Day 2 - Production - Merged Questions

1. What is the relative importance of physical drivers (temperature, ocean currents, light, precipitation,...), nutrient availability and biological/ecological drivers (the interaction between species and metabolics) across the three types of ecosystems ?
2. It is known that, in terrestrial environments, the increase in CO2 could lead to an increase in the GPP, by increasing the carboxylation rate. Can we expect an increase of PP in aquatic systems like wetlands etc. with increasing CO2? What about positive feedback in increasing the CO2 and PP?
3. What are the main disturbances impacting the PP (fires, floods, eddies, storms) in each ecosystem and what are the challenges to include them in models ?
4. How are invasive species impacting the primary producers in the different ecosystems ?
5. How important are atmospheric sources of nutrients (N2 fixation, dust and aerosols) relative to the "classic" sources (deep ocean, soil content, runoff from rivers)? How will this change in the future ?
6. Studies (both empirical and modelling) are often limited by temporal and spatial scales. These limitations in turn, affect our capacity to transfer knowledge from microscales/ short-time scales to whole ecosystems and in the last instance across terrestrial-freshwater-marine systems. Regarding that, how do scales matter in our capacity to understand the effects of climate change on aquatic/terrestrial productivity?
7. How robust is satellite data in terms of production in all systems?
8. The difference in the scale and complexity of primary producers have made scientists turn to models to assess primary production. Where is the main knowledge gap on assessing and projecting primary production in the anthropocene, as climate change continues to alter our ecosystems: is it the lack of empirical data or do models have to be refocused and "get it right"?
9. Temperature is widely regarded as the main physical driver impacting our ecosystems under climate change and gets most of the attention from society and stakeholders. However, many other important factors are hidden behind temperature and may even have a positive feedback on temperature. How do you think we can change this general perception and "convince" society to consider that climate change is more than a rise in temperature?
10. As society becomes more involved in the "battle" against climate change, how do you think citizen science can help in assessing and monitoring primary production across different ecosystems? Do you think it will become an essential tool or could it lead to more noise and low-quality data in a time when high-quality (i.e., low uncertainty) data is of paramount importance?
11. How could an increase or decrease in DOM terrestrial production change the nutrient ratios in downstream ecosystems (like other lakes or even to the marine ecosystem)? And how can changes in nutrient ratios promote changes in primary production?

12. How can we explain the mismatch between productivity in rivers/streams and their surrounding terrestrial biomes?
13. How estuaries and wetlands (as interconnecting ecosystems) behave in front of the mixing of inland water and marine water masses when they react differently to organic matter and nutrient input?
14. What are the effects of pollution (such as plastics, eutrophication) on primary production in marine, freshwater and terrestrial ecosystems?
15. How is the melting of sea-ice, snow and glaciers affecting primary production in the different ecosystems ?