(011) ΜΕΛΕΤΗ ΤΩΝ ΤΑΣΕΩΝ ΤΩΝ ΑΚΡΑΙΩΝ ΚΑΙΡΙΚΩΝ ΣΥΝΘΗΚΩΝ ΣΤΟΝ ΕΥΡΥΤΕΡΟ ΕΛΛΑΔΙΚΟ ΧΩΡΟ ΓΙΑ ΤΟ ΔΕΥΤΕΡΟ ΜΙΣΟ ΤΟΥ 20^{ου} ΑΙΩΝΑ (ΜΕΡΟΣ Β-ΘΕΡΜΟΚΡΑΣΙΑ)

Χ. ΑΝΑΓΝΩΣΤΟΠΟΥΛΟΥ, Κ. ΤΟΛΙΚΑ, Π. ΜΑΧΑΙΡΑΣ

Τομέας Μετεωρολογίας και Κλιματολογίας, Τμήμα Γεωλογίας,
Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης

ΠΕΡΙΛΗΨΗ

Υπάρχει αύξηση στη συχνότητα εμφάνισης των ακραίων καταστάσεων τα τελευταία χρόνια στην Ελλάδα και ποια είναι τα πιθανά αίτια αυτής της αύξησης; Απάντηση στο ερώτημα αυτό θα προσπαθήσει να δώσει η παρούσα εργασία, που είναι μέρος του ευρωπαϊκού προγράμματος STARDEX (STAtistical and Regional dynamical Downscaling of EXtremes for European regions).

Ειδικότερα, η εργασία αυτή έχει σκοπό την έρευνα και την εκτίμηση των ακραίων θερμοκρασιών κατά την διάρκεια του δεύτερου μισού του 20^{ου} αιώνα στην ευρύτερη ελληνική περιοχή. Βασισμένοι σε γνωστές από την βιβλιογραφία στατιστικές μεθόδους γίνεται έλεγχος για την εμφάνιση ή μη αλλαγών στην παρουσία των ακραίων θερμοκρασιών κατά τη περίοδο μελέτης. Επίσης, ελέγχεται η στατιστική σημαντικότητα των αλλαγών αυτών καθώς επίσης και αν εμφανίζουν εποχικότητα. Η ανάλυση των ακραίων θερμοκρασιών έγινε με την χρήση ημερήσιων τιμών θερμοκρασίας από 22 μετεωρολογικούς σταθμούς, οι οποίοι βρίσκονται ομοιόμορφα κατανεμημένοι στον ελληνικό χώρο, για τη χρονική περίοδο μελέτης 1958 - 2000.

Για την καλύτερη μελέτη των ακραίων θερμοκρασιών υπολογίστηκαν με τη χρήση κατάλληλου λογισμικού προγράμματος ορισμένοι δείκτες ακραίων θερμοκρασιών. Επίσης, υπολογίστηκαν οι τάσεις των δεικτών και η στατιστική σημαντικότητα αυτών σε επίπεδο 95%. Πιο συγκεκριμένα οι δείκτες αυτοί είναι:

Tx90: 9^{ο} δεκατημόριο της μέγιστης θερμοκρασίας
Tn10: 1^{ο} δεκατημόριο της ελάχιστης θερμοκρασίας
Tnfd: πλήθος των ημερών παγετού με Tmin<0^{ο}C
Txhw90: διάρκεια θερμού κύματος

Σύμφωνα με τα αποτελέσματα της ανάλυσης των τάσεων που παρατηρήθηκαν στις ακραίες θερμοκρασίες προκύπτει ότι οι ετήσιες μέγιστες θερμοκρασίες (**Tx90**) αυξάνουν σε ολόκληρη την ελληνική περιοχή για τη χρονική περίοδο μελέτης 1958-2000. Τα αποτελέσματα αυτά μπορούν να ερμηνευθούν από την αυξητική τάση των μεγίστων θερμοκρασιών κατά τη διάρκεια του καλοκαιριού παρά τη στατιστικά σημαντική πτωτική τάση αυτών κατά τη διάρκεια του χειμώνα. Αντίθετα, οι ετήσιες ελάχιστες θερμοκρασίες (**Tn10**) παρουσιάζουν στατιστικά σημαντική πτωτική τάση ιδιαίτερα στην κεντρική και νοτιοδυτική Ελλάδα. Ο δείκτης **Tnfd**, για το έτος, εμφανίζει θετικές τάσεις για τους περισσότερους ηπειρωτικούς σταθμούς. Οι τάσεις αυτές είναι στατιστικά σημαντικές μόνο για ορισμένους από αυτούς. Αντίστοιχα, ο δείκτης **Txhw90** εμφανίζει στατιστικά σημαντικές αρνητικές τάσεις ιδιαίτερα στη νοτιοανατολική και νοτιοδυτική ελληνική περιοχή.

(011) TRENDS IN EXTREME EVENTS ACROSS GREECE IN THE 2nd HALF OF THE 20th CENTURY (PART B-TEMPERATURE)

C. ANAGNOSTOPOULOU, K. TOLIKA, P. MAHERAS

Department of Meteorology-Climatology, School of Geology,
Aristotle University of Thessaloniki

ABSTRACT

Does the frequency of extremes events across Greece during the last years increase and which are the causes of this increase? The answer on this question could be this study, which is part of the European research project STARDEX (STAtistical and Regional dynamical Downscaling of EXtremes for European regions).

This study is aimed at investigating the evaluation of extreme temperature over the second half of the 20th century across Greece. Consistent statistical approaches were used in order to find out whether there have been any changes in the extreme temperatures over the studied period. It has also been investigated the significant of changes and the seasonal dependence. Using daily maximum and minimum temperatures for 22 selected stations, which are evenly distributed across Greek area, carried out the analysis of extreme temperature. The time period for the study was 1958 to 2000.

A number of extreme temperature indices were calculated using appropriate extreme indices software. The indices trends were computed and they have been tested at a level of significant a = 0.05. The extreme temperature indices are:

Tx90: Tmax 90th percentile

Tn10: Tmin 10th percentile

Tnfd: number of frost days Tmin<0°C

Txhw90: Heat wave duration

The result of the analysis of the selected temperature indices indicate that the annual maximum temperature (**Tx90**) increase during the period 1958-2000 almost for the whole Greek area. The increasing maximum summer temperatures can explain these positive trends, although the maximum winter temperature presents statistically significant decrease. On the contrary, annual minimum temperature presents a decreasing trend, which is statistically significant in central and southwestern Greece. The annual number of frost days index (**Tnfd**) present positive trend along most of the continental stations but these trends are statistically significant only in few of them. Correspondingly, the heat wave duration index (**Txhw90**) present negative trends in southeastern and southwestern Greece providing statistically significant results.

(012) PAFOG - A NEW EFFICIENT FORECAST MODEL OF RADIATION FOG AND LOW STRATIFORM CLOUDS

A. BOTT

Meteorologisches Institut, Universität Bonn, Germany

ABSTRACT

The new forecast model of radiation fog events PAFOG will be presented. The model has been developed on the basis of the microphysical fog model MIFOG of Bott. The aim of PAFOG is to improve the local fog forecast on airports and other neuralgic traffic locations where fog frequently occurs. To obtain a numerically efficient model, the detailed spectral cloud microphysics of MIFOG has been replaced by a new parameterization scheme describing condensation/evaporation within the fog. In addition to this, a vegetation model has been linked to PAFOG so that fog evolution as influenced by different types of vegetation can also be accounted for. For a large number of days which are favourable for fog formation, numerical results of PAFOG will be presented and compared with routinely measured data of the German Weather Service. It will be shown that the onset and time evolution of radiation fogs is largely affected by the surface fluxes of moisture and sensible heat and, thus, by the inclusion of vegetation in the model.

(013) CLIMATIC VARIATIONS OBSERVED IN ITALY BY THE ITALIAN METEOROLOGICAL NETWORK

T. COLOMBO, V. PELINO

National Centre of Aeronautical and Climatic Meteorology - CNMCA
Italian Met Service ROME-ITALY

ABSTRACT

We present a study concerning climatic behaviours of several observables, open to changes driven by greenhouse effect, obtained from the analysis of meteorological data collected in 53 Italian meteorological stations, since 1961. The study of temperature and precipitation trend for the period 1991 – 2000 has been calculated too. A sharp increase of the temperature after 1980, particularly in mountain stations, is showed. The trend of several climatic indexes is considered too together with a comparison of 1921-30 precipitation and 1926-55 temperature collected by Italian Hydrological Service.

(014) A STUDY OF ULTRAVIOLET SOLAR RADIATION AT CAIRO URBAN AREA, EGYPT

S. M. ROBAA

Astronomy & Meteorology Department,

Faculty of Science, Cairo University, Giza, Egypt

ABSTRACT

The monthly mean daily values of global, G, and ultraviolet, UV, solar radiation incident on a horizontal surface at Cairo urban area during the two different periods (1969-1973) and (1993-1997) are presented, analyzed and compared. The effect of urbanization processes on the solar radiation components is investigated and discussed. It was found that the total amount of the two radiation components, G and UV received at the urban area of Cairo during the period (1969-1973) highly exceeds received during the period (1993-1997) for all months of the year. The mean relative reduction of G and UV reached 17.4% and 27.4% respectively. A significant correlation between G and UV radiation has been found and the recommended correlation equation has been stated to estimate the values of UV radiation that difficulty measured at any site in the zone of Lower Egypt. Also, a comparative study of the two radiation components, G and UV, at urban (Cairo) and rural (Bahtim) areas during the period (1993-1997) revealed that the urban area always has values of G and UV radiation distinctly lower than that found in rural area for all months of the year. Urban-rural mean reduction of G and UV reached 7.0% and 17.9% respectively. The ratio of the ultraviolet to global radiation (UV/G) are calculated and compared with other sites in the Arabian Peninsula. The effect of atmospheric dust on the measured solar radiation components is also investigated and discussed.

(015) QUALITY CONTROL OF RAINFALL MEASUREMENTS IN CYPRUS

C. GOLZ[1], T. EINFALT[1], S. MICHAELIDES[2]

[1]*Einfalt & hydrotec GbR, Luebeck, Germany*
[2]*Meteorological Service, Nicosia, Cyprus*

ABSTRACT

The basic condition for using rain data from raingauges and radars is data quality control. Rain data could be used more intensively in many fields of activity (meteorology, hydrology etc.), if the achievable data quality could be improved. This depends on the available data quality delivered by the measuring devices and the data quality enhancement procedures.

In general data quality control is devided into quality check and data correction. Data quality check is the process to analyse data in order to categorise them. Data correction is the process to modify data which have been labelled as being "not o.k." in the quality check. Known data problems for one single data source (ground or space radar, continuous or daily raingauge), which should be minimized or eliminated by the means of check and correction algorithms are reviewed.

In the scope of the EU-project VOLTAIRE (**V**alidat**i**on of mu**lt**isensors precipit**ati**on fields and numerical modeling in Mediter**r**an**e**an test sites) rain data of Cyprus are analysed. Different quality control methods are applied to the rain data of 146 raingauges and the data of 14 events (2002+2003) of the C-Band radar in Kykkos. The first results of the use of quality control algorithms and radar-raingauge comparisons in Cyprus will be presented in the paper.

(016) ON LINE TEACHING AND LEARNING OF METEOROLOGICAL SUBJECTS

E. E. KATSIAMBIRTAS

Consultant meteorologist, Sydney, Australia

ABSTRACT

There is no doubt that technology and in particular the Internet facility has revolutionarised our way of life in the last 10 years. Teaching with proven learning by the learner (high school or university student) has still to go a long way in many areas of science including meteorology. Schools and Universities have spend a lot of money for hardware as computers sitting idling and glowing through the day or use as word processors but very little for software for on- line learning(distance or distributed education).

There are a lot of good web sites for the professional meteorologist with excellent information material but not many relevant packages appropriate for certain curricula and skills learned in context. The question for the teacher/lecturer is whether to use the Internet (therefore using mostly constructivist and project –based methods) as a sole mean of teaching, to have both the traditional teaching style using overhead projector, spreadsheets even power point products or a mixture of Internet and traditional methods of teaching/learning. **A*s one pedagogist said students must use sometimes books, sometimes calculators and sometimes the Internet)***

Everybody knows the advantages of the Internet like: student independence from teacher, quick, rich, up to date information ,activities that match the person's interests, needs, style and development readiness, learning independent of place and time, self –paced, customized, competency-based, no heroes needed, cost effective **and most important student stronger performance because learning is the goal.**

Professional development is experienced as a personal journey of growth and discovery that engages the learner on a daily basis**.** But some of these on –line training are little more than the 1950's college syllabi dressed up with on line reading. In addition, the question whether teacher/trainer is well trained to train the students is unfortunately hanging over our heads. From studies in the USA and elsewhere has been proven that we have a long way to go never mind the problems **students/learners are facing with**. Many students are confused by the large amount of information on the web sites and they in many cases use the method **of cut and paste** which constitutes no higher order of learning. Examples of good web sites and bad web sites for learning **solely using the Internet** are presented in this paper. With time very valuable to both teacher and students it is time more funds become available for research both individually and to universities in what I will call **"Educational Meteorology".** It is suggested that a research committee of the Hellenic Meteorological Society with assistance from other national and international Societies must be established to look at this very important aspect of education in meteorology and related sciences as we already entered the twenty first century with limited funds and big classes at Universities *following the success of the **sixth international conference on school and popular meteorological and oceanographic education in Madrid in 2003.***

The currently running of hundreds or thousands climate prediction models by the British Meteorological Office and Oxford University and assisted by the 2000 individual volunteers around the world will give the opportunity to teachers and schools to take part in this exercise via the Internet thus promoting the exchange of ideas and eventually strengthen the on- line teaching /learning process.

(017) EVALUATION OF URBANIZATION EFFECTS ON CLIMATE CHANGE OVER THE NORTH-EAST OF I.R. OF IRAN

A. SHAHABFAR, J. B. JAMALI, A. RAMESH

Climatological Research Institute (CRI), I. R. of Iran Meteorological Organization

ABSTRACT

Several climatological studies shown that human activities such as urbanization, industrial developments have a great impact on changing of climatic parameters around the world, for example, exist of heat island over the large cities, increasing of global mean temperature, increasing of mean sea surface height…

In this research by the aim of evaluation of urbanization and industrial developments impacts on the surface air temperature trend and climate change in the North-East of I. R. of Iran an updated data set that have been observed and recorded by I. R. of Iran Meteorological Organization (IRIMO) since the late 1950s in Khorasan province at North-East of Iran have considered, Therefore, maximum, minimum and mean surface air temperature recorded, analyzed to reveal spatial and temporal patterns of long-term trends, change points, significant warming (cooling) periods and linear trend per decade. According to this research summer minimum temperatures have generally increased at a larger rate than in spring and autumn minimum temperatures. On the other hand, night-time warming rates of spring and summer are generally stronger than those that exist in spring and summer daytime temperatures. Considering the significant increasing trends in annual, spring and summer temperatures, it is seen that night-time warming rates are stronger in the northern regions, which are characterized by the Khorasan Province macroclimate type: a very hot summer, a relatively hot and late spring and early autumn, and a moderate winter. We have seriously considered the strong warming trends in spring and summer and thus likely in annual minimum air temperatures. It is very likely that significant and very rapid night-time warming trends over much of the province can be related to the widespread, rapid and increased urbanization in Khorasan Province, in addition to long-term and global effects of the human-induced climate change on air temperatures.

(018) JET STREAM'S ZONES AS DANGEROUS AREAS FOR AVIATION IN EUROPE

R. BĄKOWSKI

Forecast Office, Institute of Meteorology and Water Management, Kraków, Poland

ABSTRACT

This paper presents the zones of strong streams in upper and middle troposphere over Europe. The data used in the analysis came from aerological measurements taken in the decade 1992-2001 at 67 stations over Europe and its margins. The study revealed the frequency and annual course of winds with speeds over 30 m/s, i.e. winds which indicate the occurrence of jet streams.

Taking into account annual course of the frequency of the occurrence of jet streams and their changeability during a year, 4 regions were distinguished in the area of Europe and its margins. In this investigation, the cluster analysis was used, which is based on the method of K-means.

The result of the investigations showed that region 1 (North Atlantic) is the most subjected to the occurrence of zones of strong streams, especially from October to March. In this period even larger probability of the strong streams phenomenon occurs in region 2 (Eastern Europe) but the intensity of strong streams is smaller. In the basin of Mediterranean Sea (region 3) the probability of strong streams increases from November to January and additionally in April and July. In case of Asia Minor and the area of Black Sea (region 4), the increased frequency occurs from November to February and in July.

(019) ΘΕΡΜΟΔΥΝΑΜΙΚΗ ΜΕΛΕΤΗ ΤΟΥ ΠΕΡΙΒΑΛΛΟΝΤΟΣ ΤΩΝ ΧΑΛΑΖΟΚΑΤΑΙΓΙΔΩΝ ΣΤΗΝ ΠΕΡΙΟΧΗ ΤΗΣ ΚΕΝΤΡΙΚΗΣ ΜΑΚΕΔΟΝΙΑΣ

Δ. ΦΟΡΗΣ[1], Θ. ΚΑΡΑΚΩΣΤΑΣ[2], Α. ΦΛΟΚΑΣ[2], Τ. ΜΑΚΡΟΓΙΑΝΝΗΣ[2]

[1]*Κέντρο Μετεωρολογικών Εφαρμογών ΕΛ.Γ.Α., Αεροδρόμιο «Μακεδονία», Θεσσαλονίκη*
[2]*Τομέας Μετεωρολογίας και Κλιματολογίας, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης*

ΠΕΡΙΛΗΨΗ

Το Εθνικό Πρόγραμμα Χαλαζικής Προστασίας των καλλιεργειών εφαρμόζεται από τον Οργανισμό Ελληνικών Γεωργικών Ασφαλίσεων (ΕΛ.Γ.Α.) από το 1984 στην περιοχή της Κεντρικής Μακεδονίας με στόχο τη μείωση των ζημιών στη γεωργική παραγωγή από το χαλάζι. Αυτό επιτυγχάνεται με τη σπορά των χαλαζοφόρων νεφών με ιωδιούχο άργυρο (AgI) από ειδικά εξοπλισμένα αεροσκάφη.

Οι επιχειρήσεις του προγράμματος υποστηρίζονται από το ραντάρ καιρού της Θεσσαλονίκης που είναι συνδεδεμένο με καταγραφικό σύστημα το οποίο παρέχει ψηφιακά δεδομένα που ανανεώνονται κάθε 3,5 λεπτά. Από το σύστημα αυτό αντλούνται πληροφορίες για τις καταιγίδες που αφορούν τη θέση, την ένταση, την εξέλιξη και την κίνησή τους. Οι τυχόν χαλαζοπτώσεις επιβεβαιώνονται με τη βοήθεια ενός δικτύου 140 χαλαζομέτρων και από τις αναφορές των αγροτών. Η μετεωρολογική πρόγνωση των χαλαζοκαταιγίδων υποβοηθείται μεταξύ άλλων από τις ραδιοβολίσεις της Θεσσαλονίκης που διεξάγονται στις 06 και 12 UTC.

Στην εργασία αυτή εξετάζονται χωριστά οι ραδιοβολίσεις των 06 και 12 UTC των ημερών με καταιγίδες στην περιοχή της Κεντρικής Μακεδονίας για την περίοδο 1997-2001, και ειδικότερα οι θερμοδυναμικές παράμετροι και οι δείκτες αστάθειας που εξάγονται από τις ραδιοβολίσεις, με σκοπό τη διερεύνηση της δυνατότητας πρόγνωσης (06 UTC) ή διάγνωσης (12 UTC) των καταιγίδων σε συνάρτηση με το χρόνο εμφάνισής τους, τα χαρακτηριστικά τους στο ραντάρ και τις επικρατούσες συνοπτικές καταστάσεις, με απώτερο στόχο τη διερεύνηση των αιτίων δημιουργίας τους, αν δηλαδή είναι θερμικής ή δυναμικής φύσης.

(019) THERMODYNAMIC STUDY OF HAILSTORM ENVIRONMENT IN THE REGION OF CENTRAL MACEDONIA

D.FORIS[1], T.KARACOSTAS[2], A.FLOCAS[2], T.MAKROGIANNIS[2]

[1]*Meteorolgical Applications Center, EL.G.A., "Macedonia" Airport, Thessaloniki*
[2]*Department of Meteorology and Climatology, Aristotelian University of Thessaloniki*

ABSTRACT

The Greek National Hail Suppression Program is applied by the Greek Agricultural Insurance Organization (EL.G.A.) since 1984 in the region of Central Macedonia, aiming at reducing hail damage to crops. This is accomplished by seeding hail-bearing clouds with silver iodide (AgI) from specially equipped aircrafts.

The program operations are supported by the weather radar installed in Thessaloniki's airport, which is connected to a recording system that provides digital data refreshing every 3.5 minutes. Information out of this system is drawn about storms, concerning their position, strength, development and motion. Hailfall is confirmed with the aid of a hailpad network with 140 hailpads, as well as from farmers' reports. The meteorological forecast of hailstorms is assisted, among other elements, by two atmospheric soundings taking place at 06 and 12 UTC every day in Thessaloniki.

In this study the 06 and 12 UTC soundings of storm days for the 1997-2001 period in Central Macedonia are separately examined, specifically thermodynamic parameters and instability indices derived from the soundings, in order to investigate the possibility of storm anticipation (06 UTC) or diagnosis (12 UTC) in relation to the time of their occurrence, their radar characteristics and the prevailing synoptic situations, the ultimate goal being the identification of the mechanism triggering them, that is whether this is of a thermal or dynamical nature.

(020) ΚΛΙΜΑΤΟΛΟΓΙΚΗ ΜΕΛΕΤΗ ΤΗΣ «ΒΟΜΒΑΣ» ΣΤΗ ΜΕΣΟΓΕΙΟ

Μ. ΓΕΩΡΓΑΡΑ, Ε. ΦΛΟΚΑ, Μ. ΧΑΤΖΑΚΗ

Εργαστήριο Μετεωρολογίας, Τομέας Φυσικής Εφαρμογών, Τμήμα Φυσικής, Πανεπιστήμιο Αθηνών

ΠΕΡΙΛΗΨΗ

Ορίζοντας ως «βόμβα» την ύφεση που χαρακτηρίζεται από ασυνήθιστα μεγάλη βάθυνση (τουλάχιστον 1 hPa/h για 6 h) στα μέσα γεωγραφικά πλάτη, σκοπός της παρούσας εργασίας είναι η μελέτη σε κλιματολογική βάση της χωρικής και χρονικής κατανομής της συχνότητας εμφάνισης και της έντασης της βόμβας στη Μεσόγειο. Χρησιμοποιούνται τα δεδομένα NCEP/NCAR πίεσης στη μέση στάθμη της θάλασσας σε κόμβους με διακριτότητα 2.5°x2.5° ανά 6 ώρες (00, 06, 12, 18 UTC) για την περίοδο 1958-2001. Βρέθηκε ότι το φαινόμενο εμφανίζεται στη Μεσόγειο περίπου κατά μέσο όρο 22 φορές το χρόνο, παρουσιάζοντας σημαντικές μεταβολές από έτος σε έτος. Η μεγαλύτερη συχνότητα σημειώνεται στη Βόρεια Αδριατική, ενώ σημαντικός είναι ο αριθμός των περιπτώσεων που συμβαίνουν στον Ελλαδικό χώρο. Η εκδήλωση της βόμβας ευνοείται περισσότερο το χειμώνα, και κυρίως τον Ιανουάριο, ενώ η πιο ευνοϊκή ώρα είναι η 0600 UTC. Η μέση τιμή της έντασης της μεσογειακής βόμβας είναι 1.4 Bergeron, ενώ η μέγιστη τιμή που σημειώθηκε είναι 2.3 bergeron.

(020) CLIMATOLOGY OF EXPLOSIVE CYCLOGENESIS (BOMB) IN THE MEDITERRANEAN REGION

M. GEORGARA, H. FLOCAS, M. HATZAKI

Laboratory of Meteorology, Division of Applied Physics, Department of Physics, University of Athens

ABSTRACT

Defining as “bomb” unusually deepening surface extratropical cyclones (at least 1 hPa/h for 6 h), the objective of this study is to perform a climatological analysis of the space and time distribution of the frequency and intensity of Mediterranean bombs. The analysis is based on the NCEP/NCAR grid point data of mean sea level pressure with resolution 2.5°x2.5° every 6 hours (00, 06, 12, 18 UTC) for the period 1958-2001. It was found that the mean annual number of Mediterranean bombs is 22, with significant inter-annual variations. The maximum frequency of the phenomenon appears in Northern Adriatic sea, while substantial frequency was recorded in the Greek area. The bomb prefers to occur in winter, mainly in January, while the most favorable hour is the 0600 UTC. The phenomenon is characterized by mean intensity of 1.4 Bergeron and maximum value of 2.3 bergeron.