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It is known that both the Camassa-Holm (CH) equation and the Degasperis-Procesi (DP) equation can be viewed as shallow water wave models. The short wave model of the DP equation is also known as the Ostrovsky-Hunter equation or the Vakhnenko equation, describing high-frequency waves in a relaxing medium. In the present talk, we will give bilinear equations for the DP equation and its short wave model. To be more specific, we will show that the Vakhnenko equation can be derived from a 3-reduction of C-type KP hierarchy through a hodograph transformation. The situation of the Degasperis-Procesi equation is more complicated. By proving one of the tau-functions to be the product of two pfaffians, we will show that the DP equation is a pseudo 3-reduction of the C-type KP hierarchy. As a by-product, the multi-soliton solutions including multi-loop solutions for the Degasperis-Procesi equation and the Vakhnenko equation are given in terms of pfaffians. (Received September 22, 2011)