The thesis focuses on the study of terrestrial exoplanets that are tidally heated, which can give rise to the formation of magma oceans. The primary objective is to analyze the impact and evolution of the magma ocean and thermal processes in two distinct celestial bodies: an Earth-like body and an Io-like body. We model parametrical evolution of thermal and tidal dissipation that are coupled. As part of the thesis, we investigated the influence of orbital, rheological parameters and the effect of surface temperature on the thermal evolution of the mantle. We included scaling relations developed for models heated from below as well as from within. If the tidal heating is sufficiently intense to induce the presence of a molten layer within the body, then mechanical decoupling of part of the mantle occurs, and thus the tidal response changes and less energy starts to dissipate in the body. Two possible cases have been considered for melt distribution: the case where all the melt is retained in the mantle, and the case where some of the melt reaches the surface and hence more efficient heat transfer occurs.