

COAL TYPE AND DEPOSITIONAL ENVIRONMENT - ARE THEY RELATED?

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Coal petrographic type is used to interpret depositional environment. However, studies of four mires in New Zealand show that, despite different depositional settings, peat types and their three-dimensional variation is remarkably similar. The four mires studied were Kopouatai, Moanatuatua, Whangamarino and Sponge Swamp. Kopouatai and Sponge Swamp are located in near-marine settings. Moanatuatua and Whangamarino are both adjacent to meandering river systems. Climatic conditions also differ between the mires with rainfall varying from 1.5 to 3.5m annually. Tectonically the mires occupy three different settings: 1. tensional half-graben, 2. trans-tensional sag-basin 3. relatively stable topographic infilling. Despite the differences, the peat types in all the mires are very similar, differing only in A. their amounts of fibric peat and B. Moanatuatua having abundant sapric peat below 1.4m depth (in contrast to all other mires). The occurrence of fibric peat appears related to the current height of water tables. The occurrence of sapric peat at Moanatuatua is attributed to previous lowering of water table relative to the peat as a result of base level change. There is also lowering of base level in the Sponge Swamp area but, in contrast to Moanatuatua, the basin in which the peat is forming is subsiding allowing the peat to retain a high water table. These observations suggest the one key controlling factor in peat type appears to be water table and that reasons for changes in water table are so varied that they are unlikely to be easily discernable in ancient sediments.