ABSTRACTS OF RECENT LITERATURE

GILBERT,R., 1984. The movement of gravel by tha alga *Fucus vesiculosus* (L.) on an Arctic intertidal flat. *Journal of Sedimentary Petrology*, 54(2), 463-568.

Measurements of the weights of gravel clasts with attached fucoid algae *Fucus vesiculosus* from an arctic intertidal flat at Pangnirtung in northern Canada indicate that stones are floated when the algae is at least three times heavier than the clast. When the algae is not large enough to float the clast to which it is attached, the form drag and lift which it provides allow moderate tidal currents to move very much larger stones than would be possible otherwise. These mechanisms offer a means of transporting coarse sediments to deep water where they may augment or be confused with ice-rafted materials.

ANDERSON, F.E. and MAYER, L.M., 1984. Seasonal and spatial variability of particulate matter of a muddy intertidal flood front. *Sedimentology*, 31, 383-394.

The concentrations and composition of suspended particulate matter (SPM) were measured weekley for a period of one year in the flood front waters traversing a muddy tidal flat. SPM concentrations were lowest in the winter when portions of the tidal flat were covered with ice, and biological activity was minimal. In contrast, the summer months had the highest SPM concentrations which reflected increased bottom resuspension.

The two main sources of SPM were suspended matter carried in from offshore on the flooding tide and resuspended *in situ* bottom sediments. The offshore source was characterized by low SPM concentrations, coarse textures, and a high content of protein and chlorophyll 'a'. Samples taken during resuspension events (storms/showers) had high SPM concentrations, finer textures, and were enriched in dead detrital organic material (phaeophytin). At any one time the SPM was primarily an admixture of these two sources.

The highest SPM measurements were taken during storm events, with rainfall seeming to play a dominate physical role in aiding resuspension. SPM concentrations, textures, and compositions collected during the storms closely approximated SPM measurements made over newly dug 'clam flats.'

HSIEH, Y.P. and WEBER, O.J., 1984. Net aerial primary production and dynamics of soil organic matter formation in a tidal marsh ecosystem. *Soil Science Society of America Journal*, 48, 65-72.

Relationships between net aerial primary production (NAAP) and soil organic matter formation in a tidal marsh environment were analyzed using a dynamic model. Four basic parameters were considered in the model: NAAP, disappearance of dead standing crop, and rates of plant decomposition in soil and air. The model was tested in a sawgrass (*Cladium jamaicense)* tidal marsh of north Florida. Net aerial primary production was estimated to be 2643 g $m^{-2}y^{-1}$ using a paired-plot method. The mean annual disappearance rate of dead standing crop was estimated to

be 1.965 g $g^{-1}y^{-1}$. The disappearance rate of sawgrass in soil was estimated to be 4.308 g $g^{-1}y^{-1}$ for the labile portion and 0.105 g $g^{-1}y^{-1}$ for the resistant portion. The sawgrass consists of 34% labile and 66% resistant portions. The soil organic matter due to NAPP was estimated to be 12.5 kg m^{-2}. Most of the soil organic matter was preserved by constant submergence in water and, therefore, did not actively participate in the carbon cycle. Only about 20 kg m^{-2} of the soil organic matter that had an average thickness of 30 cm was considered to be actively participating in the carbon cycle. The dynamic model predicted 30 y is needed for soil organic matter to be stabilized, and < 2 years is needed for dead standing crop to be stabilized under the environment. Ninety-eight percent of the soil organic matter was from the resistant pool of sawgrass. The mean fraction remaining (MFR) of the soil organic matter was 0.36. Two carbon cycles were defined in the marsh soil: the short one (mean retention time = 0.73 y) is probably important to the food and energy supply of the ecosystem; the long one (mean retention time = 10 y) comprises the major portion of the soil organic matter.

FITZGERALD, D.M.; FINK, L.K., Jr., and LINCOLN, J.M., 1984. A flood-dominated mesotidal inlet. *Geo-Marine Letters*, 3, 17-22.

Tidal inlets along the mesotidal coast of Maine contrast with those from other parts of the world by being dominated by flood-tidal currents. Analysis of the factors responsible for flood or ebb dominance indicates factors external to the backbarrier environment. We suggest that the flood dominance is caused by a steepening of both the tidal delta and spit platform. Flood currents are typically 10-20 cm/sec stronger than the ebb at the inlet throat. The flood dominance results in a significant net landward transport of sediment into the backbarrier.

GALLAGHER, J.L.; KIBBY, H.V., and SKIRVIN, K.W., 1984. Community respiration of decomposing plants in Oregon estuarine marshes. *Estuarine, Coastal and Shelf Science*, 18, 421-431.

Community respiration rates in air and water were measured as indicators of the decomposition rate of dead plant tissue from nine stands of plants in two Oregon estuarine marshes. Respiration rates were low and relatively constant from November to February; during warmer periods several patterns emerged. The highest respiration rates for the most and least active communities differed up to one order of magnitude. The moisture, nitrogen, and crude fiber content, as well as plant shoot and canopy structure, appeared to be important determinants of the respiration rate. Comparisons of aerial and aquatic respiration rates for a single date may be useful for determining the recent moisture history of the tissue. Rates of dead plant community respiration in Pacific Northwest marshes equalled and, in one case, exceeded those in the Atlantic Southeast.