Seminar Presentation:

"Sand blow dynamics on Fraser Island in the past 60 years"

Friday, 10th October, 1pm-2pm, Chamberlain Building Room 414

Presented by:

Dr. Noam Levin
Visiting fellow at the School of Geography, Planning and Architecture, UQ
Senior Lecturer at the Department of Geography, The Hebrew University of Jerusalem
email: noamlevin@mscc.huji.ac.il

Abstract

Coastal dunes shift between states of activity and stability as a function of fluctuations in climate and changes in human land use. In this study we have examined the dynamics of sand blows (active dune areas) on Fraser Island (Australia), the world's largest sand island. While most of Fraser Island dunes are fixed and covered by forests, there are dozens of active sand blows mainly along its eastern and northern parts. Using historical aerial photos (from the 1940s, 1958, 1970, 1982 and 1997) and high spatial resolution satellite images (SPOT 2005) we measured changes in the area of more than 50 sand blows. Climatic time series of rainfall and wind were obtained from Sandy Cape lighthouse. The overall trend revealed is of dune stabilization, where the rate in which the forest encroaches on the sand blows is about double the advance rate of the dunes. This stabilization process is more pronounced on those sand blows which are detached from the beach and have no fresh supplies of sand. Although the overall drift potential of sand by the wind in this area is very high (DP = 1,287 for the years 1957-2007), the dunes are stabilizing. This may be due to a gradual decrease of yearly DP values with time ($r = -0.6$, $n = 51$, $p < 0.001$) where DP values since 2000 are around 500, and the fact that since 1981 no major tropical cyclones have passed by Fraser Island.