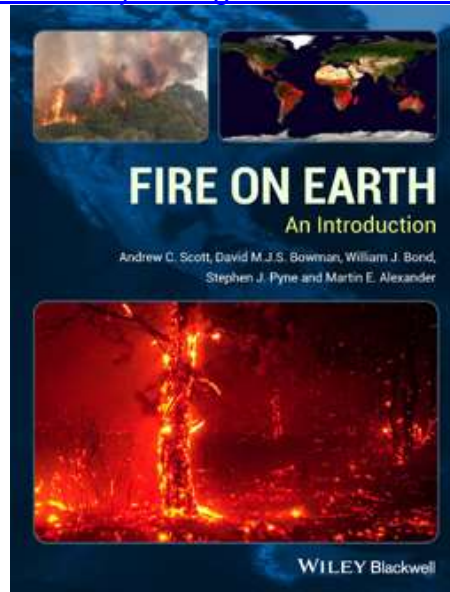


## **Fire on Earth - Book Companion Website**

[www.wiley.com/go/scott/fireonearth](http://www.wiley.com/go/scott/fireonearth)



### **Fire on Earth: An Introduction**

**Andrew C. Scott** is Professor of Applied Palaeobotany and a Distinguished Research Fellow in the Department of Earth Sciences at Royal Holloway, University of London, England ([http://pure.rhul.ac.uk/portal/en/persons/andrew-scott\\_be6989a7-c348-48aa-b401-d50d86d451c1.html](http://pure.rhul.ac.uk/portal/en/persons/andrew-scott_be6989a7-c348-48aa-b401-d50d86d451c1.html))

(author companion website: <http://www.rhul.ac.uk/science/fireonearth/home.aspx> )

**David M.J.S. Bowman** is Professor of Environmental Change Biology in the School of Plant Science at the University of Tasmania, Australia

(<http://www.utas.edu.au/plant-science/people/David-Bowman> )

**William J. Bond** is Professor of Plant Ecology in the Department of Botany at the University of Cape Town, South Africa (<http://web.uct.ac.za/depts/botany/bond.html> )

**Stephen J. Pyne** is Regent's Professor in the School of Life Sciences at Arizona State University, Tempe, Arizona, USA

(<https://sols.asu.edu/people/stephen-j-pyne> and <http://www.stephenpyne.com/> )

**Martin E. Alexander** is an Adjunct Professor of Wildland Fire Science and Management at the University of Alberta, Edmonton, Alberta, Canada and formerly a senior fire behavior research officer with the Canadian Forest Service

(<http://www.rr.ualberta.ca/ContactUs/AdjunctProfessors/MartinEAlexander.aspx>)

The website includes:

- Powerpoints of all figures from the book for downloading
- PDFs of all tables from the book for downloading

*This document includes*

- Links to key fire websites
- Links to videos and podcasts
- Additional Teaching Material including a Charcoal exercise

## LINKS TO KEY FIRE WEBSITES

There are a number of important websites that offer a range of materials and links to fire on earth:

Global Fire Monitoring Center: <http://www.fire.uni-freiburg.de/>

Global Fire Data (GFED) (Combined satellite information on fire activity and vegetation productivity to estimate gridded monthly burned area and fire emissions)  
<http://www.globalfiredata.org/>

International Forest Fire News: <http://www.fire.uni-freiburg.de/iffn/iffn.htm>

Global Fire Wildland Fire Network  
<http://www.fire.uni-freiburg.de/GlobalNetworks/globalNet.html>

National Interagency Fire Center (USA)  
<http://www.nifc.gov/>  
Includes links to fire photos, statistics for USA, policies, etc.

Canadian Interagency Forest Fire Centre  
<http://www.cifc.ca/>

Avialesookhrana (Russia): <http://www.aviales.ru/?lang=eng>

Tall Timbers Research  
Station: E.V. Komarek Fire  
Ecology Database  
<http://www.talltimbers.org/feco.html/>

Wildfire Today: <http://www.wildfiretoday.com>

There are important websites dealing with satellite monitoring of fire:

NASA MODIS satellite imagery  
<http://modis.gsfc.nasa.gov/>

Earth Observatory fire and smoke images  
[http://earthobservatory.nasa.gov/NaturalHazards/category.php?cat\\_id=8&m=09&y=2013](http://earthobservatory.nasa.gov/NaturalHazards/category.php?cat_id=8&m=09&y=2013)

NOAA Hazard System Fire and Smoke Product (USA)  
<http://www.ssd.noaa.gov/PS/FIRE/hms.html>

Fire danger forecasting: <http://www.afis.co.za> – This is an extremely useful site. Active detection, fire history, fire radiative power can be obtained for your area of interest.

Active fires in North America  
<http://wildfire.usgs.gov/geomac/viewer/viewer.shtml>

There are several national government agencies and programmes that deal with fire:

Joint Fire Science Program (USA): <http://www.firescience.gov/>

USGS Natural Hazards (Wildfire hazards) (USA)  
[http://www.usgs.gov/natural\\_hazards/](http://www.usgs.gov/natural_hazards/)

Canadian Forest Service – Fire  
<http://cfs.nrcan.gc.ca/pages/381>

USDA Forest Service – Wildland Fire  
<http://www.fs.fed.us/wildlandfire/>

Australasian Fire and Emergency Service Authorities Council  
<http://www.afac.com.au/>

Forest and Rural Fire Association of New Zealand: <http://www.frfanz.org.nz/>

Bushfire and Natural Hazards CRC (Australia): <http://www.bnhcrc.com.au/>

Fire Paradox (EU): <http://www.fireparadox.org/>

EU Fire Lab: <http://www.eufirelab.org/>

Fire in the UK: <tp://www.frsug.org/reports/index.html>

Wildland Fire Lessons Learned Center (USA) – include videos  
<http://www.wildfirelessons.net/AFP.aspx?Page=AFPOverview>

Fire Research and Management Exchange System (FRAMES)  
<http://www.frames.gov/search>

The FRAMES search system is a tool for finding information about fire research and management, focused on wildland fires. It currently contains more than 13,000 records from the FRAMES Resource Catalog.

LANDFIRE Data Distribution Site  
[landfire.cr.usgs.gov/viewer](http://landfire.cr.usgs.gov/viewer)

The LANDFIRE Data Distribution Site offers a map interface that can be used to view USGS datasets, which can be downloaded and are updated every two years to reflect changes on the landscape, for regional and national landscape strategic fire planning.

USGS National Research Program (NRP): **wildfire** research  
<http://water.usgs.gov/nrp/highlights/fire.html>  
[http://www.brr.cr.usgs.gov/projects/Burned\\_Watersheds/index.html](http://www.brr.cr.usgs.gov/projects/Burned_Watersheds/index.html)

SAFNET Southern African Fire Network - African fire data coordination:  
<http://safnet.meraka.org.za/>

### Important reports on major fires:

Hayman Fire, Colorado USA 2002

Summary Report: [www.fs.fed.us/rm/pubs/rmrs\\_gtr114/rmrs\\_gtr114\\_001\\_032.pdf](http://www.fs.fed.us/rm/pubs/rmrs_gtr114/rmrs_gtr114_001_032.pdf)

Full Report: [www.fs.fed.us/rm/pubs/rmrs\\_gtr114.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr114.html)

Lessons learnt from the Hayman Fire: [www.firescience.gov/projects/briefs/03-2-3-08\\_FSBrief68.pdf](http://www.firescience.gov/projects/briefs/03-2-3-08_FSBrief68.pdf)

Major Bush Fires in Australia: <http://home.iprimus.com.au/foo7/firesum.html>

Black Saturday Bushfires: [http://en.wikipedia.org/wiki/Black\\_Saturday\\_bushfires](http://en.wikipedia.org/wiki/Black_Saturday_bushfires)

The Victorian Bushfire Royal Commission final report.

<http://www.royalcommission.vic.gov.au/Commission-Reports>

Interactive site: <http://www.abc.net.au/innovation/blacksaturday/#/stories/mosaic>

2013 Yarnell Hill Fire Accident Investigation Report (19 members of a 20-person Interagency Hotshot Crew perished June 30, 2013 on a wildfire near Prescott, Arizona, USA; this was the largest off of life on a single wildfire incident in the USA in 50 years)

<https://sites.google.com/site/yarnellreport/>

### There are many fire associations and research groups:

Association for Fire Ecology - <http://fireecology.org/>

Homepage of the International Association of Wildland Fire (a non-profit, professional association representing members of the global wildland fire community):

<http://www.iawfonline.org/>

Missoula Fire Sciences Lab (USA) - <http://www.firelab.org/>

North Australian Fire Information - <http://www.firenorth.org.au>

Forest Fire Danger Meter - [http://www.cfa4wd.org/information/Forest\\_FDI.htm](http://www.cfa4wd.org/information/Forest_FDI.htm)

### Several journals are either dedicated to fire research or have fire as a major topic:

Fire Ecology online journal of the Association for Fire Ecology -

<http://www.fireecology.net>

International Journal of Wildland Fire,  
the journal of the International Association of Wildland Fire –

<http://www.iawfonline.org/>

<http://www.publish.csiro.au/nid/114.htm>: Homepage of the International Journal of Wildland Fire (the journal publishes new and significant papers that advance basic and applied research concerning wildland fire)

Fire Management Today

[http://www.fs.fed.us/fire/fmt/volumes\\_authors.html](http://www.fs.fed.us/fire/fmt/volumes_authors.html)

### There are software providers related to fire:

Public Domain Software: fire.org is the home page of Systems for Environmental Management, a Montana nonprofit research and educational corporation. They specialize in issues concerning wildland fire planning, behavior, fuel, weather, and effects. They post many of the publications and software packages we've developed in cooperation with various federal wildland fire management agencies. All items posted on this site are in the public domain or licensed under the GNU Public License, and freely available for you to download and use. <http://fire.org/>

NOAA Paleoclimatology – International Multiproxy Paleofire Database  
<http://www.ncdc.noaa.gov/paleo/impd/>

Crown Fire Initiation and Spread (CFIS) Software System  
<http://www.frames.gov/partner-sites/applied-fire-behavior/cfis/>

The Campbell Prediction System  
<http://www.dougfire.com/index.html> and <http://www.emxsys.com/>

*CharAnalysis* (<http://code.google.com/p/charanalysis/>) is a program for analyzing sediment charcoal records, when the goal is peak detection to reconstruct "local" fire history: Diagnostic tools help determine if peak detection is warranted, and if so, what parameters are most reasonable. Analytical tools help summarize results statistically and graphically. The entire code is distributed and well commented. Users are encouraged to "look under the hood", understand what's going on, and modify the program to suit individual needs.

### There are providers of material for fire safety training in wildland fires and consultancy services.

FIRELINE SAFETY TRAINING COURSE AVAILABLE ON CD-ROM  
Martin E. Alexander and Robert W. Thorburn see Fire Management Today 61,2,45 (2002)  
[http://www.fs.fed.us/fire/fmt/volumes\\_authors.html](http://www.fs.fed.us/fire/fmt/volumes_authors.html)

CANADIAN FOREST FIRE WEATHER INDEX SYSTEM: TRAINING AVAILABLE ON CD-ROM  
Paul St. John and Martin E. Alexander see Fire Management Today 64,2, 54 (2004)  
[http://www.fs.fed.us/fire/fmt/volumes\\_authors.html](http://www.fs.fed.us/fire/fmt/volumes_authors.html)

PRINCIPLES OF FIRE BEHAVIOR:  
A CD-ROM-BASED INTERACTIVE MULTIMEDIA  
TRAINING COURSE  
W.R. Thorburn, A. MacMillan, M.E. Alexander, N. Nimchuk, K.W. Frederick,  
and T.A. Van Nest  
see Fire Management Today 63,2 43 (2003)  
[http://www.fs.fed.us/fire/fmt/volumes\\_authors.html](http://www.fs.fed.us/fire/fmt/volumes_authors.html)

[www.ffa.co.za](http://www.ffa.co.za) – FFA Group of Companies, established in 2005, is southern Africa’s leading supplier of integrated fire management services (IFMS). Its key objectives are to provide a range of resources, varying from people to equipment to landowners, fire protection associations (FPAs), conservation agencies, government departments, parastatals and the agricultural and private sector to help manage, prevent, and suppress unwanted wildfire.

[www.wof-int.com](http://www.wof-int.com) – Working on Fire International is a supplier of Integrated Fire Management and climate change services to the international market.

[www.workingonfire.org](http://www.workingonfire.org) – Working on Fire (WoF) was launched in September 2003 as part of the South African Government's initiative to create jobs and to alleviate poverty. WoF addresses the prevention and control of wildland fires to enhance the sustainability and protection of life, poverty and the environment through the implementation of Integrated Fire Management (IFM) practices.

There are many news outlets that have regular reports on major wildfire globally  
See for example:

[www.bbc.co.uk/news](http://www.bbc.co.uk/news) (search wildfire for example)

[www.latimes.com](http://www.latimes.com)

[www.huffingtonpost.com](http://www.huffingtonpost.com)

[www.theguardian.com/world](http://www.theguardian.com/world)

[www.abc.net.au](http://www.abc.net.au)

Fire images, publications, courses and information:

<http://www.wildlandfire.com/photos.htm>: very large collection of still photos (primarily fire suppression oriented)

Fire photos. A large selection of royalty fee images ([www.nps.gov](http://www.nps.gov)) in US National Parks.

See for example images of fires in Yellowstone Park

<http://www.nps.gov/features/yell/slidefile/fire/index.htm>

USGS Multimedia Gallery: Items related to **wildfire**  
[gallery.usgs.gov/tags/wildfire](http://gallery.usgs.gov/tags/wildfire)

Fire Effects “Rainbow Series” (USA)

<http://depts.washington.edu/nwfire/project.php?projectID=358&microweb=0>

Fire Effects Information System

<http://www.fs.fed.us/database/feis>

U.S. National Fire Equipment System Catalog (several publications available free for downloading): <http://www.nwccg.gov/pms/pubs/pubs.htm>

Homepage of the Fire Research Institute (provides a library of fire information for researchers of wildland fire):

<http://www.fireresearchinstitute.org/>

Homepage of FireSmart Canada (helps you understand the potential of wildfire affecting your home and your community):

<https://www.firesmartcanada.ca/>

Homepage of *Fire Management Today* (complete collection of back issues of Fire Control Notes, Fire Management Notes and Fire Management Today dating back to 1936 available free for downloading):

<http://www.fs.fed.us/fire/fmt/>

Applied Wildland Fire Behavior Research & Development:

<http://www.frames.gov/partner-sites/applied-fire-behavior/home/>

International Crown Fire Modelling Experiment (ICFME)

<http://www.frames.gov/partner-sites/applied-fire-behavior/international-crown-fire-modeling-experiment-icfme/>

Applying the Canadian Forest Fire Danger Rating System (CFFDRS) to Alaskan Ecosystems:

<http://www.frames.gov/partner-sites/applied-fire-behavior/canadian-forest-fire-danger-rating-system/>

Crown Fire Behavior Characteristics and Prediction in Conifer Forests: A State of Knowledge Synthesis: <http://www.fs.fed.us/wwetac/projects/alexander.html>

Wildland Fire Safety Training Annual Refresher:

<http://www.nifc.gov/wfstar/>

Wildland Fire Leadership Development Program:

<http://www.fireleadership.gov/toolbox/toolbox.html>

Always Remember: <http://www.wfalwaysremember.org/>

National Fire Protection Association – Wildland Fires

<http://www.nfpa.org/safety-information/for-consumers/outdoors/wildland-fires>

Wildland Firefighter Foundation: <http://www.wffoundation.org/>

Tall Timbers Research Station: <http://www.talltimbers.org/>

Coalition of Prescribed Fire Councils: <http://www.prescribedfire.net/about-us>

## LINKS TO VIDEOS AND PODCASTS

### Wildfire PIRE website

Tasmania is a model system to study landscape fire and how fire regimes have changed in response to climate, the arrival of Aboriginal people in the late Pleistocene and Europeans in the early 19th Century. The environments of Tasmania are extremely varied, but flammable vegetation is ubiquitous. The western, wet side of the island has the greatest concentration of small lakes in Australia with excellent pollen and charcoal records. Some trees are long lived and have annual tree rings enabling ecological reconstructions of past fires. The city of Hobart was almost destroyed by a huge fire in 1967.

<http://vimeo.com/album/2067891>

### Firestorm

On 4 January 2013 an unpredicted combination of record breaking temperatures and strong winds triggered a firestorm in a Tasmanian sea side town. The ferocity of the fire was reported internationally. This website tell the story of this fire combining ecological, manage and human impacts.

<http://www.guardian.co.uk/world/interactive/2013/may/26/firestorm-bushfire-dunalley-holmes-family>

### Aboriginal fire management in Australia

Northern Australia is one of the most fire prone environments on Earth and has some of the longest surviving human cultures that used fire skillfully. This video records the reintroduction of fire into a landscape that has become empty of people in order to gain carbon credits.

<http://www.youtube.com/watch?v=Qfjw5Vts8hQ>

### Fire and Herbivores in Canada

Fire and herbivores are coupled and the removal of fire can degrade wildlife habitats. A program has been established in northern British Columbia to increase bison pollutions using controlled burning to open up invaded grasslands.

14minute video

<http://www.cbc.ca/player/News/Canada/BC/ID/2392591483/?page=2> -

<http://www.cbc.ca/news/canada/story/2013/06/19/f-first-nation-controlled-burning.html>

- short written story

[http://www.cbc.ca/news/canada/photos/4483/#iglmglid\\_73386](http://www.cbc.ca/news/canada/photos/4483/#iglmglid_73386) -photo gallery

### Kampf gegen dasinferno

This is a German documentary that is global in scope and was well ahead of its time. There are a range of interviews with fire scientists from around the world. Despite being in German the program has excellent imagery so it is well worth looking at.

<http://www.youtube.com/watch?v=Q07AMMh0nI0>



Videos of 'wildfire' by U.S. Geological Survey. Excellent series of informative videos.  
<http://search.usa.gov/search/news/videos?affiliate=usgs&m=false&query=wildfire>

Dead-Man Zone (see abstract in article by Cheney et al. 2001)  
<http://csiro.au/files/files/p1ih.pdf>  
<http://www.youtube.com/watch?v=uMGuiv2SYeg>

Introduction to the Canadian Forest Fire Weather Index System  
<https://www.youtube.com/watch?v=mdeM-cBCQJA>

International Crown Fire Modelling Experiment  
<http://www.youtube.com/watch?v=FYup7cYKE3w>  
[http://www.youtube.com/watch?v=zvPa\\_yEE4E](http://www.youtube.com/watch?v=zvPa_yEE4E)

George M. Byram Special Session Tribute  
<http://vimeo.com/61394967>

Natural Disturbances in the Boreal Forest  
<http://cfs.nrcan.gc.ca/videos/2>

What Kind of Fire Behavior is Required to Open Serotinous Cones of Jack Pine and Lodgepole Pine?  
<http://vimeo.com/31571028>

The Science and Art Behind Fire Danger Ratings: An Historical and International Perspective  
[http://www.bushfirecrc.com/research/event/2012-marty\\_seminar](http://www.bushfirecrc.com/research/event/2012-marty_seminar)

A series of podcasts related to fire and charcoal including fire in deep time  
<http://www.rhul.ac.uk/science/fireonearth/home.aspx>

Film of fire in Brazil.

Learn about the research of Jay Mistry featured in chapter 11, p203-4  
<http://www.rhul.ac.uk/science/fireonearth/home.aspx>

## ADDITIONAL TEACHING MATERIAL

See author companion website: <http://www.rhul.ac.uk/science/fireonearth/home.aspx>

### Reconstructing ancient fire history

An exercise in using charcoal data to represent fire history over the past 20,000 years. Here you will find a sample exercise together with the answers. (Available as PDFs on the book companion website: [www.wiley.com/go/scott/fireonearth](http://www.wiley.com/go/scott/fireonearth))  
Exercise provided by Mitch Power, University of Utah.  
(<http://www.geog.utah.edu/people/28-mitchell-power.html>)

### Reconstructing Fire History: An Exercise in Dendrochronology

Charles W Lafon

*The Journal of Geography*; May/June 2005; 104, 3; ProQuest Education Journals  
pg. 127

[http://www.firescience.gov/projects/01C-3-3-09/project/01C-3-3-09\\_j\\_of\\_geog\\_2005.pdf](http://www.firescience.gov/projects/01C-3-3-09/project/01C-3-3-09_j_of_geog_2005.pdf)

### Natural Disturbances in the Boreal Forest

<http://cfs.nrcan.gc.ca/videos/2>

### What Kind of Fire Behavior is Required to Open Serotinous Cones of Jack Pine and Lodgepole Pine?

<http://vimeo.com/31571028>

### The Science and Art Behind Fire Danger Ratings: An Historical and International Perspective

[http://www.bushfirecrc.com/research/event/2012-marty\\_seminar](http://www.bushfirecrc.com/research/event/2012-marty_seminar)

## OTHER

List of wildland fire related papers in The Forestry Chronicle dating back to 1925:

[http://www.ualberta.ca/~wildfire/Wildland\\_Fire\\_Canada/2010%20Posters/P42.pdf](http://www.ualberta.ca/~wildfire/Wildland_Fire_Canada/2010%20Posters/P42.pdf)

Hsieh, R.; Baxter, G.; Alexander, M.E. 2006. Grassland firebreak breaching program. Forest Engineering Research Institute, Wildland Fire Operations Research Group, Hinton, AB. Microsoft Access Software. Version 3.0.

<http://wildfire.fpinnovations.ca/67/GrasslandFirebreakBreachingProgram.htm>

### For more advanced reading see

Fire Phenomena and the Earth System: An Interdisciplinary Guide to Fire Science . Claire M. Belcher (Editor). ISBN: 978-0-470-65748-5. Hardcover. 350 pages.

<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470657480.html>