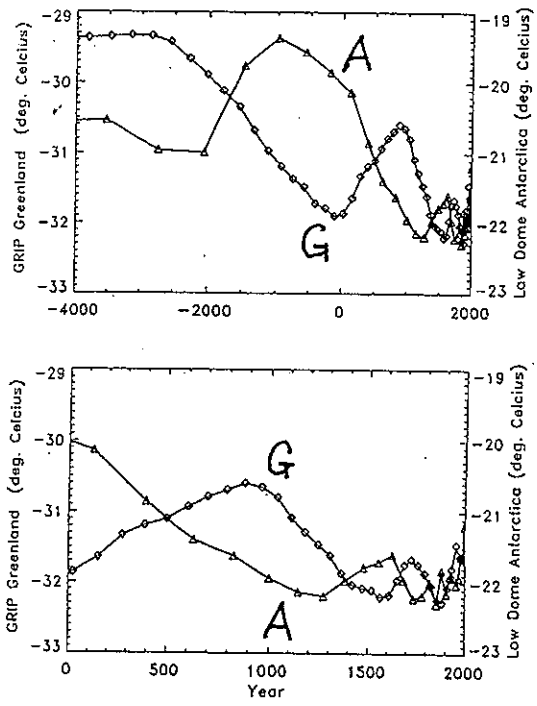


FIG. 1: Ice temperatures from the GRIP site in Greenland (73°N, 38°W)(red) and Law Dome in Antarctica (67°N, 112°E)(blue) using borehole thermometry data from Dahl-Jensen et al.[13, 14]. The Antarctic climate anomaly is particularly conspicuous during the cold period of the first millennium BC and the warm Viking Age c. 1000 AD. The apparent increase in frequency of the oscillations is not real but is due to a smoothing of the older temperature records by thermal conduction in the ice.

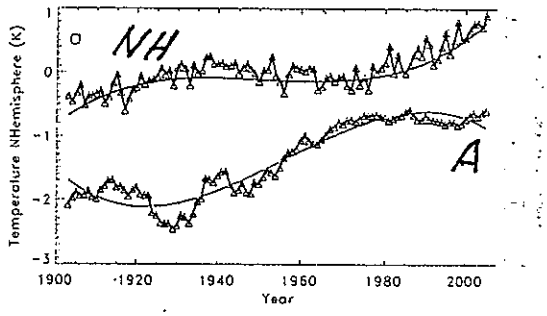


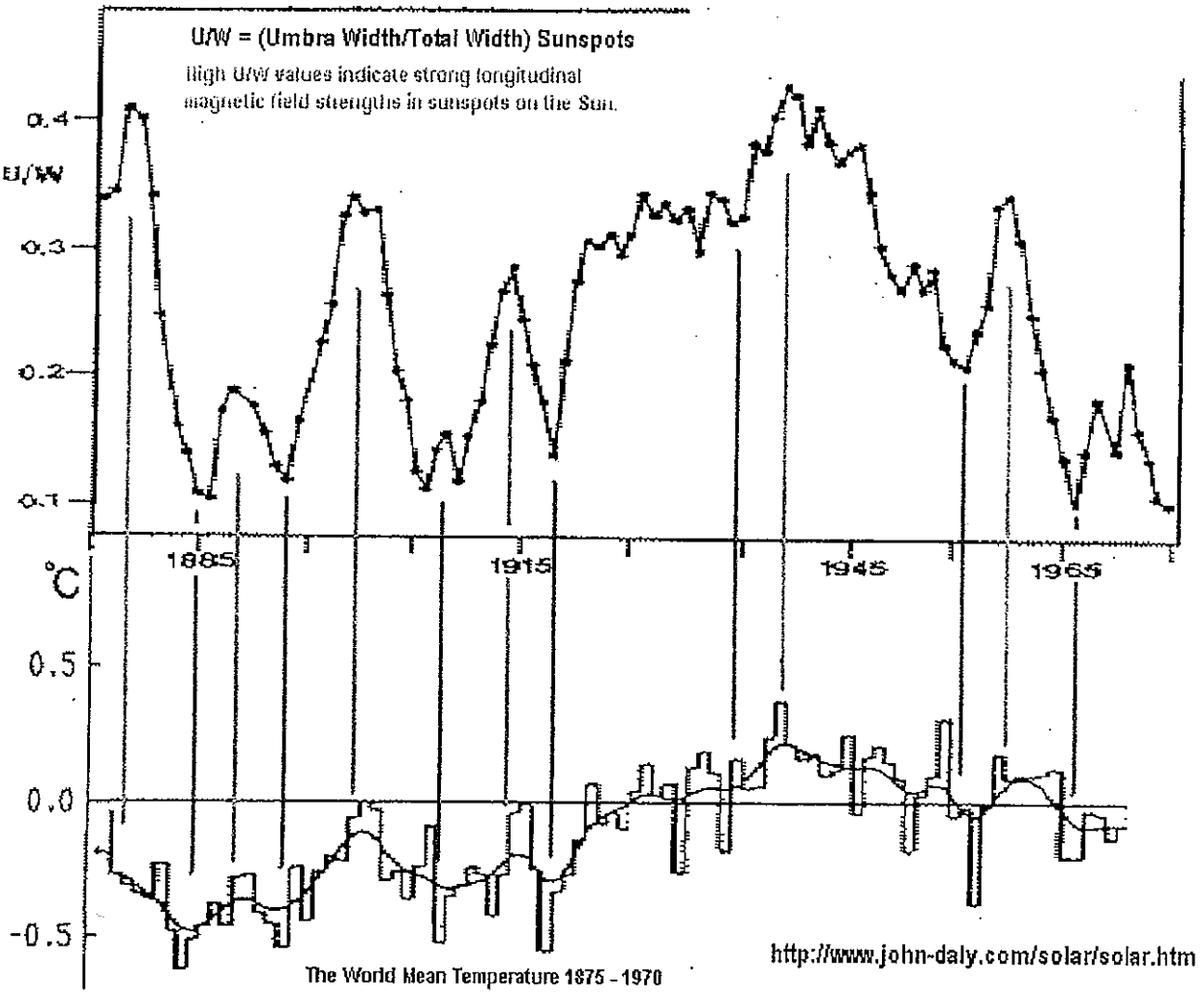
FIG. 4: a: The Antarctic climate anomaly during the past 100 years is apparent in this comparison of the annual surface temperature anomalies for the northern hemisphere and Antarctica (64S-90S), from the NASA-GISS compilations. The Antarctic data has been averaged over 12 years to minimize the temperature fluctuations. The blue and red line are fourth order polynomial fit to the northern hemisphere data and the Antarctica (64S-90S) data, respectively. If the two curves were not offset by 1 °C, for clarity, the polynomial trendlines would cross and re-cross around 1910, 1955 and 1995, in the same manner as the millennial-scale curves of the Antarctic climate anomaly in Fig. 1.

Extra-terrestrial drivers 1:– known unknowns

The 1997 book by Douglas V. Hoyt & Kenneth H. Schatten, "The role of the Sun in climate change" (OUP, 279p.),. looks at sunspots in detail. It says (p.188-91) of relative umbral width:
In (1979) ... Hoyt related sunspot structural changes to solar-irradiance changes by deducing that if convective velocities increase, the turbulent pressure of the photosphere surrounding the sunspot will increase. Increased inward pressure forces the penumbra to become smaller, while the umbra, being isolated from the surrounding photosphere, remains virtually unaffected. Thus the U/P ratio will increase because P decreases. Higher convective velocities would be associated with both a brighter sun and with higher U/P values.
Another plausible, yet unproven, conjecture concerning the connection between sunspot structure, sunspot decay rates, and solar cycle length is that when individual sunspots decay rapidly, then all sunspots collectively are decaying rapidly. ... To summarize, four solar indices with parallel behaviours are solar-cycle lengths, sunspot structure (U/P), sunspot decay rates, and fraction of penumbral spots.
Astronomer Ian Wilson (Queensland) sent me Fig. 35; from: A. Antalová 1991, "The relation of the sunspot magnetic field and penumbra-umbra radius ratio", *Bull. Astron. Inst Czechosl.* v.42 pp.316-20. This shows a striking correlation. Might IPCC care to update it?

1875-1970 SURFACE TEMPERATURE vs SUNSPOT CONFIGURATION

Figure 35



Extra-terrestrial drivers 2:– unknown unknowns

The solar fabric is far less coherent than that of our lithosphere. For instance, the Sun's rotation rate slows – ie. its length-of-day increases – from equator to poles. Hence, a point on its equator laps a polar point in just over 100 days. Clearly, resonance could be a bigger factor on a febrile Sun than a stony Earth. What this means for the Sun-Earth connection, has escaped mainstream science. It is different in Queensland. Kenneth W. Dickman 2007, "Short and longer-term planetary effects on Sun and Earth", *Energy & Environment*, v.17 no.1, pp.63-73, says:
I challenge current theories about the Sun; and offer a reason why it is affected by planetary alignments. Mercury is crucial. It is by far the closest planet, with an orbital period of 88 days (next-in-line Venus has a period of 225 days). Furthermore it has a notably elliptical orbit ... Mercury's orbital eccentricity is 0.206 (cf. 0.007 for its stay-at-home neighbour, Venus), and its closest approach to the Sun is when at an azimuth of 75^0 ... Mercury's frequent close approach provides the starting point for an electro-magnetic resonance in the Sun, which is also evident 43 days later when the planet has moved by 180^0 – to the opposing resonant position at 225^0.
And:
It appears that there are four resonant positions 90^0 apart: and each is visited in turn by Mercury [at] *average 22-day intervals. Clearly the Sun is in a permanent state of resonance – and its ringing is dramatically enhanced as additional planets pass through one of those four resonant alignments.* (See Fig 36 below; and compare it with Fig. 28.)

Surely, it is high time for IPCC to consider a broader Sun-Earth connection than little-varying solar irradiance. I offer another potential connection on the next page.

Figure 36
SOLAR RESONANCE – EMINENTLY PLAUSIBLE DRIVER OF EARTHLY AFFAIRS

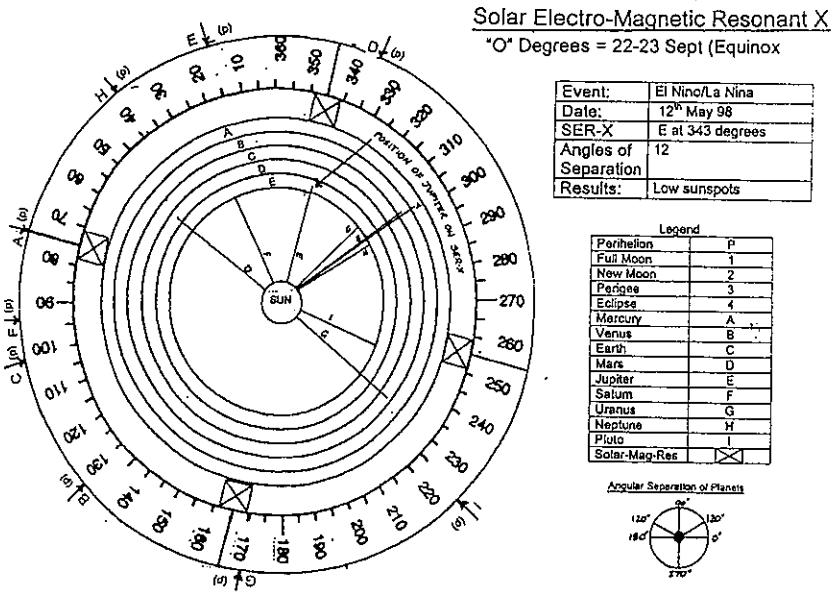


Figure 3: Abrupt El Niño/La Niña reversal, 12 May 1998. All planets were on the same side of the Sun, with Earth last in line; and there was a 72° angular separation between Earth and Neptune/Venus/Mercury. Jupiter was on SER-X at 345°.

Another unknown unknown – solar magnetics

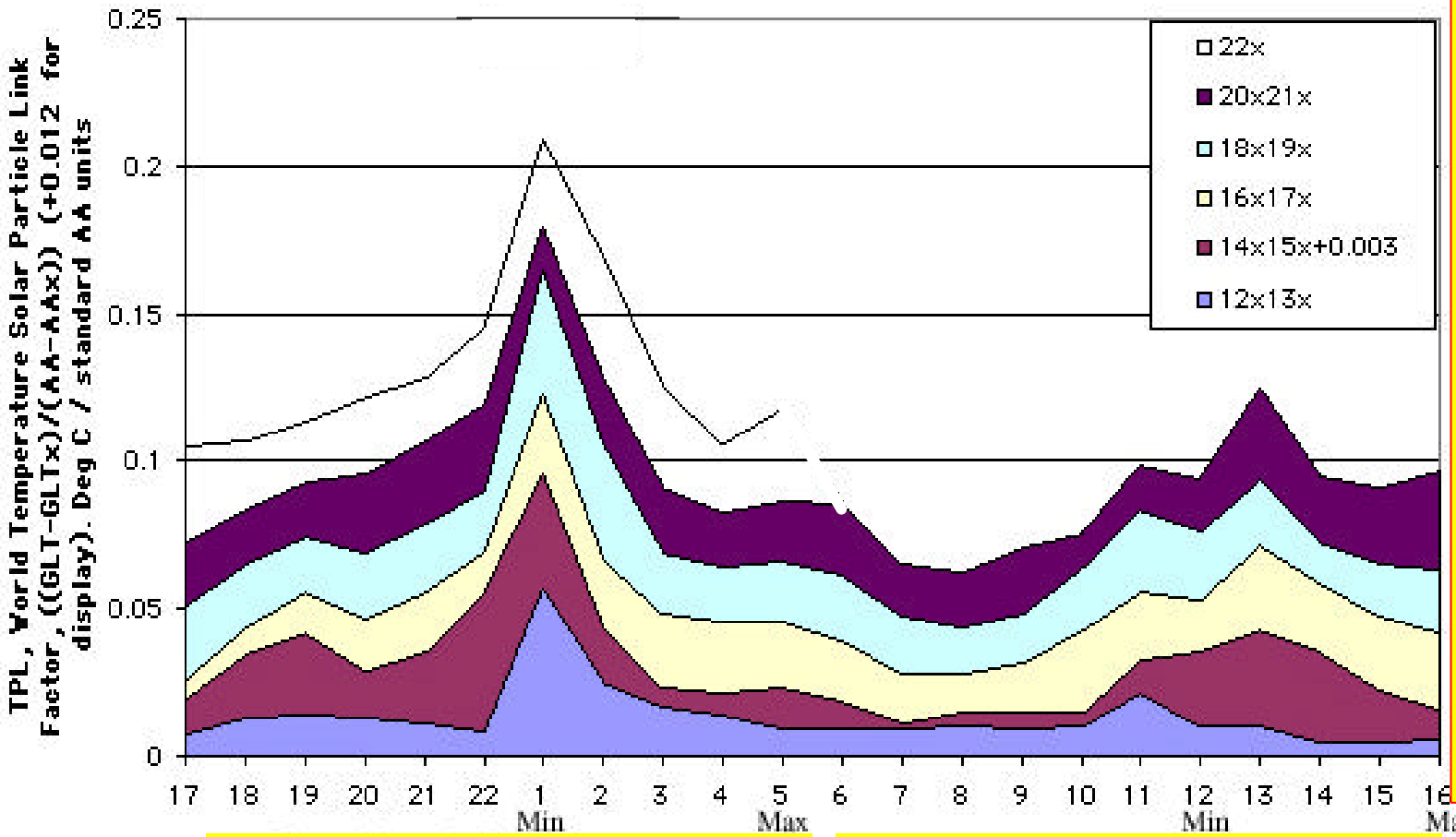
If there were but a single 'sleeping giant' in climatology – and there probably isn't – a good candidate would be variation in the (solar-driven) interplanetary magnetic field. Earth's field reverses on an irregular millennial scale – but generally, solar polarity reverses just after the peak of each ca. 11-year (Schwabe) sunspot cycle. (Counting forward from the mid 1700s, we are presently at the very end of sunspot cycle 23. Sunspots from cycle 24 should predominate from some time during the course of this year.) The period of the solar magnetic (Hale) cycle is ca. 21/22 years.

William J.R. Alexander 2005, "Linkages between solar activity and climatic responses", *Energy & Environment* v.16 no. 2 pp. 239-53, says:
Statistically significant 21-year periodicity is present concurrently in South African annual rainfall, river flow, flood peak maxima, groundwater levels, lake levels and the Southern Oscillation Index.. This is directly related to the double sunspot cycle. … The two sunspot cycles that comprise the double sunspot cycle … have fundamentally different effects on the hydro-meteorological responses.
There are somewhat similar indications in stream-flow variability for the giant Paraná River in South America; but I have not heard of similar findings – nor indeed, studies – in Australia.

Figure 37 is from Piers Corbyn of Weather Action. His company provides longer-term weather forecasts in commercial competition with the UK Met Office using correlations with the variable Sun-Earth magnetic linkage – not numerical models of a self-contained climate. (The AA index of geomagnetic activity, to which he refers, is a measure of the disturbance level of earth's magnetic field, based on magnetometer observations of two, nearly antipodal, stations in Australia and England. Numbers along the x-axis of his graph are years of the Hale cylce. But each graph represents two Schwabe cycles – hence number 1 is not at the LH end of the graph.)

It is time for IPCC to consider the possible implications of a broader Sun-Earth connection than just that which can be attributed to little-varying solar irradiance.

World Temperature: The Magnetic Link



Strong Magnetic Linkage (Even Cycle Max)
Hale phase 17-5

Weak Magnetic Linkage (Odd Cycle Max)
Hale phase 6-16

Geomagnetic Activity Index Annual Average Standard Units

Temp AA sensitivity is 0.2 deg C per 10 AA units for strong link magnetic cycle (Even Max, std Hale phase 17-5); 0.15 deg C/10 AA units for weak link magnetic cycles (Odd Max, std Hale phase 6-16).

Sun-Earth magnetic linkage changes through each Hale cycle

There is a maximum in the *sensitivity* of Temps and other weather variables to *changes* in solar particles. This occurs at Odd-Even solar Minimum (ie the start of even cycle) = about 2006/2007 - hence recently *more weather contrasts/ extremes.*

Piers Corbyn, Weather Action

Postscript: look out for (1) next PDO reversal

As shown in Fig. 14, 15, 16 above, inflection points in rate-of-change of length-of-day (LOD) were crucial to 20th Century climate – and to fish-catches. Perhaps improbably at first sight, but nevertheless explainable, Fig. 13 correlates LOD trend-reversals with inflection points in the Sun's orbital motion about the centre-of- mass (barycentre) of the solar system. The giant outer planets also orbit the barycentre, and it is their collective angular momentum which drives the Sun's irregular orbit. On this basis, Landscheidt (Fig. 13) calculated that the next such inflection point would be in 2007, and hence – as previously – LOD would also change then. (Earth orbits the Sun – not the barycentre – and it is plausible that the same inertial forcing would apply here.)

The Pacific Decadal Oscillation (PDO) – more/less upwelling in the equatorial eastern Pacific - is, at least in part, an inertial phenomenon, as suggested by its relationship with LOD (Fig. 15). More evidence is provided in Figs. 23-28. Below, is a new plot of solar motion for 1989-2028, prepared by Ian Wilson (in press). He predicts the next inflection point in solar orbit at 2008, which - if the past is a guide – means increased upwelling in the Pacific, and hence a discernible reduction in global-average surface temperature well within a decade thereafter. (Fig. 38, below, is drawn with respect to the Sun - whose limb is shown as a circle. Hence, the dots representing years show movement of the barycentre relative to the Sun.)

ABRUPT SOLAR-MOTION ASYMMETRY SUGGESTS A PDO REVERSAL IN 2008

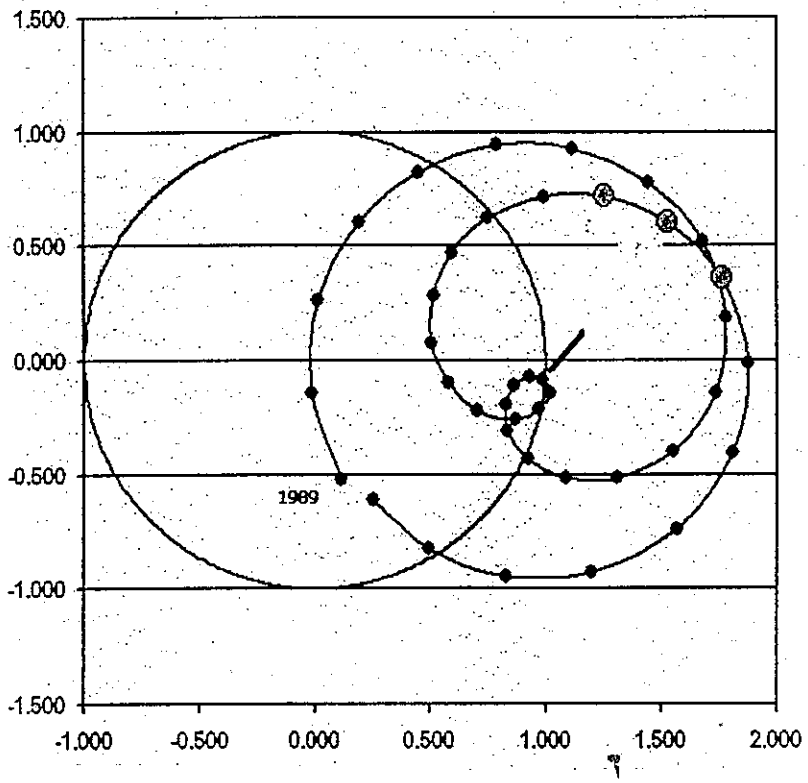


Figure 38

Figure 4 shows that we are currently passing through an abrupt asymmetry in the Sun's motion that will peak in 2008. Solar data (Wilson et al. 2006) indicates that effects of this abrupt asymmetry will most likely match those produced by the asymmetry in 1866. Hence, the Sun should experience a normal level of sunspot activity during cycle 24, reaching a peak sunspot number above 100 sometime in 2010 or 2011. However, the level of sunspot activity should dramatically decrease during solar cycle 25, only reaching a peak sunspot number of ~ 50 around about 2022-23.

Ian Wilson in press (The expected future level of solar activity is further discussed below.)

Postscript: look out for (2) next solar cycle

Figure 20 (Archibald 2006) shows solar cycles since the Maunder Minimum, and forecasts the intensity of the next two cycles. Clilverd (Fig. 22) and Wilson also (above) predict impending cycles. The world is cooler during the cyclic periods of bunched weaker solar cycles (Gleissberg Cycles, Fig 39). Will the next sunspot cycle already be weak – or will cooling be deferred for one more cycle? Fig 40 (David Archibald, in press) gives the range of predictions for cycle 24.

GLEISSBERG CYCLES OF CENTENNIAL-SCALE SOLAR VARIABILITY

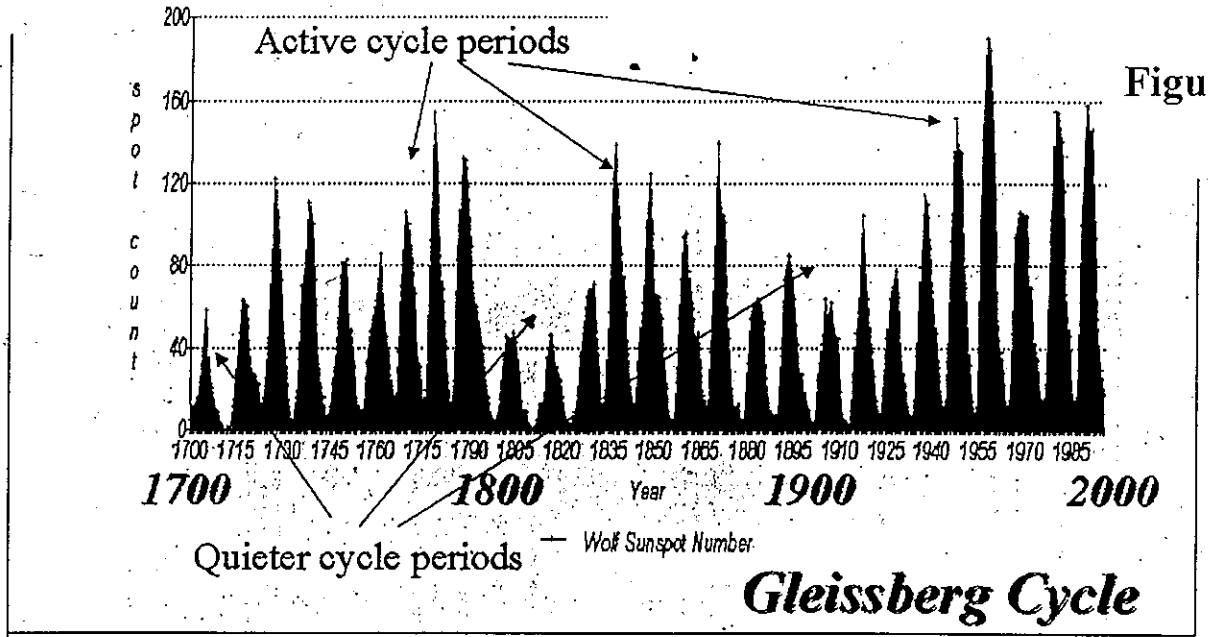
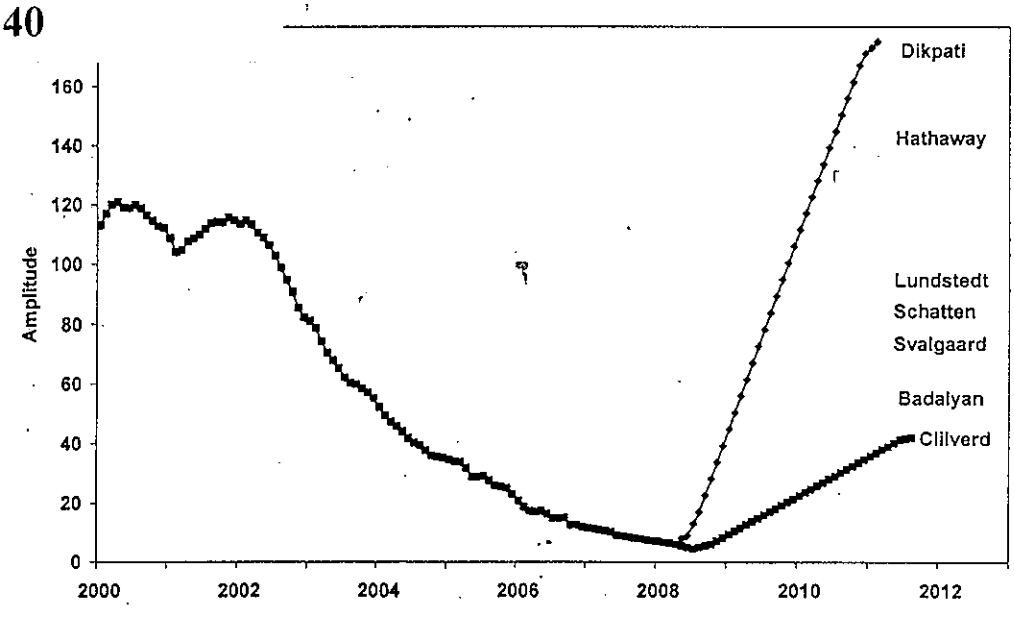


Figure 39

The solar cycles since 1700. Note the 11-year cycles are not all equal. At times the maximums are very large at other times, much less so. Periods with active cycles are warmer and those with quieter, longer cycles are colder.

SEVERAL PREDICTIONS OF AMPLITUDE FOR SOLAR CYCLE 24

Figure 40



Postscript: look out for (3) the Royal Society

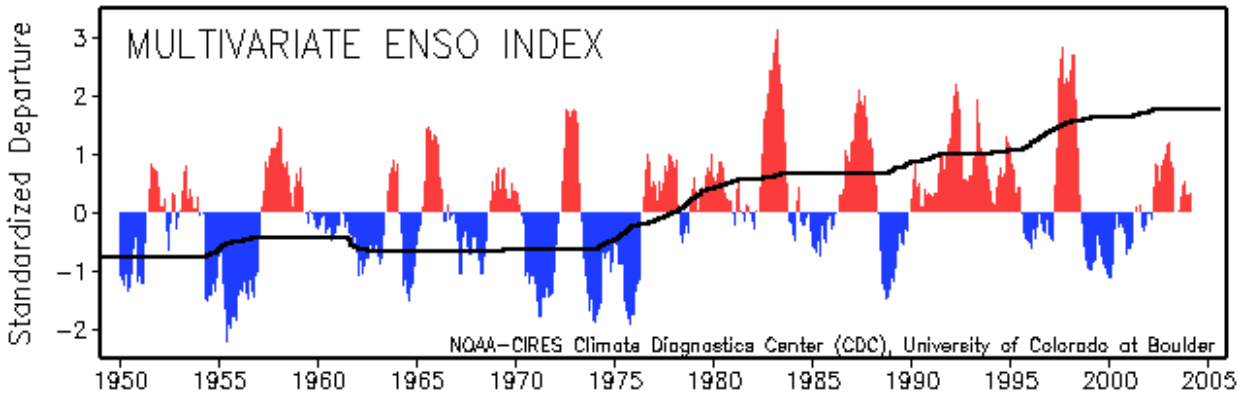
The Lord Kelvin and 1892 are long gone, but the Royal Society hasn't changed. It still sees striking correlations between events on Sun and Earth as "mere coincidence". Alert readers of this document will have already noted the correlation between zero phases in the (giant-planet imposed) solar torque cycle, length-of-day change on Earth, and global temperature (see Figures 13, 14 above). The last temperature-trend reversal on Earth was marked by the Great Pacific Climate Shift of 1976/7; and this curtailment in upwelling of cold, deep, water in the equatorial eastern Pacific is (Figures 25, 26) an externally-driven inertial event. Below is plot of El Niño/Southern Oscillation (Figure 41) which shows the greater incidence of La Niña (more upwelling) prior to the 76/7 Shift, and of El Niño (less upwelling) thereafter. Plotted on the same graph is global surface temperature. Can you see the Shift – and its impact?

On 10 April 2007, the Royal Society issued a press release "Man made climate change: the real science". It proffers up a simple guide to climate change controversies, as six 'straw men' in which it poses - and then demolishes - objections to its hypothesis of a primarily people-driven climate. The most-relevant here is: **Argument 4: 'Global warming is all to do with the Sun'**, which is sub-headed "What does the science say? " Its demolition-job is, inter alia:
Changes in the Sun's activity influence the Earth's climate through small but significant variations in its intensity. When it is in a more 'active' phase … it emits more light and heat. While there is evidence of a link between solar activity and some of the warming in the early 20th Century, … there has been very little change in underlying solar activity in the last 30 years … and so this cannot account for the recent rise we have seen in global temperatures.

Nelson-like, the Society has raised its spy-glass to its blind eye - choosing to see solar activity only in terms of little-varying solar irradiance. It has failed to acknowledge the existence of inertial/resonant drivers at many time-scales, and their inertial and/or electromagnetic outcomes - for example, very-widely-variable blasts of solar wind. Furthermore, blindness also seems also to be the only plausible explanation for the Society's failure to see a correlation between the PDO regime-change in 76/7 and global temperature – see below.

Figure 41

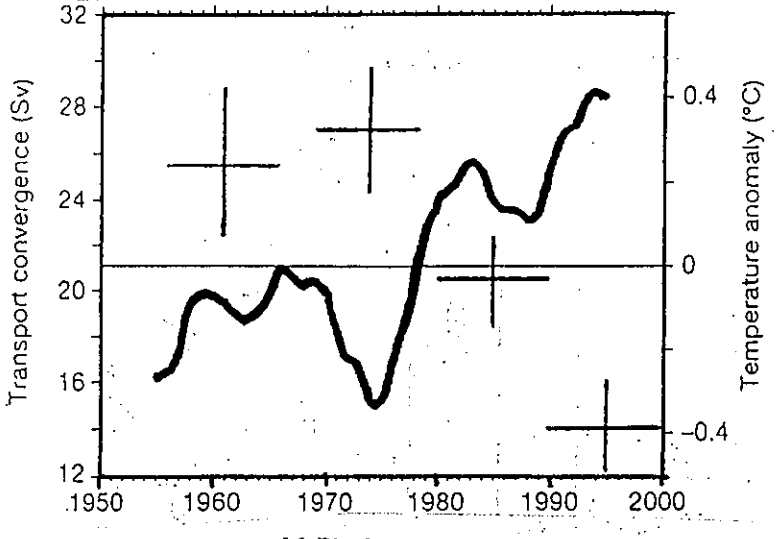
CHANGES IN ENSO-STATE AND GLOBAL TEMPERATURE AT 76/7 PDO SHIFT



Postscript: look out for (4) the influence of PDO

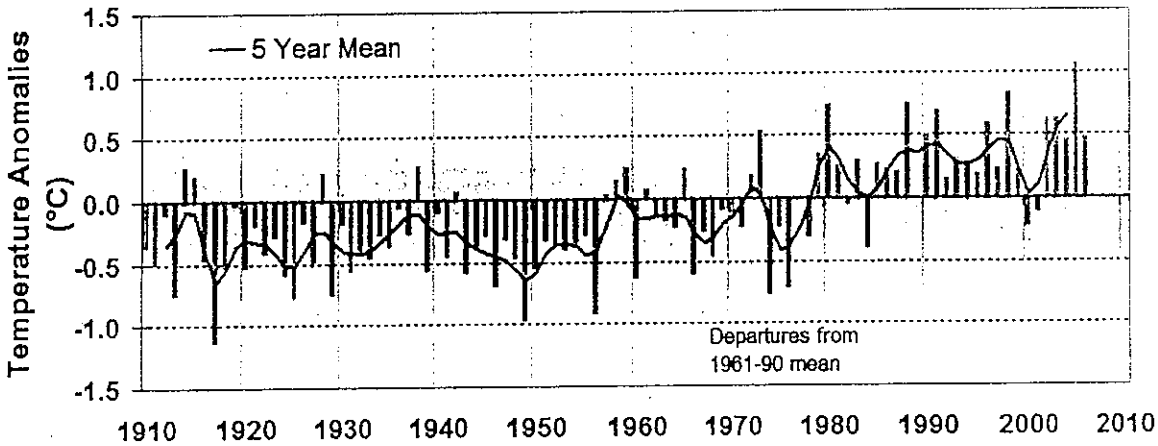
The Pacific Decadal Oscillation (PDO) has been in its warm phase since the Great Pacific Climate Shift of 1976/7. This means a preponderance of El Niño, rather than La Niña, conditions since that time - as shown in Figure 41. Note the impact on global temperatures. PDO reversals cause big changes in upwelling of cold water in the equatorial eastern Pacific. Figure 42 illustrates the impact on sea-surface temperature, and suggests a change in upwelling quantity from some 26 Sverdrups before the event to perhaps 18 Sv after. Such massive change indicates a large-scale inertial event – reflected in length-of-day. Figures 13-15 take this line of reasoning one step further. PDO and LOD correlate with rate-of-change of torque applied by the giant planets to the Sun, as they drive its irregular orbit around the centre-of-mass of the solar system. Ian Wilson predicts (Figure 38) a reversal in the sense of rate-of-change in the radius of the Sun's orbit in 2008. This seems likely to bring on a PDO reversal, to its cool phase. The outcome may be a cooling step-change in Australian temperatures, to reverse the warming Shift at 76/7 (Figure 43) - which is so prominent in the Australian record that no-one could miss it. We should soon know.

Figure 42 PACIFIC UPWELLING *CF* SEA-SURFACE TEMPERATURE



McPhaden and Zhang 2002, *Nature* v 415 p 605

Figure 43 AUSTRALIAN MEAN-TEMPERATURE ANOMALIES



Australian Bureau of Meteorology media release on climate change 20070103

Postscript: look out for (5) a variable solar wind

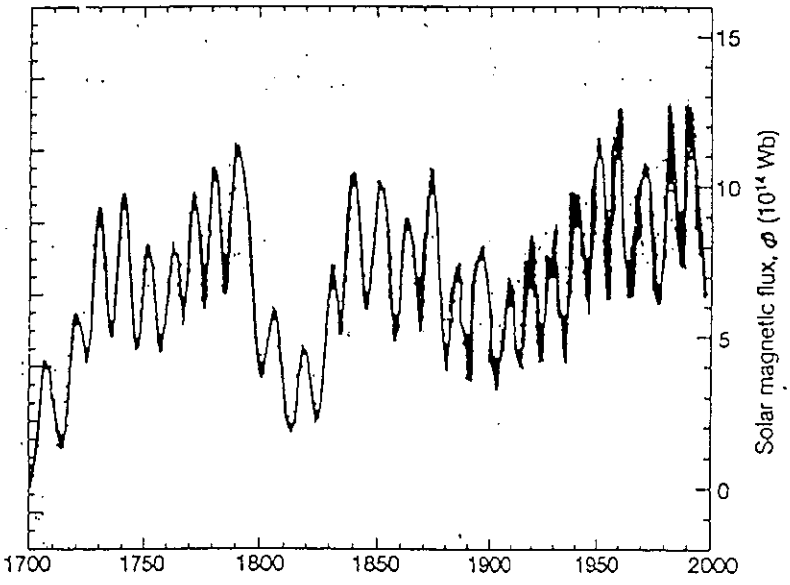
For Royal Society, NASA, UK Met Office, the only Sun/Earth climatic linkage is via total solar irradiance (TSI). Thus, IPCC can invoke people-caused warming by CO_2 and CH_4 of 1.56 + 0.48 = 2.04 W/m^2 since 1750; while the Sun gets a minuscule 0.12 W/m^2 – ca. 5% of the total. To the mainstream, the Sun is almost irrelevant. But most variation in energy transport through the outer reaches of the Sun - at times-scales from hours to millennia - is by convection associated with bulk turbulent motion of gas, not by radiation. Eruptive outflow of magnetised plasma can vary by many times, but TSI varies only by fractions of a per cent. The driver of solar-wind blasts is planetary; and hence, their timing is predictable. The Sun (Figs 12, 33, 44) is more active now than for millennia – because of the warming-trend since the Maunder Minimum "Quiet Sun". My paper hypothesises herein that the return of a quieter Sun – and cooler Earth - is imminent.

Lockwood *et al* 1999, "A doubling of the Sun's coronal magnetic field during the past 100 years", *Nature* 399, pp.437-9, say: *The solar wind is an extended ionized gas of very high electrical conductivity, and therefore drags some magnetic flux out of the Sun to fill the heliosphere with a weak interplanetary magnetic field. Magnetic reconnection – the merging of oppositely directed magnetic fields – between the interplanetary field and the Earth's magnetic field allows energy from the solar wind to enter the near-Earth environment. ... Here we show that measurements of the near-Earth interplanetary magnetic field reveal that the total magnetic flux leaving the Sun has risen by a factor of 1.4 since 1964* (ie. by 40% - with1992 the peak year).

The people-driven-climate hypothesis is epitomised by Doug M. Smith *et al* 2007, "Improved surface temperature prediction for the coming decade from a global climate model", *Science* 317, pp. 796-9. The implausible abstract concludes: *Our system predicts that internal variability will partially offset the anthropogenic global warming signal for the next few years. However, climate will continue to warm with at least half of the years after 2009 predicted to exceed the warmest year currently on record.* The Met Office's Hadley Centre has indeed forgotten the Sun!

Figure 44 MODELLED MAGNETIC FLUX AT SOLAR SURFACE

Solanki, Schüssler & Fligge 2000, *Nature* 408, pp. 445



Recollections of the Dalton Minimum

Although shorter and less-intense than the fearsome Maunder Minimum of the Little Ice Age, the Dalton Minimum was notably cold - as these paintings indicate:
AYE. "River Thames Frost Fair 1814" by Luke Clennel (Museum of London).
BEE. "Das Eismeer" by C.D. Friedrich 1823/4 (Hamburg Kunsthalle).