OMICS International
conferenceseries.com

J Marine Sci Res Dev 2015, 5:2
http://dx.doi.org/10.4172/2155-9910.S1.011

3rd International Conference on
Oceanography
June 22-24, 2015 Philadelphia, USA

Biosphere-atmosphere coupling: A tropical mangrove system perspective

Tapan Kumar Jana
University of Calcutta, India

Biological regulation of climate depends on how the biosphere-atmosphere coupling is manifested or how the biosphere could provide an environment suitable for its own sustainability. Discovery of the oldest Gilboa fossil Eospermatopteris forest which was periodically affected by brutal episodes of sea-level rise indicates that little is known how changes in early terrestrial ecosystem influenced global processes. Mangroves evolved in the eastern Tethys Sea during the early Cretaceous followed by their westward dispersal via the Mediterranean route until about Miocene (18 Ma) and exhibited considerable speedy resilience to disturbance on a geological time frame. This coincides with the event of atmospheric CO_2 fall from the Eocene level of 1400 ppmv to possibly as low as 200 ppmv during the Miocene. Now mangroves dominate the majority of the world's tropical and subtropical coastline and are highly productive, fixing and storing considerable amount of carbon. Indian Sundarban mangrove forest at the land-ocean boundary of the Gangetic delta and the Bay of Bengal covers about 2.84 % of the global mangrove area ($15x10^4$ km^2) and is a net sink for CO_2. Model prediction showed enhancement of CO2 sequestration in response to the future atmospheric CO_2 increase in spite of existing low nitrogen availability in the sediment. Mangrove adjusted the limited supply of nitrogen in the sediment through the stomatal uptake of atmospheric NO_x, NH_3, N_2^- fixation and sediment-water exchange of dissolved inorganic nitrogen. Non sea-sulphate aerosol sourced from anaerobic soil H2S efflux could counteract the extent of regional atmospheric warming effect by methane and sensible heat flux. The mangrove ecosystem is capable of resisting al least some of the anthropogenic perturbation and the crucial question is whether humanity's actions can drive the system beyond any Gaia repair capability.

tkjana@hotmail.com

Using contingent valuation method to estimate the WTP for mangrove restoration under the context of climate change: A case study of Thi Nai lagoon, Quy Nhon city, Vietnam

Tran Huu Tuan
Hue University, Vietnam

Mangroves in Thi Nai lagoon have typically provided different values for local communities. This study examines the factors influencing on the willingness to pay (WTP) of respondents for mangrove restoration in Thi Nai lagoon, Quy Nhon city, Binh Dinh province, Vietnam. A contingent valuation survey was employed in order to estimate the willingness to pay for mangrove restoration under the context of climate change. Findings showed that local awareness of the importance of the values given by mangroves was popularized among local communities. Noticeably, regression results indicated that respondents who consider the future climate scenario is severe are willing to pay more for mangrove restoration. In addition, households with permanent housing condition or whose livelihoods have greater dependence on the mangroves are willing to have higher contribution for mangrove restoration. The study suggests that local awareness of the mangroves importance, as well as the necessity of mangrove protection and restoration, should be publicly enhanced in the context of climate change and urbanization. Since mangroves can make significant contribution to reduce climate change impacts, the urban expansion plan of Quy Nhon city should be carefully considered as it can influence the existence of the mangroves in the long term.

tuantranhuu@yahoo.com