We thank very much the topical editor for his comments, which helped us clarify the final manuscript. Here, we provide in blue a short summary of the modifications performed, with non-obvious changes to the manuscript shown in green.

**Comment 1:** Page 2 line 30 “merging them with the those obtained at 30 arc-sec”: delete ‘the’

**Reply 1**: the text is corrected.

**Comment 2:** Page 2 line 40: something wrong here? The TI equation looks correct but why the (m) e.g. a(m), in the text? (m) indicates the units, but in which case it should be m\*\*2?

**Reply 2**: In fact the equation is correct. “a” in the formulation refers to the drainage area ‘per contour length’. In other words it’s an area (m2) per length (m) and as a result the unit is meters.

**Comment 3:** Page 10 line 1: you use this identical sentence on page 8, line 15. Specify it there, then here write something like ‘as explained above’? We should not get identical phrase in two locations.

**Reply 3**: The second repetition is modified as:

“As explained in Sect. 3.1.1 we assumed the mean annual WTD in wetlands to be less than 20 cm”

**Comment 4:** Page 10, wetness indices definitions: as both reviewers commented, these paragraphs and equations really belong in section 2 about data processing. Here in section 3 you want to focus on the composite maps. No re-writing necessary but to move some paragraphs would make a substantial improvement?

**Reply 4**: some modifications were done to move description of topographic indices to section 2.

The paragraphs under the title: “Three wetness index formulations” are moved to 2.4.2. As a result the name of section 2.4.2 is changed to “Three maps of topographic wetness indices”. Section 2.4.2 now starts with the following sentences:

“Flat downstream areas display a marked propensity to be saturated, which explains the wide use of topographic indices to delineate wetlands. Here, we use the global map of TI produced by Marthews et al. (2015) at 15 arc-sec resolution. It relies on the original formulation of Beven and Kirkby (1979), as in Eq (1), and on two global high-resolution digital elevation models (DEMs),… ”

The second paragraph starts with the text moved from 3.2.2:

“Topography, however, is often not sufficient for wetland identification because climate and subsurface characteristics also control water availability and vertical drainage…”

Section 3.3.2 is left with one paragraph, explaining the two ways to define the TI thresholds, and the analyzing the produced maps. The beginning of the paragraph is slightly changed to (changes in bold):

“In line withmany studies (Rodhe and Seibert 1999; Curie et al., 2007; Hu et al., 2017), we define TI-based wetlands as the pixels with TI above a certain threshold, defined to match a certain fraction of total land. In doing so, we prescribe the global GDW fraction as a chosen value, and the various TI formulations (section 2.4.2) only change the geographic distribution of the corresponding wetlands.”

**Comment 5:** Page 13 line 8: “our two CW maps”, but you have 7 CW maps, which two? The two preferred CW maps described on page 17? Later in this paragraph (line 35) you mention “four of our CW maps”. A reader does not know which two or which four maps you refer to and looking at figure legends does not always help.

**Reply 5**: In order to make the sentences more clear we specified which maps we intend by naming them explicitly (new ms, L24 p 13, L29 P12).

**Comment 5:** Page 15 line 5: “Jaccard index rises from 46 to 53”. But, JI varies between 0 and 1 (page 12).

**Reply 5**: the mistake is corrected. We meant “0.46 to 0.53”.

**Additional change:** we also modified the Acknowledgments: “This research is a part of the PhD project of Ardalan Tootchi, funded by “Région Ile de France” via the “Réseau francilien de recherche sur le développement soutenable” and by the French Agence Nationale de la Recherche (ANR grant ANR-14-CE01-00181-01). “