

Comparison of changes between draft and final Summary For Policy Makers IPCC AR5 WG1

[All page numbers listed below refer to Stockholm Final document]

Here is a comparison identifying the significant differences between the Final Government Review Draft (June 7) and the Draft Approved By Governments in Stockholm.

The short story is no significant changes, but they did clarify the language in the report.

Page 2

First shaded box reports that "warming of the climate system is **unequivocal**...." a new statement (but old from AR4).

The statement that the last decade was the warmest must be inferred from the text in the 2nd box (and that's easily done).

Page 3

The prior report of a **slowdown** in the warming temperatures is now properly framed as just one example of **natural variability**, and it's noted that that this specific period started with an El Niño event with very high temperatures. The text now reads:

"In addition to robust multi-decadal warming, global mean surface temperature exhibits substantial decadal and interannual variability (see Figure SPM.1). Due to natural variability, trends based on short records are very sensitive to the beginning and end dates and do not in general reflect long-term climate trends. As one example, the rate of warming over the past 15 years (1998–2012; 0.05 [-0.05 to +0.15] 14 °C per decade), which begins with a strong El Niño, is smaller than the rate calculated since 1951 (1951–2012; 0.12 [0.08 to 0.14] °C per decade)X. {2.4}

17 [INSERT FOOTNOTE X: Trends for 15-year periods starting in 1995, 1996, and 1997 are 0.13 [0.02 to 0.24], 0.14 [0.03 to 0.24], 0.07 [-0.02 to 0.18] °C per decade, respectively.]

Page 5

- the section on **Oceans** reports that there is **no** evidence in the trend of the AMOC (where the whole Europe freezes when the Gulf Stream stops)

Page 6

- The section on Cryosphere reports the decrease in Arctic sea ice over the last three decades is **unprecedented** in at least the last 1,450 years.

- This section now also reports that **observed warming** has been up to 3°C in parts of Northern Alaska and up to 2°C in part of the Russian European North.

Page 7

The section on sea levels in the last interglacial period now says that "high latitude temperature....[was] at least 2°C warmer than present" rather than of "no more than 2 degrees."

Page 8

There is now a footnote that permits easier translation of change in **Ocean** pH directly into "**acidity**."

Page 9

Lots of very tiny, insignificant numerical changes.

Page 10

New headline statement: "The Human Influence on the climate system is clear" is given in the first shaded box.

The first bullet in Section D, about **comparing model simulations to observed trends** is much better. The statement that models don't reproduce the recent slowdown is **struck** and instead it is noted that the models agree with the long term trend, and that there are short-term periods where there are differences.

Page 11

The revision of the **equilibrium climate sensitivity** is now attributed to **three factors - improved understanding, extended observations and a change in radiative forcings** - not just the recent observed slow down in warming.

Page 12

The famous "extremely likely" statement is now that human influence has been the "**dominant cause**" of the observed warming....

New Reference: It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Old Reference: It is extremely likely that human influence on climate caused more than half of the observed increase in global average surface temperature from 1951–2010.

There is a new finding on the cause of warming: "The best estimate of the human-induced contribution to warming is similar to the observed warming over this period." i.e. **Humans have caused ALL the warming.**

Page 13

New finding on attribution of **heat waves**: "likely that human influence has more than doubled the probability of occurrence of heat waves in some locations (see Table SPM.1)."

Page 15

The boxed key message language is much improved and clearly identifies RCP 2.6 has the scenario to keep warming below **2° degrees.**

Page 18

The boxed key message reports that **sea level rise is expected to accelerate even FURTHER in all scenarios.**

Page 20

The Carbon budget language is detailed and expanded. Critically a global carbon budget that accounts for non-CO2 gases is now offered:

New Reference:

"Limiting the warming caused by anthropogenic CO2 emissions alone with a probability of >33%, >50%, and >66% to less than 2°C since the period 1861–1880, will require cumulative CO2 emissions from all anthropogenic sources to stay between 0 and about 1560 GtC, 0 and about 1210 GtC, and 0 and about 1000 GtC since that period respectively. These upper amounts are reduced to about 880 GtC, 840 GtC, and 800 GtC respectively, when accounting for non-CO2 forcings as in RCP2.6. An amount of 531 [446 to 616] GtC, was already emitted by 2011. {12.5}

However, the central values for the fossil fuel emissions budget have been moved to a table, reducing their prominence and are now expressed as "mean" values making them less emphatic/certain as the central value estimate of science.

Note: Many carbon quantities are now presented in CO2 instead of C.