Figure S1. Simulated Effective Height of Visibility (in meters above mean sea level), which is the minimum altitude a weather echo must be to be detected by the radar antenna beam axis, given the current MeteoSwiss operational scan strategy. The simulation is based on geometric optics approach, standard refractivity, and a digital terrain model (see, e.g. [6] and [41]) and only four radars. The black dots show the locations of 135 "complex terrain" gauges, the red dots the locations of 86 "non-complex terrain" ones.
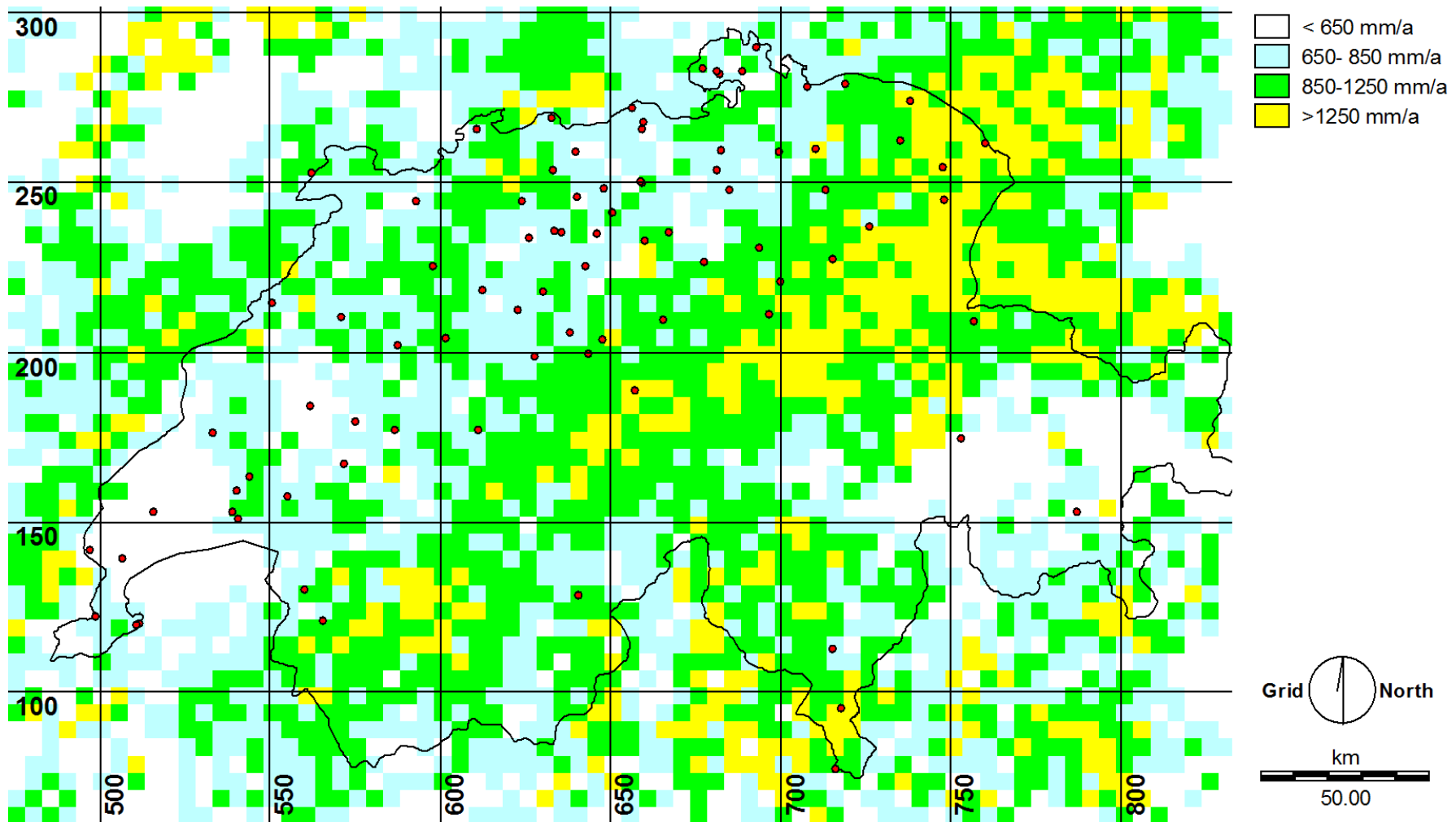
Figure S2. Estimate of annual precipitation amounts derived using MeteoSwiss weather radar network observations synchronous with the GPM satellite overpasses (this means approximately 500 acquisitions instead of the more than two hundred thousand made over the same period by the MeteoSwiss radar network). The annual average precipitation in Switzerland was of the order of 1200 mm/a. The red dots show the locations of the "non-complex terrain" sites. Note that the four categories (with thresholds 650, 850 and 1250 mm/a) are the same used in Table 5 for the Heidke Skill Score.
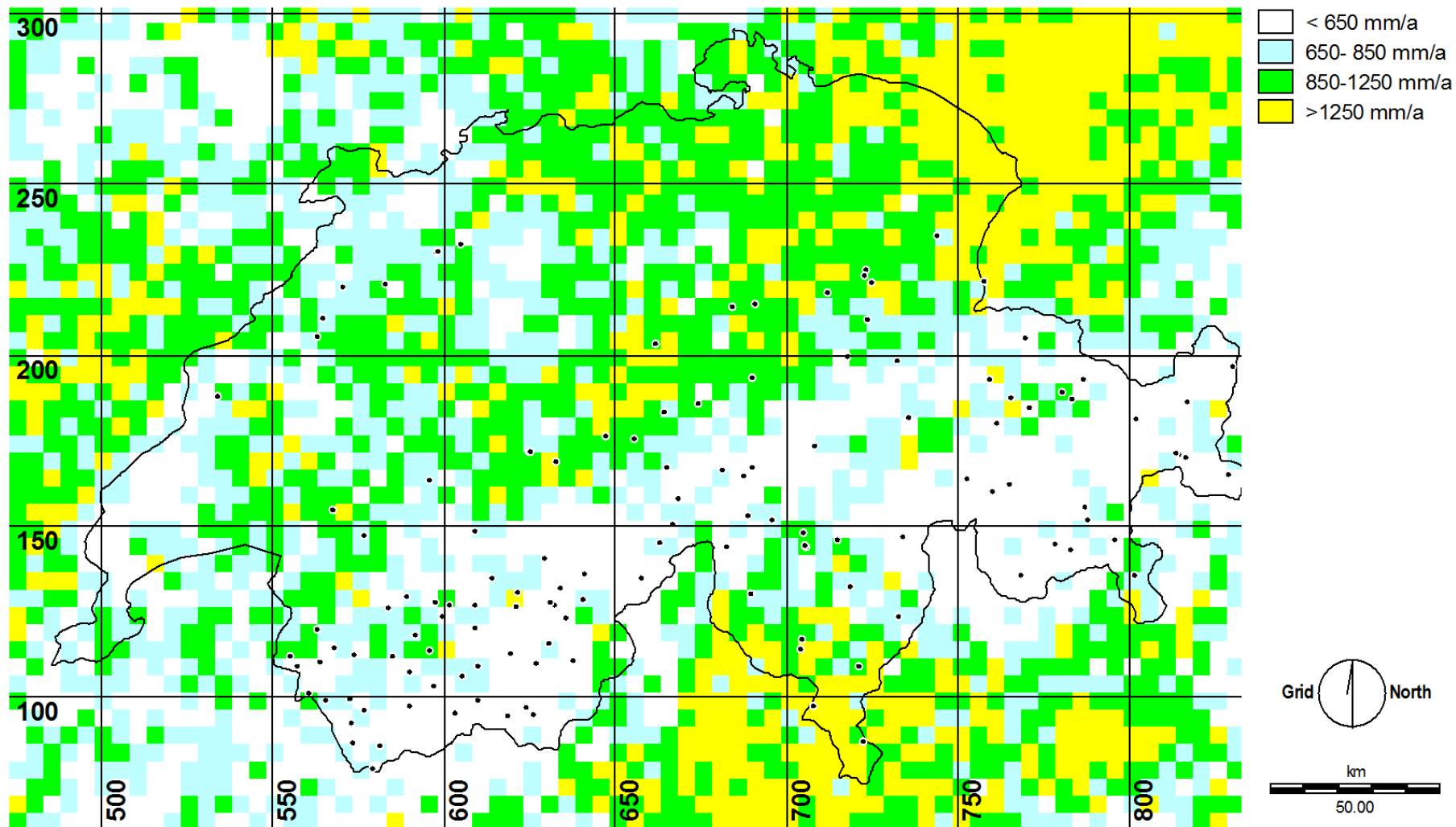
Figure S3. Estimate of annual precipitation amounts derived using approximately 500 GPM satellite overpasses (Ku band radar) augmented by −2 dB (multiplication factor of 1.6). The black dots show the locations of 135 complex terrain telemetered rain gauges.
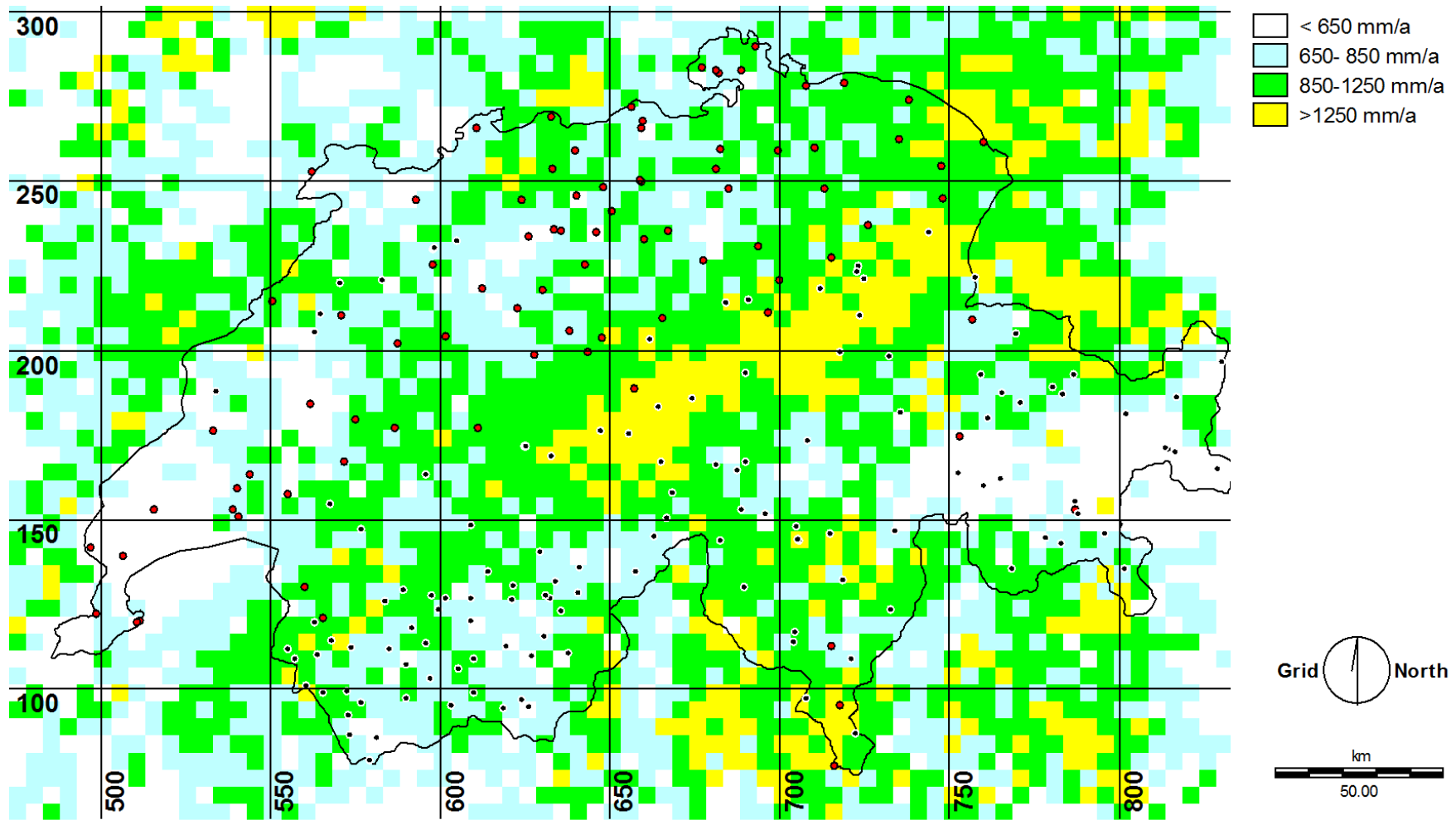
Figure S4. Same as Figure S2, but using the MeteoSwiss product called CombiPrecip, which is a geostatistical merging (kriging) of rain gauge measurements and ground based radar observations (external drifts). The black dots show the locations of 135 "complex terrain" gauges, the red dots the locations of 86 "non-complex terrain" ones.