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The Global Energy Balance Archive at ETH Zurich

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At ETH Zurich, a major effort is currently underway to update and modernize the Global Energy Balance Archive (GEBA). GEBA is a database for the instrumentally measured energy fluxes at the Earth surface. The GEBA database stores monthly means of the various energy flux components observed at worldwide distributed stations. This database to date contains 250'000 surface energy flux entries in form of monthly means from more than 2000 observation sites. GEBA is currently going though a major technical revision, including a new server, new webspace and webinterface as well as application software. Also, efforts are underway to update the time series in GEBA to near present. GEBA data are used for 1) the re-evaluation of the energy balance at the Earth's surface 2) the detection of decadal changes in the surface energy balance components, such as long term variations in surface solar radiation ("global dimming/brightening"), 3) the validation of surface energy fluxes simulated by global and regional climate models as well as reanalysis systems, 4) the investigation of surface-atmosphere exchange processes, 5) the validation of remote sensing algorithms, 6) the estimation of absorption of solar radiation in the atmosphere, by combining GEBA data with top of atmosphere data from satellites, and 7) commercial applications.