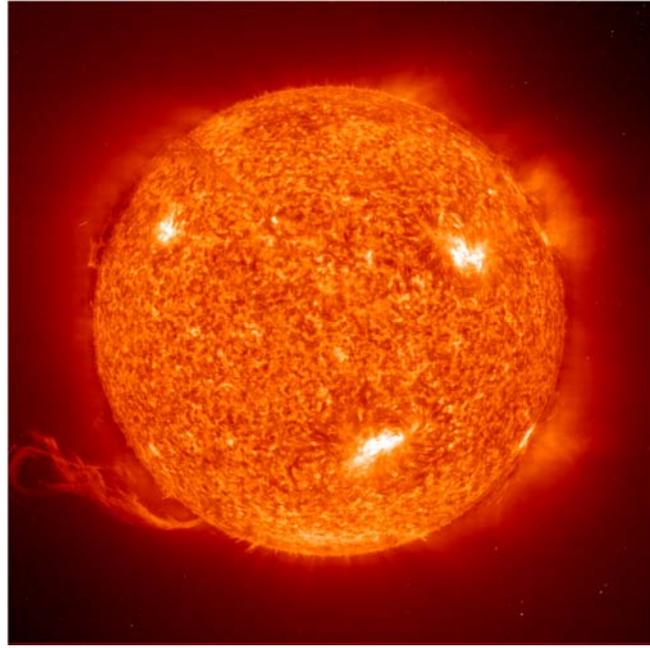
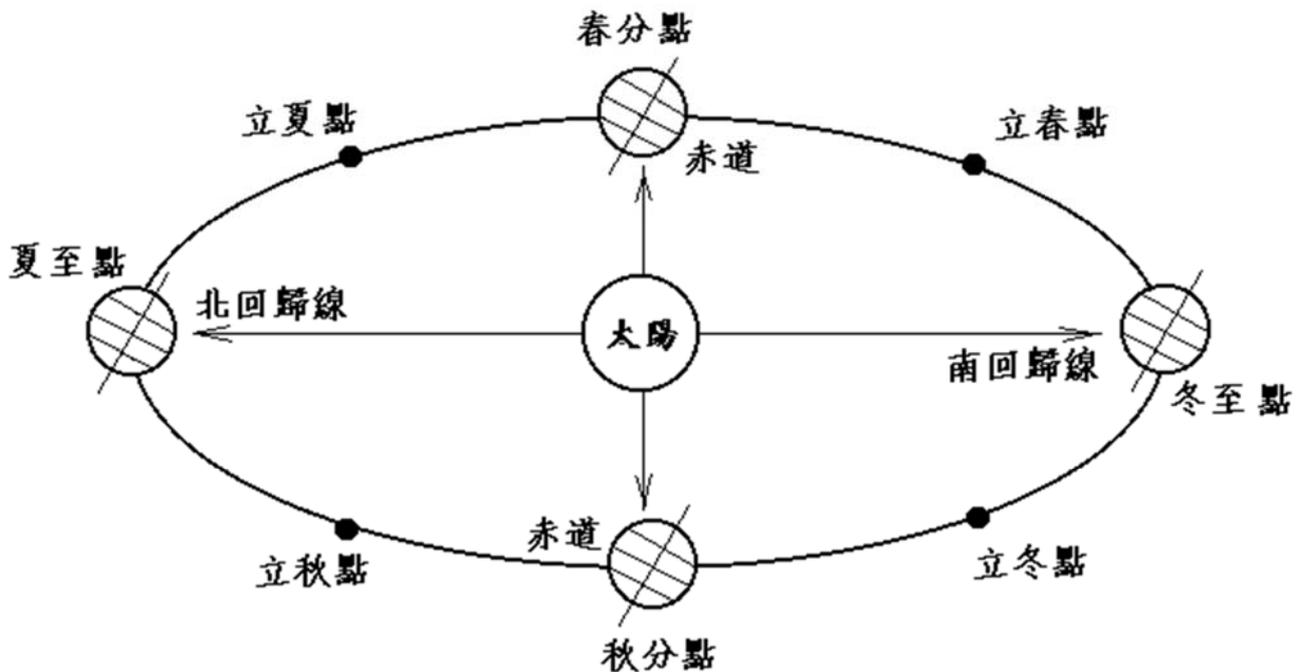


# 天地人



## 24節氣vs.太陽



⌘ 天文氣候：

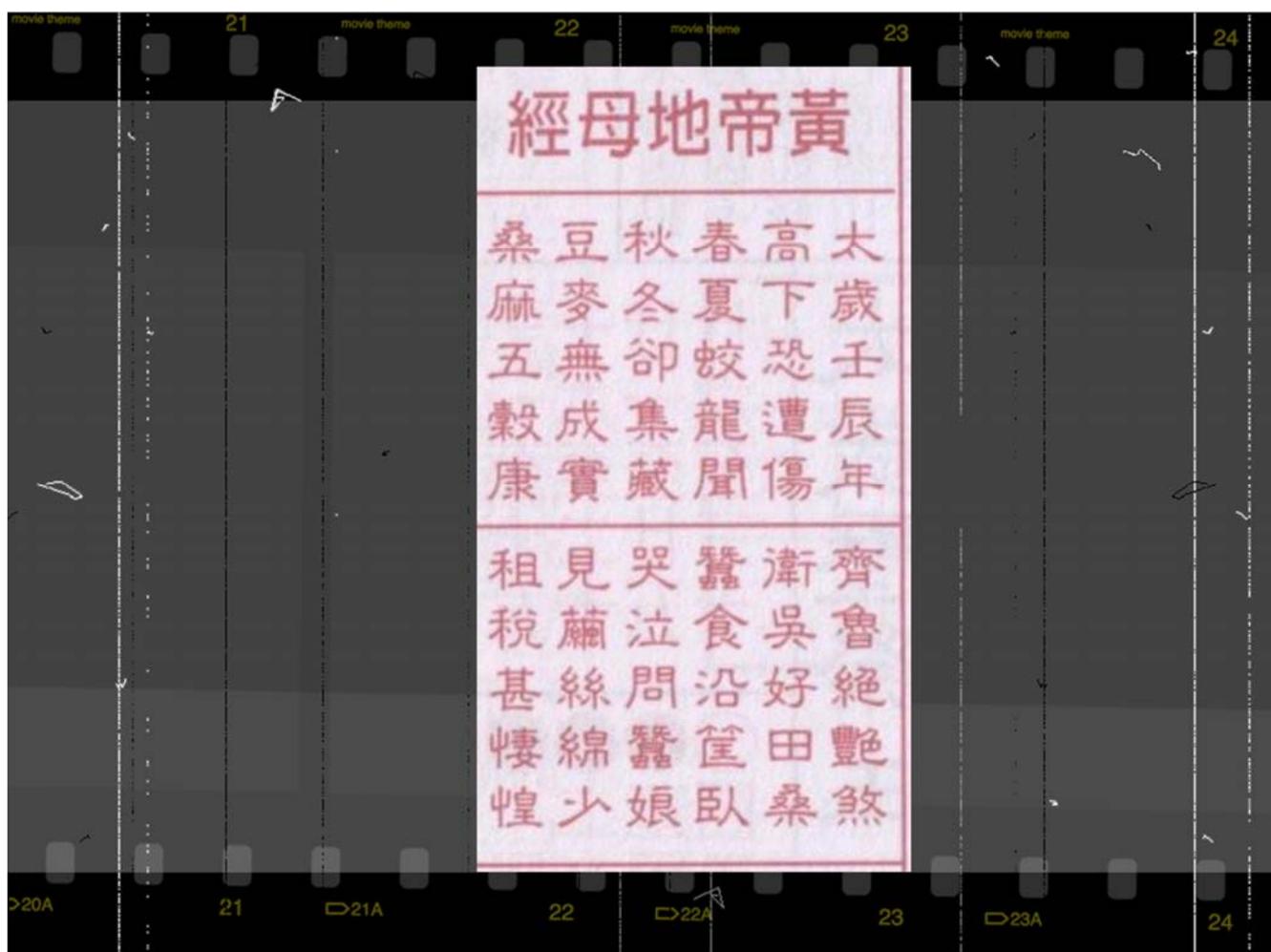
立春、春分、立夏、夏至  
立秋、秋分、立冬、冬至

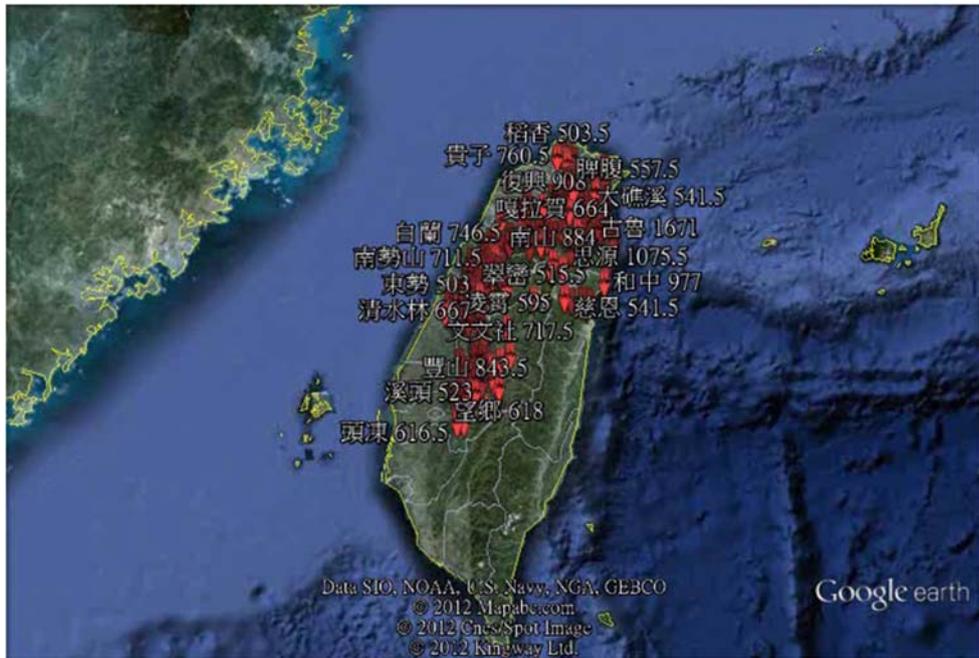
⌘ 天氣現象：

雨水、穀雨、小暑、大暑  
處暑、白露、寒露、霜降  
小雪、大雪、小寒、大寒

⌘ 物候變化：

驚蟄、清明、小滿、芒種







An aerial view of a residential area in Beijing that has been severely flooded. The muddy, brown water has inundated the streets and surrounding areas, with some buildings partially submerged. The image includes logos for CCTV 13 and 中視 (CCTV), and a news banner at the bottom.

CCTV 13  
新聞

中視



雪梨  
10-15

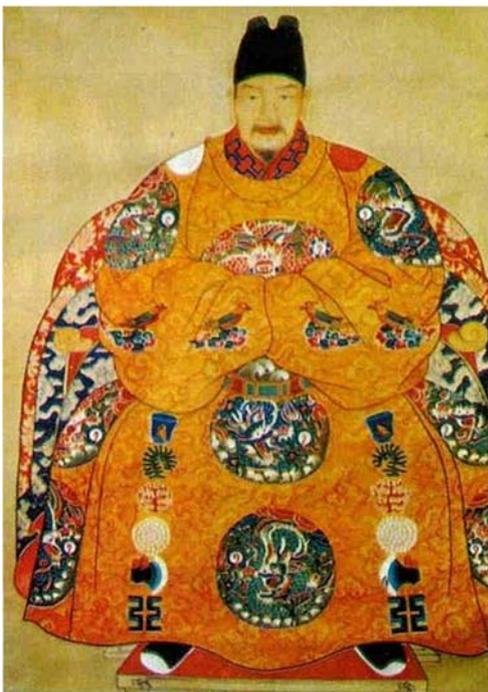
61年來最強暴雨 北京水災37死

12:33:40

工程師外遇曝光 臉書朋友都看得到 妻盛怒抓姦



## 崇禎皇帝



# 崇禎皇帝敗給氣候！

崇禎元年，全陝天赤如血。五年大飢，六年大水，七年秋蝗、大飢，八年九月西鄉旱，略陽水澇，民舍全沒。九年旱蝗，十年秋禾全無，十一年夏飛蝗蔽天……十三年大旱……十四年旱

《漢南續郡志》

## 現代的損失隨氣候變遷越來越多？

- 人口數、經濟(財富、收入、GDP)、保險…等，將其因素列入考慮
- 扣除掉以上的成長，天然災害幅度並未成長！

Bouwer 2011 分析 22篇研究報告，指出全球各地各種天災雖明顯增多，但經考慮人口、經濟或保險等因數考慮在內，將其扣除掉，天然災害損失幅度並未隨氣候變遷而增加。

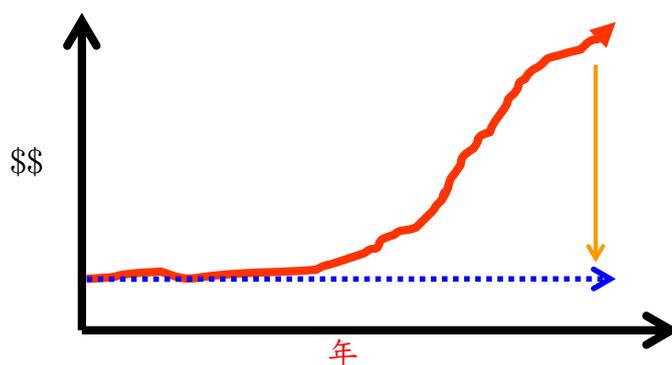


TABLE 1. Normalization studies of disaster loss records.

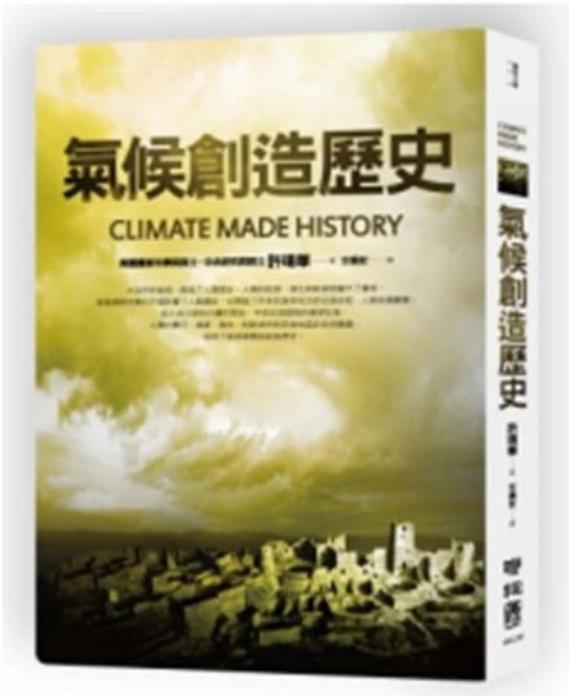
Hazard	Location	Period	Normalization	Normalized loss	Reference
Bushfire	Australia	1925–2009	Dwellings	No trend	Crompton et al. (2010)
Earthquake	United States	1900–2005	Wealth, population	No trend	Vranes and Pielke (2009)
Flood	United States	1926–2000	Wealth, population	No trend	Downton et al. (2005)
Flood	China	1950–2001	GDP	Increase since 1987	Fengqing et al. (2005)
Flood	Europe	1970–2006	Wealth, population	No trend	Barredo (2009)
Flood	Korea	1971–2005	Population	Increase since 1971	Chang et al. (2009)
Flood and landslide	Switzerland	1972–2007	None	No trend	Hilker et al. (2009)
Hail	United States	1951–2006	Property, insurance market values	Increase since 1992	Changnon (2009a)
Windstorm	United States	1952–2006	Property, insurance market values	Increase since 1952	Changnon (2009b)
Windstorm	Europe	1970–2008	Wealth, population	No trend	Barredo (2010)
Thunderstorm	United States	1949–98	Insurance coverage, population	Increase since 1974	Changnon (2001)
Tornado	United States	1890–1999	Wealth	No trend	Brooks and Doswell (2001)
Tornado	United States	1900–2000	None	No trend	Boruff et al. (2003)
Tropical storm	Latin America	1944–99	Wealth, population	No trend	Pielke et al. (2003)
Tropical storm	India	1977–98	Income, population	No trend	Raghavan and Rajesh (2003)
Tropical storm	United States	1900–2005	Wealth, population	No trend	Pielke et al. (2008)
Tropical storm	United States	1950–2005	Asset values	Increase since 1970; no trend since 1950	Schmidt et al. (2009)
Tropical storm	China	1983–2006	GDP	No trend	Zhang et al. (2009)
Tropical storm	United States	1900–2008	GDP	Increase since 1900	Nordhaus (2010)
Weather (flood, thunderstorms, hail, bushfires)	Australia	1967–2006	Dwellings, dwelling values	No trend	Crompton and McAneney (2008)
Weather (hurricanes, floods)	United States	1951–97	Wealth, population	No trend	Choi and Fisher (2003)
Weather (hail, storm, flood, wildfire)	World	1950–2005	GDP, population	Increase since 1970; no trend since 1950	Miller et al. (2008)

The table of the 22 studies

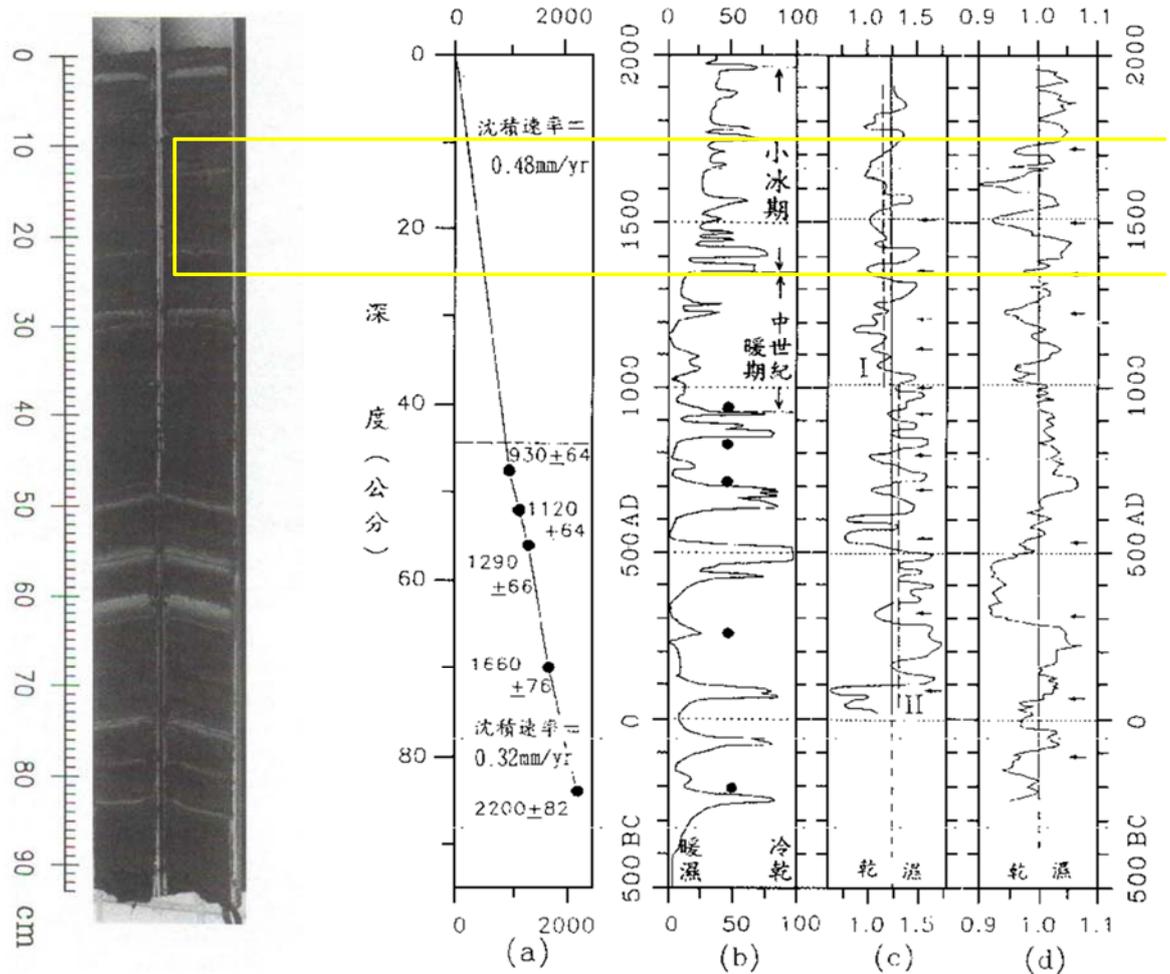
Have Disaster Losses Increased Due to Anthropogenic Climate Change? Laurens M. Bouwer *Bulletin of the American Meteorological Society* Volume 92, Issue 1 (January 2011) pp. 39-46

## 現今的糧食危機

- 只要產量損失約 10-20%
- 上漲幅度卻 60%
- 天災是起漲因 熱錢流入炒作
- 是天災 更是人禍
- 糧食危機會更引發政治不穩定
- 全球暖化導致各地內戰頻傳?

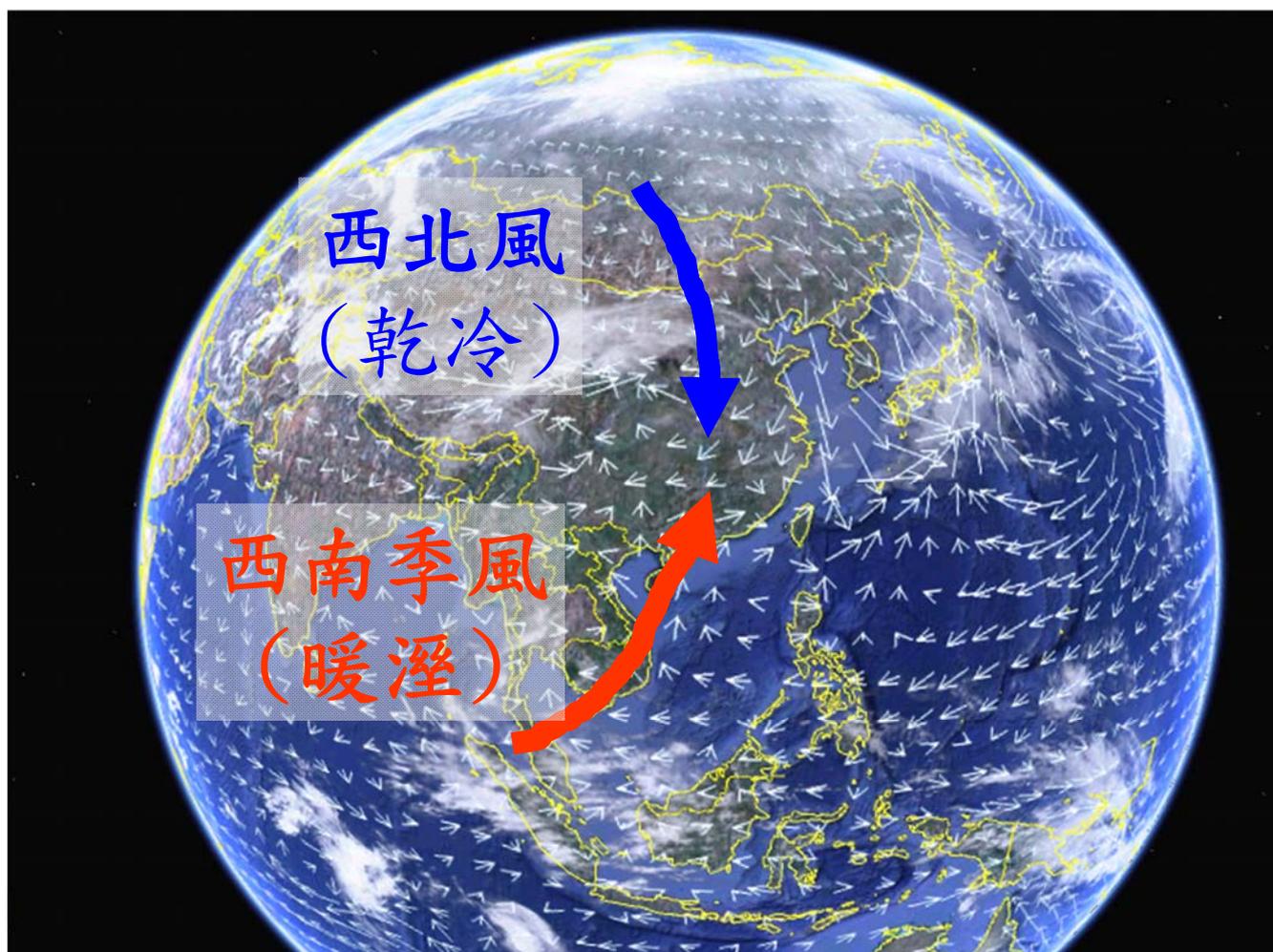
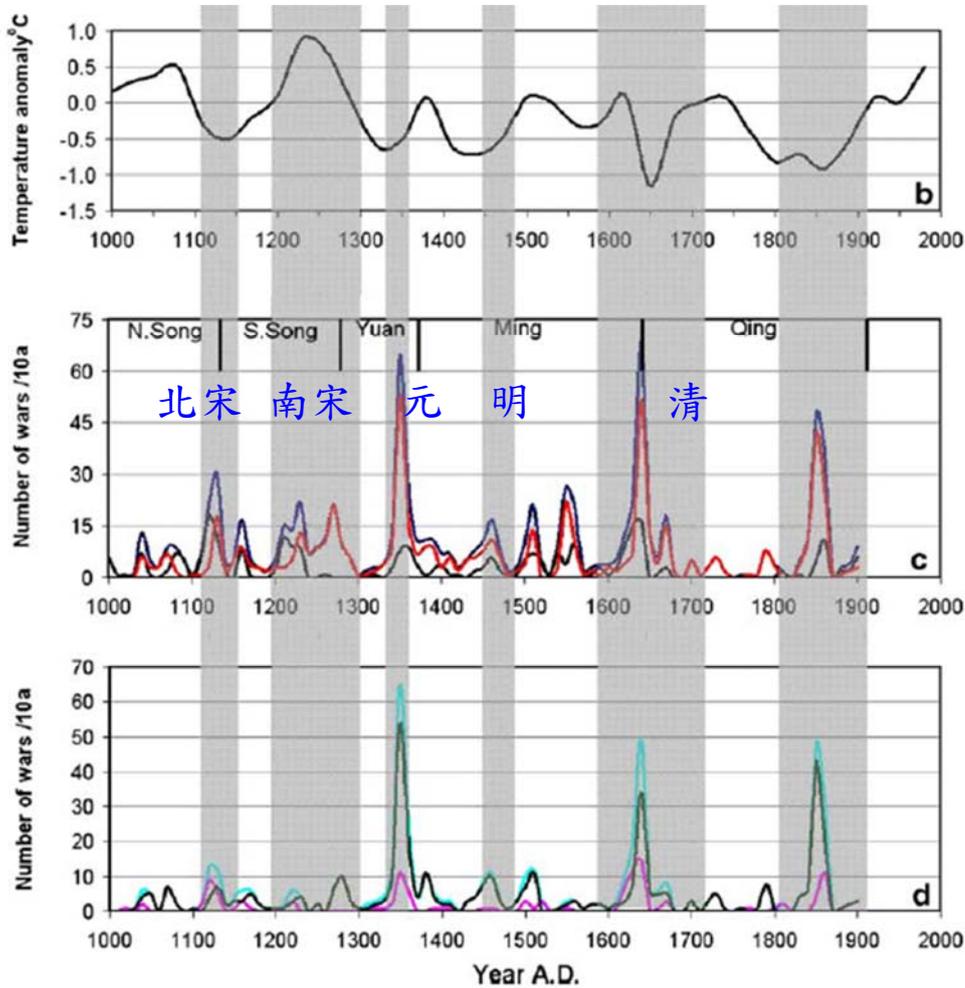


• 許靖華 院士



圖六：大東湖岩心與中國歷史記錄的乾濕期之比較。

越冷的時候戰爭發生次數越多



# 許院士的結論

- 化石燃料的燃燒引起二氧化碳的加速排放，這終將會導致全球變暖，不過歷史記載表明，總體來說，**全球變暖對人類是一個福音**。反之，全球變冷會導致農業減產、饑荒和民族大遷移。
- 也許當前最重要的任務不是用電腦來類比溫室效應對全球氣候的影響，而是進行水利和農業研究以確保不斷增長的人口的食物供應。

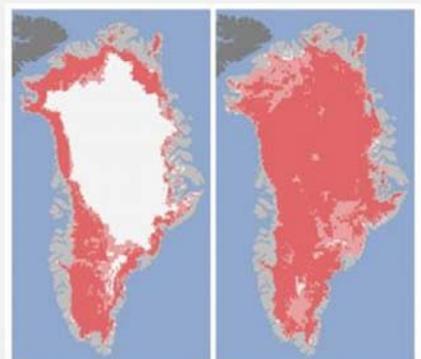
## 全球暖化？ 格陵蘭冰蓋幾乎全部融化 【2012/7/25 11:20】

Ads by Google

latic 純棉原色Tee 平價熱賣中 [www.latic.com.tw](http://www.latic.com.tw)

顏色豐富多元，便於搭配，舒適自在， 百分百純棉，基本色調，手感極佳

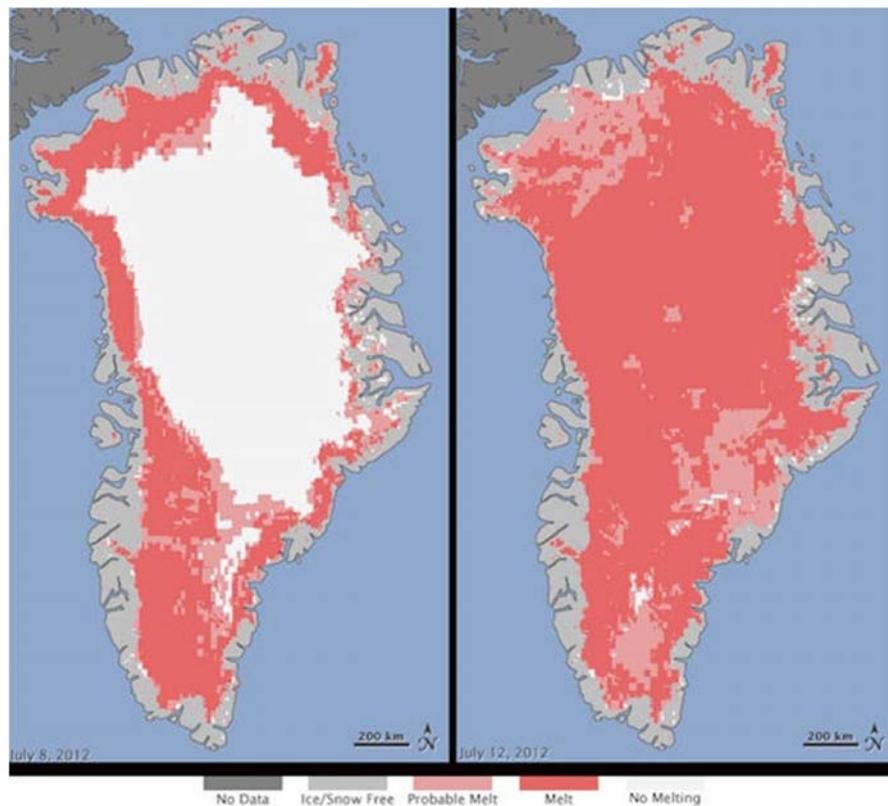
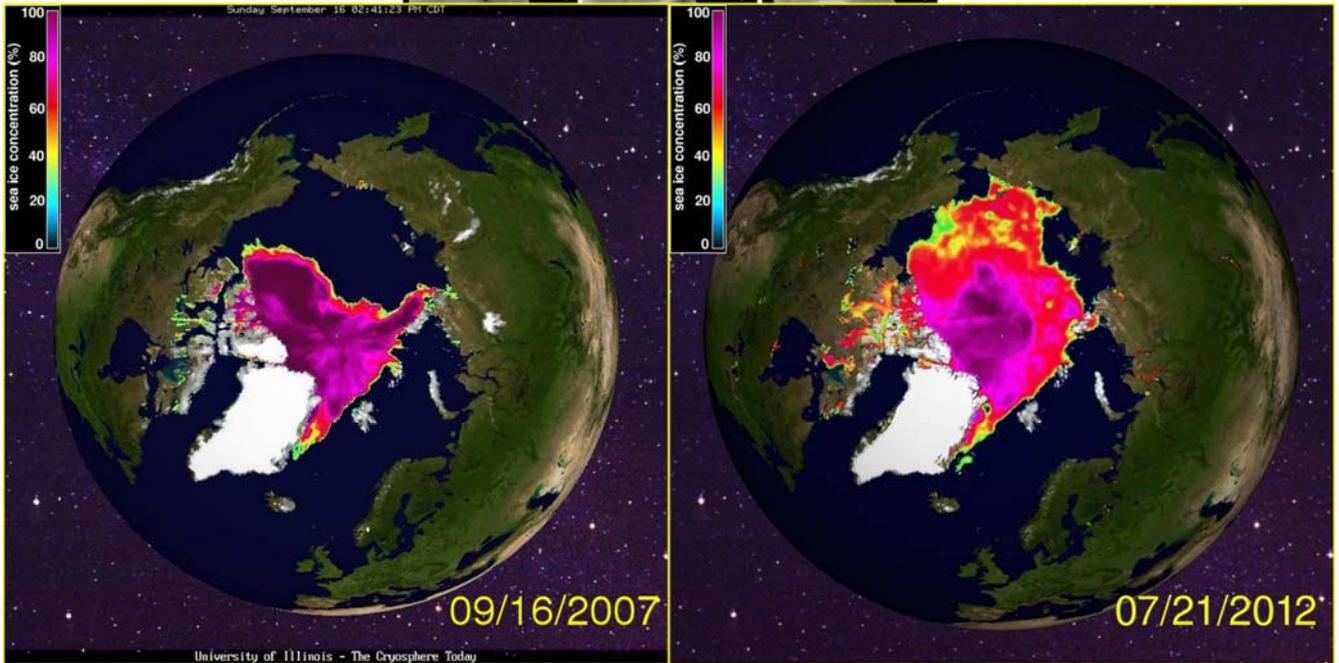
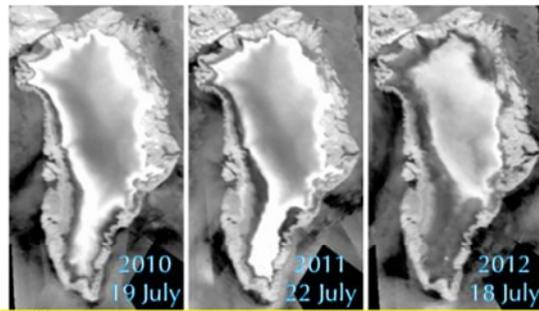
〔本報訊〕據科學家表示，格陵蘭島（Greenland）冰蓋近期發生自1973年以來最大規模的融化，幾乎每個部分都突然開始融化。



格陵蘭島的冰蓋已幾乎全部融化，從衛星探測圖顯示8日（左）與12日（右）冰蓋表面已有極大差異，淺粉色區域被歸類為「可能融化」的地區，而深粉色的區域則歸類為「融化」的地方。（路透社）



冰區約  
釋  
委  
持  
出  
去

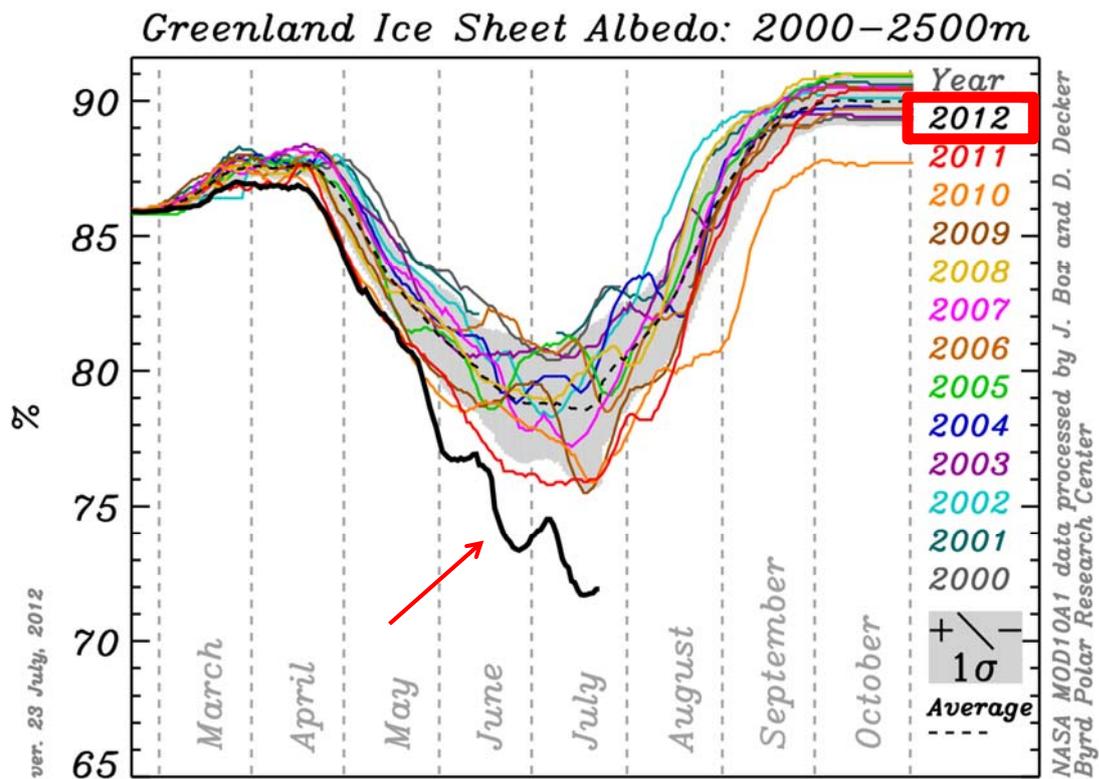


利用MODIS衛星資料發現格陵蘭地表冰覆有大面積的融化  
 7月8日(左圖)至12日(右圖)格陵蘭地表的冰覆融化率，比起過去30年的歷史觀測還要快速，7月8日尚有40%的冰覆率，很快的到7月12日全島97%的冰皆已融化。





## 格陵蘭冰蓋融化



# Greenland ice sheet melting: Be careful what you read

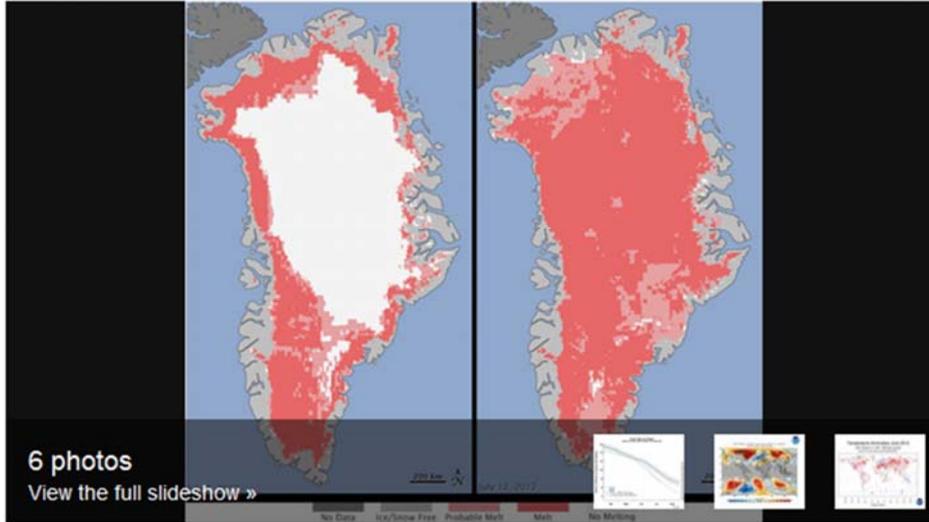
EXTREME WEATHER | JULY 25, 2012 | BY: JUSTIN BERK

73 0 0 0 0

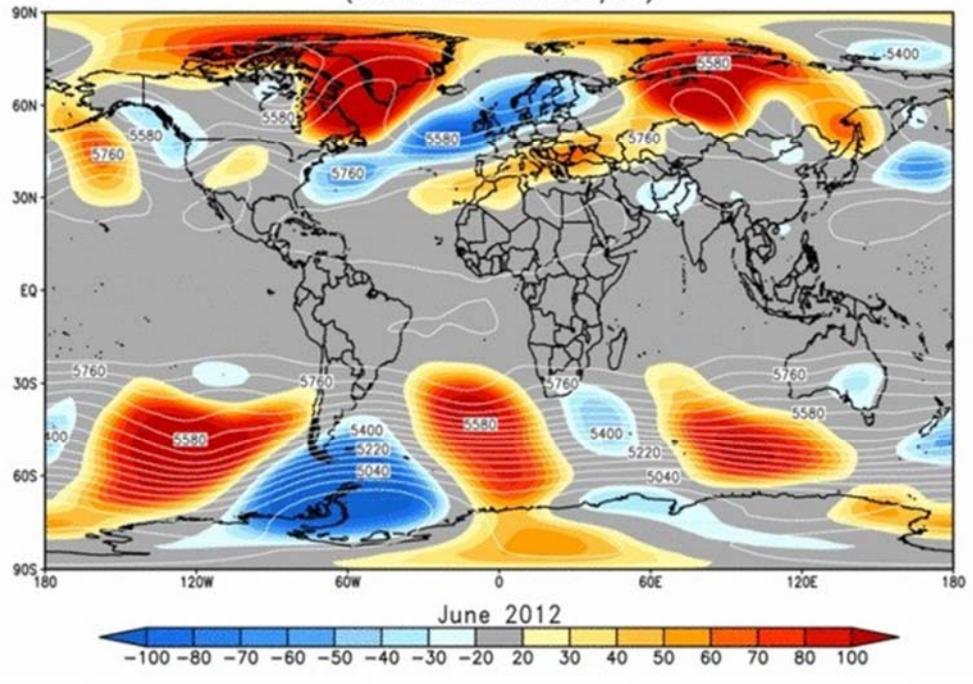
Get Weather & Climate alerts!

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Email  Sign up



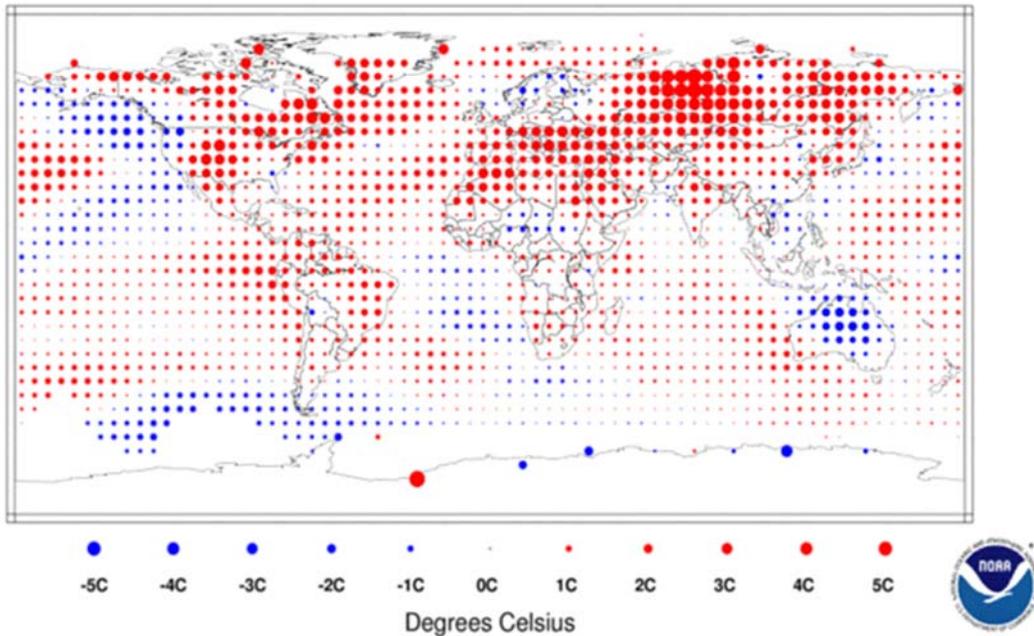
500 Millibar Heights and Anomalies (in meters)  
(From NCEP Reanalysis)



# Temperature Anomalies June 2012

(with respect to a 1971-2000 base period)

National Climatic Data Center/NESDIS/NOAA



wunderground.com 搜尋

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- [Carbon Sequestration](#) Develop knowledge and understanding of Carbon Capture and Storage [www.globalccsinstitute.com](http://www.globalccsinstitute.com)
- [TutorABC 英文課程免費下載](#) 針對>26歲設計. 線上真人同步英語視訊 學就學! 天天花45分鐘, 英文實力倍增。 [www.tutorabc.com](http://www.tutorabc.com)
- [CO2 Transport](#) Everything to know about carbon capture, transport & storage. [www.ico2n.com](http://www.ico2n.com)
- [Solar, Wind, Natural Gas](#) These markets are set to move. Find out where the smart money is. [EnergyandCar](#) AdChoices

## 過去的天氣 Summit, Greenland

星期三, 7月 11, 2012 — View Current Conditions

星期三, 7月 11, 2012

« Previous Day    7月 11, 2012    Next Day »

Daily   Weekly   Monthly   Custom

	Actual	Average	Record
<b>Temperature</b>			
平均溫度	-1 °C	-	-
最高溫度	2 °C	-	-0
最低溫度	-4 °C	-	-0
<b>Degree Days</b>			
熱日度值	34	-	-
<b>Moisture</b>			
露點	-2 °C	-	-
Average Humidity	86	-	-
Maximum Humidity	98	-	-
Minimum Humidity	61	-	-
<b>降雨量</b>			
降雨量	0.0 毫米	-	-0
<b>風</b>			
風速	7 公里每小時 ()	-	-
最大持續風速	11 公里每小時	-	-
Max Gust Speed	-	-	-

T = Trace of Precipitation, MM = Missing Value      Source: Averaged Metar Reports

**47.9萬起**

History Location

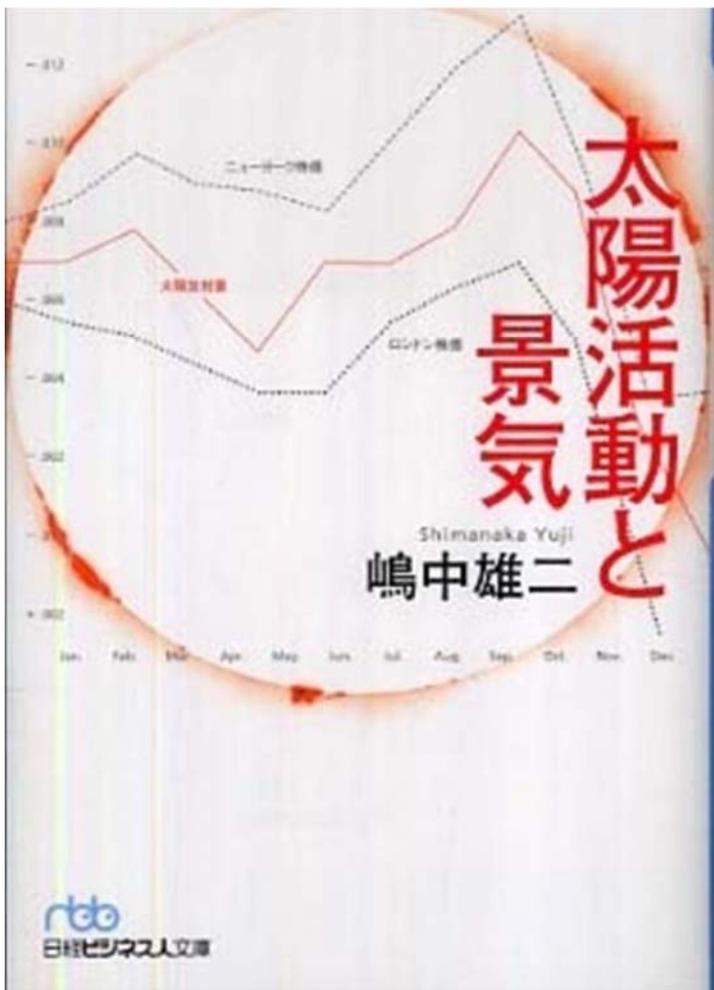
Airport:

Recent:

Trip Planner

Search our historical database for the weather conditions in past years. The results will help you decide how hot, cold, wet, or windy it will be!

Inconveniently  
misrepresent  
the truth.

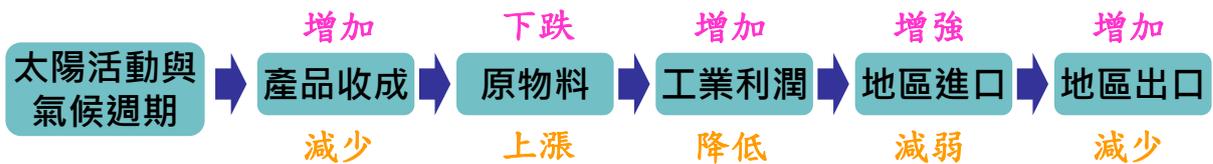


三菱UFJ經濟循環研究  
所所長  
早稻田大學客座教授



# 太陽活動影響經濟景氣

## ★ 「農林水產品收成」學說



## ★ 「人類心理」學說



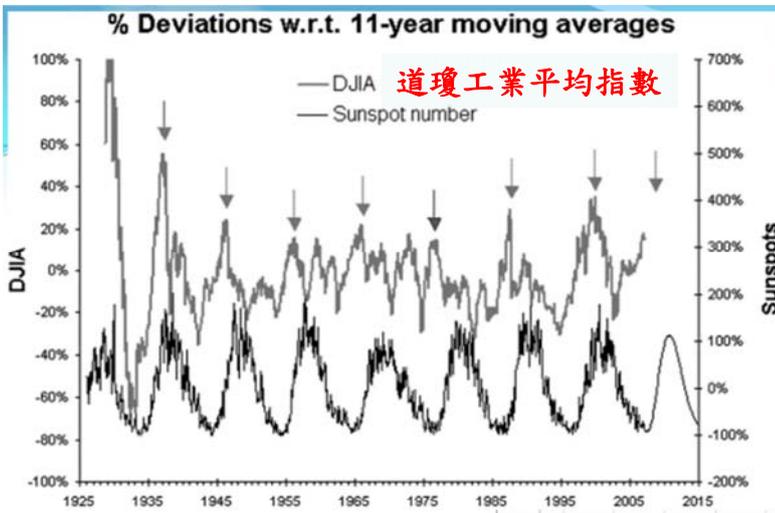
## ★ 「能量需求」學說

➢ 因太陽活動循環使得人類對能量需求量變動

## ★ 『經濟景氣循環對應太陽活動與氣候週期』學說

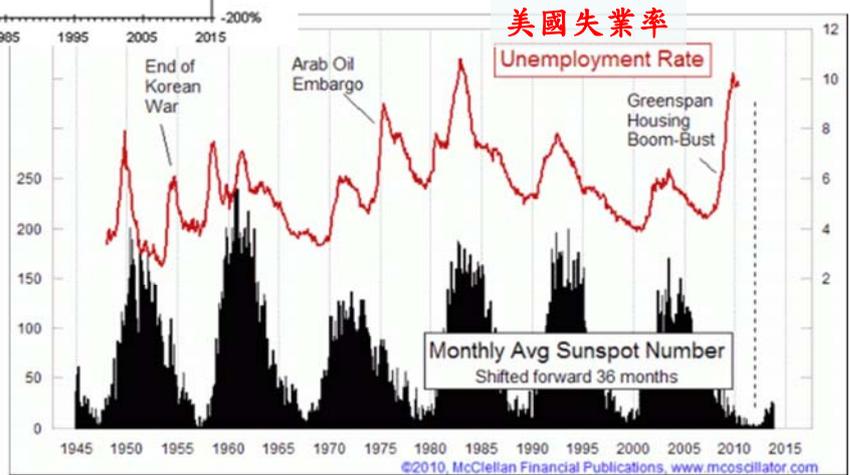
➢ 揉合「經濟景氣循環」及「太陽活動與氣候週期」兩者，所創造出之理論。

太陽活動週期	經濟景氣循環
聖嬰現象 El Niño Cycle 3.5 年週期 太陽熱輻射循環	基欽循環 Kitchin Cycle 40月 (短期循環) 庫存循環
史瓦貝循環 Schwabe Cycle 11 年週期 太陽黑子循環	朱格拉循環 Juglar Cycle 10-11年 (中期循環) 經濟投資循環
海爾循環 Hale Cycle 22 年週期 (兩次史瓦貝循環) 太陽黑子磁極循環	庫茨涅茲循環 Kuznets Cycle 20-22年 (長期循環) 生產、價格及建設循環
吉村循環 Yoshimura Cycle 55 年週期 (五次史瓦貝循環) 太陽活動大週期	康得拉捷夫循環 Kondratieff Cycle 50-60年 (長期波動) 物價、技術革新循環



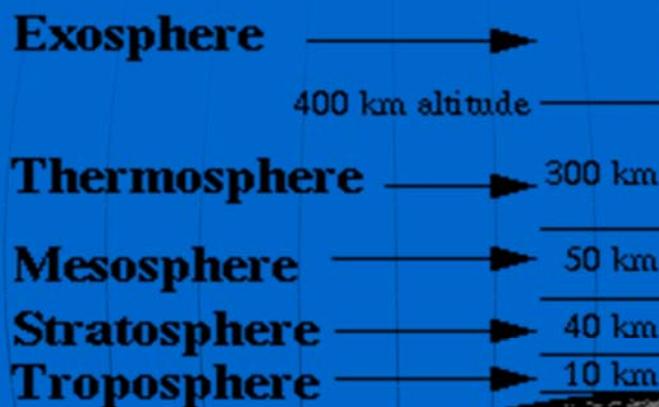
Percent deviations with respect to the long-term trends as calculated **via 11-year moving averages**. The arrows point at the “significant” **DJIA** peaks. The last arrow is a forecast (Jun-2008)

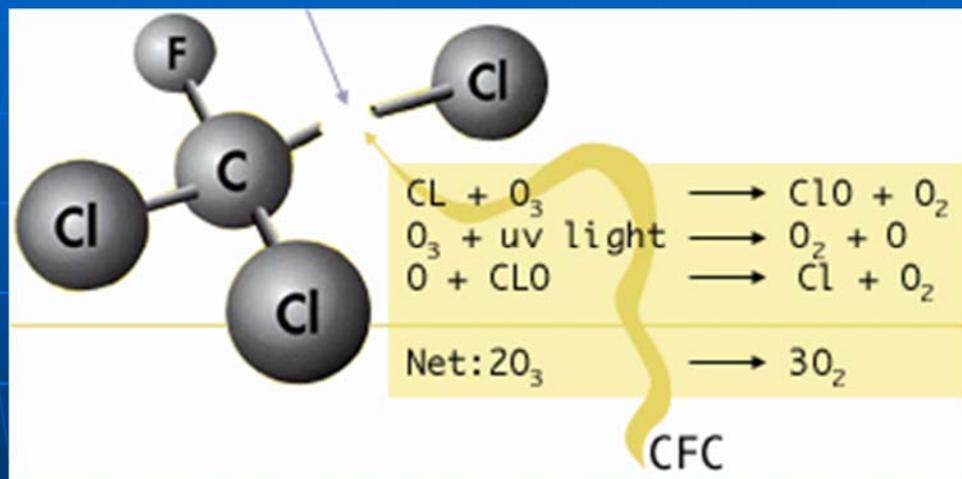
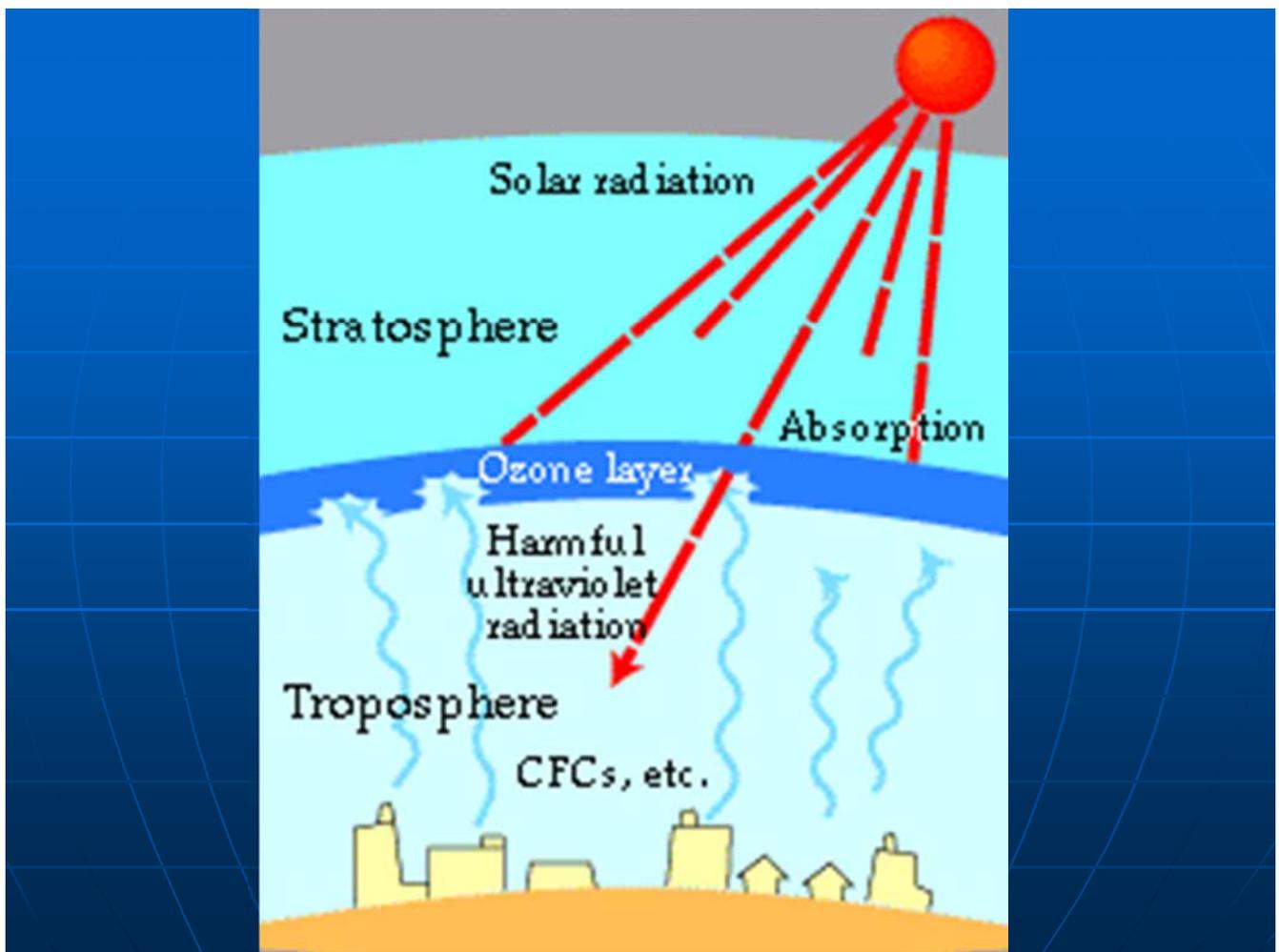
In 2010, Tom McClellan noted in a short memo that in the postwar period, peaks in the **US unemployment rate** followed about 3 years after the peaks in sunspot activity (McClellan, 2010)

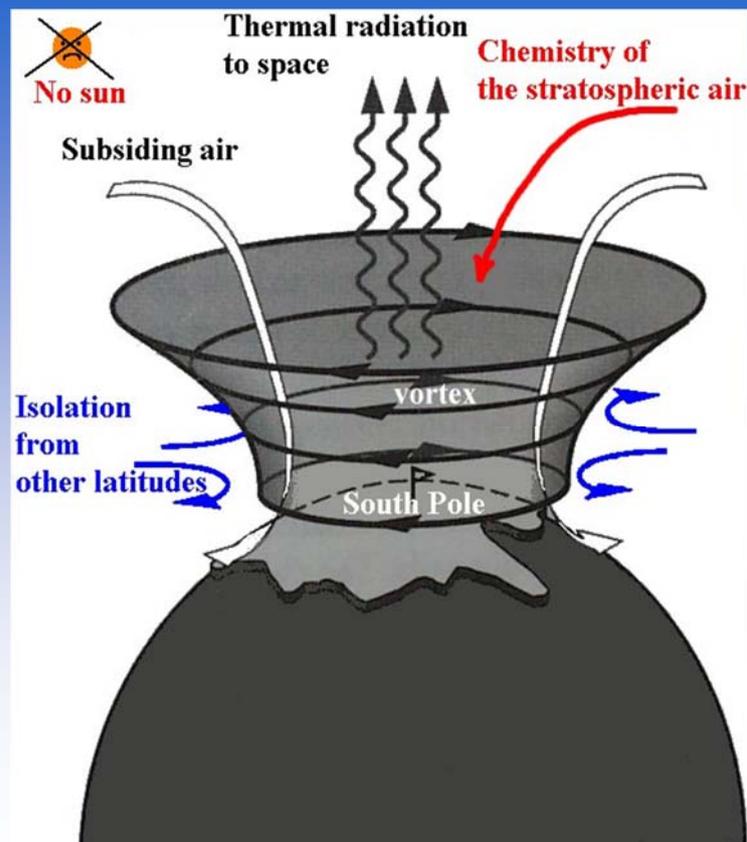


天氣風險管理開發股份有限公司  
WeatherRisk Explore Inc.

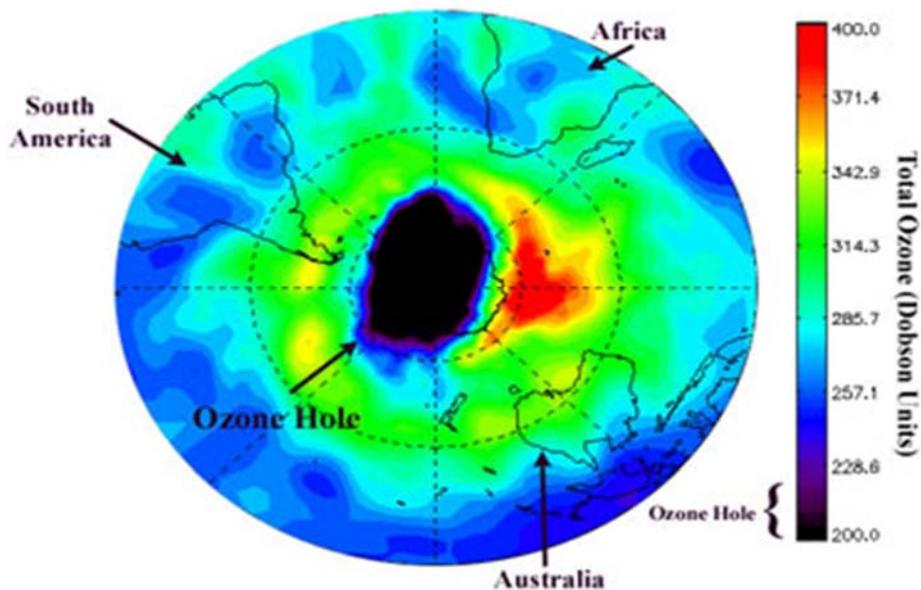
# Earth's Atmosphere





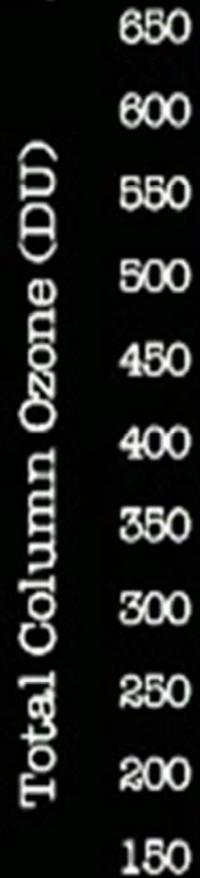
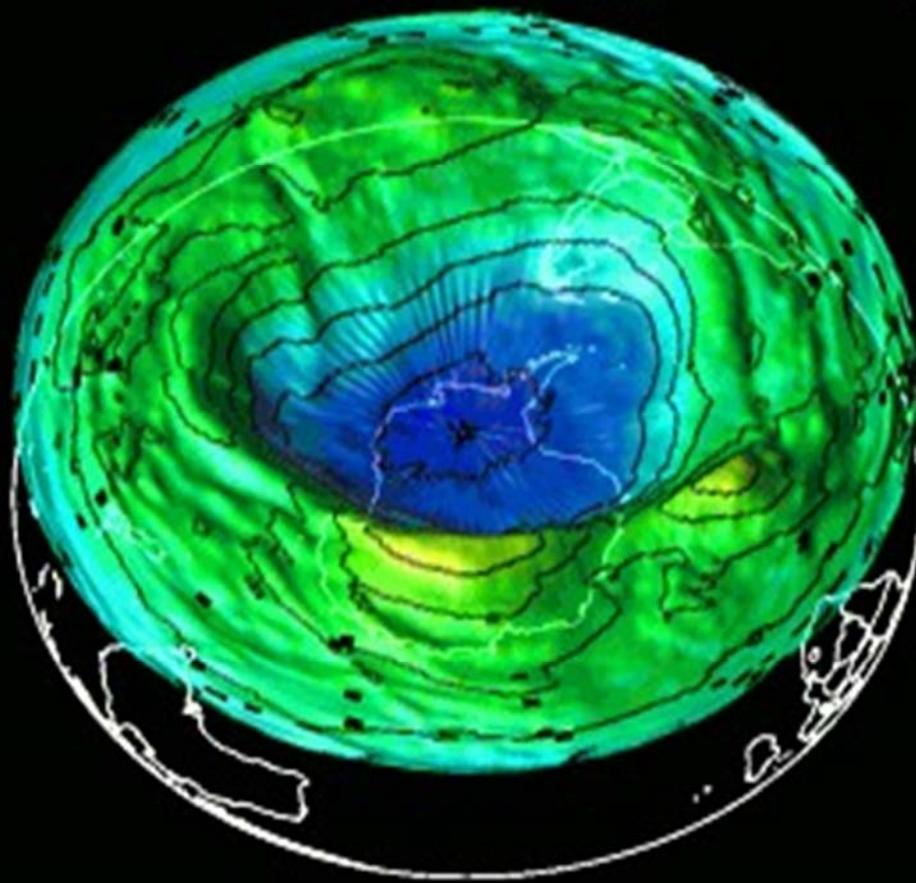


**Total Ozone on September 29, 1997**

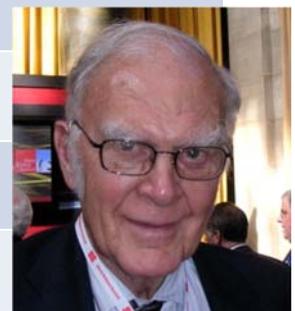


A combination of low temperatures and elevated chlorine and bromine concentrations are responsible for the destruction of ozone in the upper stratosphere thus forming a “hole”. (Kerr, 1987)

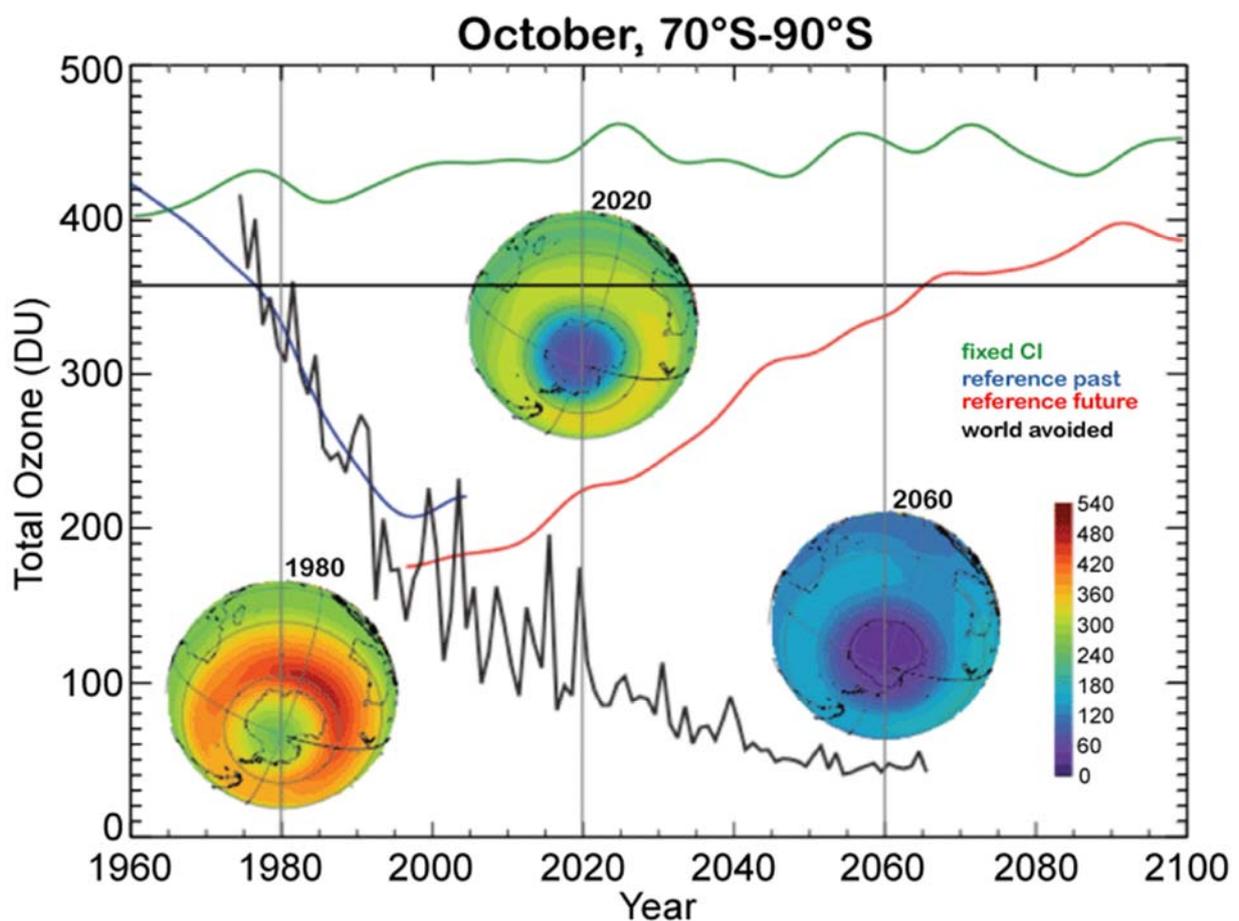
# Southern Hemisphere Upper Atmosphere



時間	記事
1840	C.F. Shoebenin 發現臭氧並為臭氧命名
1920	G.M.B. Dobson 研發監測總大氣臭氧的儀器
1928	Thomas Midgley 研發出CFC
1928	G. Findlay發現UV輻射線會導致皮膚癌
1974.6	美國加州大學Sherwood Rowland教授和Mario Molina博士在Natural 雜誌上發表論文指出CFC對臭氧層的破壞
1977.3	UNEP設立「臭氧層問題調節委員會」
1983.5.30	我國禁止輸入、製造及販賣含CFC之化妝品
1985.8	NASA發表南極上空臭氧洞的衛星觀測照片
1987.9	UNEP在加拿大召開會議，通過「蒙特羅破壞臭氧層物質議定書」，將五種CFC及三種海龍列管，共有24個國家及歐洲經濟共同體簽署



時間	記事
1989.1.1	蒙特婁議定書生效
1990.9	NASA觀測到南極上空有史以來規模最大的臭氧洞
1991.8	行政院環境保護署設置跨部會「行政院環境保護署蒙特婁議定書專案小組」
1992.5	「行政院環境保護署蒙特婁議定書專案小組」擴編為「行政院對外工作會報全球環境變遷工作小組」
1992.11.24	「中華民國臭氧層保護協會」成立
1997.1.26	「中華民國臭氧層保護協會」舉辦為臭氧層而跑活動
1995.11	Sherwood Rowland 和 Mario Molina 因發現CFC對於臭氧層的破壞而獲得1995年諾貝爾化學獎
1997.7	「中華民國臭氧層保護協會」更名為「中華民國大氣層保護協會」
2006.9	美國NOAA科學家觀察2006年南極洲記錄到的臭氧層破洞範圍又是一歷史新高



- 全球暖化是臭氧洞造成的！
- 因為有蒙特婁協議，減碳協議也可以仿效。



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## Science News

... from universities, journals, and other research organizations

### Ozone Hole Healing Could Cause Further Climate Warming

*ScienceDaily (Jan. 26, 2010)* — The hole in the ozone layer is now steadily closing, but its repair could actually increase warming in the southern hemisphere, according to scientists at the University of Leeds.

**See Also:**

**Earth & Climate**

- Environmental Issues
- Ozone Holes
- Global Warming
- Climate
- Weather
- Atmosphere

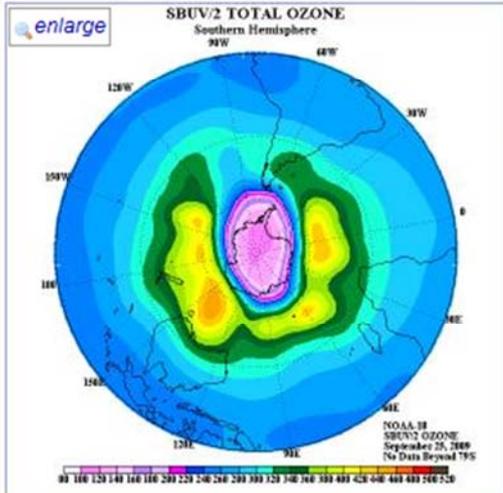
**Reference**

- Ozone layer
- Consensus of scientists regarding

The Antarctic ozone hole was once regarded as one of the biggest environmental threats, but the discovery of a previously undiscovered feedback shows that it has instead helped to shield this region from carbon-induced warming over the past two decades.

High-speed winds in the area beneath the hole have led to the formation of brighter summertime clouds, which reflect more of the sun's powerful rays.

"These clouds have acted like a



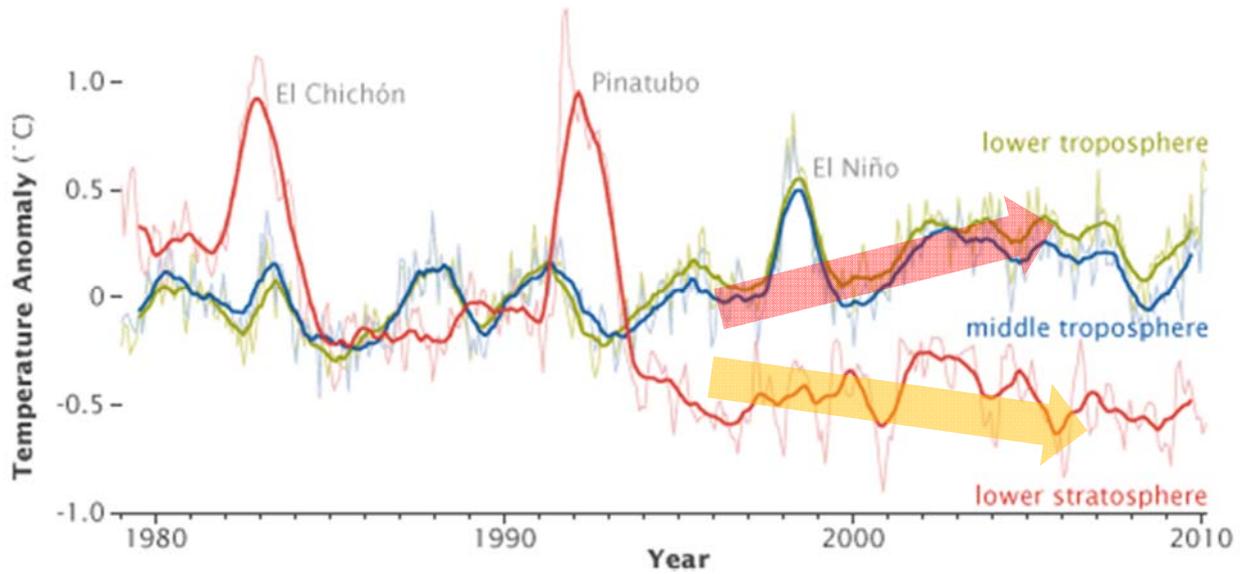
Total Antarctic ozone - September 2009. (Credit: NOAA)

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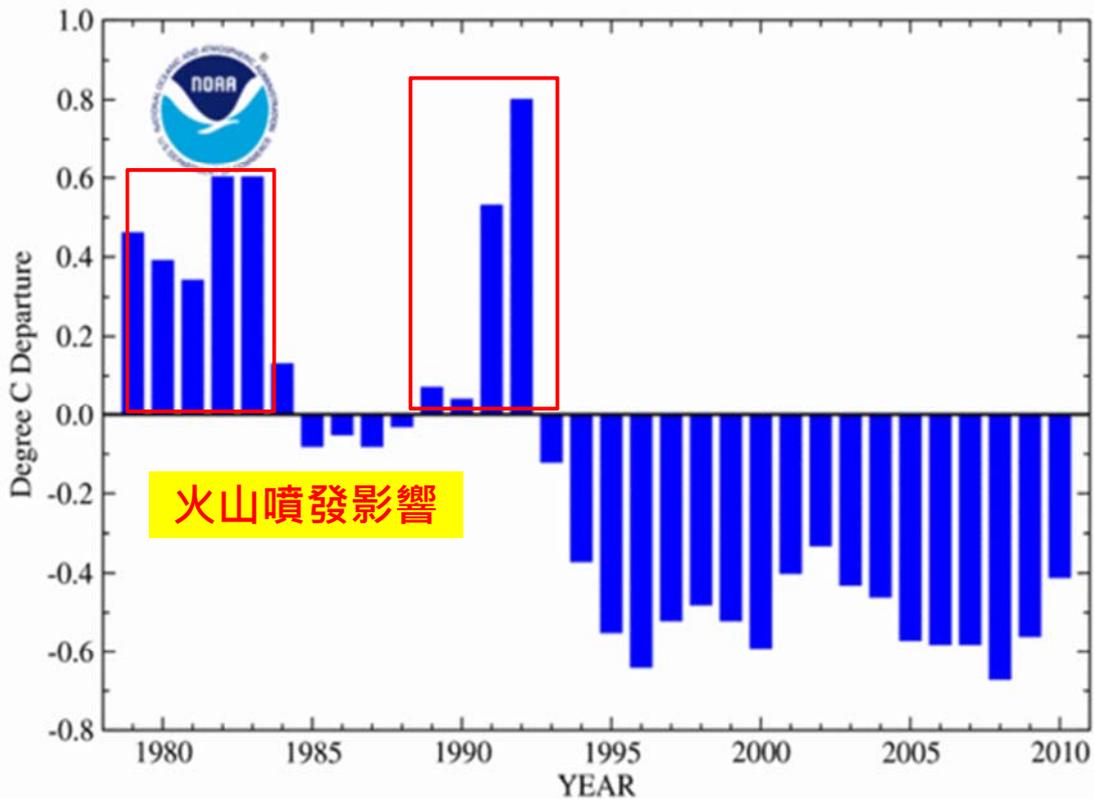
Of

# 地表溫度 vs 平流層溫度



[http://earthobservatory.nasa.gov/Features/GlobalWarming/images/msu\\_1978-2010.png](http://earthobservatory.nasa.gov/Features/GlobalWarming/images/msu_1978-2010.png)

## Departure of Stratospheric Temperature From Average

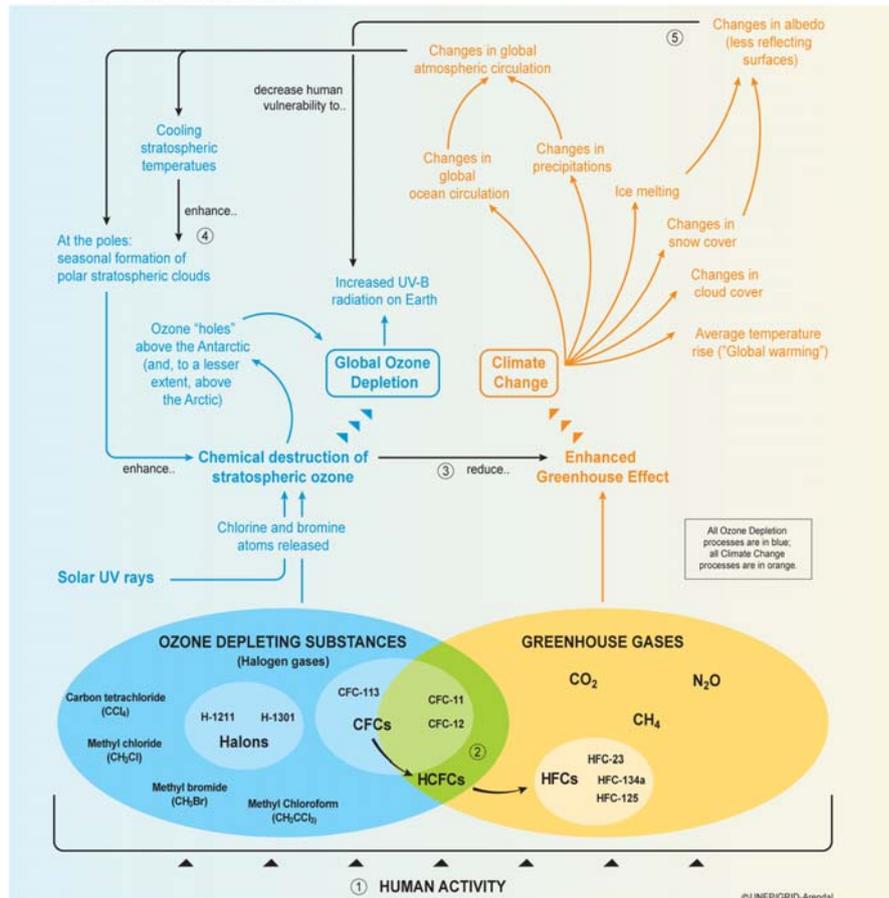


\*Base Period = 1981 - 2010

Analysis provided by NASA and the Global Hydrology and Climate Center at the University of Alabama in Huntsville

# 溫室氣體 vs 臭氧層洞關係圖

OZONE DEPLETION AND CLIMATE CHANGE



## 結語

- 臭氧層破洞問題，還沒結束！全球暖化下的氣候變遷，與臭氧層之關聯，造成複雜的交互作用，仍有許多未解之處。
- 天、地、人的關係必須重新思量，順天應時。
- 大氣保護尚未成功，同志仍需繼續努力。