From the perspective of a modeller with an interest in *Trichodesmium*, this is a useful paper. One reference you may have missed is Oliver et al. (2012). It would be interesting to see a comparison of the results in your manuscript with the results you'd expect given the energetic cost of nitrogen fixation versus nitrate uptake, and the energetic cost of chlorophyll production. Oliver et al. (2012) would be a useful resource to help make that comparison.

Author response:

Thanks for your appreciation and it is a good suggestion to do such comparison. In this study, we did not perform nitrate assimilation and chlorophyll dynamic monitor measurements, so it is hard to fulfill this target. However, in this informative paper, we got many helpful cellular metabolism physiology behaviors on energy allocation between different processes and added that information in our discussion part (Page 12 line 21-25 and Page 13 line 1-2). Regarding to the energetic cost of nitrogen fixation versus nitrate uptake, Eichner et al. (2014) had given a detailed study. Hope our founding could help the modellers.

Eichner, M., Kranz, S. A., and Rost, B.: Combined effects of different CO_2 levels and N sources on the diazotrophic cyanobacterium *Trichodesmium*, Physiologia plantarum, 152, 316-330, 2014.