

REFERENCES

- Andrews, A. E., Kofler, J. D., Trudeau, M. E., Williams, J. C., Neff, D. H. & Masarie, K. A. et al. (2014). CO₂, CO, and CH₄ measurements from tall towers in the NOAA Earth System Research Laboratory's Global Greenhouse Gas Reference Network: instrumentation, uncertainty analysis, and recommendations for future high-accuracy greenhouse gas monitoring efforts. *Atmospheric Measurement Techniques*, 7(2), 647-687. doi: 10.5194/amt-7-647-2014
- Basu, S., Krol, M., Butz, A., Clerbaux, C., Sawa, Y. & Machida, T. et al. (2014). The seasonal variation of the CO₂ flux over Tropical Asia estimated from GOSAT, CONTRAIL, and IASI. *Geophysical Research Letters*, 41(5), 1809-1815. doi: 10.1002/2013gl059105
- Berner, R. (2003). The long-term carbon cycle, fossil fuels and atmospheric composition. *Nature*, 426(6964), 323-326. doi: 10.1038/nature02131
- Bhaskaran, B., Mitchell, J., Lavery, J., & Lal, M. (1995). Climatic response of the Indian subcontinent to doubled CO₂ concentrations. *International Journal Of Climatology*, 15(8), 873-892. doi: 10.1002/joc.3370150804
- Bhattacharya, B., Green, R., Rao, S., Saxena, M., Sharma, S., & Ajay Kumar, K. et al. (2019). An Overview of AVIRIS-NG Airborne Hyperspectral Science Campaign Over India. *Current Science*, 116(7), 1082. doi: 10.18520/cs/v116/i7/1082-1088

- Bhattacharya, S. K., Borole, D. V., Francy, R. J., Allison, C. E., Steele, L. P., & Krummel, P. et al. (2009). Trace gases and CO₂ isotope records from Cabo de Rama, India. *Current Science*, 97(9), 1336–1344. <http://www.jstor.org/stable/24109728>
- Bohr, N. (1922). *The theory of spectra and atomic constitution*. Great Britain: Cambridge University Press.
- Born, M., & Wolf, E. (1999). *Principles of Optics* (7th ed.). UK: Cambridge University Press.
- Bovensmann, H., Buchwitz, M., Burrows, J. P., Reuter, M., Krings, T. & Gerilowski, K. et al. (2010). A remote sensing technique for global monitoring of power plant CO₂ emissions from space and related applications. *Atmospheric Measurement Techniques*, 3(4), 781-811. doi: 10.5194/amt-3-781-2010
- Bovensmann, H., Burrows, J., Buchwitz, M., Frerick, J., Noël, S., & Rozanov, V. et al. (1999). SCIAMACHY: Mission Objectives and Measurement Modes. *Journal of The Atmospheric Sciences*, 56(2), 127-150. doi: 10.1175/1520-0469(1999)056<0127:smoamm>2.0.co;2
- Buchwitz, M., Schneising, O., Burrows, J. P., Bovensmann, H., Reuter, M. & Notholt, J. (2007). First direct observation of the atmospheric CO₂ year-to-year increase from space. *Atmospheric Chemistry and Physics*, 7(16), 4249-4256. doi: 10.5194/acp-7-4249-2007
- Buermann, W., Lintner, B., Koven, C., Angert, A., Pinzon, J., Tucker, C., & Fung, I. (2007). The changing carbon cycle at Mauna Loa Observatory. *Proceedings of The National Academy of Sciences*, 104(11), 4249-4254. doi: 10.1073/pnas.0611224104

-
- Buschmann, M., Deutscher, N. M., Sherlock, V., Palm, M., Warneke, T. & Notholt, J. (2016). Retrieval of xCO₂ from ground-based mid-infrared (NDACC) solar absorption spectra and comparison to TCCON. *Atmospheric Measurement Techniques*, 9(2), 577-585. doi: 10.5194/amt-9-577-2016
- Canadell, J., Le Quere, C., Raupach, M., Field, C., Buitenhuis, E., & Ciais, P. et al. (2007). Contributions to accelerating atmospheric CO₂ growth from economic activity, carbon intensity, and efficiency of natural sinks. *Proceedings Of The National Academy Of Sciences*, 104(47), 18866-18870. doi: 10.1073/pnas.0702737104
- Chandra, N., Lal, S., Venkataramani, S., Patra, P. and Sheel, V., 2016. Temporal variations of atmospheric CO₂ and CO at Ahmedabad in western India. *Atmospheric Chemistry and Physics*, 16(10), pp.6153-6173.
- Chang, C. (2007). *Hyperspectral Data Exploitation: Theory and Applications*. New Jersey & Canada: John Wiley & Sons.
- Chapman, J. W., Thompson, D. R., Helmlinger, M. C., Bue, B. D., Green, R. O. & Eastwood, M. L. et al. (2019). Spectral and Radiometric Calibration of the Next Generation Airborne Visible Infrared Spectrometer (AVIRIS-NG). *Remote Sensing*, 11(18), 2129. doi: 10.3390/rs11182129
- Chhabra, A. & Gohel, A. (2017). Recent observations of atmospheric carbon dioxide over India, *Current Science*, 112(12), 2364–66.
- Crisp, D., Atlas, R., Breon, F., Brown, L., Burrows, J. & Ciais, P. et al. (2004). The Orbiting Carbon Observatory (OCO) mission. *Advances in Space Research*, 34(4), 700-709. doi: 10.1016/j.asr.2003.08.062

-
- Crisp, D., Pollock, H. R., Rosenberg, R., Chapsky, L., Lee, R. A. M. & Oyafuso, F. A. et al. (2017). The on-orbit performance of the Orbiting Carbon Observatory-2 (OCO-2) instrument and its radiometrically calibrated products. *Atmospheric Measurement Techniques*, 10(1), 59-81. doi: 10.5194/amt-10-59-2017
- David, G., Miffre, A., Thomas, B., & Rairoux, P. (2012). Sensitive and accurate dual-wavelength UV-VIS polarization detector for optical remote sensing of tropospheric aerosols. *Applied Physics B*, 108(1), 197-216. doi: 10.1007/s00340-012-5066-x
- Dennison, P. E., Thorpe, A. K., Pardyjak, E. R., Roberts, D. A., Qi, Y. & Green, R. O. et al. (2013). High spatial resolution mapping of elevated atmospheric carbon dioxide using airborne imaging spectroscopy: Radiative transfer modeling and power plant plume detection. *Remote Sensing of Environment*, 139, 116-129. doi: 10.1016/j.rse.2013.08.001
- Dettinger, M., & Ghil, M. (1998). Seasonal and interannual variations of atmospheric CO₂ and climate. *Tellus B*, 50(1), 1-24. doi: 10.1034/j.1600-0889.1998.00001.x
- Diallo, M., Legras, B., Ray, E., Engel, A. & Añel, J. A. (2017). Global distribution of CO₂ in the upper troposphere and stratosphere. *Atmospheric Chemistry and Physics*, 17(6), 3861-3878. doi: 10.5194/acp-17-3861-2017
- Dubuisson, P., Frouin, R., Dessailly, D., Duforêt, L., Léon, J., Voss, K., & Antoine, D. (2009). Estimating the altitude of aerosol plumes over the ocean from reflectance ratio measurements in the O₂ A-band. *Remote Sensing Of Environment*, 113(9), 1899-1911. doi: 10.1016/j.rse.2009.04.018
- Elachi, C., & Van Zyl, J. (2006). *Introduction to the physics and techniques of remote sensing* (2nd ed.). New Jersey & Canada: John Wiley & Sons, Inc.

- Eldering, A., Taylor, T. E., O'Dell, C. W. & Pavlick, R. (2019). The OCO-3 mission: measurement objectives and expected performance based on 1 year of simulated data. *Atmospheric Measurement Techniques*, 12(4), 2341-2370. doi: 10.5194/amt-12-2341-2019
- Eldering, A., Wennberg, P. O., Crisp, D., Schimel, D. S., Gunson, M. R. & Chatterjee, A. et al. (2017). The Orbiting Carbon Observatory-2 early science investigations of regional carbon dioxide fluxes. *Science*, 358(6360), doi: 10.1126/science.aam5745
- Elias, T., & Roujean, J. (2008). Estimation of the aerosol radiative forcing at ground level, over land, and in cloudless atmosphere, from METEOSAT-7 observation: method and case study. *Atmospheric Chemistry and Physics*, 8(3), 625-636. doi: 10.5194/acp-8-625-2008
- EnviStats-India 2019, Vol. I: Environment Statistics. (2019). Retrieved from <https://www.mospi.gov.in>
- Frankenberg, C., O'Dell, C., Guanter, L. & McDuffie, J. (2012). Remote sensing of near-infrared chlorophyll fluorescence from space in scattering atmospheres: implications for its retrieval and interferences with atmospheric CO₂ retrievals. *Atmospheric Measurement Techniques*, 5(8), 2081-2094. doi: 10.5194/amt-5-2081-2012
- Frankenberg, C., Pollock, R., Lee, R. A. M., Rosenberg, R., Blavier, J. & Crisp, D. et al. (2015). The Orbiting Carbon Observatory (OCO-2): spectrometer performance evaluation using pre-launch direct sun measurements. *Atmospheric Measurement Techniques*, 8(1), 301-313. doi: 10.5194/amt-8-301-2015

- Friend, A., Lucht, W., Rademacher, T., Keribin, R., Betts, R., & Cadule, P. et al. (2013). Carbon residence time dominates uncertainty in terrestrial vegetation responses to future climate and atmospheric CO₂. *Proceedings of The National Academy Of Sciences*, 111(9), 3280-3285. doi: 10.1073/pnas.1222477110
- Fu, Z., Dong, J., Zhou, Y., Stoy, P. C. & Niu, S. (2017). Long term trend and interannual variability of land carbon uptake—the attribution and processes. *Environmental Research Letters*, 12(1), 014018. doi: 10.1088/1748-9326/aa5685
- Gamon, J. A., Field, C. B., Goulden, M. L., Griffin, K. L., Hartley, A. E. & Joel, G. et al. (1995). Relationships Between NDVI, Canopy Structure, and Photosynthesis in Three Californian Vegetation Types. *Ecological Applications*, 5(1), 28-41. doi: 10.2307/1942049
- Garg, A., & Shukla, P. (2009). Coal and energy security for India: Role of carbon dioxide (CO₂) capture and storage (CCS). *Energy*, 34(8), 1032-1041. doi: 10.1016/j.energy.2009.01.005
- Garg, A., Shukla, P., Kankal, B., & Mahapatra, D. (2017). CO₂ emission in India: trends and management at sectoral, sub-regional and plant levels. *Carbon Management*, 8(2), 111-123. doi: 10.1080/17583004.2017.1306406
- Garg, A., Shukla, P., Parihar, S., Singh, U., & Kankal, B. (2017). Cost-effective architecture of carbon capture and storage (CCS) grid in India. *International Journal of Greenhouse Gas Control*, 66, 129-146. doi: 10.1016/j.ijggc.2017.09.012
- Goetz, A. (2009). Three decades of hyperspectral remote sensing of the Earth: A personal view. *Remote Sensing of Environment*, 113, S5-S16. doi: 10.1016/j.rse.2007.12.014

-
- Goetz, A., Vane, G., Solomon, J., & Rock, B. (1985). Imaging Spectrometry for Earth Remote Sensing. *Science*, 228(4704), 1147-1153. doi: 10.1126/science.228.4704.1147
- Green, R. (2001). *Measuring the spectral expression of carbon dioxide in the solar reflected spectrum with AVIRIS*. Presentation, Proceedings of the 11th annual Airborne Earth Science Workshop, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California 91109.
- Green, R. O. & Team, C. (2017). New measurements of the earth's spectroscopic diversity acquired during the aviris-ng campaign to India. *2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, doi: 10.1109/igarss.2017.8127646
- Green, R. O., Eastwood, M. L., Sarture, C. M., Chrien, T. G., Aronsson, M. & Chippendale, B. J. et al. (1998). Imaging Spectroscopy and the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS). *Remote Sensing of Environment*, 65(3), 227-248. doi: 10.1016/s0034-4257(98)00064-9
- Griffin, M., Hsu, S., Burke, H., Orloff, S., & Upham, C. (2005). Examples of EO-1 Hyperion Data Analysis. *LINCOLN LABORATORY JOURNAL*, 15(2), 271-298.
- Guanter, L., Kaufmann, H., Segl, K., Foerster, S., Rogass, C. & Chabrillat, S. et al. (2015). The EnMAP Spaceborne Imaging Spectroscopy Mission for Earth Observation. *Remote Sensing*, 7(7), 8830-8857. doi: 10.3390/rs70708830
- Gupta, A., Dhaka, S. K., Matsumi, Y., Imasu, R., Hayashida, S. & Singh, V. (2019). Seasonal and annual variation of AIRS retrieved CO₂ over India during 2003–2011. *Journal of Earth System Science*, 128(4), doi: 10.1007/s12040-019-1108-7

-
- Hakkarainen, J., Ialongo, I. & Tamminen, J. (2016). Direct space-based observations of anthropogenic CO₂ emission areas from OCO-2. *Geophysical Research Letters*, 43(21), doi: 10.1002/2016gl070885
- Hakkarainen, J., Ialongo, I., Maksyutov, S., & Crisp, D. (2019). Analysis of Four Years of Global XCO₂ Anomalies as Seen by Orbiting Carbon Observatory-2. *Remote Sensing*, 11(7), 850. doi: 10.3390/rs11070850
- Hamazaki, T., Kaneko, Y., & Kuze, A. (2004). *Carbon dioxide monitoring from the GOSAT satellite*. Presentation, Proceedings of XXth ISPRS Conference, Istanbul, Turkey.
- Herzberg, G. (1944). *Atomic Spectra and Atomic Structure*. New York: Dover Publications.
- Holben, B., Eck, T., Slutsker, I., Tanré, D., Buis, J., & Setzer, A. et al. (1998). AERONET—A Federated Instrument Network and Data Archive for Aerosol Characterization. *Remote Sensing of Environment*, 66(1), 1-16. doi: 10.1016/s0034-4257(98)00031-5
- Huang, X., Wang, T., Talbot, R., Xie, M., Mao, H. & Li, S. et al. (2015). Temporal characteristics of atmospheric CO₂ in urban Nanjing, China. *Atmospheric Research*, 153437-450. doi: 10.1016/j.atmosres.2014.09.007
- Imasu, R. & Tanabe, Y. (2018). Diurnal and Seasonal Variations of Carbon Dioxide (CO₂) Concentration in Urban, Suburban, and Rural Areas around Tokyo. *Atmosphere*, 9(10), 367. doi: 10.3390/atmos9100367

-
- Janardanan, R., Maksyutov, S., Oda, T., Saito, M., Kaiser, J., & Ganshin, A. et al. (2016). Comparing GOSAT observations of localized CO₂ enhancements by large emitters with inventory-based estimates. *Geophysical Research Letters*, 43(7), 3486-3493. doi: 10.1002/2016gl067843
- Jensen, J. (2007). *Remote Sensing of the Environment: An Earth Resource Perspective* (2nd ed.). New Delhi, India: Pearson Education Singapore Pte. Ltd.
- Jha, C., Thumaty, K., Rodda, S., Sonakia, A., & Dadhwal, V. (2013). Analysis of carbon dioxide, water vapour and energy fluxes over an Indian teak mixed deciduous forest for winter and summer months using eddy covariance technique. *Journal Of Earth System Science*, 122(5), 1259-1268. doi: 10.1007/s12040-013-0350-7
- Jiang, X., Crisp, D., Olsen, E. T., Kulawik, S. S., Miller, C. E. & Pagano, T. S. et al. (2016). CO₂ annual and semiannual cycles from multiple satellite retrievals and models. *Earth and Space Science*, 3(2), 78-87. doi: 10.1002/2014ea000045
- Jiang, X., Wang, J., Olsen, E. T., Liang, M., Pagano, T. S. & Chen, L. L. et al. (2013). Influence of El Niño on Midtropospheric CO₂ from Atmospheric Infrared Sounder and Model. *Journal of the Atmospheric Sciences*, 70(1), 223-230. doi: 10.1175/jas-d-11-0282.1
- Joiner, J., Yoshida, Y., Vasilkov, A., Schaefer, K., Jung, M. & Guanter, L. et al. (2014). The seasonal cycle of satellite chlorophyll fluorescence observations and its relationship to vegetation phenology and ecosystem atmosphere carbon exchange. *Remote Sensing of Environment*, 152375-391. doi: 10.1016/j.rse.2014.06.022

- Kaufman, Y., Tanré, D., Gordon, H., Nakajima, T., Lenoble, J., & Frouin, R. et al. (1997). Passive remote sensing of tropospheric aerosol and atmospheric correction for the aerosol effect. *Journal Of Geophysical Research: Atmospheres*, 102(D14), 16815-16830. doi: 10.1029/97jd01496
- Keeling, C. (1960). The Concentration and Isotopic Abundances of Carbon Dioxide in the Atmosphere. *Tellus*, 12(2), 200-203. doi: 10.1111/j.2153-3490.1960.tb01300.x
- Keeling, C. (1997). Climate change and carbon dioxide: An introduction. *Proceedings of The National Academy Of Sciences*, 94(16), 8273-8274. doi: 10.1073/pnas.94.16.8273
- Keeling, C., Bacastow, R., Bainbridge, A., Ekdahl, C., Guenther, P., Waterman, L., & Chin, J. (1976). Atmospheric carbon dioxide variations at Mauna Loa Observatory, Hawaii. *Tellus*, 28(6), 538-551. doi: 10.1111/j.2153-3490.1976.tb00701.x
- Keeling, C., Chin, J., & Whorf, T. (1996). Increased activity of northern vegetation inferred from atmospheric CO₂ measurements. *Nature*, 382(6587), 146-149. doi: 10.1038/382146a0
- Keeling, C., Piper, S., Bacastow, R., Wahlen, M., Whorf, T., Heimann, M., & Meijer, H. (2005). Atmospheric CO₂ and ¹³CO₂ Exchange with the Terrestrial Biosphere and Oceans from 1978 to 2000: Observations and Carbon Cycle Implications. *A History of Atmospheric CO₂ And Its Effects on Plants, Animals, and Ecosystems*, 83-113. doi: 10.1007/0-387-27048-5_5
- Kleppner, D. (1999). A short history of atomic physics in the twentieth century. *Reviews Of Modern Physics*, 71(2), S78-S84. doi: 10.1103/revmodphys.71.s78

-
- Kondratyev, K. Y. & Varotsos, C. (1995). Atmospheric greenhouse effect in the context of global climate change. *Il Nuovo Cimento C*, 18(2), 123-151. doi: 10.1007/bf02512015
- Krapivin, V. F. & Varotsos, C. A. (2016). Modelling the CO₂ atmosphere-ocean flux in the upwelling zones using radiative transfer tools. *Journal of Atmospheric and Solar-Terrestrial Physics*, 150-15147-54. doi: 10.1016/j.jastp.2016.10.015
- Kumar, K., Revadekar, J., & Tiwari, Y. (2014). AIRS retrieved CO₂ and its association with climatic parameters over India during 2004–2011. *Science of the Total Environment*, 476-477, 79-89. doi: 10.1016/j.scitotenv.2013.12.118
- Kuze, A., Suto, H., Nakajima, M. & Hamazaki, T. (2009). Thermal and near infrared sensor for carbon observation Fourier-transform spectrometer on the Greenhouse Gases Observing Satellite for greenhouse gases monitoring. *Applied Optics*, 48(35), 6716. doi: 10.1364/ao.48.006716
- Lee, C. M., Cable, M. L., Hook, S. J., Green, R. O., Ustin, S. L. & Mandl, D. J. et al. (2015). An introduction to the NASA Hyperspectral InfraRed Imager (HyspIRI) mission and preparatory activities. *Remote Sensing of Environment*, 1676-19. doi: 10.1016/j.rse.2015.06.012
- Lee, E., Zeng, F., Koster, R. D., Weir, B., Ott, L. E. & Poulter, B. (2018). The impact of spatiotemporal variability in atmospheric CO₂ concentration on global terrestrial carbon fluxes. *Biogeosciences*, 15(18), 5635-5652. doi: 10.5194/bg-15-5635-2018
- Li, K., Tian, B., Waliser, D. E. & Yung, Y. L. (2010). Tropical mid-tropospheric CO₂ variability driven by the Madden-Julian oscillation. *Proceedings of the National Academy of Sciences*, 107(45), 19171-19175. doi: 10.1073/pnas.1008222107

-
- Li, Z., Xia, J., Ahlström, A., Rinke, A., Koven, C. & Hayes, D. J. et al. (2018). Non-uniform seasonal warming regulates vegetation greening and atmospheric CO₂ amplification over northern lands. *Environmental Research Letters*, 13(12), 124008. doi: 10.1088/1748-9326/aae9ad
- Lindqvist, H., O'Dell, C. W., Basu, S., Boesch, H., Chevallier, F. & Deutscher, N. et al. (2015). Does GOSAT capture the true seasonal cycle of carbon dioxide? *Atmospheric Chemistry and Physics*, 15(22), 13023-13040. doi: 10.5194/acp-15-13023-2015
- Lolli, S., Khor, W. Y., Matjafri, M. Z. & Lim, H. S. (2019). Monsoon Season Quantitative Assessment of Biomass Burning Clear-Sky Aerosol Radiative Effect at Surface by Ground-Based Lidar Observations in Pulau Pinang, Malaysia in 2014. *Remote Sensing*, 11(22), 2660. doi: 10.3390/rs11222660
- Machida, T., Matsueda, H., Sawa, Y., Nakagawa, Y., Hirokani, K. & Kondo, N. et al. (2008). Worldwide Measurements of Atmospheric CO₂ and Other Trace Gas Species Using Commercial Airlines. *Journal of Atmospheric and Oceanic Technology*, 25(10), 1744-1754. doi: 10.1175/2008jtecha1082.1
- Majumdar, D., & Gajghate, D. (2011). Sectoral CO₂, CH₄, N₂O and SO₂ emissions from fossil fuel consumption in Nagpur City of Central India. *Atmospheric Environment*, 45(25), 4170-4179. doi: 10.1016/j.atmosenv.2011.05.019
- Marescaux, A., Thieu, V., Borges, A. V. & Garnier, J. (2018). Seasonal and spatial variability of the partial pressure of carbon dioxide in the human-impacted Seine River in France. *Scientific Reports*, 8(1), doi: 10.1038/s41598-018-32332-2

-
- Matthais, V., Freudenthaler, V., Amodeo, A., Balin, I., Balis, D., & Bösenberg, J. et al. (2004). Aerosol lidar intercomparison in the framework of the EARLINET project 1 Instruments. *Applied Optics*, 43(4), 961-976. doi: 10.1364/ao.43.000961
- Miao, G., Guan, K., Yang, X., Bernacchi, C. J., Berry, J. A. & DeLucia, E. H. et al. (2018). Sun-Induced Chlorophyll Fluorescence, Photosynthesis, and Light Use Efficiency of a Soybean Field from Seasonally Continuous Measurements. *Journal of Geophysical Research: Biogeosciences*, 123(2), 610-623. doi: 10.1002/2017jg004180
- Monfray, P., Gaudry, A., Polian, G., & Lambert, G. (1987). Seasonal variations of atmospheric CO₂ in the southern Indian Ocean. *Tellus B: Chemical and Physical Meteorology*, 39(1-2), 67-71. doi: 10.3402/tellusb.v39i1-2.15323
- Montmessin, F. & Ferron, S. (2019). A spectral synergy method to retrieve martian water vapor column-abundance and vertical distribution applied to Mars Express SPICAM and PFS nadir measurements. *Icarus*, 317549-569. doi: 10.1016/j.icarus.2018.07.022
- Montmessin, F., Gondet, B., Bibring, J., Langevin, Y., Drossart, P. & Forget, F. et al. (2007). Hyperspectral imaging of convective CO₂ ice clouds in the equatorial mesosphere of Mars. *Journal of Geophysical Research*, 112(E11), doi: 10.1029/2007je002944
- Nestola, E., Calfapietra, C., Emmerton, C., Wong, C., Thayer, D. & Gamon, J. (2016). Monitoring Grassland Seasonal Carbon Dynamics, by Integrating MODIS NDVI, Proximal Optical Sampling, and Eddy Covariance Measurements. *Remote Sensing*, 8(3), 260. doi: 10.3390/rs8030260

- Nevison, C. D., Mahowald, N. M., Doney, S. C., Lima, I. D., van, der Werf G. R. & Randerson, J. T. et al. (2008). Contribution of ocean, fossil fuel, land biosphere, and biomass burning carbon fluxes to seasonal and interannual variability in atmospheric CO₂. *Journal of Geophysical Research: Biogeosciences*, 113(G1), n/a-n/a. doi: 10.1029/2007jg000408
- Norby, R., & Luo, Y. (2004). Evaluating ecosystem responses to rising atmospheric CO₂ and global warming in a multi-factor world. *New Phytologist*, 162(2), 281-293. doi: 10.1111/j.1469-8137.2004.01047.x
- O'Dell, C. W., Eldering, A., Wennberg, P. O., Crisp, D., Gunson, M. R. & Fisher, B. et al. (2018). Improved retrievals of carbon dioxide from Orbiting Carbon Observatory-2 with the version 8 ACOS algorithm. *Atmospheric Measurement Techniques*, 11(12), 6539-6576. doi: 10.5194/amt-11-6539-2018
- Patil, M., Dharmaraj, T., Waghmare, R., Prabha, T., & Kulkarni, J. (2014). Measurements of carbon dioxide and heat fluxes during monsoon-2011 season over rural site of India by eddy covariance technique. *Journal Of Earth System Science*, 123(1), 177-185. doi: 10.1007/s12040-013-0374-z
- Piao, S., Liu, Z., Wang, Y., Ciais, P., Yao, Y. & Peng, S. et al. (2017). On the causes of trends in the seasonal amplitude of atmospheric CO₂. *Global Change Biology*, 24(2), 608-616. doi: 10.1111/gcb.13909
- Publications Division, Ministry of Information and Broadcasting, Government of India. (2020). *India 2020*. New Delhi.
- Queißer, M., Burton, M. & Kazahaya, R. (2019). Insights into geological processes with CO₂ remote sensing – A review of technology and applications. *Earth-Science Reviews*, 188389-426. doi: 10.1016/j.earscirev.2018.11.016

-
- Rangarajan, S., & Mani, A. (1982). Total precipitable water in the atmosphere over India. *Proc. Indian Acad. Sci. (Earth Planet. Sci.)*, 91(3), 189-207.
- Ravi Kumar, K., Tiwari, Y., Revadekar, J., Vellore, R., & Guha, T. (2016). Impact of ENSO on variability of AIRS retrieved CO₂ over India. *Atmospheric Environment*, 142, 83-92. doi: 10.1016/j.atmosenv.2016.07.001
- Raychaudhuri, B. & Roy, S. (2020). Investigation of seasonal variability of atmospheric columnar CO₂ over India in relation to environmental parameters using OCO-2 observation and vertical redistribution model. *International Journal of Remote Sensing*, 42(4), 1450-1473. doi: 10.1080/01431161.2020.1832281
- Raychaudhuri, B. and Roy, S. (2021). Martian Atmospheric Spectral Radiance Used as Model for Water Vapor Correction of Terrestrial Carbon Dioxide Absorption Profile Around 2 μ m. *IEEE Geoscience and Remote Sensing Letters*, 18(10), pp.1693-1697. doi: 10.1109/LGRS.2020.3007378.
- Raychaudhuri, B. & Roy, S. (2022). A Proof of Concept for Estimating the Annual Atmospheric Carbon Dioxide Variation from Orbiting Carbon Observatory-3 vEarly Data. *IEEE Geoscience and Remote Sensing Letters*, 191-5. doi: 10.1109/lgrs.2021.3099172
- Raychaudhuri, B. (2016). Imaging spectroscopy: Origin and future trends. *Applied Spectroscopy Reviews*, 51(1), 23-35. doi: 10.1080/05704928.2015.1087405
- Raychaudhuri, B., Chaurasia, S. & Roy, S. (2019). Spatial variation of atmospheric carbon dioxide concentration retrieved from AVIRIS-NG images including water vapor correction and spectroradiometric validation for two urban places of India. *Remote Sensing of Clouds and the Atmosphere XXIV*, doi: 10.1117/12.2532027

-
- Read, P. L., Lewis, S. R. & Mulholland, D. P. (2015). The physics of Martian weather and climate: a review. *Reports on Progress in Physics*, 78(12), 125901. doi: 10.1088/0034-4885/78/12/125901
- Rees, W. (2001). *Physical Principles of Remote Sensing* (2nd ed.). U.K.: Cambridge University Press.
- Remer, L., Kaufman, Y., Tanré, D., Mattoo, S., Chu, D., & Martins, J. et al. (2005). The MODIS Aerosol Algorithm, Products, and Validation. *Journal of The Atmospheric Sciences*, 62(4), 947-973. doi: 10.1175/jas3385.1
- Revadekar, J., Ravi Kumar, K., Tiwari, Y., & Valsala, V. (2016). Variability in AIRS CO₂ during active and break phases of Indian summer monsoon. *Science of The Total Environment*, 541, 1200-1207. doi: 10.1016/j.scitotenv.2015.09.078
- Román-Cascón, C., Yagüe, C., Arrillaga, J., Lothon, M., Pardyjak, E. & Lohou, F. et al. (2019). Comparing mountain breezes and their impacts on CO₂ mixing ratios at three contrasting areas. *Atmospheric Research*, 221111-126. doi: 10.1016/j.atmosres.2019.01.019
- Rosenberg, R., Maxwell, S., Johnson, B. C., Chapsky, L., Lee, R. A. M. & Pollock, R. (2017). Preflight Radiometric Calibration of Orbiting Carbon Observatory 2. *IEEE Transactions on Geoscience and Remote Sensing*, 55(4), 1994-2006. doi: 10.1109/tgrs.2016.2634023
- Roy, P., Behera, M., Murthy, M., Roy, A., Singh, S. & Kushwaha, S. et al. (2015). New vegetation type map of India prepared using satellite remote sensing: Comparison with global vegetation maps and utilities. *International Journal of Applied Earth Observation and Geoinformation*, 39, 142-159. doi: 10.1016/j.jag.2015.03.003

-
- Sanghavi, S., Martonchik, J., Landgraf, J., & Platt, U. (2012). Retrieval of the optical depth and vertical distribution of particulate scatterers in the atmosphere using O₂ A- and B-band SCIAMACHY observations over Kanpur: a case study. *Atmospheric Measurement Techniques*, 5(5), 1099-1119. doi: 10.5194/amt-5-1099-2012
- Sawyer, J. (1972). Man-made Carbon Dioxide and the “Greenhouse” Effect. *Nature*, 239(5366), 23-26. doi: 10.1038/239023a0
- Schawlow, A. (1982). Spectroscopy in a new light. *Reviews Of Modern Physics*, 54(3), 697-707. doi: 10.1103/revmodphys.54.697
- Scheffer, M., Brovkin, V., & Cox, P. (2006). Positive feedback between global warming and atmospheric CO₂ concentration inferred from past climate change. *Geophysical Research Letters*, 33(10). doi: 10.1029/2005gl025044
- Schott, J. (2007). *Remote Sensing: The Image Chain Approach* (2nd ed.). New York: Oxford University Press.
- Singh, R., Janmajaya, M., Dhaka, S., & Kumar, V. (2015). Study on the association of greenhouse gas (CO₂) with monsoon rainfall using AIRS and TRMM satellite observations. *Physics And Chemistry of The Earth, Parts A/B/C*, 89-90, 65-72. doi: 10.1016/j.pce.2015.04.004
- Solomon, S., Plattner, G., Knutti, R., & Friedlingstein, P. (2009). Irreversible climate change due to carbon dioxide emissions. *Proceedings of The National Academy of Sciences*, 106(6), 1704-1709. doi: 10.1073/pnas.0812721106

-
- Spinetti, C., Carrère, V., Buongiorno, M. F., Sutton, A. J. & Elias, T. (2008). Carbon dioxide of Pu`u`O`o volcanic plume at Kilauea retrieved by AVIRIS hyperspectral data. *Remote Sensing of Environment*, 112(6), 3192-3199. doi: 10.1016/j.rse.2008.03.010
- Statistics related to climate change-India 2015. (2015). Retrieved from <http://www.indiaenvironmentportal.org.in/content/421903/statistics-related-to-climate-change-india-2015/>
- Stockie, J. M. (2011). The Mathematics of Atmospheric Dispersion Modeling. *SIAM Review*, 53(2), 349-372. doi: 10.1137/10080991x
- Sun, Y., Frankenberg, C., Jung, M., Joiner, J., Guanter, L., Köhler, P., & Magney, T. (2018). Overview of Solar-Induced chlorophyll Fluorescence (SIF) from the Orbiting Carbon Observatory-2: Retrieval, cross-mission comparison, and global monitoring for GPP. *Remote Sensing of Environment*, 209, 808-823. doi: 10.1016/j.rse.2018.02.016
- Tadic, J. M., Loewenstein, M., Frankenberg, C., Butz, A., Roby, M. & Iraci, L. T. et al. (2014). A comparison of in situ aircraft measurements of carbon dioxide and methane to GOSAT data measured over Railroad Valley Playa, Nevada, USA. *IEEE Transactions on Geoscience and Remote Sensing*, 52(12), 7764-7774. doi: 10.1109/tgrs.2014.2318201
- Taylor, T. E., Eldering, A., Merrelli, A., Kiel, M., Somkuti, P. & Cheng, C. et al. (2020). OCO-3 early mission operations and initial (vEarly) XCO₂ and SIF retrievals. *Remote Sensing of Environment*, 251, 112032. doi: 10.1016/j.rse.2020.112032

-
- Thorpe, A. K., Frankenberg, C., Thompson, D. R., Duren, R. M., Aubrey, A. D. & Bue, B. D. et al. (2017). Airborne DOAS retrievals of methane, carbon dioxide, and water vapor concentrations at high spatial resolution: application to AVIRIS-NG. *Atmospheric Measurement Techniques*, 10(10), 3833-3850. doi: 10.5194/amt-10-3833-2017
- Tiwari, Y. K., Patra, P. K., Chevallier, F., Francey, R. J., Krummel, P. B. & Allison, C. E. et al. (2011). Carbon dioxide observations at Cape Rama, India for the period 1993–2002: implications for constraining Indian emissions. *Current Science*, 101(12), 1562–1568. <http://www.jstor.org/stable/24080696>
- Tiwari, Y. K., Revadekar, J. & Ravi, Kumar K. (2013). Variations in atmospheric Carbon Dioxide and its association with rainfall and vegetation over India. *Atmospheric Environment*, 6845-51. doi: 10.1016/j.atmosenv.2012.11.040
- Tiwari, Y., Vellore, R., Ravi Kumar, K., van der Schoot, M., & Cho, C. (2014). Influence of monsoons on atmospheric CO₂ spatial variability and ground-based monitoring over India. *Science of The Total Environment*, 490, 570-578. doi: 10.1016/j.scitotenv.2014.05.045
- Torrence, C. & Compo, G. P. (1998). A Practical Guide to Wavelet Analysis. *Bulletin of the American Meteorological Society*, 79(1), 61-78. doi: 10.1175/1520-0477(1998)079<0061:apgtwa>2.0.co;2
- Umezawa, T., Matsueda, H., Sawa, Y., Niwa, Y., Machida, T., & Zhou, L. (2018). Seasonal evaluation of tropospheric CO₂ over the Asia-Pacific region observed by the CONTRAIL commercial airliner measurements. *Atmospheric Chemistry and Physics*, 18(20), 14851-14866. doi: 10.5194/acp-18-14851-2018

- Van der Meer, F., van der Werff, H., van Ruitenbeek, F., Hecker, C., Bakker, W., & Noomen, M. et al. (2012). Multi- and hyperspectral geologic remote sensing: A review. *International Journal of Applied Earth Observation And Geoinformation*, 14(1), 112-128. doi: 10.1016/j.jag.2011.08.002
- Vane, G., & Goetz, A. (1993). Terrestrial imaging spectrometry: Current status, future trends. *Remote Sensing of Environment*, 44(2-3), 117-126. doi: 10.1016/0034-4257(93)90011-1
- Vane, G., Goetz, A., & Wellman, J. (1984). Airborne imaging spectrometer: A new tool for remote sensing. *IEEE Transactions on Geoscience and Remote Sensing*, GE-22(6), 546-549. doi: 10.1109/tgrs.1984.6499168
- Varotsos, C., Assimakopoulos, M. & Efstathiou, M. (2006). Technical Note: Long-term memory effect in the atmospheric CO₂ concentration at Mauna Loa. doi: 10.5194/acpd-6-11957-2006
- Viviano, C. E., Seelos, F. P., Murchie, S. L., Kahn, E. G., Seelos, K. D. & Taylor, H. W. et al. (2014). Revised CRISM spectral parameters and summary products based on the currently detected mineral diversity on Mars. *Journal of Geophysical Research: Planets*, 119(6), 1403-1431. doi: 10.1002/2014je004627
- Watanabe, H., Hayashi, K., Saeki, T., Maksyutov, S., Nasuno, I. & Shimono, Y. et al. (2015). Global mapping of greenhouse gases retrieved from GOSAT Level 2 products by using a kriging method. *International Journal of Remote Sensing*, 36(6), 1509-1528. doi: 10.1080/01431161.2015.1011792
- Wei, J., Savtchenko, A., Vollmer, B., Hearty, T., Albayrak, A. & Crisp, D. et al. (2014). Advances in CO₂ observations from AIRS and ACOS. *IEEE Geoscience and Remote Sensing Letters*, 11(5), 891-895. doi: 10.1109/lgrs.2013.2281147

-
- Wu, L., Hasekamp, O., Hu, H., Landgraf, J., Butz, A. & van de Brugh J. et al. (2018). Carbon dioxide retrieval from OCO-2 satellite observations using the RemoTeC algorithm and validation with TCCON measurements. *Atmospheric Measurement Techniques*, 11(5), 3111-3130. doi: 10.5194/amt-11-3111-2018
- Wunch, D., Toon, G. C., Blavier, J. L., Washenfelder, R. A., Notholt, J. & Connor, B. J. et al. (2011). The Total Carbon Column Observing Network. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 369(1943), 2087-2112. doi: 10.1098/rsta.2010.0240
- Wunch, D., Wennberg, P., Osterman, G., Fisher, B., Naylor, B., & Roehl, C. et al. (2016). Comparisons of the Orbiting Carbon Observatory-2 (OCO-2) XCO₂ measurements with TCCON. *Atmospheric Measurement Techniques*, 10, 2209–2238. doi: 10.5194/amt-2016-227
- Xueref-Remy, I., Dieudonné, E., Vuillemin, C., Lopez, M., Lac, C. & Schmidt, M. et al. (2018). Diurnal, synoptic and seasonal variability of atmospheric CO₂ in the Paris megacity area. *Atmospheric Chemistry and Physics*, 18(5), 3335-3362. doi: 10.5194/acp-18-3335-2018
- Yang, D., Liu, Y., Cai, Z., Chen, X., Yao, L. & Lu, D. (2018). First Global Carbon Dioxide Maps Produced from TanSat Measurements. *Advances in Atmospheric Sciences*, 35(6), 621-623. doi: 10.1007/s00376-018-7312-6
- Yokota, T., Yoshida, Y., Eguchi, N., Ota, Y., Tanaka, T. & Watanabe, H. et al. (2009). Global Concentrations of CO₂ and CH₄ Retrieved from GOSAT: First Preliminary Results. *SOLA*, 5160-163. doi: 10.2151/sola.2009-041

- Yoshida, Y., Ota, Y., Eguchi, N., Kikuchi, N., Nobuta, K. & Tran, H. et al. (2011). Retrieval algorithm for CO₂ and CH₄ column abundances from short-wavelength infrared spectral observations by the Greenhouse gases observing satellite. *Atmospheric Measurement Techniques*, 4(4), 717-734. doi: 10.5194/amt-4-717-2011
- Zhang, X., Gurney, K. R., Rayner, P., Baker, D. & Liu, Y. (2016). Sensitivity of simulated CO₂ concentration to sub-annual variations in fossil fuel CO₂ emissions. *Atmospheric Chemistry and Physics*, 16(4), 1907-1918. doi: 10.5194/acp-16-1907-2016
- Zhao, F. & Zeng, N. (2014). Continued increase in atmospheric CO₂ seasonal amplitude in the 21st century projected by the CMIP5 Earth system models. *Earth System Dynamics*, 5(2), 423-439. doi: 10.5194/esd-5-423-2014
- Zhong, W., & Haigh, J. (2013). The greenhouse effect and carbon dioxide. *Weather*, 68(4), 100-105. doi: 10.1002/wea.2072