General comments:
The paper “New insights into mechanisms of sunlight-mediated high-temperature accelerated diurnal production-degradation of fluorescent DOM in lake waters” **has the potential** to investigate the diurnal daytime-photoinduced production of FDOM components and their associated cascade night-time-microbial degradation processes as affected by temperature in two closed lake systems. However, the work is complicated to read. Although the importance of knowing the process in the context of global warming (GW) is mentioned, it is not explained because it is important to study it in two lakes located inside the campus of Tianjin University. Also, it is suggested to leave the objectives well stated and framed, as well as to order the texts according to the section of the article (do not mix objectives with methodologies, and methodologies with results, for example). The figures presented are not of good quality and are also difficult to interpret.
Finally, it is suggested to do an in-depth review of the work structure with emphasis to achieve a better transfer and interpretation of the results to a reader interested in this research topic.

Some specific comments are mentioned below as an example of the lack of organization in this work.

-page 5, lines 116-120: "Water samples were collected along 24-h in each season from the lakes Jingye and Qingnian in China, on which water temperature, solar intensity (SI), dissolved organic carbon (DOC), dissolved organic nitrogen (DON), NO3-, O and N isotopes of NO3-, NO2-, NH4+, PO43-, dissolved silicon (DSi), pH and electrical conductivity (EC) were determined at hourly intervals together with scanning electron microscopy imaging of phytoplankton variability between day and night".
Reviewer's comments: It should be in the materials and methods section.

-page 6, lines 139-142: "The diurnal results measured on FDOM components in July and October samples showed that the most important changes occurred in the afternoon at around 14:00 due to day-time sunlight-induced production and degradation and at early morning before sunrise (6:00) by night-time microbial processes."
Reviewer's comments: this text belongs to results.

-page 6, lines 157-158: Microscopic images of phytoplankton were obtained by the intelligent identification and counting instrument for algae (Algacount S300-3614025).
Reviewer's comments: The authors should explain how the sampling was carried out.

-page 17, lines 467-478.
Reviewer's comments: Part of the first paragraph of the conclusions section has already been presented in the introduction.