

## SOME APPEARANCES OF THE AURORA BOREALIS IN GREECE

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*Summary* — Some observations of the aurora borealis in Greece are given with the sources from which they were taken. It was found that the appearances of this phenomenon are not exceptionally rare. These appearances coincide with the years of maximum of solar activity and especially 1-2 years after it, while in the years of minimum of solar activity or near these years none of the described cases belong here. Except of two appearances of this phenomenon all the others were observed in Spring and Autumn or near these seasons. The southeast geographical latitude of which edges of the aurora borealis have been observed in Greece is the latitude of 35° N.

As it is well known the appearances of the aurora borealis in geographical latitudes of less than 45° are seldom and even more seldom in latitudes of less than 40°.

In the latter of these regions edges only of this phenomenon appear in the northern horizon in the form of diffused rose-coloured or red light with occasional radiant or arc-like sections.

In Greece, the aurora borealis though rare appears from time to time and observations of this phenomenon are mentioned by ARISTOTLE (1) and by other ancient writers as well as in the later years.

We give below some observations which in our opinion attribute to this phenomenon and of which we found in various historical notes. Besides these we also give the appearances of the aurora borealis in Greece during the years 1870, 1938, 1940 and 1950 for which exact reports have been made.

All the cases are given in chronological sequence with the sources from which they were taken, while at the same time and wherever possible, comparison is made with the solar activity.

The first of these cases is recorded in the code of the Greek School of the island Skopelos (page 418) and is as follows (2): « In the year 1524 and in the 4th August a great glow appeared in the sky two hours before day break ».

The second recording was taken from the chronicles of PAPANODINOU (3): « In September of the year 1621 seven fiery columns appeared in the sky and they stood all nightlong ».

This aurora appears to have been radiant and that a large part of this was

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also visible in Greece. Consequently, it must have been one of the most intense aurora borealis.

The third observation is found recorded on page 1 of the code Y.O.D. of the Patmou Library (4) and is as follows: « In March 1739 a red glow appeared in the sky in the north point about 3 o'clock in the morning ».

The year 1739 was either a year of maximum of solar activity or it was near it. This is concluded from the fact that in accordance with the list of sunspots which was commenced in 1748 the year 1750 was a year of maximum of solar activity.

The fourth observation was found in the historical notes of KALLINIKOS the 3rd Patriarch of Constantinople (5) and is as follows: « In June 11th 1771 the country of Trikkis was destroyed by earthquake and about midnight a red light appeared in the sky ».

The maximum of solar activity was noted in 1769. But in the May and June of 1771 an abrupt and great increase of the number of sunspots was noted which justifies the appearance of an intense aurora.

The fifth case is recorded in the code 8 of the Boudapest Library of the Greek Community (6), and is as follows: « In September 1st 1779 at 9 o'clock in the evening a red glow shone in the sky westwards and this glow remained two hours ».

The years 1778 and 1779 are years of maximum of solar activity. The first of these has a mean number of sunspots (154.4) the largest ever observed ever since data of solar activity have been recorded.

The year 1779 presents an annual number of sunspots 125.9 with great fluctuations of solar activity.

The sixth observation is found reported in the historical notes of KALLINIKOS the 3rd Patriarch of Constantinople from Zagora and particularly in the 91st code of the Zagora Library (5) and is as follows: « On 12th March 1786 at midnight a glow like moonlight appeared in the sky northward. Afterwards spreading and the sky became red till morning ».

The year 1786 is not a year of maximum of solar activity, however an abrupt and relatively large increase in the number of sunspots was noted at the beginning of this year and particularly from March to April, which justifies the appearance of this aurora.

The seventh and eighth observations refer to the aurora of the 24th and 25th of October 1870. The first of these observations was made by the Master at that time of the Royal Naval vessel *Plyxavra* A. VATSAXIS, who was at Leukas island and the second observation was made by the sub-prefect, at that time, of the village *Xirochoreon*, M. GITARAKOS. These observations are as follows (7):

1) In the year 1870 at 0655 hours of the 25th October, there appeared above the clouds, at an angle to the constellation of Great Bear a fiery brightness having as centre a luminous body on the horizon inside the clouds, just northwards. This brightness during its appearance, did not have much signification but as the time passed it became more vivid and exactly at 0718 hours it had its most vivid intensity, reaching to the Pole Star.

2) In the evening of the 24th October just after sunset, when the twilight had disappeared there appeared in the north a dark fog which consisted of circular arcs reaching to two parts of the horizon. The visible part of this region was covered in a short while by a red light from which frequent rays of white light were given out, which in turn in short periods disappeared. The redness of the