Abstract Details

AOGS 1st Annual Meeting > Ocean and Atmospheres > Coastal Plumes in Southeast Asia as indicators of Inland Environmental Impact (for OS17) >

Corresponding Author : Dr. Gupta Avijit (<u>avijit@foxhill.demon.co.uk</u>) Organization: University of Leeds Category: Ocean and Atmospheres Paper ID: 57-00A-A1567 Title: Coastal Plumes in Southeast Asia as indicators of Inland Environmental Impact (for OS17) Abstract: Southeast Asia, especially its maritime fraction, has been identified as an area of high sediment yield on a global scale [1,2]. To a large extent, this is due to the regional geology, high local relief, and large volume of seasonal and intense rainfall. Since the 1950s, this naturally high sediment yield has been phenomenally increased by land use changes in the drainage basins. The changes have been due to deforestation, expansion of agriculture, planned resettlement of large numbers of people, and urbanisation. The associated accelerated erosion and increased sediment transfer to the local river systems have led to large and numerous sediment plumes in the coastal waters. We submit that satellite imagery is an extremely efficient tool for identifying plumes as indicators of environmental health of the drainage basins and coasts. The coastal plumes were mapped in the early 1990s using AVHRR and Landsat imagery for regional and local coverage respectively [3]. This set of mapping indicated extensive coastal plumes and their possible effect on coastal forms and organisms. A comparison with recent coverage using MODIS allows identification of changes over time and space, a set of information which could be extremely valuable. Locations with recognisably large sediment plumes can be further inspected using higher resolution imagery such as SPOT or IKONOS in order to detect both the inland environmental degradation and loci of coastal sediment accumulation. Such mapping has the yet uninvestigated potential for geoenvironmental research, but at least it could be the first step towards predicting the future health of beaches, spits, mangroves, and coral reefs. It also allows speedy identification of environmental degradation over a range of scales. References [1] J.D. Milliman and R.H. Meade, J. Geol., 91, 1-21 (1983) [2] J.D. Milliman and J.P.M. Syvitski, J. Geol., 100, 525-544 (1992) [3] A. Gupta and P. Krishnan, IAHS Pub., 224, 457-463 (1994)

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