Preface

This report is one of a series of operations reports of the "United States National Science Foundation Office of Polar Programs, Ultraviolet Spectral Irradiance Monitoring Network." The network is now in its 20th year of operation. This report complements Volume 16.0 network data that have been measured in 2006 and 2007. Like operations reports of Volumes 7 – 15 , this report is also made available in pdf-format on the project's website at www.biospherical.com/NSF.

The Antarctic "ozone hole" in the austral fall of 2006 was one of the largest and deepest on record. The 21-30 September average area of the ozone hole derived from data of the Ozone Monitoring Instrument (OMI) onboard NASA's AURA satellite was 27.4 million km^2. This is the largest area on record since satellite measurements began in 1979. The minimum total ozone column within the vortex was approximately 90 DU and was observed by OMI on 8 October 2006. The ozone hole was approximately centered at the South Pole during October and much of November 2006. This led to elevated UV intensities at the South Pole during the entire season. McMurdo Station is relatively close to the South Pole, and UV levels were also increased during much of September, October and November. A record UV Index of 7.5 was observed on 2 December 2006. Palmer Station, located 2800 km away from the South Pole, was affected several times by the ozone hole, but there were also extended periods when total ozone was above 300 DU. Ushuaia was affected by the ozone hole mostly only in early October (when solar elevations were still small), and mid-November.

The methods used for processing of SUV and GUV data were essentially identical to those implemented for Volumes 7 – 15. Data are provided at the project's website at www.biospherical.com/NSF and can also be obtained on DVD by special request.

We want to emphasize that a new data version of the entire data set of the NSF UV Monitoring Network is currently being prepared. This new data set is named "Version 2" and will eventually replace "Version 0" data discussed in this report. Version 2 data are corrected for the instruments' cosine errors; wavelength errors, which mostly affected earlier network data; and step-changes caused by modifications to the instruments. Version 2 data have a higher accuracy than Version 0 data. They also feature a larger number of data products, such as total column ozone, effective albedo, and cloud optical depth. In addition, each measured UV spectrum is complemented with a model spectrum, which has been calculated with a radiative transfer model. These model spectra are required for the various corrections and also serve as reference clear-sky spectra during cloudy conditions. As of this writing, Version 2 data are available for all sites with the exception of San Diego. More about the Version 2 data set can be found at the "Version 2 website" at www.biospherical.com/NSF/Version2.

We would like to express our appreciation to all researchers that have used and published data from the NSF UV Monitoring Network (see Appendix Section A2. "References"). We are always looking for publication references in which the network's data have been used. We are especially grateful to those who offered feedback on methods, algorithms, and data products. We continue to encourage this input and welcome suggestions on how we can further meet the needs of the scientific community. An easy-to-use feedback form can be found at the project's website www.biospherical.com/NSF.
This report has been prepared by Biospherical Instruments Inc.

Biospherical Instruments Inc.
5340 Riley Street
San Diego, CA 92110-2621
Phone: (619) 686-1888
Fax: (619) 686-1887
Internet: www.biospherical.com

For project data inquiries, please e-mail to nsfdata@biospherical.com.

Acknowledgements

The need for the rapid establishment of the UV monitoring program was identified by Dr. Peter Wilkniss, Director, Division of Polar Programs, National Science Foundation (NSF) in 1987. Dr. Polly Penhale of NSF's Office of Polar Programs has guided this project. From 2005 onward, responsibility at NSF was assumed Dr. Roberta Marinelli, Simon Stephenson, and Brain Stone.

Gary Harris from Research Instrument Systems was commissioned by the NSF in the fall of 1987 to design and build the precursor to the SUV-100. Four instruments were manufactured between October 1987 and January 1988, and two were deployed at McMurdo Station and the South Pole in February 1988. In the original configuration no publishable data were produced by the two instruments, and both were substantially redesigned by Biospherical Instruments Inc during the following year.

Key Contributors

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Susana Díaz of the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) oversees Ushuaia's system operation with assistance of Guillermo Deferrari. The former director of the Centro Austral de Investigaciones Científicas (CADIC), Dr. J. Rabassa, made the installation possible.

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Personnel at Biospherical Instruments

The Principal Investigator for the project is Charles R. ("Rocky") Booth, the Chief Executive Officer and Research Director of Biospherical Instruments Inc. The Co-Principal Investigator is Dr. Germar Bernhard, an Atmospheric Physicist and UV researcher. He is responsible for quality control and scientific analysis of data from the network. The Project Manager is James ("Jim") C. Ehramjian and he is responsible for the project's operational activities. Vi Quang is the project's Data Analyst/Database Administrator and is also responsible for programming and website development. Additional assistance in the installation of the SUV-150B system at Summit was provided by Seth White.