Below are our final responses to the technical comments of the two reviewers. Reviewer comments are in italics, with our responses in normal font.

Reviewer Report #1:

I had gone through the author replies earlier on, and am generally happy with the way the authors addressed comments and suggestions from the different reviewers.
A few technical suggestions for the supplementary material, however:

-add coordinates for the different sampling locations

These have now been added to Supplementary Table S1.

-use an appropriate number of decimals - e.g. there is little point in expressing %O2 with two decimals; and for N2O concentrations use a consistent number of deciments (now: data from some sites presented with one decimal, for other sites with two decimals).

This has now been corrected in Supplementary Table S1 so that % O_2 no longer has decimals. All other data are now also consistently reported.

Reviewer Report #2

Upstill-Goddard et al. have adequately addressed my concerns from my previous review. There a few minor issues listed below:

L65: Here and throughout please use gC or gCH4

This has now been done

L89: specify the number of tributaries

We have now changed all references to "several" tributaries to "seven", this being the number of tributary systems listed in Table 1.

L129: specify how was the water collected: Niskin bottle ?

Yes these were collected using a Niskin-type sampler. We have now modified the text to include an additional sentence (lines 129-130), which reads: "Surface water samples (~0.3 m depth) were collected from central river channels using a standard "niskin"-type water sampler (http://www.tresanton.co.uk/standard.html)".

L147: YSI is not a UK brand

We have now modified this to "https://www.ysi.com/", which is the correct link.

L355: Regarding N2O and DIN relations, Borges et al. (2015) envisaged this in several African rivers, refer to supplemental figures 5 and 6.

We have modified this so that following "(Bouillon et al., 2012)", we now say "and in several other African rivers (Borges et al., 2015b)".