Towards the estimation of DOC from space in the open ocean

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The Dissolved Organic Carbon (DOC) represents the largest pool of organic carbon and the most active carbon compartment in the ocean. Describing the spatio-temporal dynamics of the oceanic DOC in response to variation in the physical of biological forcings is therefore crucial for better understanding the global carbon cycle. The DOC distribution and its temporal dynamics is however currently not well known.

In the recent years several works have demonstrated the possibility to assess from space the DOC distribution in the coastal ocean thanks to direct relationships between DOC and the optical properties of colored dissolved organic matter (CDOM). Such CDOM-DOC relationships are not applicable for the open ocean water due making more complex the DOC estimation from space in the latter environments. Here we present first results documenting an alternative method for estimating DOC from satellite imagery which rely on the use of a neural network which combines different physical and biogeochemical input variables (SST, SSS, PAR, aCDOM and Chl-a).