

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Trans-continental migration of dragonfly *Pantala Flavescens* between India and Africa: Energetics and Role of wind KUMAR SANAT RANJAN, AMIT ASHOK PAWAR, ARNAB ROY, SANDEEP SAHA, Indian Institute of Technology Kharagpur — The dragonfly species *Pantala flavescens* migrates between India and Africa, covering a distance of around 14000-18000 km, crossing the Indian ocean twice, which is very extraordinary for a dragonfly or any flier. The route followed in this migration is India-Maldives-Seychelles-Africa-India, comprising of four legs. For such a migration, flight energetics and role of wind are most important factors. Computation models were developed for energetics, optimal time and route estimation. Energetics estimation shows, a *P.flavescens* can fly for 90hrs, covering a distance of 1400km; Without wind, time required for the completion of migration is more than 90hrs for all the legs. Our results show that with wind assistance, the time taken is well within 90hrs for all the legs. Also, *P. flavescens* detour from the virtual direct line connecting the two points of a leg in the sense of geodesic, and it follows the wind, which is expected based on the wind compensation capability of dragonflies. The results clearly show that wind assistance is vital if *P.flavescens* has to complete the migration. *Pantala flavescens* is able to achieve this great feat with the help of winds and stand in league of birds as far as migration flight is concerned.

Kumar Sanat Ranjan
Indian Institute of Technology Kharagpur

Date submitted: 03 Aug 2020

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