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## ***Interactive comment on “King Tide floods in Tuvalu” by C.-C. Lin et al.***

### **Anonymous Referee #2**

Received and published: 23 August 2013

#### Scientific Significance:

The manuscript has the potential to make a good contribution to the understanding of natural hazards. The study seems to have two main points: Creating a local definition of what a King Tide is for the island of Tuvalu, and breaking down and quantifying the various influences of Astronomical, Meteorological and Climatic effects on the incidences of King Tides. This type of research is important, as it is needed to predict the future impact of global climate change on low-lying island nations such as Tuvalu.

#### Scientific Quality:

The authors seem to be working with the appropriate data sets and sources to back up their work. The authors make the point that the increase in SSH due to warming effects in the Pacific (El Nino and global warming) must be taken into consideration in

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order to account for the actual heights of King Tide incidents over the past 20 years.

The methods sections of the paper seem to be the strongest, as far as explanations and being backed up by figures.

#### Presentation Quality:

The major problems with this paper come in its structure, presentation of data, and especially its appropriate use of the English language. It appears that the points can be broken down as:

1. Definition of king tide and its importance on Tuvalu. (This could be done in a much more succinct fashion)
2. Factors determining size of king tide. (More quantification would be helpful here.)
3. The methods by which to measure those factors
4. Relative importance of ocean heating in these listed events. (See last paragraph for details)

The structure of the paper, as is, is a bit jumbled.

The paper also suffers from confusion in many of the words that are used. For instance, the authors use the word 'identify' many times when they actually mean 'define.' In the context of this paper, such mistakes are important, as they confuse the reader as to the purpose of several paragraphs. This is one of many problems with both vocabulary and grammar in the paper. My suggestion is for the authors to use an English speaking editor to assist with getting this manuscript into an understandable format.

I don't think that the data, as presented, are all that interesting scientifically. The authors seems to be saying that any explanation of the size of king tide or any tides or predictions of future ones that must take into account not only the astronomical effects and meteorological effects, but also climatic effects due to the warming of the ocean water. This is a great point, but one that is not quantified nearly enough in the paper. For instance, Table 1 is a chart of King Tide events. From the data that they presented, the authors should be able to quantify for each event the percent of the anomaly (variation from expected astronomical tide) that is contributed by each factor. That would

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be interesting and worthy of being published.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 1943, 2013.

**NHESSD**

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