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INDEX ULTRAVIOLETA USING OZONE MONITORING INSTRUMENT (OMI) MEASUREMENTS WITH BASE ON EARTH: A SYSTEMATIC REVIEW

CIRO WILLIAM TAIPE HUAMAN
Universidad Nacional de Juliaca – Perú. ORCID ID: 0000-0002-6075-5582, Email: cwtaipe@gmail.com

HUGO HERNAN FLORES LAIME
Universidad Nacional Intercultural de Quillabamba – Perú. ORCID ID: 0000-0002- 2739-9264
Email: hugohernandezflores@mail.com

Abstract

Research-based methodology of systematic review of type a descriptive and documentary. The exploration of the databases that met the descriptors and criteria of inclusion (such as Revisions or scientific articles, scientific publications, current and relevant, databases Scielo, Scopus and Academic Google and thesis) defining a period indagatorio 2005-2021 were identified 128 scientific papers, excluding 107 references for duplication of information of rigor, by display of sections without coherence and incomplete removal of access URL and topics that are moving away from the focus of this article, in the final analysis were Consolidated 21 scientific references. Feu developed the discussion of various researchers that allowed the analysis and manejor data. It was concluded that the products of OMI, which include ozone, aerosols, clouds, ultraviolet radiation and trace gases. In addition, it can measure the pressure and cloud coverage, providing information on the ozone layer above the Earth, so same, it was found that for future research would be of great utility in the use of the OMI data collection, comparisons between the data of UV-based satellites and on the ground showed, on average, the records of OMI exceed the UV measurements on the ground in more than 20%.

Keywords: Ultraviolet Index, Ozone Monitoring Instrument (OMI), Measures Based On Land

1. INTRODUCTION

Ozone is formed in the stratosphere from the photo dissociation of molecular oxygen. The optical properties of ozone, related to its spectrum of emission and absorption of radiation, play a very important role in many atmospheric processes, including protection against strong uv rays of the sun. In the mid-SEVENTEENTH century, the first measurements of ozone were in the impregnation of the paper with a solution of iodide of potassium (IK) and starch exposed to the air; when you interact with the ozone-containing, produce different shades of blue, showing a comparative scale of levels. Technically speaking, the measurement of ozone began in 1924 with the british scientist Gordon Miller Bourne Dobson. That year, Dobson used a prism to split sunlight into its spectrum and by recording photographic, could determine the intensity of the radiation in the solar spectrum total above 295 nm (Caves, 2002). In the case of the stratospheric ozone layer, the measurement with instrinstruments satellite has achieved great accuracy, allowing a sampling standing in todor the planet. Have been derived from Radiación Ultraviolet (UV) and dose eritémicas that impinge on the surface of the Earth from data obtained with teams placed on satellites, such as the instrument Total Ozone Mapping Spectrometer

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(TOMS) and Ozone Monitoring Instrument (OMI) of the u.s. National Aeronautics and Space (NASA) (Red And Rivas, 2017).

The atmosphere is a layer of gases that surrounds the Earth, bound together by gravity. Its maximum density decreases near the surface of the Earth with the altitude to which it is indistinguishable from the gas interplanetary, although there is a defined limit. The different regions can be distinguished by significant differences in the properties, as well as by the physical and chemical phenomena that occur at each one of them. The pressure at each level depends on the weight of all the air above him, per unit of area. The weight is given by

$$\mathrm{p} = \int_{\mathrm{z}}^{\infty} \mathrm{gpdz}$$

ρ is the density, g the acceleration of gravity, a value that varies slightly with the height, and z is the height. In this way, the atmosphere is a layer of gases that surrounds the Earth, bound together by gravity. Its maximum density is close to the surface and it is possible to classify the atmosphere depending on their chemical composition, less than 100 km the mechanisms of mixtures (mainly turbulence mixing and thermal) are very active and keep atmospheric air well mixed. Therefore, the composition of the air, with the exception of some traces of gas and water vapor, which is constant, and this is why this region is called homósfera. More than 100 km, the situation changes: there is little mixing, so that lcomposition can change, that's why it is called homósfera, while, above, the rest of the atmosphere is called heterósfera due to their variations in the composition, (Lusi, 2017).

Los planets revolve like the earth around the sun, the radiation emitted by this is necessary for life, all this radiation does not reach the surface since the passingof r by the atmosphere is attenuated and createsn optimal conditions for life. The entry of UV sol varies during the year and depends on the distance between the Earth-Sun, the angle opening hours, ozone and aerosols present in the atmosphere (Alfaro, Llacza, & Sanchez, 2016); (Huillca, Taipe, and Saavedra, 2017a).

As well as, the ultraviolet radiation depends on the factors that determine the intensity on the surface such as: Altitude of the sun, latitude, cloud cover, altitude, ozone, the reflection by the ground or xxi albedo, particulate matter consisting of particles in suspension (aerosol) and trace gases (SO,$O2$) product of air pollution (Miranda, 2018), the sun emits a large amount of energy to earth, of which only 7% corresponds to the UV (Huillca et al., 2017to), however, small amounts of UV are beneficial to humans and essential to the production of vitamin D (Sosa, 2019). The sun is a powerful source of energy and without light and heat, the life on our planet could not exist.

Peru is a country that has a variety of altitudes (Zegarra, 2019) and is located in one of the first places worldwide with the radiation higher, due to the close proximity of the country to the equator, the UV falls in a perpendicular on the surface (Sosa, 2019). The

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Automatic Weather Station Laboratory mark DAVIS Vantage model Pro2 of the Professional School of Engineering and Environmental Health of the National University of Huancavelica, recorded automatically these data and were taken from the first day of the month of January in the year 2018 to December 2019. For the computer to take data as often as necessary, it was essential to verify the proper functioning of the same, performing the maintenance and standardization, obtaining records of meteorological variables, depending on the days, months, years and seasons.

In this sense, the index of uv by Ozone Monitoring Instrument (OMI) measurements with ground-based, the CIE (Commission Internationale de l'éclairage) adopted in 1987 an “orbit of erythema” (CIE, 1998) that is used regularly to fix the solar UV radiation eritemática (UVER). The UVER is calculated by the convolution of the spectral curve of the radiation eventsgives to ground level with the curve of the spectrum of action eritemático raised by the CIE. The UV Index (UVI) is ato quantification recommended by the International Commission on Protection against Non-Ionizing Radiation (ICNIRP) in cooperation with the World Health Organization (WHO), the World Meteorological Organization (WMO) and the United Nations Program for Environment (UNEP) participates in the public opinion about the levels of UV radiation that reaches the ground (WHO, 2002). Ultraviolet radiation is one of the natural factors are most important to the life (April, Quicksilver, Chancusig, Suarez, & León, 2019). The region (UV) comprises the range of wavelengths from 100 to 400 nm, and it breaks down in the three bands Radiación Ultraviolet C (UVC) (100 - 280) nm; Radiación Ultraviolet B (UVB) (280 - 315) nm; Radiación Ultraviolet A (UVA) (315 - 400) nm (Organizationsion World of Health, 2003). Therefore, it is necessary to validate the satellite data from measures based on the ground to assess the quality and accuracy of them (Marchetti, 2016).

El ozone in the stratosphere has been studied with dedication and discovered that the ozone layer presentsto conduct considerably dinámicto and its thickness varies constantly. For this reason, the average value of 300 Dobson units (UD) must be considered as a reference, due to the levels of the Ozone Column (refers to how many ozone molecules are in the air above a certain point on earth and is expressed in Dobson Units -UD-) (Lusi, A., 2017), depend on:

a) Geographical location: the ozone layer is thinnest at the Equator than at mid-latitudes, and, in general, in the hemisphere south of the values of the ozone column are lower than in the northern hemisphere,

b) Stations: the lower levels are presented at the end of winter and beginning of spring and the highest in late summer and start of autumn in both hemispheres. The lowest records of all the planet are given above Antarctica in the months of September and October,

c) Natural phenomena: solar activity, volcanic eruptions that bring the gases that destroy the ozone and the air currents in the stratosphere, responsible for the displacement of the molecules of ozone.

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El number of measuring stations, terrestrial that provide good data to solar UV in spite of its limited spatial coverage have been increasing. On the other hand, instruments that measure solar ultraviolet radiation on satellites, such as GOME and SCIAMACHY of the European Space Agency's or TOMS and OMI NASA, provide greater spatial coverage. Therefore, the validation of the satellite data from measurements based earth is necessary to evaluate the quality and accuracyon these. The OMI's, located onboard NASA's Aura satellite, it is a spectrophotometer designed to record the amount of ozone and other chemicals in the atmosphere (Levelt, et al., 2006). OMI it is the successor of the TOMS, and continues to record the concentrations of ozone vertical column total, aerosols, and solar UV. The algorithm OMI for UV products was described in detail by Tanskanen et al. (2007). Since the launch of the NASA's Aura satellite in 2004, the data of ultraviolet solar OMI using measures based on land have been ratified by several authors. The aim of this essay is to conduct a systematic review of the uv index using Ozone Monitoring Instrument (OMI) measurements with ground-based.

2. MATERIALS AND METHODS

The present investigation was based on a systematic review, type descriptive, as that will analyze and discuss the profiles of the uv index using Ozone Monitoring Instrument (OMI) measurements with ground-based, with the purpose of generating or expanding the knowledge and documentary, as it will take into account bibliographical references scientific cover and validated in the context of this research. Equivalently, we performed the scan on secondary sources of data, following the guidelines of declaration PRISM; (Urrútia and Bonfill, 2010).

For the achievement of the objective of this article is appropriate to conduct a systematic review of the literature, we consider the following inclusion criteria:

a) Revisiones or scientific articles on empirical studies that analyze the uv index using Ozone Monitoring Instrument (OMI) measurements with ground-based,

b) Plocations on current scientific and relevance within the context of the study,

c) B -aces free data access Scopus, Scielo, Google scholar, among other scientific basis, by defining as the period of inquiry 2005-2021,

d) Andstudios made himself the subject of study, andstudios with a possible or non-duplication of the databases, books, original articles and review and theses of postgraduate, undergraduate and doctoral programs.

For the processing and filtration of the sample of the study takes into account parameters of language and search strategies as descriptors and keywords of individually identified within the study, the same involve: uv index, Ozone Monitoring Instrument (OMI), measures based on land, Latin America, in Spanish and English (in some cases), for which they turned to the connectors for logical “and” (and) and “or” (OR). Equally, the inclusion criteria involving the date of publication, and language. These descriptors are appreciated by means of selection criteria that are determined by the objective of the

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research, and respond to the questions of the same, taking into account methodological quality and criteria of scientific quality of what you want to achieve.

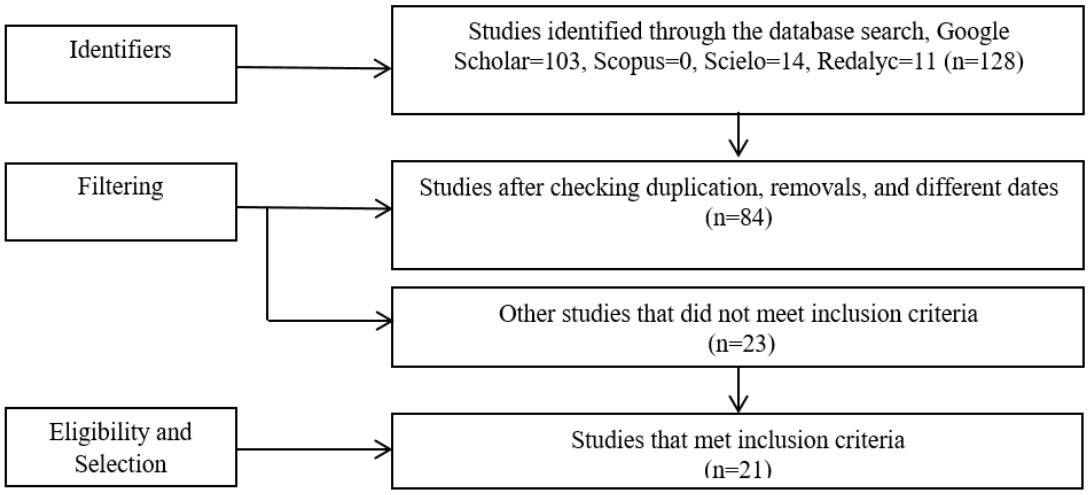
EB= Ítable of contents ultraviolet “Scielo” AND (Ozone Monitoring Instrument OR measures land-based)

EB= Ítable of contents uv by Ozone Monitoring Instrument AND measures based on land.

Subsequently, we analyzed the results according to title and systematic analysis, running the review of bibliographical considering the year, article type, country and conclusions, equally, in the search engine of the program were the key words to narrow the publications, granting advantage to the articles to develop the array of analysis, and to consolidate the findings.

In the process were identified 128 scientific papers, excluding 107 references by duplication of information of rigor, by display of sections without coherence and incomplete removal of URL access, and because the issues that are moving away from the focus of this article. In that sense, the unit of analysis end was 21 scientific references. Evidence of the process PRISM in Figure 1.

Figure 1. Diagram PRISM



Source: own Elaboration

3. RESULTS

For the bibliometric analysis and visualization of the findings reconciled during the methodological process proceeds to the organization of the information, that is, the logical structure that is introduced sequentially and reasonable information by means of an array of synthesis that had as its purpose the relationship, it is easy to read and understanding on the part of the reader, rotulando relevant aspects that underpin the scientific research and is conducive to the display of the findings that we 'rewanting in the process of

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comparison and discussion of the uv index using Ozone Monitoring Instrument (OMI) measurements with ground-based, in this sense, is expressed in Table 1.

Table 1: Matrix synthesis literature

Nro	Title of the research	Authors	Source of reconciliation and year
1	Index Solar Ultraviolet and Thickness of the Ozone Layer in Arica, Northern Chile,	Rojas, E., and Rivas, M.	Interciencia, 2017 42(2), pp. 115-118
2	Prediction efficiency of total column ozone based on regression algorithms vector support, numerical models, and data - Suomi-satellite	Carro, L., et al.	Atmosphere 2017, 30(1), pp.1-10
3	Validation of the data of solar UV radiation by the Ozone Monitoring Instrument (OMI) from measures based on land on the mediterranean coast	Marchetti, F., 2016	Journal of remote Sensing
4	High levels of ultraviolet radiation in Medellín and in a town in eastern antioquia (Colombia)	Sanclemente, G. and Hernández, G.,	Iatreia, apr./June 2010, 23(2) Medellin
5	Ultraviolet Radiation in Arequipa 2016 - 2017	Acuña, S.	, National University of San Agustin, Peru
6	Concentrations in situ ozone on forests in the Basin of Mexico and the influence of the altitude	Alvarado D., et al.	Mexican journal of Forest Science, 2017, 8(44)
7	Study on the distribution of the dose eritemal solar uv in peninsular Malaysia using a monitoring instrument of ozone	Tan, K., Lim, H. and Jafri Z.	The Egyptian Magazine of Remote sensing and Space Science, 2018 21(1), 2018, pp. 105-110
8	Analysis of solar ultraviolet radiation accumulated in Mexico	Castanedo, J., et al.	Rev Med Inst Mex Seguro Soc 2016; 54 (1)
9	Evaluation of the Levels of Ozone in the City of Maracaibo, Zulia State, Venezuela	Cano, Y., et al.	International journal of Environmental Pollution, 2016, 32(1).
10	Mobile Application to Determine the Index of Ultraviolet Radiation	Taipe, C.	National University of the Altiplano, Peru, 2018
11	long term study of the relations between erythemal UV-B irradiance, total ozone column and aerosol optical depth at central Argentina	Palancar, G., et al.	Journal of Quantitative Spectroscopy, 2017, 198(1), pp. 40-47
12	Impact of the Ozone Hole on the UV Radiation in the mid-Latitudes and High	Lusi, A.	phd Thesis, National University of the Center of the Province of Buenos Aires, 2017
13	spatiotemporal Variability of the column of total ozone and their relationship with the ultraviolet radiation in South America	Nunes, M., Mariano, G. and Alonso, M.	Revista Brasileira de Geography and Physics, 2020, 13(5), pp. 2053-2073
14	Improvement of the UV Radiation by Cloud Effect in the NE of Brazil	Tiba, C. and Da Silva, S.	International Journal of Fotoenergía 2017, pp. 1-9

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15	uv Index in the city of Puno for a clear sky	Huillca A., et al.	Revista de Investigaciones Altoandinas, 2017
16	Quantification and characterization of uv-b in the city of Tacna, period: 2012-2014	Pole, C. and Miranda, G.	TechnicalJan 2020, 30(1), pp.43-52
17	Evaluation and analysis of time series of ultraviolet radiation collected in different cities of Peru,	Fields, A., Correa, M. and Sanchez, Or.	Brazilian journal of Meteorology, 2018, 33(2) pp. 298-305
18	measuring Station of Ultraviolet Rays powered by a Photovoltaic System	Marín, E., Alzate, S., & Serna, A.	INGE CUC, 2020, 16(2), pp. 163-179
19	Study of the impact of the solar radiation Ultraviolet in people by means of satellite information	Stadler, C.	Universidad Nacional del Centro de la Provincia de Buenos Aires, 2017
20	Evaluation of the index of ultraviolet radiation and its relationship with the transfer of solar energy in the monitoring point CH-23 - Cerro de Pasco – 2018	Prudencio, E.	Universidad Nacional Daniel Alcides Carrión, Peru, 2019
21	Andstimación and Analysis of the uv index in the City of Pone during the period of SandpSeptember 2015 to SepSeptember 2016	Huillca, A., et al.	XXIV Symposium Peruvian Solar Energy and the Environment (XXIV - SPES), Huaraz, 13 -17.11.2017

Source: own Elaboration.

4. DISCUSSIONS

To start arguing the work you have done is made an approach to the various researchers and designers that have been selected in the present study, taking into account the premise of this study that is the uv index using Ozone Monitoring Instrument (OMI) measurements with ground-based, is presented:

OMI, launched in July 2004, describes an orbit heliumsynchronicto the on-board dthe Aura satellite operated by NASA, has ato time in ecuador from 13:45 ± 15 minutes. It is a spectrometer images display nadir that measures the sunlight through backscattering air in the wavelength region of 270-500 nm with a spectral resolution of 0.5 nm in the UV and 0.63 in the visible range. As you can see, this device has a frequency range of 2600 km, and pixels between 13 x 24 and 13 x 128 km The OMI provides data for the extraction of ozone, as well as measurements of pressure and cloud cover. The OMI has a high spectral power, which improves the level and precision of the column of total ozone (Marchetti, 2016). OMI works with an algorithm of linear fit to recover the total amount of ozone in the column. OMI it is the successor of the TOMS, and continues to record the concentrations of total vertical column of ozone, aerosols, and solar UV radiation.

The gradual decline of the class of ozone in the last two decades has important consequences for living organisms on the Earth, due to the increase of solar ultraviolet radiation (UVB, 280-320 nm) through ozone to the floor. This solar radiation has enough energy to damage biological systems despite the normal conditions, the waves <290nm

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as soon as they reach the surface of the Earth. (Red and Rivas, 2017), andxponand that the common behavior of the maximum values of the index of UV is measured at noon and for measurements of satellites elementary ozone in the area of Arica, las measurements are performed with a biometer broadband YES-UVB (Yankee Environmental Sysyem, 2005), calibrated regularly by means of a cooperation agreement between the University of Tarapacá (UTA) and Direction Weather Chile (DMC), these data of index UV reach in the summer of 2008, the maximum value of 15.8 and el winter of 2010, the minimum value 2. Measures of freedom to UVB was carried out every 5 minutes from the December 20, 2006 and the 12/11/2015, the distribution information of season of the values index UV observed in Arica and the relationship that the index is saved with the thickness dand the ozone layer is measured by satellite detector, level the number of index UV monthly annual average for the city of Arica is the highest in Chile.

In this trend, (Alvarado et al 2017) in his study indicates that in the City of Mexico prevails an oxidizing atmosphere during the months of sunny, while in the rainy months, increase the reducing agents on the oxidation, andl study was conductedto according to the scheme of statistical models, due to the need to determine if observed differences in ozone concentrations between and within localities. The model takes into account the history of observations, the altitude was performed passive monitoring of ozone concentrations, minimum and maximum of ozone calculated during the study period. For the average concentrations, the time of maximum concentrations determined during the evaluation of 14 months.

In addition, (Tan et al. 2018), on the study of solar UV dose distribution of erythema on lto peninsular Malaysia used OMI. For the developsor of this study, the data obtained from the OMI on the AURA satellite. In addition, the study also focused on the analysis and mapping of the distribution of vectors of the average daily dose of erythema UV in peninsular Malaysia in 2015. Concluded that for the production of erythema, the maximum value of the maximum daily dosage of GRAPE appeared in April with a value of 7711.43 J⁄m2 while the minimum dose daily for December was 5518.13 J⁄m2. While that, (El-Nouby, & Ahmed, 2016) takesn conduct an investigation to evaluate the relationship between UV-B radiation and broadband solar radiation in all cloudy conditions. The data are collected from the Station of Weather Research University South Valley (SVUMRS), located in Quena, one of the pilot stations of the Weather bureau Egyptian (EMA).

In South America, presents a detailed analysis by (Tiba and DSilva, 2017) with measuring terrestrial solar radiation and UV in the northeast of Brazil, in the city of Recife, the city is very close to the equator, which causes high levels of ultraviolet radiation during the greater part of the year. Using a pyranometer (PSPPrecision Spectral Pyranometer) of Eppley, its accuracy is 3% and the operation range is from 300 nm to 3000 nm. The measurement of solar ultraviolet radiation was conductedto through a radiometer uv total TUVR (The Total Ultraviolet Radiometer) with a precision of <5%. The two meters were transferred to the data acquisition system Campbell, Model CR-1000X.

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Study published in the University Nationof Cordoba, in the midand the effects of ozone and aerosols on surfaces on the UVER. The measurements are performed with a pyranometer YES in 2000 and 2013. The effects of ozone and aerosols are measured by the Factor of Amplification of Radiation (RAF) and the Factor Toerosol (AF). Los data obtained with TOMS from the ground in the spacecraft until 2005 and the OMI from soil in the space ship from AURA 2006, (Palancar et al., 2017). Similarly, it is also evalúto the concentration of ozone in the city of Maracaibo, Zulia state, Venezuela. The evaluation space temporary ozone, through the collection of 20 samples at the site, with the use of photometers during the period January 2009, during 24 consecutive hours. The cycle photochemical ozone presents a behavior that characterized the urban areas, with a minimum value in the early hours ofl day and an increase from 8 in the morning, with a value higher at noon. From the statistical analysis, the notesto which the maximum concentrations of ozone per hour exceeded the national standards of air quality in the days tested (Cano et al., 2016). Likewise, en a research presented by (Castanedo, J., et al. 2016), sand exposes that the dose of radiation UV eritematógena was obtained from the system gestor Giovanni, designed to study the data and information of the Earth sciences. This instrument was developed and maintained by Space Flight Center Goddard NASA. Los data from the system Aura satellite, is not being used OMI. The data correspond to the city of San Luis Potosí in Mexico and 10 other representative regions of the country.

In accordance with what has been dealing withthe study of Buenos Aires, and investigates cases of displacement of ozone on a small scale to mid-latitudes, as a result of the formation of the ozone hole Tontártico and its impact on the solar UV radiation, and analyzed through the parametric model and measurements from satellite and terrestrial. The surface measurements, partn of the network radiómetros SAVER-Net, are provided by the Division of Atmospheric CEILAP. For the analysis, we used information of the instrument/satellite OMI/Aura and CERES (Clouds and the Earth's Radiant Energy System)/Aqua Terra, (Lusi, 2017).

In this section, (Stadler, 2017) in his research, describes the sensors usedtwo in order to obtain the necessary information on the parameters to determine the UV index. How to obtain the coefficients of the suitability of the study area, the model UV, and the equations needed to determine the effect of the presence of clouds on the UV values, the amount of erythema dose received and the duration of exposure to skin types I and III. This work was developed in Buenos Aires and Mar del Plata, Argentina. The choice depends on mainly because these two cities are great and important, and because the sensor OMI contains information of both. The sensor OMI, in the NASA's Aura satellite, it is a spectrometer designed to record the amount of ozone and other chemicals in the atmosphere. OMI it is the successor of the TOMS, and continues to record the concentrations of ozone vertical column total, aerosols, and solar UV.

Now let's see, (Prudencio, 2019) in their research, the levels of incidence of ultraviolet rays IUV, get data from a sensor forestry GRAPE Grove installed on-site, state mining

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Company Champamarca, through SENAMHI (Service Nvariation of Meteorología e Hidrología) of Peru, test using an instrument called a spectrometer Dodson, it provides information on the concentration of ozone and the position of the sol at different times of the year. Also, it turns out that (Polo and Miranda, 2020) in their study conducted in the city of Tacna, data recostacktwo for the SENAMHI through the network for monitoring ultraviolet radiation B of the city, are recorded and archived automatically, for the period (2012-2014) generated at the weather station main agricultural (MAP) Jorge Basadre Grohmann, located 18º01'36 "south latitude, 70º15'2.4" west longitude and 560 msnm altitude. In the same order of ideas, in their research work (Taipe, 2018), performed by la comparison of the results of the mobile application is detailed to the results of the mobile application and the model TUV to the sky clear, in the days January 10, and February 10 and April 23, September 10, 10 and 23 of October of the year 2018 reported of the application to mobile phones and the model Transferencia Radioactiva TUV supported by calculations within a wavelength range of 100 nm and 1000 nm to estimate the radiation spectral and integrated, flow-spectral amplification factor of radiation (RAF), coefficients of rate of photolysis and the irradiance eritemática to Puno, withsiderando the geography and characteristics of ozone in this city. A great extension of the connection between the values calculated by the mobile phone and the values obtained by the model TUV-designate, for each hour of the day, due to the range of 6:00 to 6: 00 to 6: 00 with a total of 12 hours. On the other hand, (Huillca, et al., 2017b), exhibits in his work Estimation and Analysis of the Index of Uv in the City of Puno during the Period of September 2015 to September 2016, use datos registered from September 2015 to September 2016 by the weather station DAVIS INTRUMENTS, the model VANTAGE PRO 2 PLUS has been installed in the National University of the Altiplano, maintained and calibrated by the manufacturer August 2015. Measures the solar radiation in the spectral range [290-390] nm corresponding to the class of UV-B, measures the UV radiation in the range [0-16], with resolution and accuracy of 0.1 and 5% respectively.

5. CONCLUSION

In the light of the foregoing, to examine the studies of scientists who have explored with respect to the subject matter, there is evidence that the use of Ozone Monitoring Instrument (OMI), not being used potentially for the studies of uv Index based on earth, be this in the NASA's Aura satellite, being a spectrometer designed to record the amount of ozone and other chemicals in the atmosphere, as well as, solar radiation that is reflected and backscattered in the spectral range of 270-500 nm with a spectral resolution of 0.55 nm in the ultraviolet and 0.63 nm in the visible region, with a scan width is 2600 km, which allows a global coverage daily with a spatial resolution of 13 × 24 km at nadir, los products of OMI, which include ozone, aerosols, clouds, ultraviolet radiation and trace gases. In addition, it can measure the pressure and cloud coverage, providing information on the ozone layer on the Earth. It is known that it is the successor to the TOMS.

We analyzed studies using other types of devices capable of measuring data of concentrations of ozone vertical column total of the aerosols and the solar UV, however,

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studies with data extracted from OMI according to its authors have been reliable, it should be noted that it would need more studies reporting the use of the data that the AURA satellite through OMI saved daily in each point of the earth while the monitors. Andbetween the satellite data and the floor of the UV Index, it was observed that there is a correlation between them, but OMI overestimates the UVI measured by the instruments of soil, las differences between the satellite data observed, and the ground-based measurements may be influenced by atmospheric parameters such as aerosols, clouds, and ozone, as well as different weather conditions between solar noon and solar time satellite.

From the systematic review conducted, it was found that for future research would be of great utility in the use of the OMI data collection taking this the benefits identified with respect to the information that you get accurate, timely and reliable, las comparisons between the data of UV-based satellites and on the ground showed that, on average, the products OMI UV exceed the UV measurements on the ground in more than 20%. This can be attributed to the fact that the instrument satellite does not probe the boundary layer, the extinction by aerosols can be important, mainly in the urban site. Con data OMI new research on the spectral data of UV rays OMI obtained by satellite are needed with the aim of reducing the uncertainty of the recoveries of UV light through this instrument.

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