

Table 2Summary of effects of degradative processes on C₃₇ di- and triunsaturated alkenones

Degradation process	Variation in $U_{37}^{K'}$ index	Variation in temperature ^e	References
Auto-metabolism in <i>Emiliana</i> cells	-0.04 to +0.11 ^{a,b}	-1.2 to +3.2 °C	Epstein et al., 2001; Prah et al., 2003; Pan and Sun, 2011
Zooplanktonic grazing	0	0	Volkman et al., 1980b; Grice et al., 1998
Photooxidation (UV – PAR ^d)	0 to +0.04	0 to +1.2 °C	Rontani et al., 1997; Mouzdahir et al., 2001; Christodoulou et al., 2010
Free radical oxidation	Up to +0.20	Up to 5.9 °C	Rontani et al., 2006a, 2007a,b
Aerobic bacterial degradation	0 to +0.11 ^c	0 to 3.2 °C	Teece et al., 1998; Rontani et al., 2005, 2008; Zabeti et al., 2010
Anaerobic bacterial degradation	0	0	Teece et al., 1998; Rontani et al., 2005
Stereomutation	Up to +0.06	Up to 1.8 °C	Rontani et al., 2005; 2006b
Sulfurization	0?	0?	Koopmans et al., 1997; Sinninghe-Damsté et al., 1990

^a Depending on the relative proportion of alkenones bound in membrane and intracellular lipid bodies.

^b The increase of the index observed might also result from aerobic bacterial degradation processes (non-axenic cultures).

^c Depending on the bacterial strain considered.

^d Photosynthetically Active Radiation.

^e Estimated using the standard calibration equation ($U_{37}^{K'} = 0.034T + 0.039$; Prah et al., 1988)