Local geoid determination based on airborne gravity data

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This contribution deals with the local gravity field modeling based on airborne gravity data. A mathematical model used for determination of a local geoid model by combining airborne gravity disturbances and the Earth Gravitational Model EGM08 is shortly reviewed. Residual geoidal heights are estimated through a residual disturbing gravity potential that is solved from the airborne gravity disturbances reduced for the reference component generated from EGM08. The mathematical model is based on the Neumann boundary-value problem of the potential theory. In order to meet its theoretical requirements, residual airborne gravity must be reduced for the so-called direct effect of topographical masses outside the geoid. Consequently, the computed residual disturbing gravity potential must be completed for the so-called indirect topographical effect. Finally, the residual geoid is evaluated from the residual disturbing gravity potential by using Bruns's formula. The local geoid model for the area of Taiwan obtained through its combination with the reference geoid computed from EGM08 is presented.