

## **My meeting with IPCC scientist from WGII, Ulf Molau**

### **Reflections on works within the IPCC working groups, expanded version**

The IPCC will provide a scientific view of climate change, they will describe the effects, and give possible measures to counteract climate change. The panel's findings are addressed primarily to the world's decision-makers and are intended to be used both nationally and internationally, including in the negotiations that take place within the UNFCCC which took place in Paris.

IPCC reports are produced by three working groups.

According to the IPCC site the three groups has this different objectives.

#### **The IPCC Working Group I (WG I) assesses the physical scientific aspects of the climate system and climate change.**

The main topics assessed by WG I include: changes in greenhouse gases and aerosols in the atmosphere; observed changes in air, land and ocean temperatures, rainfall, glaciers and ice sheets, oceans and sea level; historical and paleoclimatic perspective on climate change; biogeochemistry, carbon cycle, gases and aerosols; satellite data and other data; climate models; climate projections, causes and attribution of climate change.

#### **The IPCC Working Group II (WG II) assesses the vulnerability of socio-economic and natural systems to climate change, negative and positive consequences of climate change, and options for adapting to it.**

It also takes into consideration the inter-relationship between vulnerability, adaptation and sustainable development. The assessed information is considered by sectors (water resources; ecosystems; food & forests; coastal systems; industry; human health) and regions (Africa; Asia; Australia & New Zealand; Europe; Latin America; North America; Polar Regions; Small Islands).

#### **The IPCC Working Group III (WG III) assesses options for mitigating climate change through limiting or preventing greenhouse gas emissions and enhancing activities that remove them from the atmosphere.**

The main economic sectors are taken into account, both in a near-term and in a long-term perspective. The sectors include energy, transport, buildings, industry, agriculture, forestry, waste management. The WG analyses the costs and benefits of the different approaches to mitigation, considering also the available instruments and policy measures. The approach is more and more solution-oriented.

The Working Group II has no mandate to assess climate change, they should look at the effects of climate change identified by Working Group I.

#### **Professor Ulf Molau from Gothenburg participated in the work of IPCC WGII**

<http://science.gu.se/aktuellt/nyheter/Nyheter+Detalj/goteborgsforskare-huvudforfattare-i-ny-rapport-fran-klimatpanelen.cid1212714>

Some history

When I studied biology in the 80s at the University in Gothenburg, Ulf Molau was active there and I met him occasionally in the corridors. He worked with a major project at the Institution of Botany called "Flora of Ecuador". The purpose of that was to examine and determine species of tropical

plants in South America. Swedish students were sent to Ecuador to analyse and determine the plants species. It was a project that had been going on for many years, see <http://www2.dpes.gu.se/project/ecuador/> Between 1978 and 1988, Ulf Molau publishes many articles on tropical plants but later he turns to alpine plants and their ecology. Prof Ulf Molau conducted a botanical work in the spirit of Linnaeus that impressed me.

Therefore, I looked forward to listen to him at the lecture in Vara Municipality, organized by Maria Aronsson, environmental strategist, October 7 at the library hall.

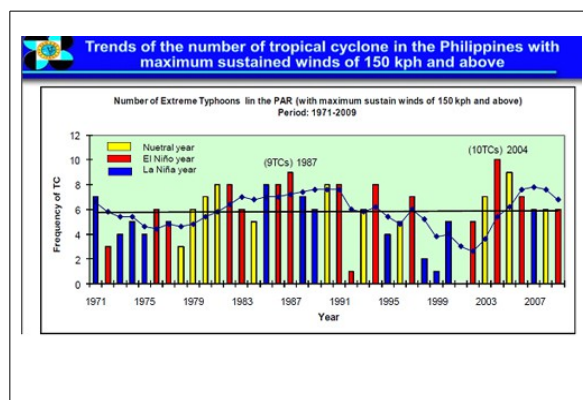
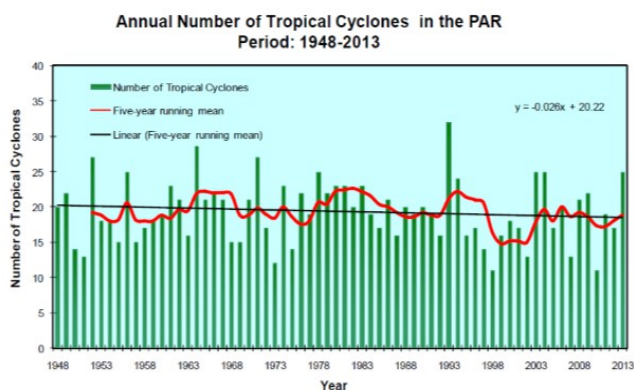
Before the lecture I got a nice and interesting conversation with him about how it was at the Botanical Institution in Gothenburg. Got a better understanding of one thing I wondered about regarding my first and only scientific publication in botany. After some thought I chose to become a teacher instead of starting at the doctoral education at this institution.

Prof Molau told us interesting things about his work in Working Group II,

Prof Ulf Molau is one of the lead authors of Chapter 18, which we will take a closer look at. His lecture inspired me to look at WGII's work, and particularly Chapter 18, where Ulf Molau is one of the lead authors.

At the lecture, he told the audience first about his work in the group, but then he took up climate change. More extreme weather and cyclones will increase he said.

I was surprised with that, when he unexpectedly began talking about the increasing numbers of cyclones/extreme weather, then I felt the need to put up my hand and I interrupted him and asked him if the cyclones actually will increase. I referred to the IPCC WGI and I even had the report with me and I showed it to the audience. WGI came to the conclusion that the number of tropical cyclones would not increase, perhaps they would even decrease slightly. ETC cyclones (cyclones at our higher latitudes) would be reduced but not by more than a few percent. In certain ocean basins, it could be that the intensity of the rain and wind associated with the cyclones would increase as demonstrated by model studies despite the fact that there are no trends that indicate that the largest and most intense cyclones are on the increase. Philippine weather service, Pagasa Dost, speaks of rising number of cyclones in the future while they publish statistics showing the absence of any increasing trend of extreme weather. And the Philippines are often badly hit by tropical cyclones.



My students in Sweden and the Philippines (<http://www.lagmansnaturesida.se/sommarlovet.pdf>) has learned that cyclones will be more frequent in the future, in a textbook for high schools students in Sweden, the authors have included a picture of the disaster film "The Day of Tomorrow," to illustrate the future climate with more cyclones. See my previous article on this topic <http://www.klimatupplysningen.se/2014/09/14/gastinlagg-om-skolans-larobocker-och-klimatet/>

Considering the conclusion that WGI (included in the technical summary) arrived at, I was very surprised over Ulf Molau's statement. I also told before all the audience of the new research on stalactites along Australia's coasts used to examine the frequency of cyclones in the past. The result of the research showed that the 1700 century appeared to be the most turbulent century and since 1970 the cyclone frequency had decreased. Ulf Molau admitted that he was not aware of this research.

Before this meeting when teaching in Alléskolan in Vara Municipality I and my co-teacher had shown all the students the 4 kg heavy book from WGI, my colleague had seen the IPCC statement on decreasing cyclones which surprised her and the students thought it was good. "Good," said a kid in grade seven very high. My colleague who also attended the lecture of prof Molau, was very surprised when Ulf Molau spoke of increasing cyclones and extreme weather now and in the future. My colleague had seen and read what WGI wrote.

What then is written in WGII?

From WGII Chap. 18.4.3. **Impacts of Extreme Weather Events.**

Here WGII oddly enough, makes a small investigation of their own into the question if the frequency of the cyclones has increased instead of taking WGI's conclusions direct to the point as they should have done. WGI's conclusions are given in the technical summary so they didn't need to read the full WGI. But the WGII should work from WGI's conclusions and continue from that. For them to make their own, albeit small investigation is unnecessary. They write about changes in the frequency and intensity of extreme weather events.

**“The last Several decades have seen changes in the frequency and intensity of extreme weather events including extreme temperature, droughts, heavy rainfall, and tropical and extratropical cyclones with low to very high confidence, depending on the type of extreme events (IPCC, 2012; WGI AR5 Chapter 2). However, the impacts of extreme weather events also depend on the vulnerability and exposure of systems. It is possible that climate change can affect vulnerability and exposure, but typically both are influenced primarily by non-climate confounders, most notably economic development.”**

Here they write that: "**Changes in the frequency and intensity of extreme weather events**" in a way that you get the impression that there is an increase in extreme weather events, and as I also understand on the basis of professor Ulf Molau's lecture.

Here it may be interesting to recall what the "Report Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) 2011 says on page 124 in a question box FAQ 3: 1 **Is the Climate Becoming More Extreme?** The answer given is that it is not possible to answer the question.

On page 158 in SREX "While the global frequency has remained steady, there can be substantial inter-annual variability to multi-decadal frequency variability within individual ocean basins." Furthermore, "Natural variability combined with uncertainties in the historical data makes it difficult to detect trends of tropical cyclone activity" but they note a regional trend that differs, namely in the North Atlantic. They also note that it is difficult to say when the changes in tropical cyclone activity exceed natural variability, p160. On page 161 you are referred to some scholars who say that **it will take several decades before any increasing trend can be discerned.**

**18.4.3.1. Economic Losses Due to Extreme Weather Events**

Extreme weather events can result in economic impacts related to damage to private and public assets as well as the temporary disruption of economic and social activities, long-term impacts, and impacts beyond the areas affected. Some economic and especially social impacts are not readily monetizable and are thus excluded from most economic assessments (Handmer et al., 2012, their Sections 4.5.1, 4.5.3).

**Economic costs of extreme weather events have increased over the period 1960–2000** (high confidence), with insured losses increasing more rapidly than overall losses (Section 10.7.3; Handmer et al., 2012, their Sections 4.5.3.3, 4.5.4.1). **This is also reflected by an increase in the frequency of extreme weather-related disasters over the same period** (Neumayer and Barthel, 2011). Recent studies from Mexico and Colombia highlight both variability and positive trends in disaster frequency (unadjusted) losses and other damage metrics (Saldaña-Zorrilla and Sandberg, 2009; Marulanda et al., 2010; Rodriguez-Oreggia et al., 2013).

Thus, an **increase in extreme weather disasters** but the increase of the costs are mostly due to population growth and more buildings, for example.

**However, the greatest contributor to increased cost is rising exposure associated with population growth and growing value of assets** (high confidence; Bouwer et al., 2007; Bouwer, 2011; Barthel and Neumayer, 2012; Handmer et al., 2012, their Sections 4.2.2, 4.5.3.3, Box 4-2). To account for changes over time in the value of exposed assets, many studies attempt to normalize monetary losses by an overall measure of changes in asset value. **A majority of studies have found no detectable trend in normalized losses** (Bouwer, 2011). Studies on insured losses that in general meet higher data quality standards than data on overall losses due to thoroughly monitored payouts have focused on developed countries including Australia, Germany, Spain, the USA (Changnon, 2007, 2008, 2009a,b; Barredo et al., 2012; Barthel and Neumayer, 2012; Sander et al., 2013; see also Section 10.7.3). **Studies of normalized losses from extreme winds associated with hurricanes in the USA** (Miller et al., 2008; Pielke Jr. et al., 2008; Schmidt et al., 2010; Bouwer and Botzen, 2011) **and the Caribbean** (Pielke Jr. et al., 2003), **tornadoes in the USA** (Brooks and Doswell, 2002; Boruff et al., 2003; Simmons et al., 2013), **and wind storms in Europe** (Barredo, 2010) **have failed to detect trends consistent with anthropogenic climate change**, although some studies were able to find signals in loss records related to climate variability, such as damage and loss of life due to **wildfires** in Australia related to ENSO and Indian Ocean dipole phenomena (Crompton et al., 2010), or **typhoon loss variability in the western North Pacific** (Welker and Faust, 2013). Effects of adaptation measures (disaster risk prevention) on disaster loss changes over time cannot be excluded as research is currently not able to control for this factor (Neumayer and Barthel, 2011).

(The Philippines increased in population by nearly 50 % since the late 80's when my wife's family experienced a tropical cyclone that devastated their village, an increase from about 60 million to over 100 million.)

In conclusion, although there is **limited evidence of a trend in the economic impacts** of extreme weather events that is consistent with a change driven by observed climate change, **climate change cannot be excluded as at least one of the drivers** involved in changes of normalized losses over time in some regions and for some hazards

#### 18.4.3.2. Detection and Attribution of the Impact of Single Extreme Weather Events to Climate Change

”Although most studies on the relationship between climate change and extreme weather events have focused on changes over time in their frequency and intensity, a few studies have focused on the contribution of climate change to specific events (WGI AR5 Section 10.6.2). **Assessing the contribution of climate change to a specific event poses particular challenges, both in terms of methodology and communication of results** (Allen, 2011; Curry, 2011; Hulme et al., 2011; Trenberth,

2011). Only a few studies have attempted to evaluate the role of climate change in the impacts of individual extreme weather events. For instance, Pall et al. (2011) and Kay et al. (2011), using observational constraints on climate and hydrologic model simulations, **concluded that greenhouse gas emissions have increased the probability of occurrence of a comparable flooding event in autumn 2000 over the UK.**"

**The likelihood of similar floods like those in England have increased due to greenhouse gas emissions, they say. (Would like them to comment on what George Monbiot says. Man has been part of this, but in a completely different way. <http://www.monbiot.com/2014/01/13/drowning-in-money>**

George Monbiot tells us in this article how landowners have, with the help of contributions, radically reduced the tree and shrub cover at higher altitudes. There is no longer any forest that can act as a "sponge" and take up a significant amount of precipitation when heavy rain falls as occurred four times during November 2012. Now the water flows faster down into the valleys, which causes flooding.

Moreover, some authorities gave sharp criticism of the continued expansion of communities on the flat flood plains. "The Flood Protection Association, an industry body, warned that flooding is being made worse by developers building on flood plains to cater for an expanding population. Mary Dhonau, the group's chairwoman said more than 2,000 properties were approved on flood plains this year despite official objections, and added: "It is absolutely barking mad to build on a flood plain when there are so many other places that could be built on." <http://www.telegraph.co.uk/news/weather/10539504/Britain-faces-a-month-of-floods-with-no-end-in-sight.html>

See also <http://wattsupwiththat.com/2014/01/07/is-englands-bad-weather-a-sign-of-climate-change/> for precipitation statistics.

In highly temperature-sensitive regions, such as high mountains, several extreme impact events of recent decades can be qualitatively attributed to effects of long-term warming (*high confidence*), **namely glacier lake outburst floods due to glacier recession and subsequent formation of unstable lakes** (Evans and Clague, 1994; Carey, 2005; Bajracharya and Mool, 2009), debris flows from recently deglaciated areas, and rock fall and avalanches following the loss of mechanical support accompanying glacier retreat (Haeberli and Beniston, 1998; Oppikofer et al., 2008; Huggel et al., 2012b; Stoffel and Huggel, 2012; see also Section 18.3.1.3).

Furthermore they write, "In highly temperature-sensitive regions, such as high mountains several extreme impact events of recent decades can be qualitatively attributed to effects of long-term warming (high confidence), namely glacier lake outburst floods due to glacier recession and subsequent formation of unstable lakes, debris flows from recently deglaciated areas, and rockfall and avalanches following the release of mechanical support accompanying glacier retreat."

**Certainly since the Little Ice Age has ended, it is logical with such events that the glaciers are melting at lower levels.**

They also notes that warming take place more noticeable at higher latitudes. This is in line with the IPCC's conclusion that additional CO<sub>2</sub> does not have so much impacts in the tropics. Ulf Molau had a clear understanding that the greenhouse effect was concentrated in the tropics. Later, at another lecture by Per Holmgren (a well-known TV-weather man) I asked the question if it was so that about 70% of the greenhouse effect was found between 30 degrees north and 30 degrees south. He thought for a while and then replied that it seemed reasonable.

"Both low- and high-income countries have been strongly impacted by extreme weather events in recent years, but the impacts relative to economic strength have been higher in low-income countries (Handmer et al., 2012). Similarly, at the national scale, poor or elderly people have been disproportionately affected, as documented for Hurricane Katrina in the USA in 2005 (Elliott and Pais, 2006; Bullard and Wright, 2010) or the 2003 European heat wave" they say.

4-5000 years ago, today's glaciers started to form at higher altitudes, it's called neoglaciation. Caused by a slight drop in temperature. This glacier formation in the mountain ranges continued with some interruptions, such as the warm Middle Ages when it grew giant pines up in our mountain range where there are now only thin forests, all the time up to 100 years ago. The neoglaciation did not end until the end of the Little Ice Age. In South America, some glaciers reacted earlier but slowly already in the mid-1600, but "Storglaciären" in Sweden started it's melting around 1910. I always tell my students that "we must be thankful that we have escaped from the Little Ice Age when the tree lines lowered and growing conditions became worse further north and up in the mountain valleys/alpine valleys".

#### 18.6.4. Reasons for Concern

Finally they writes "Current evidence does not, however, indicate sustained global trends in tropical cyclone or extratropical cyclone activity (see WGI AR5 Section 2.6.3)."

In their conclusion, they write that climate change is visible in Arctic ecosystems and coral reefs. Climate change in Arctic ecosystems, certainly, in the northern Sweden, Swedish researchers studies changes in the permafrost formed during the Little Ice Age, after the warm Middle Ages.

The authors of Chapter 18 starts by saying that the frequency of extreme weather events have changed in a way that makes you believe that they believe in increasing number of cyclones as Ulf Molau said at his lecture in Vara. But towards the end they say that there are **no global trends** "in extratropical cyclone or extratropical cyclone activity". Then there is also **no increasing trend**. This summerical study is completely unnecessary.

**They refer to WGI Chapter 2.6.3, the title is "Tropical Storm".**

In this chapter the IPCC authors from WGI writes:

"AR4 concluded that it was likely that an increasing trend had occurred in intense tropical cyclone activity since 1970 in some regions but that there was no clear trend in the annual numbers of tropical cyclones. Subsequent assessments, including SREX and more recent changes literature indicate that it is difficult to draw firm conclusions with respect to the confidence levels associated with observed trends prior to the satellite era and the ocean basins outside of the North Atlantic. *(chapter 2 is continued futher down)*

Here it is interesting to remind oneself what "Report Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) 2011 says on p 124 in a question box.

FAQ 3:1 **Is the Climate Becoming More Extreme?** The answer is that you cannot answer the question.

Here follows the complete question box.

**While there is evidence that increases in greenhouse gases have likely caused changes in some types of extremes, there is no simple answer to the question of whether the climate, in general, has become more or less extreme.** Both the terms 'more extreme' and 'less extreme' can be defined in different ways, resulting in different characterizations of observed changes in extremes. **Additionally, from a physical climate science perspective it is difficult to devise a comprehensive metric that encompasses all aspects of extreme behavior in the climate.**

One approach for evaluating whether the climate is becoming more extreme would be to determine whether there have been changes in the typical range of variation of specific climate variables. For example, if there was evidence that temperature variations in a given region had become significantly

larger than in the past, then it would be reasonable to conclude that temperatures in that region had become more extreme. **More simply temperature variations might be considered to be becoming more extreme if the difference between the highest and the lowest temperature observed in a year is increasing. According to this approach, daily temperature over the globe may have become less extreme because there have generally been greater increases in mean daily minimum temperatures globally than in mean daily maximum temperatures, over the second half of the 20th century.** On the other hand, one might conclude that daily precipitation has become more extreme because observations suggest that the magnitude of the heaviest precipitation events has increased in many parts of the world. Another approach would be to ask whether there have been significant changes in the frequency with which climate variables cross fixed thresholds that have been associated with human or other impacts. For example, an increase in the mean temperature usually results in an increase in hot extremes and a decrease in cold extremes. Such a shift in the temperature distribution would not increase the 'extremeness' of day-to-day variations in temperature, but would be perceived as resulting in a more extreme warm temperature climate, and a less extreme cold temperature climate. So the answer to the question posed here would depend on the variable of interest, and on which specific measure of the extremeness of that variable is examined. As well, to provide a complete answer to the above question, one would also have to collate not just trends in single variables, but also indicators of change in complex extreme events resulting from a sequence of individual events, or the simultaneous occurrence of different types of extremes. So it would be difficult to comprehensively describe the full suite of phenomena of concern, or to find a way to synthesize all such indicators into a single extremeness metric that could be used to comprehensively assess whether the climate as a whole has become more extreme from a physical perspective. **And to make such a metric useful to more than a specific location, one would have to combine the results at many locations, each with a different perspective on what is 'extreme.'**

Three types of metrics have been considered to avoid these problems, and thereby allow an answer to this question. **One approach is to count the number of record-breaking events in a variable and to examine such a count for any trend.** However, one would still face the problem of what to do if, for instance, hot extremes are setting new records, while cold extremes are not occurring as frequently as in the past. In such a case, counting the number of records might not indicate whether the climate was becoming more or less extreme, rather just whether there was a shift in the mean climate. Also, the question of how to combine the numbers of record-breaking events in various extremes (e.g., daily precipitation and hot temperatures) would need to be considered. **Another approach is to combine indicators of a selection of important extremes into a single index, such as the Climate Extremes Index (CEI),** which measures the fraction of the area of a region or country experiencing extremes in monthly mean surface temperature, daily precipitation, and drought. The CEI, however, omits many important extremes such as tropical cyclones and tornadoes, and could, therefore, not be considered a complete index of 'extremeness.' Nor does it take into account complex or multiple extremes, nor the varying thresholds that relate extremes to impacts in various sectors.

**A third approach to solving this dilemma arises from the fact that extremes often have deleterious economic consequences.** It may therefore be possible to measure the integrated economic effects of the occurrence of different types of extremes into a common instrument such as insurance payout to determine if there has been an increase or decrease in that instrument. This approach would have the value that it clearly takes into account those extremes with economic consequences.

**But trends in such an instrument will be dominated by changes in vulnerability and exposure** and it will be difficult, if not impossible, to disentangle changes in the instrument caused by non-climatic changes in vulnerability or exposure in order to leave a residual that reflects only changes in climate extremes. For example, coastal development can increase the exposure of populations to hurricanes; therefore, an increase in damage in coastal regions caused by hurricane landfalls will largely reflect changes in exposure and may not be indicative of increased hurricane activity. **Moreover, it may not always be possible to associate impacts such as the loss of human life or damage to an ecosystem due to climate extremes to a measurable instrument.**



None of the above instruments has yet been developed sufficiently as to allow us to confidently answer the question posed here. Thus we are restricted to questions about whether specific extremes are becoming more or less common, and our confidence in the answers to such questions, including the direction and magnitude of changes in specific extremes, depends on the type of extreme, as well as on the region and season, linked with the level of understanding of the underlying processes and the reliability of their simulation in models. *(End of question box.)*

Would it be sane to say that during medieval time it was extreme weather/temperature and it caused giant pines to grow on higher altitudes in our mountain ranges? Photos by Leif Kullman foremost expert in Sweden on treeline changes. The photos show impressive parts of trees that lived in medieval time.

## Uppvärmning i fjällkedjan en katastrof eller en återgång till ett normaltillstånd????

Medeltidens värme  
skapade fjällskogar av  
i nutiden oöverträffad  
storlek och grovlek



Leif Kullman Professor emeritus i Naturgeografi Umeå Universitet

On p 158 SREX it says "While the global frequency has remained steady, there can be substantial inter-annual variability to multi-decadal frequency variability within individual ocean basins." Vidare "Natural variability combined with uncertainties in the historical data makes it difficult to detect trends tropical cyclone activity" But the note a regional trend that is different namely in the north Atlantic.

**They conclude that it is difficult to say when changes in tropical cyclone activity goes beyond naturalvariation.**

"Based on changes in tropical cyclone intensity predicted by idealized numerical simulations with CO<sub>2</sub>-induced tropical SST warming, Knutson and Tuleya (2004) suggested that clearly detectable increases may not be manifest for decades to come. Their argument was based on a comparison of the amplitude of the modeled upward trend (i.e., the signal) in storm intensity with the amplitude of the inter annual variability (i.e., the noise). The recent high-resolution dynamical downscaling study of Bender et al. (2010) supports this argument and **suggests that the predicted increases in the frequency of the strongest Atlantic storms may not emerge as a clear statistically significant signal until the latter half of the 21st century** under the SRES A1B warming scenario. From SREX p 161.



## Continuation of chapter 2

“Section 14.6.1 (*here the author refers to another important chapter*) **discusses changes in tropical storms in detail. Current data sets indicate no significant observed trends in global tropical cyclone frequency over the past century** and it remains uncertain whether any reported long-term increases in tropical cyclone frequency are robust, after accounting for past changes in observing capabilities (Knutson et al., 2010). **Regional trends in tropical cyclone frequency** and the frequency of very intense tropical cyclones **have been identified in the North Atlantic and these appear robust since the 1970s** (Kossin et al. 2007) (very high confidence). However, argument reigns over the cause of the increase and on longer time scales the fidelity of these trends is debated (Landsea et al., 2006; Holland and Webster, 2007; Landsea, 2007; Mann et al., 2007b) with different methods for estimating undercounts in the earlier part of the record providing mixed conclusions (Chang and Guo, 2007; Mann et al., 2007a; Kunkel et al., 2008; Vecchi and Knutson, 2008, 2011). **No robust trends in annual numbers of tropical storms, hurricanes and major hurricanes counts have been identified over the past 100 years in the North Atlantic basin.** Measures of land-falling tropical cyclone frequency (Figure 2.34) are generally considered to be more reliable than counts of all storms which tend to be strongly influenced by those that are weak and/or short lived. **Callaghan and Power (2011) find a statistically significant decrease in Eastern Australia land-falling tropical cyclones since the late 19th century although including 2010/2011 season data this trend becomes non-significant (i.e., a trend of zero lies just inside the 90% confidence interval).** **Significant trends are not found in other oceans on shorter time scales** (Chan and Xu, 2009; Kubota and Chan, 2009; Mohapatra et al., 2011; Weinkle et al., 2012), although Grinsted et al. (2012) find a significant positive trend in eastern USA using tide-gauge data from 1923–2008 as a proxy for storm surges associated with land-falling hurricanes. **Differences between tropical cyclone studies highlight the challenges that still lie ahead in assessing long-term trends.**”

### Frequently Asked Questions FAQ 2.2 | Have There Been Any Changes in Climate Extremes?

(A bit different question compared to SREX. The question there was “Is the Climate Becoming More Extreme?” (The question in SREX was wider.)

Here their answer is yes with some reservation.

**There is strong evidence that warming has led to changes in temperature extremes—including heat waves—since the mid-20th century.**

That minimum temperatures have increased more than maximum temperatures is shown by a chart. But it says “Furthermore, there is no consistent definition in the scientific literature of what constitutes an extreme climatic event, and this complicates comparative global assessments.

**They raise a bit different question compared to SREX but concerning tropical cyclones they say,**

“There is strong evidence that warming has led to changes in temperature extremes” they say.

Among other things, they say “Considering the other extremes, such as **tropical cyclones**, the latest assessments show that due to problems with past observing capabilities, **it is difficult to make conclusive statements about long-term trends. There is very strong evidence, however, that storm activity has increased in the North Atlantic since the 1970s.**”

**Over periods of a century or more, evidence suggests slight decreases in the frequency of tropical cyclones making landfall in the North Atlantic and the South Pacific, once uncertainties in observing methods have been considered. Little evidence exists of any longer-term trend in other ocean basins. For extratropical cyclones, a poleward shift is evident in both hemispheres over the past 50 years, with further but limited evidence of a decrease in wind storm frequency at mid-latitudes. Several studies suggest an increase in intensity, but data sampling issues hamper these assessments.**

Here WGI chapter 2 takes up the Atlantic Ocean and its cyclones, and they refer to chapter 14 who

study this in more detail. Interestingly, they take a reference to Landsea 2006 something that I noted that the authors of Chapter 14 failed. They even in Chapter 2 have a chart of "land falling hurricanes, United States" that resembles Landsea's charts. That is missing in chapter 14.

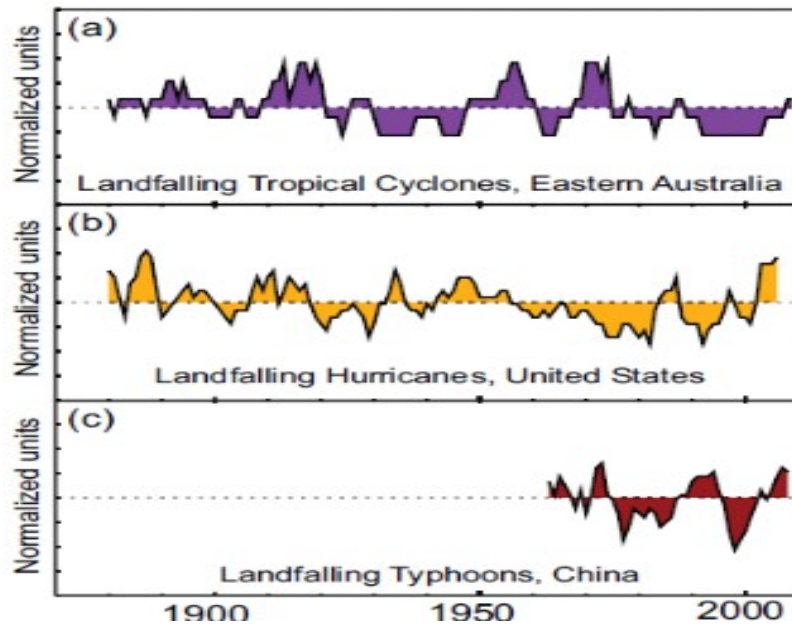
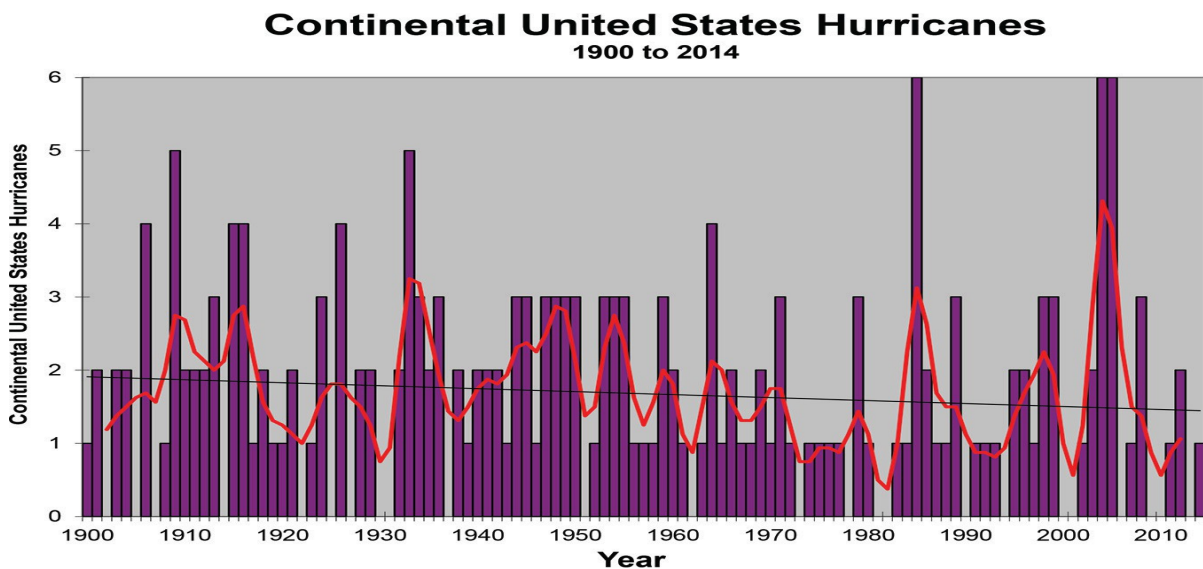


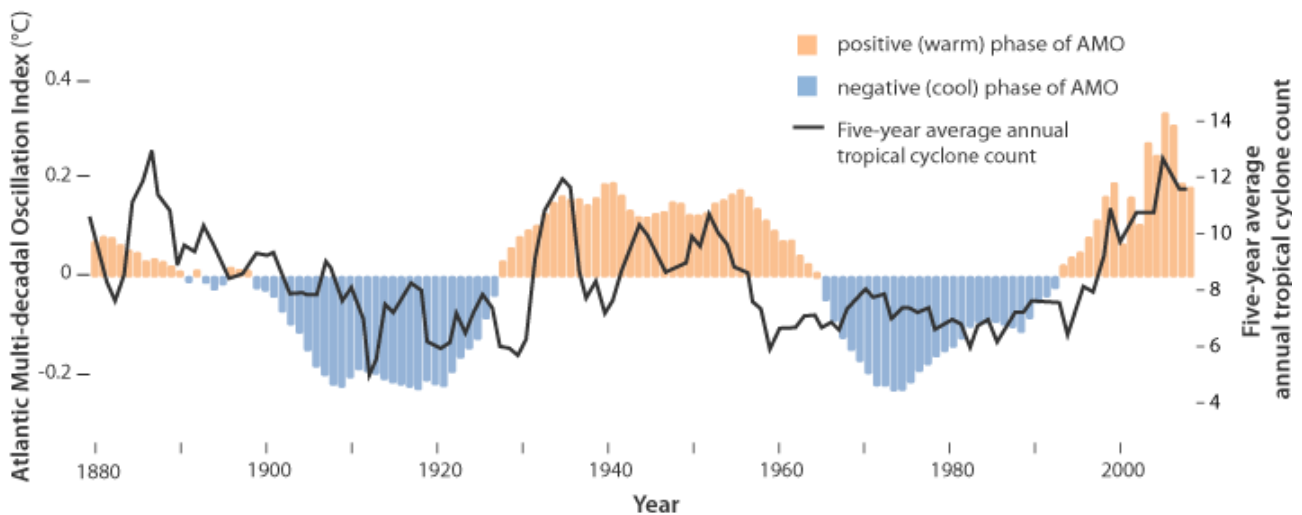
Chart from Chapter 2 above. Chart from Landsea below.



<http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-13-00211.1> Volume 96, Issue 7 (July 2015)

### They have found a straw man in the North Atlantic.

There are some noticeable explanation as variation with AMO, Atlantic Multidecadal Oscillation. This is as PDO in the Pacific, variation on longer terms. As a reasearcher wrote according to SREX, more decades of observation are needed before you can talk about change in extreme weather events. See the chart below.



On page 220 Chapter 2, there are a compilation of wind strengths from all over Europe. No increases in wind velocity/strength will be the conclusion when you look at this page.

## Om Kap 14

It was from the technical summary referring to Chapter 14 and Chapter 14, I gathered information about the decreasing frequency of cyclones which I wrote about in my article on school textbooks threats posted on the blog Climate Enlightenment (Klimatupplysningen)

Why doesn't Ulf Molau and the authors of WGII Chapter 18 read chapter 14 in WGI that goes into more details, as they refer to Chapter 2, and the authors of that chapter refers to chapter 14?

The authors of Chapter 14 writes in the technical report:

### From Chapter 14.6.3

**“The influence of past and future climate change on tropical cyclones is likely to vary by region, but the specific characteristics of the changes are not yet well understood, and the substantial influence of ENSO and other known climate modes on global and regional tropical cyclone activity emphasizes the need for more reliable assessments of future changes in the characteristics of these modes.... Although projections under 21st century greenhouse warming indicate that it is likely that the global frequency of tropical cyclones will either decrease or remain essentially unchanged, concurrent with a likely increase in both global mean tropical cyclone maximum wind speed and rainfall rates, there is low confidence in region-specific projections of frequency and intensity.... The global number of ETCs is unlikely to decrease by more than a few percent due to anthropogenic change.** A small poleward shift is likely in the SH storm track, but the magnitude is model dependent. There is only medium confidence in projections of storm track shifts in the Northern Hemisphere. Nevertheless, model results suggests that it is more likely than not that the N. Pacific storm track will shift poleward, and that it is unlikely that the N. Atlantic storm track will respond with a simple poleward shift. There is low confidence in the magnitude of regional storm track changes, and the impact of such changes on regional surface climate.”

**“The global number of ETC's is unlikely to decrease by more than a few percent due to anthropogenic change due to anthropogenic change?????? What does they mean with that?**

But about the Atlantic they say "Shorter term increases such as those observed in the Atlantic over the past 30 to 40 years appear to be **robust and have been hypothesized to be related, in part, to regional external forcing by GHGs and aerosols**, but the more steady century-scale trends that may be expected from CO2 forcing alone are much more difficult to assess given the data uncertainty in the available tropical cyclone records. "

Here they write about the Atlantic 30-40 years back and the increase of cyclones "appear to be robust." Ok it's robust but not unusual when studying Landsea's chart and the chart in Chapter 2. Is the earlier decreases also robust?

## **Conclusions**

What to say about those working in the IPCC organization?

Several groups are working in parallel with the same questions. Chewing the same things in multiple places. Trying partly to build up a feeling that extreme weather may be increasing in spite of the absence of the trends.

They first try to build up a picture that increases of cyclones in northern Atlantic are caused by man through GHG. But later they acknowledge that it is no increase when you look at it on longer time periods. They even say "Over periods of a century or more, evidence suggests slight decreases in the frequency of tropical cyclones making landfall in the North Atlantic and the South Pacific", WGI s 219.

Why not tell this more loudly?

We have seen the differences in the argumentation in Chapter 2 and chapter 14 WGI. There are differences in references in chapter 14, which goes into more detail with the cyclones, compared with chapter 2. But what is missing in chapter 14 are found in chapter 2. In chapter 2, there are multiple references made to Landsea, up to 2011, but in chapter 14, they have a single reference to him from 1999. Landsea is a highly merited researcher of cyclones in the Atlantic Ocean, a man whose conclusions it is hard to deny. He is working at the National Hurricane Center in Miami.

The authors of Chapter 18 WGII makes their own little unnecessary investigation of whether cyclones has increased or not and come to the conclusion that you can not comment on that. This instead of just accepting the conclusions of WGI. They could have had a reference to the straight conclusions that WGI came up with in Chapter 14 and in the technical summary. Were they not able to read more than up to Chapter 2? Didn't they read the technical summary which relates to chapter 14 and concluded that cyclones will not increase in numbers?

One of the lead authors of chapter 18 WGII, Ulf Molau, lectures and talks about the increasing number of cyclones now and in the future.

In addition, we remind ourselves that the notion that the cyclones will not increase in numbers but instead may be reduced in numbers in a warmer climate is forgotten in SPM, Summary for Policymakers.

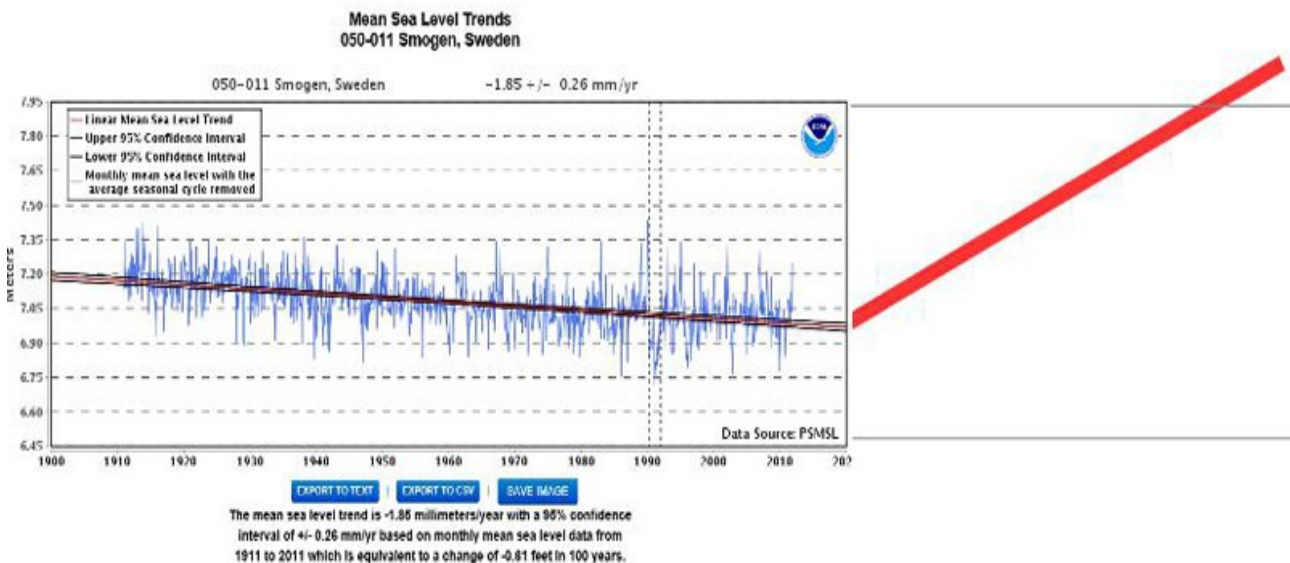
PS: Today, lobbyists are busy with their excesses. Two examples from Sweden:

Professor Johan Rockström at Stockholm Environmental Institute. Not a climate researcher and his doctoral dissertation was in the agricultural area. He is known to do research in earth resources. He has written a book with a foreword of Bill Clinton and three other well known figures. He goes public and say that the ocean will rise nearly 2 m until 2100. He is always on TV when climate is discussed. But he is not a climate researcher so he has to have some authorities in sea level rise. His authorities are the Australian scientists Church and White from Hobart, Tasmania and they say that the ocean will, with the present rise and acceleration, rise about 30 cm. This we learn from his fashionable book.

**A little discrepancy of about 1,5 m.**



<http://lagmansnaturesida.se/dbarkiv/2015/vecka45/db15nov06.htm>



And from the west coast of Sweden comes the following. Some people expect the ocean to rise very much in the future and they write about it in the leading newspaper in Gothenburg. The also ask millions for their projects to save the city from sea level rise. The chart show their expectations.

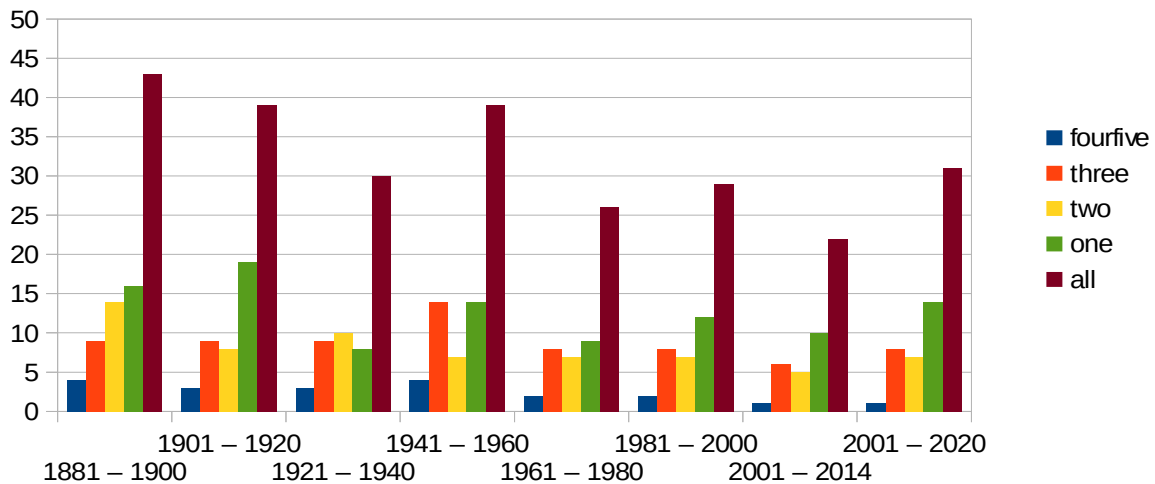
<http://lagmansnaturesida.se/dbarkiv/2015/vecka39/db15sep21.htm>



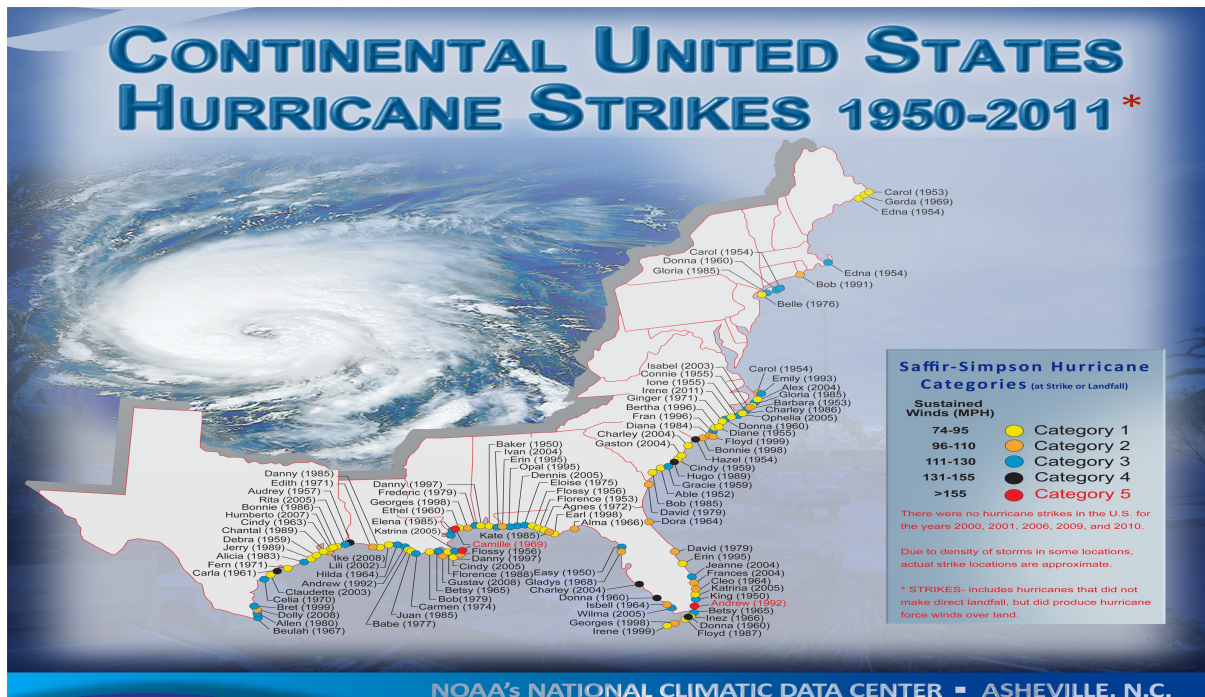
# Hurricanes in the USA

Hurricanes that make landfalls in eastern and southern USA. Hurricanes are divided according to wind speed in categories 1 to 5. In this chart they are divided in twenty years periods. The last period we assume the same level of hurricanes as up to 2014.

Hurricanes that make a landfall USA



This chart is based on the list of hurricanes found here: <http://www.aoml.noaa.gov/hrd/tcfaq/E23.html>



See also <http://www.livescience.com/39619-major-hurricane-landfall-drought.html> and it continues.