SUPPLEMENTARY.

**Primary production**

Spectral irradiance at the ocean surface was estimated with the model of Gregg & Carder (1990) combined with a correction for cloud cover, and the spectral light field was subsequently propagated into the water column with an ocean bio-optical model. PP at each depth was calculated as a function of the concentration of chlorophyll-a and light through light-photosynthesis relationships, based on parameters that vary with biogeographic province and season (Longhurst, 1998). Finally, PP was integrated over day length and depth, down to the 0.1% depth isolume.

**References**

Figure S2: Mean annual catch in each Large Marine Ecosystems (LME) as a function of global marine primary production (PP) over 5-year block periods. Solid dashed lines indicate quantile regressions models with quantile $\tau = 10\%, 50\%, \text{ and } 90\%$.
Figure S3: Relationship between the mean annual catch in each Large Marine Ecosystem (LME) during 1950-2004 and the mean annual catch in each LME during 2000-2004. $r$ is the Pearson's correlation coefficient for the different relationship.
Figure S4: Relationship between the mean annual catch in each Large Marine Ecosystem (LME) over 5-year block periods and the mean annual catch during 2000-2004. $r$ is the Pearson’s correlation coefficient for the different relationship.
Figure S5: Mean annual primary production required (PPR) to sustain catches in each Large Marine Ecosystems (LME) as a function of global marine primary production (PP) over 5-year block periods. Solid dashed lines indicate quantile regressions models with quantile $\tau = 10\%$, 50\%, and 90\%.