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Diapcynal nutrient fluxes in seasonally stratified shelf seas

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The diapcynal nitrate flux plays an important role in fuelling new production in the temporate oceanic and shelf sea seasonal thermocline once the spring bloom has exhausted the euphotic zone of nitrate. In this paper we present a series of estimates of this vertical nitrate flux, based on the dissipation method, for a range of physically contrasting locations in the shelf seas to the west of Britain. The estimated fluxes range from 1.2 to 37 mmol N $m^{-2}d^{-1}$ with the largest values found at locations close to major topographic features such as a seabed mound and the continental shelf break. Typically values of $\sim$ 2 mmol N $m^{-2}d^{-1}$are found for mid shelf locations thus suggesting that the vertical flux of nitrate into the euphotic zone accounts for about half of the annual new production in seasonally stratified continental shelf seas.