

**First Reviewer:**

We would like to thank the reviewer for his comments and thoughtful suggestions.

**Comment 1:**

Clarify the role of westerly winds for rainfall in Africa. From the literature review (introduction) it was clearly indicated that westerly winds over east Africa enhance rainfall in the Upper Blue Nile (UBN). But it seems strong westerly winds over Western Indian Ocean reduce rainfall over UBN. Details on the physical interaction between these two statements will clarify the seemingly contradicting statements.

**Reply 1:**

The statement about the role of Westerly winds over East Africa is re-written to remove the confusion. The increase of westerly winds from Congo basin to Eastern Africa enhance the rainfall over the UBN (lines-59-61). However, an increase of westerly winds over Western Indian induce low level divergence over the UBN and decrease rainfall (lines 74-78).

**Comment 2:**

Similarly, a clearer statement is required on the physical explanation why UBN rainfall reduces when SIO index is positive. It is clearer when ENSO is positive. Then how/why the two occurring at the same time depress/or enhance the rainfall needs more explanation. I understand this is mainly a correlational study, but the attempted explanation requires more supportive physical understanding. A connection/disruption to the seal level air pressure during the Indian monsoon and airflow from the Congo to UBN to would be most helpful.

**Reply 2:**

The authors highlighted to physical explanation of the connection between South Indian Ocean SSTs and the UBN flow in the modified manuscript (lines 78-81).

“The warming over the South Indian Ocean, generates a cyclonic flow in the boundary layer, which reduces the cross-equatorial meridional transport of air and moisture towards the UBN basin, favoring a reduction in rainfall and river flows.”

**Comment 3:**

There appears to be a mix-up of numbers between the literature and the current study. For example, this study shows  $R^2$  of 0.3 for ENSO while the literature citation shows 0.25. Because of this mix-up, the proportion of ENSO vs SIO is confused. Instead of being 30% ENSO and 28% SIO for a combined 44% (when both ENSO and SIO are used). The text shows 44% combined, 25% ENSO (literature) and 20% SIO ( $44-25 =$  rounded to 20??). NOT CLEAR why this mix-up is chosen? Why not use the results from this study for all numbers?

**Reply 3:**

The ENSO index used in the literature (Eltahir 1996) is based on the period 1872-1972 and this one has and  $R^2=0.25$ . On the other hand, in this study we focus on the period 1900 to 2000 and this period has an  $R^2=0.3$ . The authors has highlighted the period of study of Eltahir 1996 in the introduction (line 37) and the discussed number in Section 3 (lines 120-123).

**Comment 4:**

I think the abstract should clearly separate the contribution of each index for explaining annual variability vs “rare” case variability when the two are non-neutral. For example, ENSO = 30% and SIO% = 28%, combined at 44% for explaining inter annual variability and ENSO = 64%, SIO = 60% and combined at 84% on rare years (~20% of time, put rarity level) when both conditions are non-neutral.

**Reply 4:**

The authors have added this part in the modified abstract.

**Comment 5:**

Good to discuss why the analysis was not extended to 2013? Unable to find data at Dongola other than the global runoff dataset?

**Reply 5:**

Yes, it was not extended because of the limited data.

**Comment 6:**

It would be helpful to show the multiple regression equation that relates Q with ENSO and SIO.

**Reply 7:**

The equations are added in Figure 4.

**Comment 7:**

Table 1: Explain what the variance stands for, flow in percent?

**Reply 7:**

The authors have added a description in the table. It stands for the observed variance in the flow of the Nile river in units of (MCM<sup>2</sup>/day<sup>2</sup>).

**Comment 8:**

Table 5: Check for typo for “1” for condition of ENSO Colds/SIO Normal

**Reply8:**

It is not a typo, it is the actual number.

**Comment 9:**

Figure 3: caption: I do not see a blue line on map

**Reply 9:**

The authors modified it to back to match the figure.

**Comment 10:**

Figure 4: MCM/day scale appears in error? Spell in caption what MCM is, if million meter cubic, then 400 MCM per day will yield > 146 km<sup>3</sup>/year which is far more than the annual

Nile Flow at Dongola?  
Spell axis label in caption...

**Reply 10:**

These values are for the average flow from July to October, not the annual average. Thus, 400 MCM/day, will yield almost 50 Km<sup>3</sup> for the 4 months period.

**Comment 11:**

Figure 5: Show "n" in each case

**Reply 11:**

The number are added in the caption of the figure.

**Comment 12:**

Check if per month value is correct? 10 km<sup>3</sup>/month which suggests a flow of 120 km<sup>3</sup>/year??

Figure 2 clearly shows a monthly value of less than 10 km<sup>3</sup>/month in any of the years. So how these figures happen to be more than 10 or > 15 km<sup>3</sup> per month is not clear

**Reply 12:**

In Figure 2 only 2 months (August and September) have values above 10 Km<sup>3</sup>/month, the other months (From November to July) are below 5km<sup>3</sup>/month, which makes the total annual Nile flow around 84 Km<sup>3</sup> as expected.

**Comment 13:**

Figure 7: will improve if years were shown in place of symbols (or as labels next two markers) so we can see the correspondence of ENSO and SIO values in a given year. Or some kind of color coding to reduce the clutter....the point is when both are non-neutral do they tend to have the same sign (+/-) despite being independent? Or a tabular summary for this information?

**Reply 13:**

The authors are afraid that adding year labels will make the figure hard to read. However, the required information can be discerned from Figure 4, which shows the Nile flow as function of ENSO and SIO independently.

**Comment 14:**

Figure 8c: y-axis, label uniformly

**Reply 14:**

The figure is modified.

**Comment 15:**

Including a separate section for the methods after the “data” section will improve the readability. The method and results appear to be all combined.

**Reply 15:**

The authors prefer to keep two sections, one highlighting the different modes of natural variability in the flow of Nile river and another one for the forecast approach. We are afraid that combing forecast section with the section in which we highlight the different modes might confuse the readers.

**Second Reviewer:**

We would like to thank the reviewer for his comments and thoughtful suggestions.

**Comment 1:**

Line 25: 60% of the annual flow as measured where?

**Reply1:**

It is highlighted in the modified manuscript that it is 60% of the annual flow as measured at Dongola

**Comment 2:**

Line 33: 'The prediction' rather than 'The predictability'

**Reply2:**

It is modified in the new manuscript.

**Comment 3:**

Line 34: SST not defined

**Reply3:**

It is added in the new manuscript.

**Comment 4:**

Line 36: () missing around reference? This is the case in several places

**Reply4:**

It is added in the new manuscript.

**Comment 5:**

Line 41: 'These correlation' this is presumably referring to the correlations found in Eltahir (1996), but it now appears as if it is referring to ElSanabary et al. (2014)?

**Reply5:**

It is modified in the new manuscript and it refers to the general correlations found between the Nile flow and SSTs indices.

**Comment 6:**

Line 86: '...investigate the strength of the teleconnections...'

**Reply 6:**

It is added in the new manuscript.

**Comment 7:**

Line 106: 'In comparison toAn earlier studyies, by EIDaw et al (2003) used SST indices...'

**Reply 7:**

It is modified in the new manuscript.

**Comment 8:**

Line 112: Delete 'Here'

**Reply 8:**

It is removed in the new manuscript.

**Comment 9:**

Line 114: Replace 'However' with 'In contrast'

**Reply 9:**

It is modified in the new manuscript.

**Comment 10:**

Line 1999-: 'predicted by three different a linear regression models using either ENSO averaged from September to November (Figure 4a) and or SIO August (Figure 4b) , or both (Figure 4c) as covariates.

**Reply 10:**

It is modified in the new manuscript.

**Comment 11:**

Line 120: SOI not defined (I think)

**Reply 11:**

It is added in the new manuscript (line 112).

**Comment 12:**

Line 147: 'The four different modes are identified...in (Table 1) and a new set of simple regression models fitted.

**Reply 12:**

It is added in the new manuscript (line 112).