



Relationship between photochemical ammonium production and DOM absorbance: a review and synthesis

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The photochemical production of ammonium (ammonification) from dissolved organic matter (DOM) was first reported more than a decade ago. Since that time, ammonification has been reported within a wide range of natural aquatic environments spanning from highly absorbing, coloured inland waters to clear, open ocean oligotrophic seawaters. Previous data allowed identification of a broad trend of decreasing photochemical ammonium production from terrestrial to marine waters. However, more detailed, quantitative relationships have not been identified so far, except for a study in the Eastern Mediterranean, where limited data indicated a regional relationship of increasing photoproduction with increasing DOM absorbance normalised to dissolved organic carbon (DOC) concentration (Kitidis et al., *Biogeosciences* 3, 439-449, 2006). The aim of this review is to investigate the possibility that similar relationships may apply to a wider range of study areas from previous work. For this purpose we have summarised ammonium photoproduction rates, DOM absorbance and DOC concentrations from 8 studies covering 44 individual irradiation experiments. For these, we attempted normalisation to DOM absorbance at 350 nm and standard irradiance. Our preliminary results indicate that standard absorbance and DOC measurements may provide a satisfactory proxy for ammonium photoproduction over larger geographic scales and throughout diverse aquatic environments.