Report of activities for the Caribbean, Central America and Mexico

11th ORM

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The National Ozone Unit (NOU) was established in 1997 to facilitate the phase out of chlorofluorocarbons (CFCs) and other Ozone Depleting Substances (ODSs) in Jamaica.

The NOU also acts as a liaison between the Jamaican Government and international bodies such as the United Nations Environment Programme (UNEP) and the United Nations Development Programme (UNDP).

The NOU is currently making plans to complete the UNEP HPMP, Third Tranche Stage I (funded 2018-2020)

The NOU will be making a request for the additional tranches on the basis of work completed under this Small Scale Funding Agreement (SSFA).

The ISP (The Institutional Strengthening Project) is key to the national phase out programme of ODS as it provides financial support for the National Ozone Unit (NOU). The United Nations Environment Programme (UNEP) is the implementing agency.

To date, all ISP activities have been completed successfully. Approval of extension of the Institutional Strengthening Project phase X for the period January 2020 - December 2021 for Jamaica was given at the 84th meeting of the Executive Committee (ExCom) of the Multilateral Fund (MLF) of the Montreal Protocol held 16-20 December 2019 in Montreal Canada.
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<td><strong>Industry conversion Project</strong>&lt;br&gt;1.- Seal Sprayed Solutions, ODS based (HCFC141b) foam manufacturing facility in the region to a non-ODS based facility. The non-ODS alternative used was methylformate. The project cost over US$95,000.</td>
<td><strong>Jamaica, led by the National Ozone Unit (NOU) is desirous of conducting ozone related research to determine the health and sustainability of the ozone layer, through column and profile measurements.</strong>&lt;br&gt;• Request for a recycling centre(ODSs), which is important to the sector and the protection of the Ozone layer; as such the need for a recycling centre in Jamaica and the region should be revisited.</td>
<td><strong>The NOU will solicit the assistance of the University of Technology, the Caribbean Maritime University and the Meteorological Service of Jamaica to develop proposals to seek support to conduct ozone related research.</strong>&lt;br&gt;<strong>The NOU will determine the quantity of ODS stored across the island to determine the feasibility of establishing a refrigerant destruction facility in Jamaica or the region.</strong>&lt;br&gt;<strong>Ongoing capacity building programmes</strong></td>
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<td><strong>Ratification of the Kigali Amendment (2019)</strong>&lt;br&gt;1.- Strengthened legal and regulatory framework for the ratification and implementation of the Kigali Amendment.&lt;br&gt;2.- Harmonised Customised Codes aligned with new series of pure and blended HFCs&lt;br&gt;3.- Increased public awareness of the Kigali Amendment</td>
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<td><strong>HPMP Phase II</strong>&lt;br&gt;1.- Although Jamaica is currently pursuing activities to complete phase I of the HPMP</td>
<td><strong>The RAC industry is transitioning to the use of natural refrigerants. This decision has lead to the need for very expensive specialized tools. The NOU will lobby the multilateral funding agencies to provide assistance to technicians and service agencies for the acquisition of these tools.</strong></td>
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<td><strong>Jamaica National Cooling Strategy 2019 (proposed)</strong>&lt;br&gt;1.- Developed through the Caribbean Cooling Initiative (CCOOL), which was launched in 2017&lt;br&gt;2.- Kigali Cooling Efficiency Program (K-CEP) of the Kigali Amendment</td>
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Jamaica Contact
Observational Activities

- Total Ozone measurements with Dobson No.67 spectrophotometer restarted beginning 1 March 2021
- Dobson Spectrophotometer No. 67 participated in the intercomparison carried out in Buenos Aires, Argentina.
- Aeronet Cimel Camaguey Site

Projects, Collaboration, Twinning And Capacity Building

- At this time, we have no twinning collaborations with any foreign institution. However, we intend to accept the invitation from our Mexican colleagues to participate in the network for monitoring UV radiation in Central America and the Caribbean that is being planned by the Solarimetric Network of Mexico.

Dissemination of Results (Relevant Scientific Papers)

- Mogo S., B. Barja, V. Cachorro, R. Barroso, R. Monteiro, Á. de Frutos, R. Estevan, J. C. Antuña-Marrero, 2019, Spectral dependence of aerosol light absorption over Camagüey obtained from an integrating sphere spectral system. Proc. SPIE 11207, Fourth International Conference on Applications of Optics and Photonics, 112070F (October 3rd 2019); http://doi.org/10.1117/12.2526552
- Review the national report to consult the rest of the references.
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<td>WOUDC (Doboson Observations, March-June 2021)</td>
<td>• Consolidate a stable program of ozone measurements at the station in Havana.</td>
<td>• The Solar Radiation and Ozone Monitoring Group at the Institute of Meteorology, as well as the Optics Group at the Camagüey Meteorological Center are interested in establishing collaborations with any willing foreign institutions.</td>
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<td>Aeronet Project (Camaguey Site 2008-2021)</td>
<td>• Install the Array Spectroradiometer that we have solicited under our proposal to the Montreal Protocol Trust Fund. This instrument will allow us to measure spectrally-resolved UV radiation and to prepare UV Index forecasts, to be made public through the website of the Institute of Meteorology and other public information media, like TV and radio.</td>
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<td>• The Atmospheric Optics Group in Camagüey will continue their research into the optical properties of atmospheric aerosols.</td>
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Cuba Contact

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### República Dominicana National Report

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<td>• The Ministry of Environment and Natural Resources of the Dominican Republic, in coordination with the Executive Power and the Ministry of Foreign Affairs, began the corresponding actions to ratify the Kigali Amendment of the Montreal Protocol.</td>
<td>• The Dominican Republic it’s interested in approving the criteria applied in other countries of the Caribbean region, to participate in the network of countries that perform measurements of stratospheric ozone and ultraviolet radiation.</td>
<td>• The Dominican Republic is interested in contributing to the study and monitoring of stratospheric ozone and the measurement of ultraviolet radiation. So the Ministry of Environment and Natural Resources would like to have the support of UNAMBIENTE and the World Meteorological Organization (WMO), for the installation of solar traffic light or semaphore in the main Dominican cities and tourist areas that measure ultraviolet radiation levels, alerting the population through a code based on 5 colors as determined by the World Health Organization, WHO.</td>
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México National Report
### Observational Activities
- TOC with the 098 Mexico City spectrophotometer.
- UVB measurements by the Mexican Solarimetric Service (UNAM) over the country.
- Intercomparison Dobson-Beck 098 BaAs, Argentine March 2019.
- Intercomparison of UVB biometers in Davos, Switzerland, 2017.
- Four Cimel spectrophotometers.
- Two Pandoras (CCA, UNAM)

### Results From Observations and Analysis
- Global, Diffuse, Direct solar irradiation maps as well as UVB.
- Implementation of the database corresponding to the stations spread over the national territory.

### Theory, Modelling and other Ozone Related Research
- Climatological behavior of stratospheric ozone over Mexican territory through Dobson 098 measurements and AURA / OMI data (validity is still being evaluated).
- Contribution of UV radiation distribution maps in the National Center for Disaster Prevention (CENAPRED).

### Projects, Collaboration, Twinning And Capacity Building.
- CENAPRED (UVB MAPS)
### Dissemination of Results

- Ozone measurements can be found at the WOUDC (Canada).
- Global, Diffuse and Normal Direct solar radiation components can be found at the WRDC (St. Petersburg, Russian Federation).
- Cimel Data at the site of the AERONET PROJECT.

### Implementation of the recommendations of the 10th Ozone research managers meeting

- In Mexico, through SEMARNAT (Secretary of the Environment and Natural Resources) we continue to comply with the Montreal protocol for the care of the ozone layer, as well as the implementation of the Kigali amendment that was ratified in September 2018, becoming effective as of January 2019.
- Continuity in the TOC measurement regimen with the only station so far in Mexico (Doboson 098) as well as regular delivery to WOUDC.

### Future plans

- Expand the terrestrial network for the measurement of the Ozone Layer by acquiring current technology equipment (Brewers).
- Expand the surface UVB network (establishing a collaboration agreement with the National Meteorological Service of Mexico).
- Keep the Mexican Solarimetric Service network operating.
- Conduct research on seasonal variations of stratospheric ozone.
- Contribute the measurements of the Solarimetric Service Network in the UVB parameter to the World Center for Ozone and Ultraviolet Radiation.
- Training of specialists at the national level.
- Update of Cenapred UVB radiation maps with surface points of the Mexican Solarimetric Service Network.
Needs and Recommendations

- Regularity in the intercomparison process for Dobson instruments (the last intercomparison was delayed 9 years)
- Establish a regional program with Central America and the Caribbean to implement the increase in Ozone and UVB measurement points, but also the preparation of specialists who can operate and interpret the information generated, in this case, the ORS as the Regional Center for Solar radiation (AR-IV) can play an important role in this process.
Thanks for your attention
Mexican Solarimetric Service Network