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Gravity Field Model derived from Ørsted Data

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The Ørsted satellite was launched in 1999, and is dedicated to magnetic measurements. Here, the Ørsted satellite has been evaluated as a gravity mission satellite, with the goal of deriving a gravity field model, based only on Ørsted data. The energy conservation method has been used to derive the gravitational potential from the state vectors of the satellite. Least squares collocation has been used to derive a global gravity field model from the calculated gravitational potential. An Ørsted gravitational potential model, ORSTED05, has been found which contains spherical harmonic coefficients up to degree and order 6. The upper limit of obtainable coefficients was determined by comparison with EGM96 coefficients and evaluation of the modeling errors from the program which has been developed for the model calculations.