



## The second geomagnetic survey in Bavaria by Messerschmitt in 1905

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After the first geomagnetic regional survey in Bavaria and other states in southern Germany by J. Lamont between 1850 and 1855, a second survey was made by J.B. Messerschmitt between 1903 and 1905. Most of Lamont's 129 stations could not be used again because of the expansion of the cities and the industrialization of the country. Messerschmitt used a new nonmagnetic theodolite which had been developed by Eschenhagen and Tesdorpf. The new instrument allowed a more reliable determination of the inclination than the instruments used by Lamont about 50 years earlier. In general, the sensitivity could be improved by a factor of about two. His new map, reduced to the early 1905 value in Munich is based on 98 stations in Bavaria and the Palatinate. It shows isolines for D, I and H as differences with respect to the Geomagnetic Observatory in Munich. Compared with the map by Lamont of 1854, which had been reduced to the value in Munich on 1 January 1850 ( $D = 15^{\circ} 53.9' W$ ,  $I = 64^{\circ} 59.5'$  und  $H = 19\,523\text{ nT}$ ) the early 1905 values in Munich are  $D = 10^{\circ} 07.3' W$ ,  $I = 63^{\circ} 10.5'$  und  $H = 20\,653\text{ nT}$ . The recordings of the Munich observatory between 1850 and 1905 show, that all three geomagnetic elements changed more or less linearly during the time interval 1850 and 1905. The declination dropped by  $5^{\circ} 46.6'$  (corresponding to  $6.3'/\text{year}$ ), the inclination dropped by  $1^{\circ} 49.0'$  ( $2.0'/\text{year}$ ) and the horizontal intensity increased by  $1130\text{ nT}$  ( $20.5\text{ nT}/\text{year}$ ). A more detailed analysis of the local secular variation showed systematic deviations in some regions in southern Germany which are not due to errors of the measurements. The reason for these small scale secular variations are still unclear.