

Prof. Alkiviadis F. Bais - CURRICULUM VITAE



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Studies

- 1980: BA in Physics, Aristotle University of Thessaloniki, Greece.
- 1982: Summer Course in Air-Sea Interaction, University of Washington, Seattle, USA.
- 1984: Ph.D. in Physics, "Investigation of ultraviolet radiation transfer in the atmosphere", Aristotle University of Thessaloniki, Greece.

Academic Positions

Scientific assistant at the Laboratory of Atmospheric Physics, Physics Department, Aristotle University of Thessaloniki, Greece (1982-1987).

Lecturer at the Physics Department, Aristotle University of Thessaloniki, Greece (1987-1990).

Assistant Professor at the Physics Department, Aristotle University of Thessaloniki, Greece (1991-1994).

Visiting Scientist National Center for Atmospheric Research, Colorado, USA (summer 1998)

Associate Professor at the Physics Department, Aristotle University of Thessaloniki, Greece (1998- 2008).

Professor at the Physics Department, Aristotle University of Thessaloniki, Greece (since 2008)

Head of Section of Applied and Environmental Physics, Physics Department, AUTH (2000-2003), (2007-2009).

Head of the Laboratory of Atmospheric Physics, Physics Department, AUTH (since 2002).

Director Graduate Program in Environmental Physics, Physics Department, AUTH (since 2002).

Research Interests

The main research interests include the transfer of solar ultraviolet (UV) radiation through the atmosphere, the physics and variations of stratospheric ozone and processes related to global change. Particular emphasis is given in processes related to the effects of different atmospheric variables, such as ozone, aerosols and clouds, on UV radiation, as well as in investigation of ecosystem and health impacts of solar UV radiation changes. Experimental work includes monitoring of UV radiation, ozone, other trace gasses, and aerosol optical properties, as well as work on technology of instrumentation for these measurements, data management and QA/QC procedures. Emphasis is given also on the development and testing of calibration procedures for spectral, broadband, and narrowband solar radiation instruments. Modeling studies are focused on the interpretation, simulation and predictions of solar radiation changes, including solar energy.

Membership with Scientific Societies and Panels

Member, Greek Union of Physics.

Member, Hellenic Meteorological Society.

Member, American Society for Photobiology.

Member, American Geophysical Union.

Member of the Instrumentation Working Group of the WMO AD HOC Scientific Steering Committee on UV Monitoring, since 1994.

Member of the Environmental Effects of the Ozone Depletion Assessment Panel of UNEP, since 2000.

Member of the International Ozone Commission, since 2008.

Teaching

Undergraduate program - Physics Dept. - A.U.Th.

Introduction to Atmospheric Physics

Atmospheric Physics

Atmospheric Technology

Energy resources in the Environment

Graduate program in Environmental Physics - Physics Dept. - A.U.Th.

Atmospheric Radiation

Technology of atmospheric monitoring

Solar radiation modelling

Atmospheric Physics Lab

Renewable energy resources

International Summer Schools

NATO Advanced Study Institute, "Solar Ultraviolet Radiation Modelling, Measurements and Effects", 2-10 October 1995, Halkidiki, Greece.

EC Advanced Study Course, Interactions between chemical compounds, the ozone layer and UV-B fluxes (ICLU), 4-10 October 1998, Halkidiki, Greece.

EC Advanced Study Course, "Biological UV Dosimetry, a tool for Assessing the Impacts of UV Radiation on Health and Ecosystems", 25-31 January 1998, Bad Honnef, Germany.

EC Advanced Study Course, "Atmospheric effects of aircraft emissions in the upper troposphere and lower stratosphere" (ASTAIRE), 22 - 31 August 1999, Bergen, Norway.

NATO Advanced Study Institute, "Chemistry and Radiation Changes in the Ozone Layer", 15 - 24 May, 1999, Crete, Greece.

Supervising of theses

Graduate program in Environmental physics: 17 M.Sc. theses since 1995

Graduate program in Environmental physics: 7 Ph.D. theses since 2000

Participation and management of research projects (recent 5 years)

A full list of projects can be found at http://lap.physics.auth.gr/cvs/bais_projects.pdf

1. EC FP6 RTD & Demonstration, Integrated project “Stratosphere-Climate Links with Emphasis on the UTLS – O₃” (SCOUT-O₃), Principal Investigator and Activity Leader, 2004.
2. EC, COST Action 726, “Long term changes and climatology of UV radiation over Europe”, Management Committee Member, 2004.
3. National Research and Technology Council, “Validation of UV radiation, total ozone and aerosol measurements derived from OMI instrument on board the AURA satellite from the ground in a complex aerosol environment”, Coordinator, 2006.
4. ESA, Comparison between nitrogen columnar amounts measured from the ground and space NO₂VAL, Principal Investigator, 2007.
5. EC, FP7, Capacities Specific Programme, Research Infrastructures, Community heavy-payload long endurance instrumented aircraft for tropospheric research in environment and geosciences (COPAL), Principal Investigator, 2008.
6. ESA, Building Infrastructure for the validation of satellite derived atmospheric parameters, Principal Investigator, 2009.
7. G.S.R.T., “National Research Network for the European Research Infrastructure COPAL”, Coordinator, 2010.
8. G.S.R.T., “National Network for Solar Energy”, Coordinator, 2011.

Publications

Peer reviewed papers (120)

Assessment reports (6)

Conference proceedings (63)

Conference presentations-posters (66)

Other publications (18)

A full list of these publications can be found at http://lap.physics.auth.gr/cvs/bais_papers.pdf

Selected publications

1. Bais, A.F., C. S. Zerefos, C. Meleti, I. C. Ziomas, K. Tourpali, Spectral Measurements of Solar UV-B Radiation and its Relations to Total Ozone, SO₂ and Clouds, J. Geophys. Res., 98(D3), 5199-5204, 1993.
2. Zerefos, C. S., K. Tourpali, and A.F. Bais, Further studies on possible volcanic signal to the ozone layer, J. Geophys. Res., 99, D12, 25741-25746, 1994.
3. Bais A.F., C. S. Zerefos and C. T. McElroy, Solar UVB Measurements with the Double- and Single-monochromator Brewer Ozone Spectrophotometers, Geophys. Res. Lett, 23, 8, 833-836, 1996.
4. Bais, A.F., Absolute Spectral Measurements of Direct Solar Ultraviolet Irradiance with a Brewer Spectrophotometer, Appl. Opt., 2007, 5199-5204, 1997.
5. Bais, A.F., S. Kazadzis, D. Balis, C. S. Zerefos, and M. Blumthaler, Correcting global solar UV spectra recorded by a Brewer spectroradiometer for its angular response error, Appl. Opt., 37, 27, 6339 - 6344, 1998.
6. Kylling, A., A.F. Bais, M. Blumthaler, J. Schreder, C. S. Zerefos, and E. Kosmidis “The effect of aerosols on solar UV irradiances during the Photochemical Activity and Solar Ultraviolet Radiation campaign”, J. Geophys. Res., 103, D20, 26051-26060, 1998.

7. Ryan, K. R., J. E. Frederick, A.F. Bais, J. B. Kerr, B. Wu, Solar Ultraviolet Irradiance at the Ground, in: *Aviation and the Global Atmosphere*, IPCC Special Report, J. E. Penner, D. H. Lister, D. Griggs, D. Dokken, M. McFarland Eds, Cambridge University Press, pp. 165-183, 1999.
8. Zerefos, C.S., C. Meleti, D. Balis, K. Tourpali, and A.F. Bais, Quasi-biennial and longer-term changes in clear sky UV-B solar irradiance, *Geophys. Res. Lett.*, 25 (23), 4345-4348, 1998.
9. Bais, A.F., B. G. Gardiner, H. Slaper, M. Blumthaler, G. Bernhard, R. McKenzie, A. R. Webb, G. Seckmeyer, B. Kjeldstad, T. Koskela, P. Kirsch, J. Gröbner, J. B. Kerr, S. Kazadzis, K. Leszczynski, D. Wardle, C. Brogniez, W. Josefsson, D. Gillotay, H. Reinen, P. Weihs, T. Svenoe, P. Eriksen, F. Kuik, A. Redondas, SUSPEN intercomparison of ultraviolet spectroradiometers, *J. Geophys. Res.*, 106, 12,509-12,526, 2001.
10. McKenzie, R. L., G. Seckmeyer, A. Bais, and S. Madronich, Satellite retrievals of Erythematous UV dose compared with ground-based measurements at Northern and Southern midlatitudes, *J. Geophys. Res.*, 24051-24062, 2001.
11. Gröbner, J., D. Rembges, A. Bais, M. Blumthaler, T. Cabot, W. Josefsson, T. Koskela, T. M. Thorseth, A. R. Webb, U. Wester, Quality assurance of reference standards from nine European solar-ultraviolet monitoring laboratories, *Appl. Opt.* 41, pp. 4278-4282, 2002.
12. Bais, A.F., S. Madronich, J. Crawford, S. Hall, B. Mayer, M. van Weele, J. Lenoble, J. G. Calvert, C. A. Cantrell, R. E. Shetter, A. Hofzumahaus, P. Koepke, P. Monks, G. Frost, R. McKenzie, N. Krotkov, A. Kylling, S. A. Lloyd, W. Swartz, G. Pfister, T.J. Martin, E-P. Roeth, E. Griffioen, A. Ruggaber, M. Krol, A. Kraus, G. D. Edwards, M. Mueller, B. L. Lefer, P. Johnston, H. Schwander, D. E. Flittner, B. Gardiner, J. Barrick, R. Schmitt, International Photolysis Frequency Measurement and Model Intercomparison: Spectral Actinic Solar Flux Measurements and Modeling, *J. Geophys. Res.* 108(D16), 8543, doi:10.1029/2002JD002891, 2003.
13. Bais, A.F., A. Kazantzidis, S. Kazadzis, D.S. Balis, C.S. Zerefos, and C. Meleti, Deriving an effective aerosol single scattering albedo from spectral surface UV irradiance measurements, *Atmos. Environ.*, 39 (6), 1093-1102, 2005.
14. Kazadzis, S., A. Bais, N. Kouremeti, E. Gerasopoulos, K. Garane, M. Blumthaler, B. Schallhart, and A. Cede, Direct spectral measurements with a Brewer spectroradiometer: absolute calibration and aerosol optical depth retrieval, *Appl. Opt.*, 44 (9), 1681-1690, 2005.
15. Kylling, A., A. R. Webb, R. Kift, G. P. Gobbi, L. Ammannato, F. Barnaba, A. Bais, S. Kazadzis, M. Wendisch, E. Jakel, S. Schmidt, A. Kniffka, S. Thiel, W. Junkermann, M. Blumthaler, R. Silbernagl, B. Schallart, B. Kjeldstad, T. M. Thorseth, R. Scheirer, and B. Mayer, "Spectral Actinic flux in the Lower Troposphere: Measurement and 1-D Simulations for Cloudless, Broken Cloud and Overcast Situations", *Atmos. Chem. Phys.*, 5, 1975-1997, 2005.
16. Arola, A., S. Kazadzis, N. Krotkov, A. Bais, J. Gröbner, and J.R. Herman, Assessment of TOMS UV bias due to absorbing aerosols, *J. Geophys. Res.*, 110, D23211, doi:10.1029/2005JD005913, 2005.
17. Garane, K., A.F. Bais, S. Kazadzis, A. Kazantzidis, and C. Meleti, Monitoring of UV spectral irradiance at Thessaloniki (1990-2005): Data re-evaluation and quality control, *Ann Geophys.* 24 (12), 3215, 2006.
18. Tourpali, K., C.S. Zerefos, D. Balis, A.F. Bais, The 11-year solar cycle in stratospheric ozone: Comparison between Umkehr and SBUVv8 and effects on surface erythematous irradiance, *J. Geophys. Res.*, 112, D12306, doi:10.1029/2006JD007760, 2007.
19. Bais, A.F. and D. Lubin (Lead Authors), A. Arola, G. Bernarhd, M. Blumthaler, N. Chubarova, C. Erlick, H.P. Gies, N. Krotkov, K. Lantz, B. Mayer, R.L. McKenzie, R. Piacentini, G. Seckmeyer, J.R. Slusser, C. Zerefos, Surface ultraviolet radiation: Past, present and future, Chapter 7 in *Scientific Assessment of Ozone Depletion: 2006*, Global Ozone Research and Monitoring Project-Report No. 47, World Meteorological Organization, Geneva, Switzerland, 2007.

20. UNEP, Environmental effects of ozone depletion and the interaction with climate change: 2006 assessment, 206 pp, Nairobi, 2007.
21. Kazadzis, S., A.F. Bais, V. Amiridis, D. Balis, C. Meleti, N. Kouremeti, C.S. Zerefos, S. Rapsomanikis, M. Petrakakis, A. Kelesis, P. Tzoumaka, K. Kelektoglou, Nine years of UV aerosol optical depth measurements at Thessaloniki, Greece, *Atmos. Chem. Phys.*, 7, 2091-2101, 2007.
22. Kouremeti, N., A.F. Bais, S. Kazadzis, M. Blumthaler, and R. Schmitt, Charge-coupled device spectrograph for direct solar irradiance and sky radiance measurements, *Appl. Opt.*, 47 (10), 1594, 2008.
23. Kazantzidis, A., A.F. Bais, M.-M. Zebila, S. Kazadzis, P. denOuter, T. Koskela, and H. Slaper, Calculations of the human Vitamin D exposure from UV spectral measurements at three European stations, *Photochem. Photobiol. Sci.*, 8, 45-51, 2009.
24. Tourpali, K., A.F. Bais, A. Kazantzidis, C.S. Zerefos, H. Akiyoshi, J. Austin, C. Brühl, N. Butchart, M.P. Chipperfield, M. Dameris, M. Deushi, V. Eyring, M.A. Giorgetta, D.E. Kinnison, E. Mancini, D.R. Marsh, T. Nagashima, G. Pitari, D.A. Plummer, E. Rozanov, K. Shibata, and W. Tian, Clear sky UV simulations in the 21st century based on Ozone and Temperature Projections from Chemistry-Climate Models, *Atmos. Chem. Phys.*, 9, 1-8, 2009.
25. Pissulla, D., G. Seckmeyer, R. Cordero, M. Blumthaler, B. Schallhart, A. Webb, R. Kift, A. Smedley, A.F. Bais, N. Kouremeti, A. Cede, J. Herman, and M. Kowalewski, Comparing different methods to derive spectral radiance as a function of incident and azimuth angle, *Photochem. Photobiol. Sci.*, 8, 516-527, 2009.
26. Lee, D. S., G. Pitari, V. Grewe, K. Gierens, J. E. Penner, A. Petzold, M. Prather, U. Schumann, A. Bais, T. Berntsen, D. Iachetti, L. L. Lim and R. Sausen, Scientific Assessment of the Impacts of Aviation on Climate Change and Ozone Depletion, *Atmos. Environ.*, doi:10.1016/j.atmosenv.2009.06.005, 2009.
27. den Outer, P. N., Slaper, H., Kaurola, J., Lindfors, A., Kazantzidis, A., Bais, A. F., Feister, U., Junk, J., Janouch, M., and Josefsson, W., Reconstructing of erythemal ultraviolet radiation levels in Europe for the past four decades, *J. Geophys. Res.* 115, D10102, doi:10.1029/2009JD012827, 2010.

Other activities

Participation in about 21 field campaigns related mainly to ozone and solar UV radiation.

Invited lectures (9) at various scientific forums

Participation in the organization of 13 conferences and summer schools, as member of the organizing, program, or technical committees.

Reviewer in more than 14 scientific journals and project evaluator in 8 research proposals of the European Commission and the Norwegian Research Council.

A full list of these activities can be found at http://lap.physics.auth.gr/cvs/bais_activities.pdf