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Hydrology and Earth System Sciences Discussions

Interactive comment on "Satellite data interpretation of causes and controls on groundwater-seawater flow directions, Merseyside, UK: implications forassessing saline intrusions" *by* S. Mukherjee et al.

S. Mukherjee et al.

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I agree on all points raised by the Editor in the interactive comments to the HESSD Paper "Satellite DataĚ. saline intrusions". I request the Editor to incorporate the following points as improvement for the paper under publication in HESS.

1.All the points studied by using SPOT satellite data were validated by actual ground truthing. The authors visited 10% of the area and the ground truthing was carried out by using 8 band (0.4 to 1.1 Micrometer wavelength) Ground Truth Radiometer. Whole area was classified by using Supervised classification technique. The assessment of Clay and Sand and different vegetation cover was confirmed in the visible and near infrared spectrum. Any remote sensing scientist or hydrologist can check it by using

the above-mentioned instrument in Mersey side area.

2. In the cited corresponding Figure 6 and 7 of Chapter 5 the spectral reflectance from Clay and Sand was demonstrated in Visible and Near Infrared bands of SPOT satellite data. Clay patches consists of more pore spaces, hence the water is trapped within these pore spaces. These pore spaces absorb more electromagnetic energy in Near Infra Reds spectrum. This has been demonstrated in Figure 6 as 36 digital number in band 3 (which is NIR band).

3. In Figure 7 of corresponding Chapter 5 the INSET shows high reflectance in SPOT data for SAND while low spectral value for CLAY deposits. The location of INSET is highlighted in between Hale and Speke near Merseyside.

4. Ground truthing of all the vegetation anomalies above the inferred fault zones has been carried out by using Resistivity surveys using Resistivity meter. The Resistivity values in the inferred fault locations shows relatively low in comparison with the surrounding areas. Shallow water levels as well as high soil moisture in the fault traces also another supporting evidence.

5. Graphical plot of NIR to clay is possible. Clay dominated areas are showing very low spectral reflectance in NIR region while Sand dominated areas are showing high spectral reflectance in NIR region

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Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 887, 2005.