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The Earth's magnetic field consists of various contributions that reveal a different spatial, spectral, and temporal behaviour. Therefore, multiscale methods can be a useful tool for its investigation. In this talk, we give a brief overview on the different contributions before we focus on the lithospheric field, which can be described by a harmonic potential in the exterior of the Earth. We describe in some detail how adequate multiscale kernels and approximation methods can be constructed that pay tribute to the available data situation (i.e., global data on a satellite orbit and regional data at the Earth's surface) as well as the spatial variability of the lithospheric magnetic field. (Received September 14, 2014)