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Ben Fusaro* (fusaro@math.fsu.edu). *Environmental Mathematics via the Visual, Qualitative and Computational.*

This is a calculus-free approach to basic modeling in an environmental context. It has no prerequisites beyond HS algebra, yet students can (numerically) solve differential equations, and even pairs of such equations. This five-stage method starts with a description of the target system to a standard graph in an Energy vs Time coordinate system. In the 1st stage, the target system is represented by a simple energy diagram (a tank, or compartment). In the 2nd stage, the diagram is the basis for drawing a qualitative Energy vs Time solution graph in a standard C.S. In the 3rd stage, the diagram is coupled with a simple Input-Output (conservation of energy) argument that yields a flow equation (a DE in disguise). In the 4th stage, the flow equation is solved step-by-step via a calculator, spread sheet, or simple computer program. In the 5th stage, the computations are used to construct a standard Energy vs Time graph. The end result is five representations of the original target entity, process, or system – a diagram, a qualitative graph, a flow equation, a tabular data set, and a standard energy-time graph. (Received September 25, 2012)