

**Virtual NEP/NEC
Hurricane Fact Sheet
April 28, 2006
Consolidated Comments**

Approvals

Approved:
Silent Approvals:
Disapproved: None

CIO, NWS, NMAO, AGO, OAR, NESDIS, NMFS, PPI
COS, DUS, A/S, CFO, CAO, WFMO, DAS/OA, DAS/IA, PA&E, NOS, GC

Comments

CIO (Staton)

CIO concurs with comments (aimed at the presentation of info, not the science)

1. **"What are the major issues associated with this increased activity?"**
 1. First sub-bullet: The question above is seems very straightforward, but this bullet is not a straightforward answer. "Strong natural decadal variation. .." would by itself be a straightforward answer as it is "a thing/entity" identifiable to increased activity (assuming that it is scientifically accurate). But the remainder of the sub-bullet is confusing. the next part talks about data and processes that IMHO don't have anything to do with the question. But then the last part tries to tie the "entity" and "process" together with a "whether or not" non-answer to the question, and BTW makes specific reference to intensity trends. This assumes the reader will related intensity to "increased activity" I think this is a stretch.
 1. RECOMMEND: Reword question to: **What are the major issues associated with increased hurricane frequency and hurricane intensity?"**
 2. RECOMMEND: separate the issues crammed into the first sub-bullet as the science supports.

This language is agreed upon by the NOAA scientists that provided input to this document and it is consistent language with a WMO report in which NOAA scientists participated.
 3. RECOMMEND: omit reference to "whether or not a global warming contribution ... can be detected" I contend it is not relevant to the question.

Disagree – the whole point is whether or not impacts of global warming can be detected given data issues and strong natural variability

2. Second Sub-bullet: Delete "However". Use of the word weakens the statement.

Yes – strengthened statement

2. **"What factors influence hurricanes?"**

1. First sub-bullet: This is a non-answer to the question.
 1. RECOMMEND: remove this bullet

This is an important bullet. We strengthened bullet and incorporated the NWS suggestion.

3. **"What key research is NOAA working on?"**

1. Third and fifth sub-bullet: Appear to be addressing common elements, if so, recommend combining these bullets.

We combined the bullets as suggested.

2. Fourth sub-bullet: Define anthropogenic for the non-science readers or use the definition in the bullet rather than the word itself.

Done

3. Sixth sub-bullet: Saying we are making improvements to the short range hurricane track and intensity forecast through "improved understanding" is unclear. "Improved of understanding" of what ... and how does it help?
RECOMMED: delete or detail this item.

We removed "understanding".

PA&E (Moorehouse)

General Comment: This issue assessment notes that there are many views in NOAA about the science. It is unclear how a document, with those varying views, should or could be effectively used. Also, without understanding the intended audience it is difficult to know if the fact sheet will be effective in communicating with the audience.

Recommendation: Review the document in the context of the intended message and audience of the document and revise if necessary. Include an overarching and/or summary statement for use by NOAA officials to accurately characterize the uncertain state of the science.

On most points there is agreement – only one topic disagreement, e.g. how long will the active period last.

General Comment: There are grammar inconsistencies in the document. Several bullets mix verb tense. For example, the first bullet, first sentence is past tense; the second sentence is present tense; some bullets end with a period; others do not.

Recommendation: Use consistent grammar throughout.

We revised language where appropriate.

Page 1:

Comment: Under the bullet titled "Has hurricane activity changed in the 20th century?" the second sub-bullet contains several qualifiers, leaving the impression that NOAA does not know if earlier periods were as active as the period beginning in 1995.

Recommendation: If NOAA does know about previous periods, remove the qualifiers. Reword the sentence to read "Earlier periods, such as 1945 to 1970 were as active as the most recent decade."

Done.

Page 2:

Comment: The bullet titled "How long will the current active period last?" cites data sources for two of the three sub-bullets.

Recommendation: Add the data source for the third sub-bullet.

Done.

NESDIS (Kicza)

1. On page two under "NOAA Resources for Additional Information" second bullet "NOAA Satellite and Information Service" add:

/National Coastal Data Development Center: /distributes data and information associated with natural and man-made events that impact coastal areas.

Done.

2. Recommend that web sites for listed centers/laboratories/office under "NOAA Resources for Additional Information" be included.

Done.

NWS (Jones)

"Research indicates that global warming can also increase hurricane intensities; there is less evidence for impacts on frequency." - is too vague and not quantified. (Is the forecast of global warming on hurricane intensity large - a doubling of Cat 4 and 5s - or small?). We suggest the following based upon GFDL modeling work and observational findings: "Research indicates that global warming can also increase hurricane intensities – most recent research suggests small increases on the order of 5% stronger winds in hurricanes near the end of the 21st Century; there is less evidence for impacts on frequency."

Revisions were made, but we used different wording.

Secondly, there is an over-emphasis of ocean temperature changes impacting hurricane activity at the expense of the very large tropospheric vertical shear alterations that have been seen. This must be included into the writeup (added to the second to last bullet point on the first page): "Hurricanes respond to a variety of environmental factors besides local ocean temperatures. In particular, low vertical wind shear (how the winds changes in direction and speed with height between the ocean's surface and about 8 miles up) is crucial for hurricane development. The recent active hurricane seasons have seen a large reduction in this parameter that in conjunction with warmer waters have helped cause the increase in major hurricane numbers."

Revisions were made but used more concise language.

Also, we offer the following minor comments:

Depending on the intended audience, some language will be above many non-scientist level. All should be made as clear as possible without losing meaning. For example:

"Limited understanding of natural decadal variability, combined with its irregular temporal behavior, preclude definitive statements....etc."

We incorporated this idea as stated in the response to Staton's comment 2.1.1.

"anthropogenic forcing"

Done. We used "human induced" instead.

Second page, Tropical Prediction Center/National Hurricane Center:
Clarify .."issue daily and seasonal operational hurricane forecasts;...etc" suggest, .."issues outlooks and forecasts for tropical cyclones;...etc." or ..."issues outlooks and operational hurricane forecasts..."

Done.

Note: Other revisions were made due to separate comments from NOAA GC.