Magic of π-π Interaction in Climate Change Management

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Abstract—*The debate on the change in carbon pools and anthropogenic contribution has been always leading to confusion on its planning and management. Uncontrolled anthropogenic activities always create perturbation towards the projection of C in various pools. The human influence on the fluxes of carbon among the four reservoirs/ pools (atmosphere, ocean, fossil fuel and cement production and terrestrial) represents a small but significant perturbation of a huge global cycle. In the last decade (2002-2011) fossil fuel emission and cement production is responsible for 89% of the total CO_2 emission and remaining 11% is due to land use changes. The CO_2 emission rate is continuously increasing at a rate of 2.7 % per year against 1% in the year 1990. The total emission change from1960-2012 is partitioned among atmosphere (37-49%), ocean (26-27%) and terrestrial (37-24%). Weather events such as abnormally high temperature in January, 2014 (54^0C) in Australia, and at the same time Canada suffers from an extreme cold storms (~ -50^0C), breaking of 160-square-mile section of the Wilkins Ice Shelf from the coast of Antarctica (2008), droughts, bushfires, snow (almost simultaneously) in Australia in 2006, Hurricane Katrina in the United States in 2005, the European heat wave in 2003 killed more than 30,000 people making climate change as a issue of global concern.*

Role of π electrons are very important in terms of carbon management activities in plants, prokaryotes and bacteria. There are eight biological pathways, namely reductive pentose phosphate pathway, Hatch-Slack cycle, Crassulacean acid metabolism, reductive citric acid cycle, 3-hydoxypropionate bicycle, dicarboxylate/4-hydroxybutyrate, 3-hydroxypropionate/4-hydroxybutyrate, and reductive acetyl-CoA,, known for converting inorganic carbon to organic material in cell biomass interaction. In all eight pathways carboxylation and reduction reaction are involved. So it is quite reasonable to explain carbon management and hence climate change using simple chemical approach π-π interaction for expending its research scope.

Keywords: *π-π interaction, carbon management, climate change, anthropogenic contribution, carbon pools.*