How efficient are mid-latitude weather systems at transporting pollutants out of the boundary layer? Can we estimate, in advance, the amount of pollution a given weather system will ventilate out of the boundary layer? These questions are addressed in this seminar. First, I will show that there are three, inter-linked physical processes that lead to the eventual transport of pollutants out of the boundary layer. I will then show results from sensitivity studies which investigate which of these processes is the controlling factor. Finally, I will present a diagnostic to estimate the amount of boundary-layer ventilation. These results have been obtained by simulating a range of idealised, baroclinic, life cycle experiments with the Met Office Unified Model.