Average sea-surface temperature and the amount of CO$_2$ dissolved in the ocean are rising as atmospheric CO$_2$ increases. Many coral reef fishes appear to be living close to their thermal optimum, and even 2-4°C temperature increases reduce respiratory performance. In addition, predicted future rises in ocean CO$_2$ levels – even at present temperatures - alter sensory responses and behaviour of marine fishes, such as increased boldness and activity, loss of behavioural lateralization, altered auditory preferences and impaired olfactory function. I will show that these abnormalities relate to GABA-A receptor function, since they can be rapidly and effectively reversed by treatment with an antagonist of this receptor. GABA-A is a Cl$^-$/HCO$_3^-$ channel and a major neurotransmitter receptor in the vertebrate brain, as well as the nervous system of many invertebrates. Given the ubiquity and conserved function of GABA-A receptors, this predicts that rising CO$_2$ levels could cause behavioural impairment in a wide range of marine animals. Recent examples of apparent high-CO$_2$ induced alterations in GABA-controlled functions in both fish and molluscs will be presented.