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# Surface Heat Loss on Venus due to the Heat Capacities of Thermal Conductivity and Hot-Spot/Corona Volcanism

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A lot of different approaches have been performed in the literature to estimate the surface heat flow on Venus. Estimates based on parameterized convection solutions resulted in values between 15 and 50 mW m-2, in contrast to global scaling from Earth, which results in a distinctively higher amount of heat loss (between ca. 60 and 70 mW m-2) as shown by Phillips R. J. et al. (1997).

In our estimate we have considered the capacities of main lithospheric heat transport mechanisms on Venus. On Earth their contribution to the total heat loss is small, because plate-recycling is the most dominant factor. But since the MAGELLAN radar surface mapping mission and theoretical calculations which have shown that presently plate-recycling is not able to be operative on Venus (Leitner J. J. and Firneis M. G. (2005)), the Venusian surface heat loss is only characterized by thermal conductivity and hot-spot/Corona volcanism.

In considering the different thermic parameters of the Venusian interior we have calculated the amount of heat loss due to thermal conductivity to be 33.5 mW m-2. The present contribution of hot-spot volcanism, which we have found on Venus to be manifested in the form of Corona-volcanism (under regard of presumably active or at least in the recent past active sources), yields a quota of 6.0 +/- 1.4 mW m-2. A result, which corresponds well with the estimation for the quota of Corona heat loss on Venus given by Stofan E. R. al el. (2001).

With this prior estimate we were able to determine the present heat loss on Venus to be 39.5 +/- 3.0 mW m-2.