



## **Transport of Australian Continental Dust to Australia's Great Barrier Reef Region: First Results From Sampling, Remote Sensing, Synoptic and Trajectory Analyses**

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As part of a large multi-disciplinary project funded by the Australian Research Council and in collaboration with the Australian Nuclear Science and Technology Organisation, we established in mid-2008 three PM 2.5 samplers in eastern Australia to determine possible transport of continental dust from the major dust source region of the Lake Eyre Basin (LEB). These samplers were located at Fowlers Gap, New South Wales [NSW] (31.09S, 141.70E), Mount Stromlo, NSW (35.30S, 149.00E) and Heron Island, Queensland (23.44S, 151.83E). The latter location is of particular significance because of its proximity to the World Heritage Great Barrier Reef (GBR) and to the tropical rainforest of coastal North Queensland. In previous studies, dust and associated organic material of African origin has been associated with rainforest fertilisation in Amazonia and coral bleaching in the Caribbean.

In this presentation three case studies of continental dust transport to Heron Island that occurred in the first four months of sampling are examined. In each case transport of soil material from the LEB region and/or western NSW is confirmed by the nature of material sampled, by remote sensing of the dust, by forward and backward air parcel trajectory analysis and by synoptic analysis. In each case the dust arrived over Heron Island 3-7 days after passing over the southern samplers, generally having followed an anti-clockwise curved path to approach Heron Island from the southeast. The potential significance of this finding for the GBR is briefly discussed.