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Return glider radiosonde to measure temperature, humidity and radiation profiles through the atmosphere

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Very promising radiation profile measurements through the atmosphere were made in 2011 with a balloon borne short- and longwave net radiometer. New and improved radiation sensors from Kipp&Zonen are now used in a glider aircraft together with a standard Swiss radiosonde from Meteolabor AG. This new return glider radiosonde (RG-R), is lifted up with double balloon technique to prevent pendulum motion and to keep the radiation instruments as horizontal as possible during the ascent measuring phase. The RG-R is equipped with a mechanism that allows to release the radiosonde at a preset altitude, and an autopilot allowing to fly the radiosonde back to the launch site and to land it savely with a parachute at a preset location. The return glider radiosonde technique as well as new measurement possibilities will be shown. First measurements show temperature, humidity and radiation profiles through the atmosphere up to 30 hPa (24 km) during different atmospheric conditions. Radiation profiles during different daytimes show possibilities with respect to temporal resolution of vertical radiation profiles trough the atmosphere.