

Fire in the Earth System

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Suggested further reading

- Amiro, B.D., and J.M. Chen. 2003. Forest-fire-scar aging using SPOT-VEGETATION for canadian ecoregions. *Canadian Journal of Forest Research-Revue Canadienne De Recherche Forestiere* 33:1116-1125.
- Amiro, B.D., J.M. Chen, and J. Liu. 2000. Net primary productivity following forest fire for Canadian ecoregions. *Canadian Journal of Forest Research-Revue Canadienne De Recherche Forestiere* 30:939-947.
- Balzter, H., F.F. Gerard, C.T. George, C.S. Rowland, T.E. Jupp, I. McCallum, A. Shvidenko, S. Nilsson, A. Sukhinin, A. Onuchin, and C. Schmullius. 2005. Impact of the Arctic Oscillation pattern on interannual forest fire variability in Central Siberia. *Geophysical Research Letters* 32.
- Barbosa, P.M., D. Stroppiana, J.M. Gregoire, and J.M.C. Pereira. 1999. An assessment of vegetation fire in Africa (1981-1991): Burned areas, burned biomass, and atmospheric emissions. *Global Biogeochemical Cycles* 13:933-950.
- Barducci, A., D. Guzzi, P. Marcoionni, and I. Pippi. 2002. Infrared detection of active fires and burnt areas: theory and observations. *Infrared Physics & Technology* 43:119-125.
- Brivio, P.A., M. Maggi, E. Binaghi, and I. Gallo. 2003. Mapping burned surfaces in sub-Saharan Africa based on multi-temporal neural classification. *International Journal of Remote Sensing* 24:4003-4018.
- Chopard and Droz, 1998, Cambridge University Press.
- Csiszar, I., L. Denis, L. Giglio, C.O. Justice, and J. Hewson. 2005. Global fire activity from two years of MODIS data. *International Journal of Wildland Fire* 14:117-130.
- Czimeczik, C.I., M.W.I. Schmidt, and E.D. Schulze. 2005. Effects of increasing fire frequency on black carbon and organic matter in Podzols of Siberian Scots pine forests. *European Journal of Soil Science* 56:417-428.
- Fraser, R.H., Z. Li, and J. Cihlar. 2000. Hotspot and NDVI differencing synergy (HANDS): A new technique for burned area mapping over boreal forest. *Remote Sensing of Environment* 74:362-376.
- Fuller, D.O. 2000. Satellite remote sensing of biomass burning with optical and thermal sensors. *Progress in Physical Geography* 24:543-561.
- Gerard, F., S. Plummer, R. Wadsworth, A.F. Sanfeliu, L. Iliffe, H. Balzter, and B. Wyatt. 2003. Forest fire scar detection in the boreal forest with multitemporal SPOT-VEGETATION data. *Ieee Transactions on Geoscience and Remote Sensing* 41:2575-2585.
- Ito, A. 2005. Modelling of carbon cycle and fire regime in an east Siberian larch forest. *Ecological Modelling* 187:121-139.
- Jain, A.K., Z.N. Tao, X.J. Yang, and C. Gillespie. 2006. Estimates of global biomass burning emissions for reactive greenhouse gases (CO, NMHCs, and NOx) and CO₂. *Journal of Geophysical Research-Atmospheres* 111.

- Jupp, T.E., C.M. Taylor, H. Balzter, and C.T. George. 2006. A statistical model linking Siberian forest fire scars with early summer rainfall anomalies. *Geophysical Research Letters* 33.
- Kasischke, E.S., J.H. Hewson, B. Stocks, G. van der Werf, and J. Randerson. 2003. The use of ATSR active fire counts for estimating relative patterns of biomass burning - a study from the boreal forest region. *Geophysical Research Letters* 30.
- Kasischke, E.S., E.J. Hyer, P.C. Novelli, L.P. Bruhwiler, N.H.F. French, A.I. Sukhinin, J.H. Hewson, and B.J. Stocks. 2005. Influences of boreal fire emissions on Northern Hemisphere atmospheric carbon and carbon monoxide. *Global Biogeochemical Cycles* 19:art. no.-GB1012.
- Kharuk, V.I., M.L. Dvinskaya, and K.J. Ranson. 2005. The spatiotemporal pattern of fires in northern Taiga larch forests of central Siberia. *Russian Journal of Ecology* 36:302-311.
- Langenfelds, R.L., R.J. Francey, B.C. Pak, L.P. Steele, J. Lloyd, C.M. Trudinger, and C.E. Allison. 2002. Interannual growth rate variations of atmospheric CO₂ and its delta C-13, H-2, CH₄, and CO between 1992 and 1999 linked to biomass burning. *Global Biogeochemical Cycles* 16.
- Lee, K.H., J.E. Kim, Y.J. Kim, J. Kim, and W. von Hoyningen-Huene. 2005. Impact of the smoke aerosol from Russian forest fires on the atmospheric environment over Korea during May 2003. *Atmospheric Environment* 39:85-99.
- Liu, Y.Q. 2005. Enhancement of the 1988 northern U.S. drought due to wildfires. *Geophysical Research Letters* 32.
- Moriondo, M., P. Good, R. Durao, M. Bindi, C. Giannakopoulos, and J. Corte-Real. 2006. Potential impact of climate change on fire risk in the Mediterranean area. *Climate Research* 31:85-95.
- Mouillot, F., and C.B. Field. 2005. Fire history and the global carbon budget: a 1 degrees x 1 degrees fire history reconstruction for the 20th century. *Global Change Biology* 11:398-420.
- Mouillot, F., A. Narasimha, Y. Balkanski, J.F. Lamarque, and C.B. Field. 2006. Global carbon emissions from biomass burning in the 20th century. *Geophysical Research Letters* 33.
- Nakano, T., W. Takeuchi, G. Inoue, M. Fukuda, and Y. Yasuoka. 2006. Temporal variations in soil-atmosphere methane exchange after fire in a peat swamp forest in West Siberia. *Soil Science and Plant Nutrition* 52:77-88.
- Page, S.E., F. Siegert, J.O. Rieley, H.D.V. Boehm, A. Jaya, and S. Limin. 2002. The amount of carbon released from peat and forest fires in Indonesia during 1997. *Nature* 420:61-65.
- Page, S.E., R.A.J. Wust, D. Weiss, J.O. Rieley, W. Shotyk, and S.H. Limin. 2004. A record of Late Pleistocene and Holocene carbon accumulation and climate change from an equatorial peat bog (Kalimantan, Indonesia): implications for past, present and future carbon dynamics. *Journal of Quaternary Science* 19:625-635.
- Patra, P.K., M. Ishizawa, S. Maksyutov, T. Nakazawa, and G. Inoue. 2005. Role of biomass burning and climate anomalies for land-atmosphere carbon fluxes based on inverse modeling of atmospheric CO₂. *Global Biogeochemical Cycles* 19.
- Pereira, A.C., and A.W. Setzer. 1996. Comparison of fire detection in savannas using AVHRR's channel 3 and TM images. *International Journal of Remote Sensing* 17:1925-1937.
- Pereira, J.M.C. 2003. Remote sensing of burned areas in tropical savannas. *International Journal of Wildland Fire* 12:259-270.
- Roy, D.P., Y. Jin, P.E. Lewis, and C.O. Justice. 2005. Prototyping a global algorithm for systematic fire-affected area mapping using MODIS time series data. *Remote Sensing of Environment* 97:137-162.
- Ryan, K.C. 2002. Dynamic interactions between forest structure and fire behavior in boreal ecosystems. *Silva Fennica* 36:13-39.
- Samsonov, Y.N., K.P. Koutsenogii, V.I. Makarov, A.V. Ivanov, V.A. Ivanov, D.J. McRae, S.G. Conard, S.P. Baker, and G.A. Ivanova. 2005. Particulate emissions from fires in central Siberian Scots pine forests. *Canadian Journal of Forest Research-Revue Canadienne De Recherche Forestiere* 35:2207-2217.

- Sitch, S., B. Smith, I.C. Prentice, A. Arneeth, A. Bondeau, W. Cramer, J.O. Kaplan, S. Levis, W. Lucht, M.T. Sykes, K. Thonicke, and S. Venevsky. 2003. Evaluation of ecosystem dynamics, plant geography and terrestrial carbon cycling in the LPJ dynamic global vegetation model. *Global Change Biology* 9:161-185.
- Smith, A.M.S., M.J. Wooster, N.A. Drake, F.M. Dipotso, and G.L.W. Perry. 2005. Fire in African savanna: Testing the impact of incomplete combustion on pyrogenic emissions estimates. *Ecological Applications* 15:1074-1082.
- Stocks, B.J., J.A. Mason, J.B. Todd, E.M. Bosch, B.M. Wotton, B.D. Amiro, M.D. Flannigan, K.G. Hirsch, K.A. Logan, D.L. Martell, and W.R. Skinner. 2002. Large forest fires in Canada, 1959-1997. *Journal of Geophysical Research-Atmospheres* 108:art. no.-8149.
- Sukhinin, A.I., N.H.F. French, E.S. Kasischke, J.H. Hewson, A.J. Soja, I.A. Csiszar, E.J. Hyer, T. Loboda, S.G. Conrad, V.I. Romasko, E.A. Pavlichenko, S.I. Miskiv, and O.A. Slinkina. 2004. AVHRR-based mapping of fires in Russia: New products for fire management and carbon cycle studies. *Remote Sensing of Environment* 93:546-564.
- Tansey, K., J.M. Gregoire, E. Binaghi, L. Boschetti, P.A. Brivio, D. Ershov, S. Flasse, R. Fraser, D. Graetz, M. Maggi, P. Peduzzi, J. Pereira, J. Silva, A. Sousa, and D. Stroppiana. 2004a. A global inventory of burned areas at 1km resolution for the year 2000 derived from SPOT VEGETATION data. *Climatic Change* 67:345-377.
- Tansey, K., J.M. Gregoire, D. Stroppiana, A. Sousa, J. Silva, J.M.C. Pereira, L. Boschetti, M. Maggi, P.A. Brivio, R. Fraser, S. Flasse, D. Ershov, E. Binaghi, D. Graetz, and P. Peduzzi. 2004b. Vegetation burning in the year 2000: Global burned area estimates from SPOT VEGETATION data. *Journal of Geophysical Research-Atmospheres* 109.
- Thonicke, K., S. Venevsky, S. Sitch, and W. Cramer. 2001. The role of fire disturbance for global vegetation dynamics: coupling fire into a Dynamic Global Vegetation Model. *Global Ecology and Biogeography* 10:661-677.
- Trouet, V., A.H. Taylor, A.M. Carleton, and C.N. Skinner. 2006. Fire-climate interactions in forests of the American Pacific coast. *Geophysical Research Letters* 33.
- van der Werf, G.R., J.T. Randerson, L. Giglio, G.J. Collatz, P.S. Kasibhatla, and A.F. Arellano. 2006. Interannual variability in global biomass burning emissions from 1997 to 2004. *Atmospheric Chemistry and Physics* 6:3423-3441.
- van der Werf, G.R., J.T. Randerson, G.J. Collatz, L. Giglio, P.S. Kasibhatla, A.F. Arellano, S.C. Olsen, and E.S. Kasischke. 2004. Continental-scale partitioning of fire emissions during the 1997 to 2001 El Nino/La Nina period. *Science* 303:73-76.
- Venevsky, S., K. Thonicke, S. Sitch, and W. Cramer. 2002. Simulating fire regimes in human-dominated ecosystems: Iberian Peninsula case study. *Global Change Biology* 8:984-998.
- Wooster, M.J., and Y.H. Zhang. 2004. Boreal forest fires burn less intensely in Russia than in North America. *Geophysical Research Letters* 31.
- Wooster, M.J., B. Zhukov, and D. Oertel. 2003. Fire radiative energy for quantitative study of biomass burning: derivation from the BIRD experimental satellite and comparison to MODIS fire products. *Remote Sensing of Environment* 86:83-107.
- Yurganov, L.N., T. Blumenstock, E.I. Grechko, F. Hase, E.J. Hyer, E.S. Kasischke, M. Koike, Y. Kondo, I. Kramer, F.Y. Leung, E. Mahieu, J. Mellqvist, J. Notholt, P.C. Novelli, C.P. Rinsland, H.E. Scheel, A. Schulz, A. Strandberg, R. Sussmann, H. Tanimoto, V. Velazco, R. Zander, and Y. Zhao. 2004. A quantitative assessment of the 1998 carbon monoxide emission anomaly in the Northern Hemisphere based on total column and surface concentration measurements. *Journal of Geophysical Research-Atmospheres* 109.