The effect of the August 11, 1999 total solar eclipse on the geomagnetic field

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A b s t r a c t : The last total solar eclipse on August 11, 1999, observed on an area covered by many geomagnetic observatories, offers a unique opportunity to look for consequent responses in the geomagnetic field. Minute values of all field components have been taken from thirteen European observatories located in the total eclipse strip or in its vicinity. Data from other three stations located far from the eclipse region were used for comparison. The overall geomagnetic activity was low during the 10th to 12th August. Regular diurnal variation was quiet on these days, but during the eclipse a small deviation was observed. Its time position depends on the time of the eclipse. The most pronounced effect appeared in the Y-component. The field intensity increased by about 10 nT, this increase started one hour before the middle of the eclipse and lasted one hour or a little more. In the X-component the field intensity decreased by 5 nT one hour before the eclipse, then increased by 10 nT above the normal course and returned back during one hour. In the Z-component the course was similar to that in the X-component. Both effects were weaker than those in the Y-component. The same deviations appeared also at stations where only partial solar eclipse was observed with not less than 80% coverage. No such deviation was observed on stations situated far from the total eclipse zone.

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