Review Comments

# Paper by Ding et al

Reviewer: Anonymous

**General Comments**

In summary, the paper is a good one in that it contributes to the NPS literature in terms of the following: 1) improved the Export Coefficient Method by including the spatial and temporal variations of the major driving force responsible for NPS pollution, i.e., precipitation. The impact of terrain is also included via the use of slope; 2) differentiated the constituents into dissolved and particulate (absorbed) fractions, and 3) quantified the relative contribution to NPS pollution from natural or background (ecological) and human activities (anthropogenic) sources. The second and third items above are of particular interest to NPS researchers. I therefore would recommend acceptance with some answers/changes/revisions.

**Specific Comments**

1. Introduction -- Line 10-22. The sentence seems to give out the impression that meteorological/hydrologic conditions are NOT important to human-related NPS pollution. Actually, such conditions should be important to BOTH sources. The generation and transport mechanisms applied to both types of pollutants. Please clarify.
2. Materials and Methods -- The definitions of α's suggest that their values depend only on the spatial and temporal distribution of rainfall. However, the location of the sub-watershed is very important because of the delivery ratio situation. For example, a sub-watershed located far upstream has less impact on the key assessment point (presumably the outlet of the watershed) than a sub-watershed located right at the outlet point. The two sub-watersheds would have the same α's if their rainfall

characteristic are the same according to your definition. This situation could be discussed now and in future research, the **"distance"** to the key assessment point could be considered.

3. Results and Discussion

- In validating the model, the relative errors for dissolved substances are much lower than those for the sediment/absorbed pollutant. Any particular reason for this?
- There seems to be a "change pint" for the trends of pollutant variation over time, and the year is 1980. May be I missed it, but is there a reason for this?
- Section 3.4. – Line 15-22. The terms "sink control" and "source control" seem to be a bit confusing. Generally, techniques such as fertilizer reduction, nutrient management, etc. are usually referred to as "source controls"
- The reduction rate of 9.17% for contour tillage is mentioned. Is this calculated by this study? If not, please provide reference(s).
- Controls – There are many control practices specifically developed for agricultural activities, forest land, etc. Suggest the authors consider adding a few practices such as <u>buffer strips, farm ponds, constructed wetlands, etc.</u>