



Christopher D. Barnet

Christopher D. Barnet received degrees in electronics technology (1976) and solid state physics (1978) from Northern Illinois University, DeKalb. In 1990 he received his Ph.D. degree from New Mexico State University, Las Cruces in remote sensing of planetary atmospheres using visible and infrared instruments aboard the Voyager spacecraft. His postdoctoral research at NASA and the Canadian Institute for Space and Terrestrial Science focused on ultraviolet, visible, and near-infrared observations of the planets using the Hubble Space Telescope. Since 1995 he has worked on advanced algorithms for terrestrial infrared and microwave remote sensing and has actively supported NASA's Advanced Infrared Sounder (AIRS) science team and the NPOESS Sounder Operational Algorithm Team (SOAT). In June 2003 he joined the Office of Research and Applications (ORA) of NOAA/NESDIS where he is exploiting operational sounder missions to provide the first global understanding of carbon monoxide, carbon dioxide, and methane in the free troposphere. These measurements, will contribute to the understanding of the terrestrial carbon cycle and climate change.

Professional Activities:

Teaching UMBC PHYS 741, Remote Sounding	Spring 2004
Teaching UMBC PHYS 440/640 Computation Physics	Spring 2002 & 2001
Active participation with the Integrated Carbon Observing System	2004-present
AIRS Science Team participation (member since 2004)	1995-present
Active participation with the Integrated Programs Office (IPO) Sounder	
Operational Algorithm Team (SOAT)	1997-present

Experience

2003-present	Physical Scientist, National Oceanographic and Atmospheric Administration
2001-2003	Associate Research Faculty, University of Maryland Baltimore County
1995-2001	Senior Programmer/Analyst, General Sciences Corporation
1992-1995	Project Scientist, Institute for Space & Terrestrial Science
1990-1992	Research Associate, NAS-NRC at NASA GSFC
1988-1990	Graduate Research Assistant, New Mexico State University
1985-1988	Supervisor, Lockheed Eng. & Mgmt. Services Company
1983-1985	Engineer, Nicolet Instrument Company, Madison, WI
1981-1983	Engineer & Supervisor, Lockheed Eng. & Mgmt. Services Co.
1979-1980	Graduate Research Assistant, New Mexico State University
1976-1979	Graduate & Faculty Research Assistant, Northern Illinois University
1972-1976	Electronics Technician, Fermi National Accelerator

Recent Honors Received

NASA group achievement award for Aqua/AIRS	2004
NASA/GSFC group achievement award for Aqua/AIRS	2003

Letter of recognition for service on the NASA NPOESS Preparatory Project	2002
Letter of recognition for contribution to the NASA Carbon Cycle initiative	2002

Research Support

- NASA NRA-00-OES-08, Awarded, 2002-2005, \$450,000, to work on trace gas (CO₂, CH₄, CO) retrievals using measurements from the Atmospheric Infrared Sounder (AIRS), launched May 2002 on the EOS-AQUA platform.
- NASA NRA-03-OES-02, Awarded, 2004-2006, \$485,000 to work on production of AIRS trace gas products.
- NASA NRA-03-EOS-02, Awarded, 2004-2006, \$450,000 to work on AIRS cloud clearing risk reduction activities in the event Aqua/AMSU fails.
- NOAA OAR, Awarded, 2004, \$350,000 to work on hyperspectral sounding of atmospheric carbon

Recent Conference Publications:

Barnet, C.D., M. Goldberg, L. McMillin and M.T. Chahine 2004. Remote sounding of trace gases with the EOS/AIRS instrument. Proceedings of SPIE, **5548** p.300-312

Connor, B, Z. Huang, G. Toon, D. Crisp, S. Wood, C.D. Barnet 2003. The averaging kernel of CO₂ column measurements by the orbiting carbon observatory (OCO), its use in inverse modeling, and comparisons to AIRS, SCIAMACHY and ground based FTIR. AGU, San Francisco Dec. 2003.

Barnet, C.D., S. Datta, L. Strow 2003. Trace gas measurements from the atmospheric infrared sounders (AIRS). Optical Remote Sensing, OSA Technical Digest 89-92.

Refereed Publications:

- 1) Susskind, J., C. D. Barnet, J. M. Blaisdell 2003. Retrieval of atmospheric and surface parameters from AIRS/AMSU.HSB data under cloud conditions. *IEEE Trans. Geosci. Remote Sens* **41**, 390-340.
- 2) McClain McClain, C.R., Hall, F.G., Collatz, G.J., Kawa, S.R., Gregg, W.W., Gervin, J.C., Abshire, J.B., Andrews, A.E., Barnet, C.D., Behrenfeld, M.J., Caruso, P.S., Chekalyuk, A.M., Demaio, L.D., Denning, A.S., Hansen, J.E., Hoge, F.E., Knox, R.G., Masek, J.G., Mitchell, K.D., Moisan, J.R., Moisan, T.A., Pawson, S., Rienecker, M.M., Signorini, S.R., and C.J. Tucker 2002. Science and Observation recommendations for future NASA Carbon Cycle Research, Goddard Space Flight Center. NASA TM-2002-210009. Apr. 2002.
- 3) Barnet, C. D., J. M. Blaisdell, J. Susskind 2000. Practical methods for rapid and accurate computation of interferometric spectra for remote sensing applications. *IEEE Trans. Geosci. Remote Sens.* **38**, 169-183.
- 4) Barnet, C. D., J. Susskind 1999. "Simulation studies of advanced infrared and microwave sounders." in Optical Remote Sensing of the Atmosphere, *OSA Technical Digest* (Optical Society of America, Wash. DC), 146-148.
- 5) Susskind, J., C. D. Barnet and J. Blaisdell 1998. Determination of atmospheric and surface parameters from simulated AIRS/AMSU sounding data: Retrieval methodology and cloud clearing methodology. *Adv. Space Res.* **21**, 369-384.
- 6) McMillin, L. M., M. D. Goldberg, H. Ding, J. Susskind, C. D. Barnet 1998. A forward calculation for interferometers: method and validation. *Applied Optics* **37**, 3059-3068

- 7) Edgington, S. G., S. K. Atreya, L. M. Trafton, J. J. Caldwell, R. F. Beebe, A. A. Simon, R. A. West and C. D. Barnet 1998. On the latitude variation of ammonia, acetylene, and phosphine altitude profiles on Jupiter from HST faint object spectrograph observations. *Icarus* **133**, 192-209.
- 8) Barnet, C. D., J. J. Caldwell, C. C. Cunningham, X. M. Hua 1996. Hubble Space Telescope Observations of Mars: The CO Abundance. in *Science with the Space Telescope, Vol. II*, eds. P. Benvenuti, F.D. Macchetto, & E.J. Schreier, 1996, 538-545.
- 9) Trafton, L. M., J. J. Caldwell, C. Barnet, C. C. Cunningham 1996. The Gaseous Sulfur Dioxide Abundance over Io's Leading and Trailing Hemisphere: HST spectra of Io's C¹B₂- X¹A₁ Band of SO₂ Near 2100 Å. *ApJ* **456**, 384-392.
- 10) Noll, K. S., M. A. McGrath, L. M. Trafton, S. K. Atreya, J. J. Caldwell, H. A. Weaver, R. V. Yelle, C. Barnet, S. Edgington 1995. HST Spectroscopic Observations of Jupiter After the Collision of Comet Shoemaker-Levy 9. *Science* **267**, 1307-1313.
- 11) Hammel, H. B., G. W. Lockwood, J. R. Mills, C. D. Barnet 1995. Hubble Space Telescope Imaging of Neptune's Cloud Structure in 1994. *Science* **268**, 1740-1742.
- 12) Ingersoll, A. P., C. D. Barnet, R. F. Beebe, F. M. Flasar, D. P. Hinson, S. S. Limaye, L. A. Sromovsky, V. E. Suomi 1995. Dynamic Meteorology of Neptune. in *Neptune and Triton*, ed. T. Gehrels (University of Arizona Press, Tucson)
- 13) Caldwell, J., Xin-Min Hua, B. Turgeon, J.A. Westphal and C.D. Barnet 1993. An observed drift of Saturn's polar spot by HST. *Science* **260**, 326-329.
- 14) Barnet, C. D., J. A. Westphal, R. F. Beebe and L. F. Huber 1992. Hubble Space Telescope observations of the 1990 equatorial disturbance on Saturn: zonal winds and central meridian albedos. *Icarus* **100**, 499-510.
- 15) Westphal, J.A., W.A. Baum, A.P. Ingersoll, C.D. Barnet, E.M. De Jong, G.E. Danielson and J. Caldwell 1992. Hubble Space Telescope observations of the 1990 equatorial disturbance on Saturn: images, albedos, and limb darkening. *Icarus* **100**, 485-498.
- 16) Beebe R.F., C. Barnet, P.V. Sada and A. S. Murrell 1992. The onset and growth of the 1990 equatorial disturbance on Saturn. *Icarus* **95**, 163-172.
- 17) Barnet, C., R. F. Beebe, B. J. Conrath 1992. A seasonal radiative-dynamic model of Saturn's troposphere. *Icarus* **98**, 94-107.
- 18) Smith, B.A., L.A. Soderblom, D. Banfield, C.D. Barnet, A.T. Basilevsky, R.F. Beebe, K. Bollinger, J.M. Boyce, A. Brahic, G.A. Briggs, R.H. Brown, C. Chyba, S.A. Collins, T. Colvin, A.K. Cook, D. Crisp, S.K. Croft, D. Cruikshank, J.N. Cuzzi, G.E. Danielson, M.E. Davies, E.M. De Jong, L. Dones, D.A. Godfrey, J. Goguen, I. Grenier, V.R. Haemmerle, H.B. Hammel, C.J. Hansen, C.P. Helfenstein, C. Howell, G.E. Hunt, A.P. Ingersoll, T.V. Johnson, J. Kargel, R. Kirk, D.I. Kuehn, S.S. Limaye, H. Masursky, A. McEwen, D. Morrison, T. Owen, W. Owen, J.B. Pollack, C.C. Porco, K. Rages, P. Rogers, D. Rudy, C. Sagan, J. Schwartz, E.M. Shoemaker, M. Showalter, B. Sicardy, D. Simonelli, J. Spencer, L.A. Sromovsky, C. Stoker, R.G. Strom, V.E. Suomi, S.P. Synott, R.J. Terrile, P. Thomas, W.R. Thompson, A. Verbiscer and J. Veverka 1989. Voyager 2 at Neptune: Imaging science results. *Science* **246**, 1422-1449.
- 19) Barnet, C.D., R. Davis, and W. L. Sanders 1985. The Aberration Constant for QSO's, *ApJ* **295**, 24-27.

- 20) Stafford, B., C.D. Barnet, C.W. Kimball, and F.Y. Fradin 1980. Mossbauer study of metal cations in the Chevrel phases in. "Superconductivity in d- and f- band metals" (ed. Harry Suhl and M. Brian Maple). Academic Press, New York.
- 21) Dunlap, B.D., C.K. Shenoy, F.Y. Fradin, C.D. Barnet, and C.W. Kimball 1979. Measurement of the spin depairing interaction in $\text{Sn}_{0.75}\text{Eu}_{0.25}\text{Mo}_6\text{S}_8$. J. Magn. and Magn. Mater. (Netherlands) **13**, 319- 321.
- 22) Kimball, C.W., G.L. Van Landuyt, C.D. Barnet, G.K. Shenoy, B.D. Dunlap, F.Y. Fradin 1979. Mossbauer studies of ternary superconductors. J. Phys. Colloq. (France) **40**, C2/671-675.
- 23) Kimball, C.W., G.L. Van Landuyt, C.D. Barnet, G.K. Shenoy, B.D. Dunlap, F.Y. Fradin 1978. Hyperfine interaction studies of Chevrel phase superconductors. J. Phys. Colloq. (France) **39**, C6/367-368.