Knowledge for Wildfire

NERC Knowledge Exchange Fellowship

KfWf

Improving management of UK wildfire through knowledge exchange

Julia McMorrow

Senior Lecturer in Remote Sensing, NERC KE Fellow

School of Environment, Education and Development, University of Manchester

julia.mcmorrow@manchester.ac.uk

Wildfire 2013, The Vale Resort, Glamorgan, 22-23 Oct 2013

KfWf

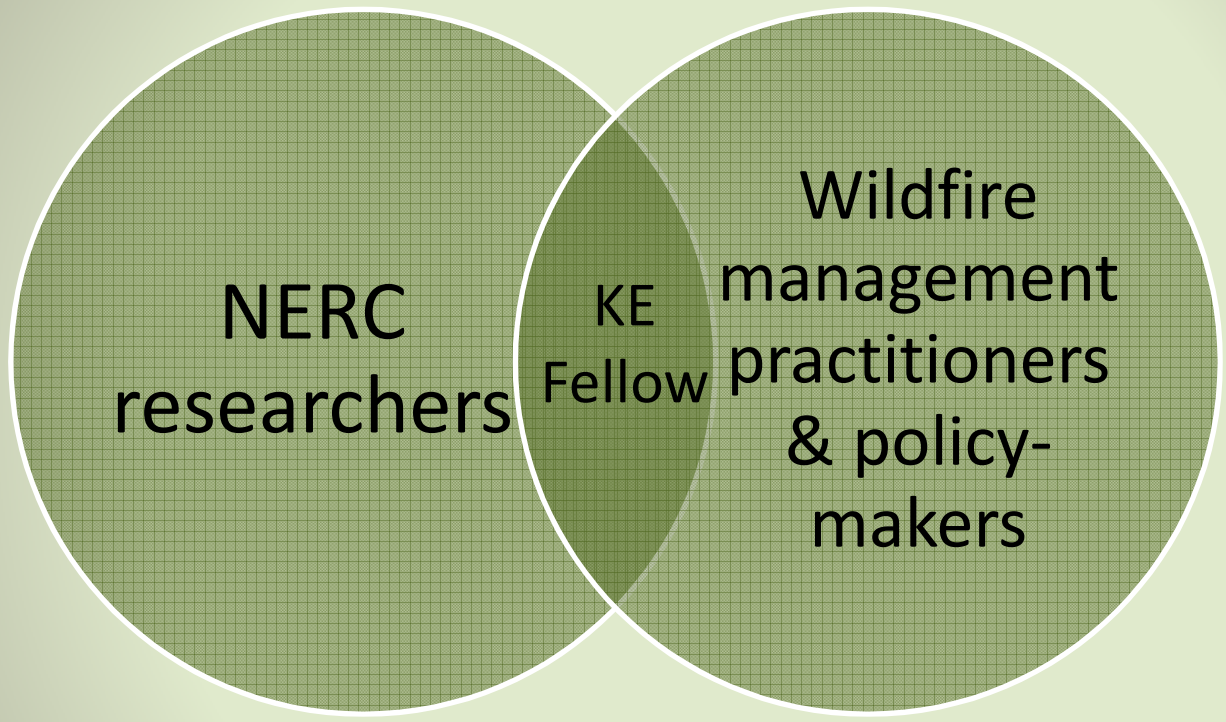
Improving management of UK wildfire through knowledge exchange

Structure of session

1. Progress report on Knowledge for Wildfire project
2. Poster session

KfWf
Improving management of UK wildfire through knowledge exchange

KE Fellow's role



- Planned as a 3 year project, 3 days a week
- Funded for 2 years at 2 days a week, Oct 2012 - Sep 2014
- Top up funding from NERC; from 1st Oct 2013, 1.5 days a week, but extended to a 3rd year, ending 2015.

KfWf
Improving management of UK wildfire through knowledge exchange

Project aims

- To maximise the use of existing NERC-funded research and promote mutually beneficial new research and KE projects on wildfire;

  improve the evidence base for managing wildfire risk in the UK
- To assist the management of wildfire risk in the UK at all stages from prevention to response and recovery.

KfWf
Improving management of UK wildfire through knowledge exchange

Project objectives

1. **Connect** emerging cross-sector and cross-disciplinary interests in wildfire; awareness-raising and advocacy role
2. **Apply** NERC's existing fire-related research, and use research to **adapt** (add value to) user data
3. **Create**/facilitate new partnership research and KE which addresses knowledge gaps.

KfWf
Improving management of UK wildfire through knowledge exchange

Who we are

Julia McMorrow
KE Fellow,
KfWf project leader

Ioanna (Jo) Tantanasi
Administrative assistant

http://kfwf.org.uk/about/staff/

Gareth Clay
e-Communications

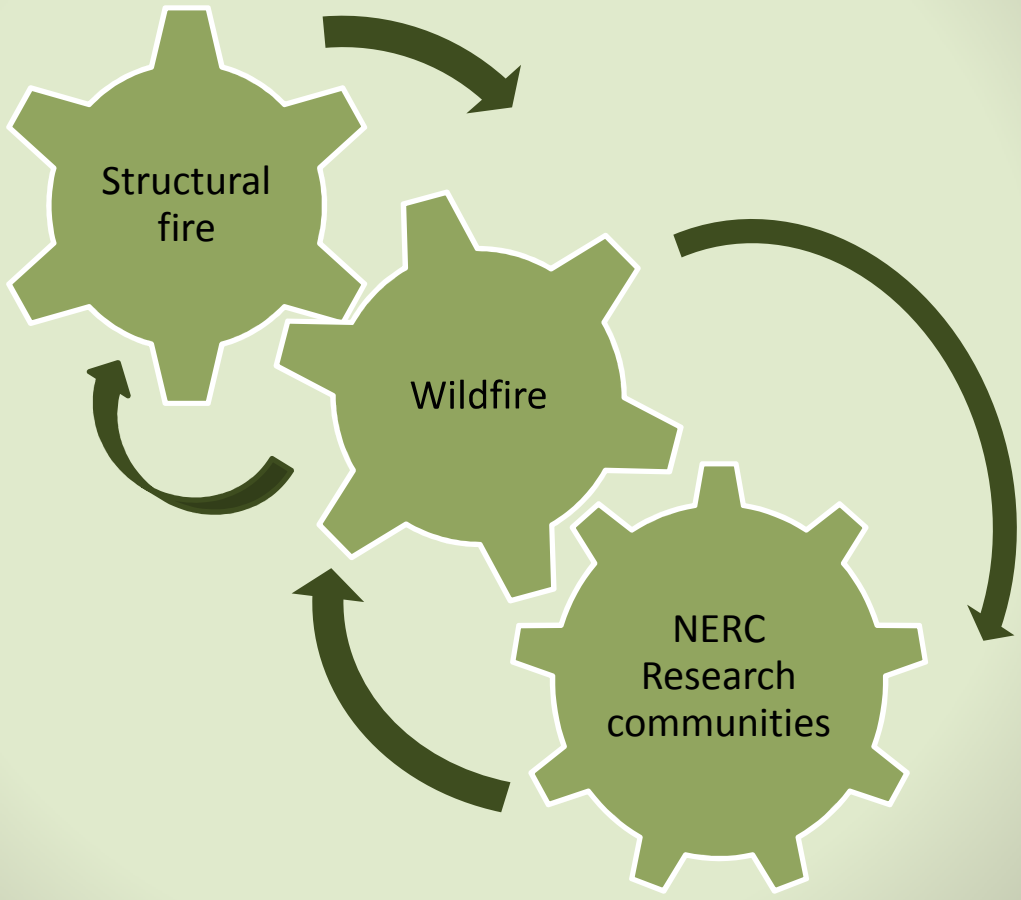
Steering Group

http://kfwf.org.uk/about/steeringgroup/

Paul Hedley: CFOA Wildfire Group
Steve Barnes: Civil Contingencies Secretariat, Cabinet Office
Phil Philippou: Resilience and Emergencies Division, DCLG
Jonathan Aylen: Manchester Business School
Simon Thorp: The Heather Trust

KfWf

Improving management of UK wildfire through knowledge exchange

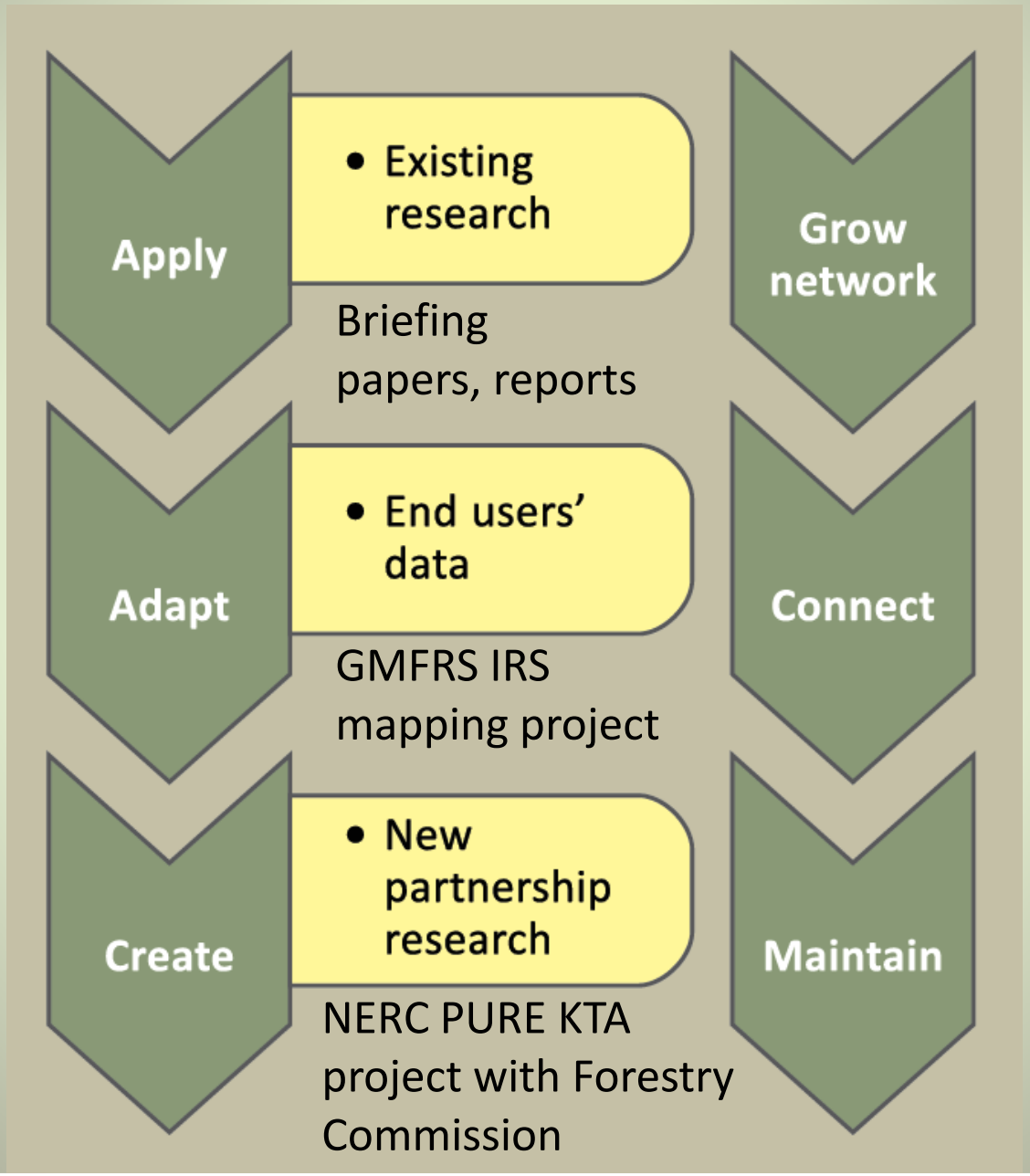


KfWf
Improving management of UK wildfire through knowledge exchange

Approach

Know-what, Know-why

Know-how



Know-who

Networking events:

- wildfire@ manchester seminars
- Conference sessions
- Website www.Kfwf.org.uk
- Twitter KfWf_Manchester

KfWf
Improving management of UK wildfire through knowledge exchange

Apply | How NERC science can help

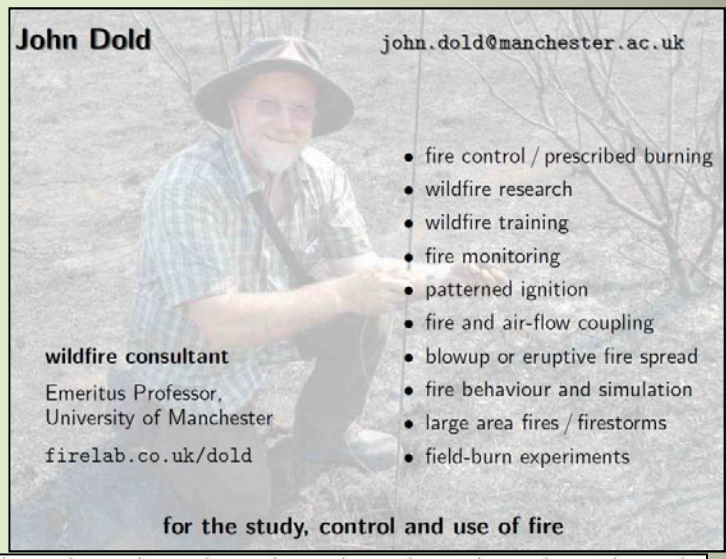
By improving our understanding of:

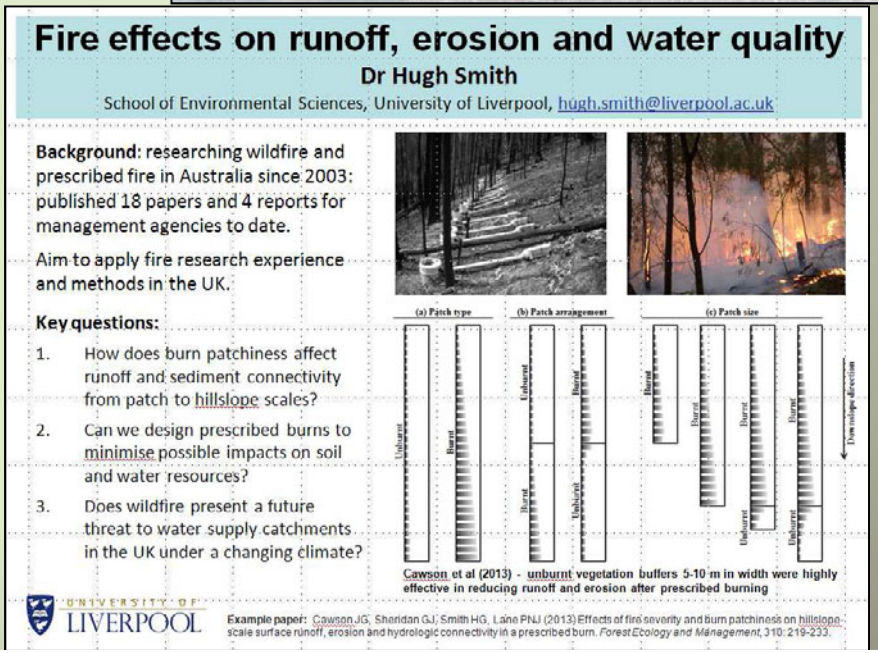
- How *past fire regimes* were related to climate and land management. How *climate change* may change wildfire frequency and magnitude, and feedback to climate
- How wildfires affect *carbon budgets*
- How wildfire emissions affect *air quality* and *health*
- How *fire ecology* explains complex relationships between fire, vegetation, soil, climate and people. How managed fire and wildfire interact with biodiversity, water colour and other ecosystem services
- How *remote sensing* can be used to detect: *pre-fire* fuel load & fuel moisture content; *active fire* location and energy; *post-fire* vegetation and soil burn severity, and monitor long-term ecological response
- How *GIS* can model wildfire risk, hazard and threat…..*etc*

KfWf
Improving management of UK wildfire through knowledge exchange

Connect, Apply | Who's Who in UK fire researchers

	Fire behaviour	Hydrology	Keyword 3
Research group 1	●		●
Research group 2		●	
Research group 3		●	●





Fire effects on runoff, erosion and water quality

Dr Hugh Smith

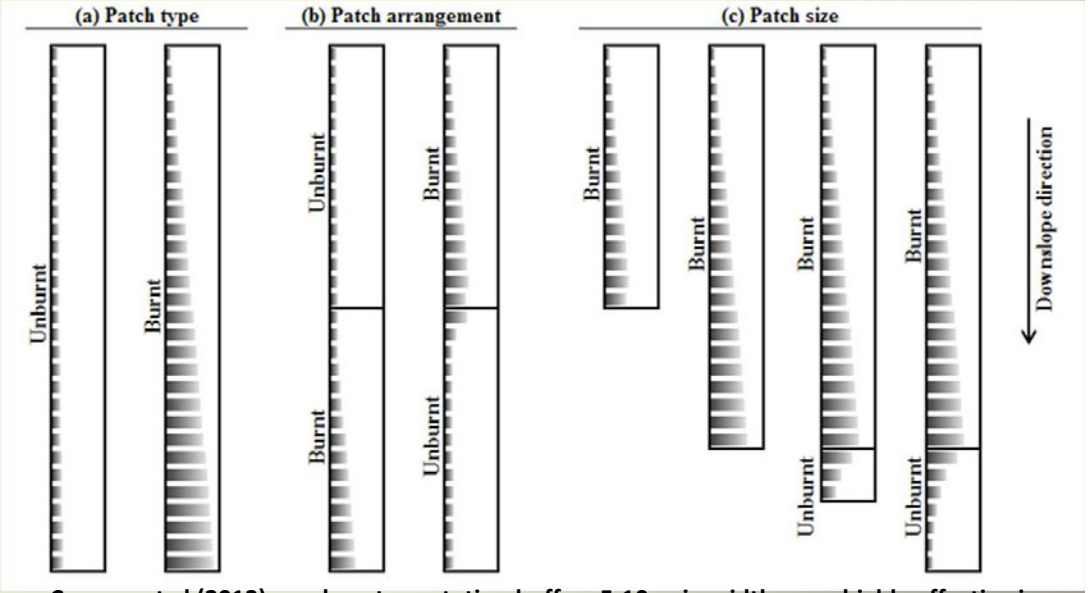
School of Environmental Sciences, University of Liverpool, hugh.smith@liverpool.ac.uk

Background: researching wildfire and prescribed fire in Australia since 2003: published 18 papers and 4 reports for management agencies to date.

Aim to apply fire research experience and methods in the UK.

Key questions:

1. How does burn patchiness affect runoff and sediment connectivity from patch to hillslope scales?
2. Can we design prescribed burns to minimise possible impacts on soil and water resources?
3. Does wildfire present a future threat to water supply catchments in the UK under a changing climate?



Cawson et al (2013) - unburnt vegetation buffers 5-10 m in width were highly effective in reducing runoff and erosion after prescribed burning

UNIVERSITY OF LIVERPOOL

Example paper: Cawson JG, Sheridan GJ, Smith HG, Lane PNJ (2013) Effects of fire severity and burn patchiness on hillslope-scale surface runoff, erosion and hydrologic connectivity in a prescribed burn. *Forest Ecology and Management*, 310: 219-233.

KfWf
Improving management of UK wildfire through knowledge exchange

Connect, Apply | Wildfire@manchester

KfWf
Improving management of UK wildfire through knowledge exchange

Understanding fire intensity and severity: Implications for managing wildfire and prescribed fire

Report

2nd wildfire@manchester seminar, 13th June 2013

Keynote:
Professor John Dold (University of Manchester)

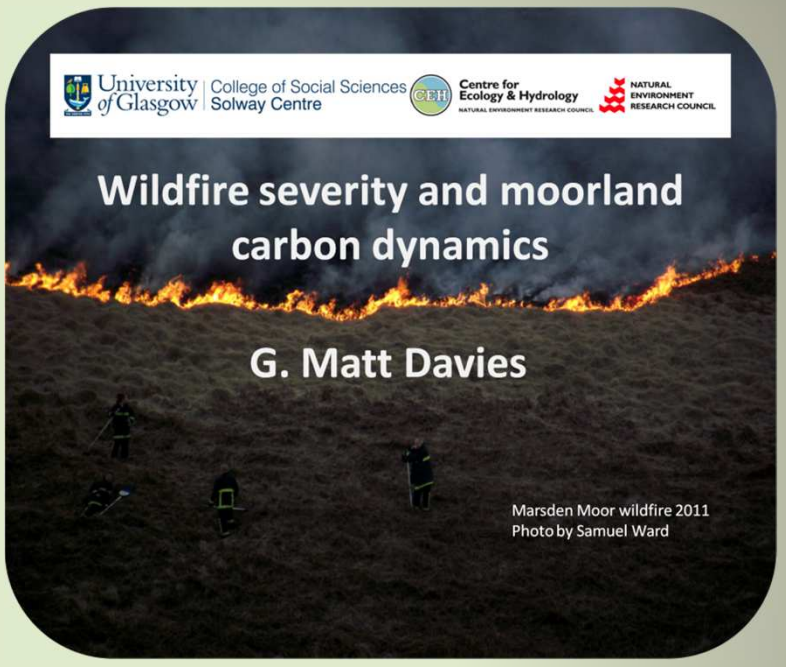
Discussants:
Andy Elliott (Dorset Fire and Rescue Service)
George Winn-Darley (Moorland Association)

Rapporteur:
Gail Millin-Chalabi (Geodata R&D Officer, PhD student, Geography, School of Environment, Education and Development, University of Manchester)

Convenor and Editor:
Julia McMorrow (NERC Knowledge Exchange Fellow; Senior Lecturer in Remote Sensing, Geography, School of Environment, Education and Development, University of Manchester)

NATURAL ENVIRONMENT RESEARCH COUNCIL

MANCHESTER 1824
The University of Manchester

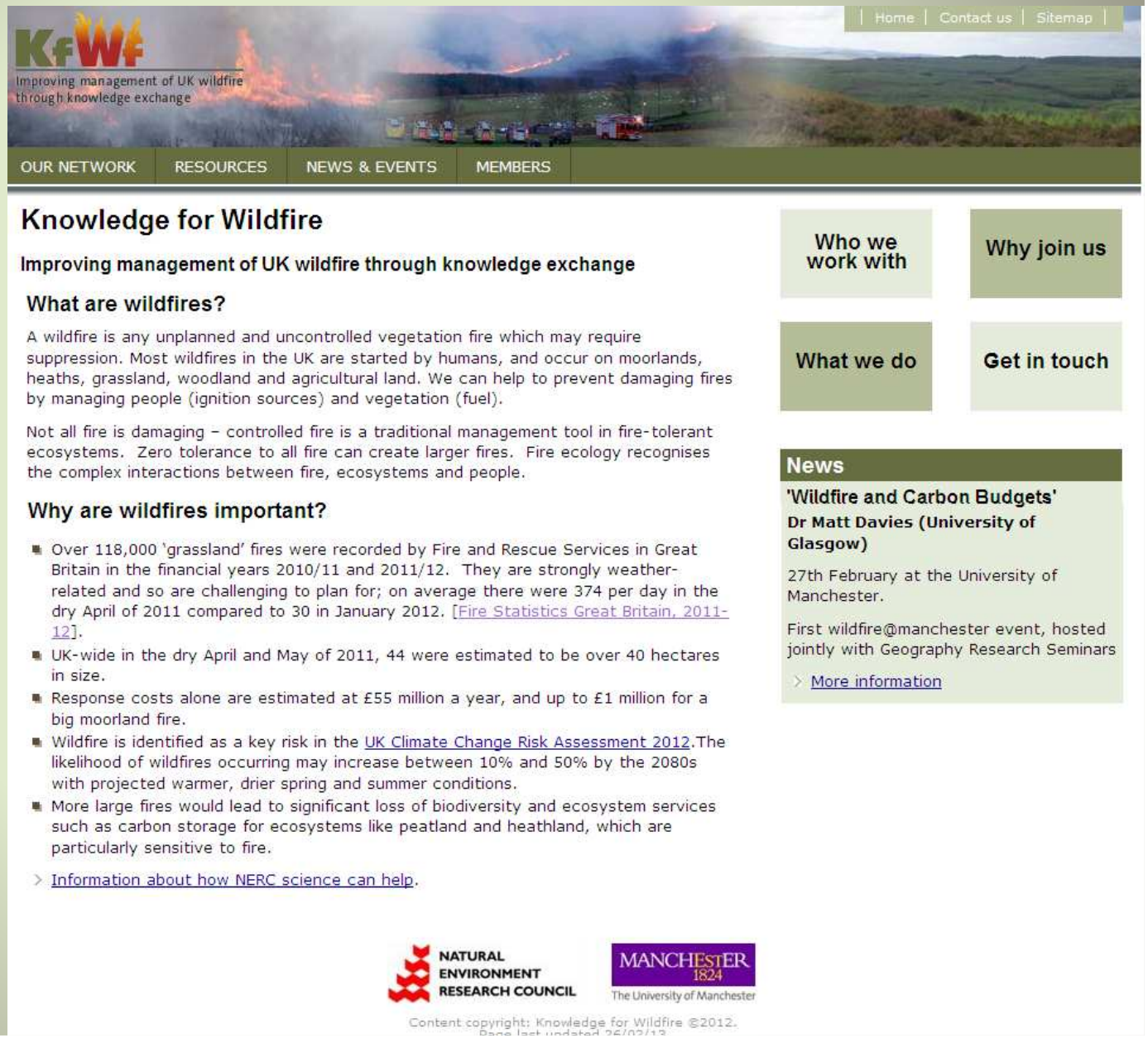


http://kfwf.org.uk/_assets/documents/Millin-Chalabi_et_al_13jun13_KfWf_seminar_report.pdf

KfWf
Improving management of UK wildfire through knowledge exchange

Connect | Website

www.kfwf.org.uk



KfWf
Improving management of UK wildfire through knowledge exchange

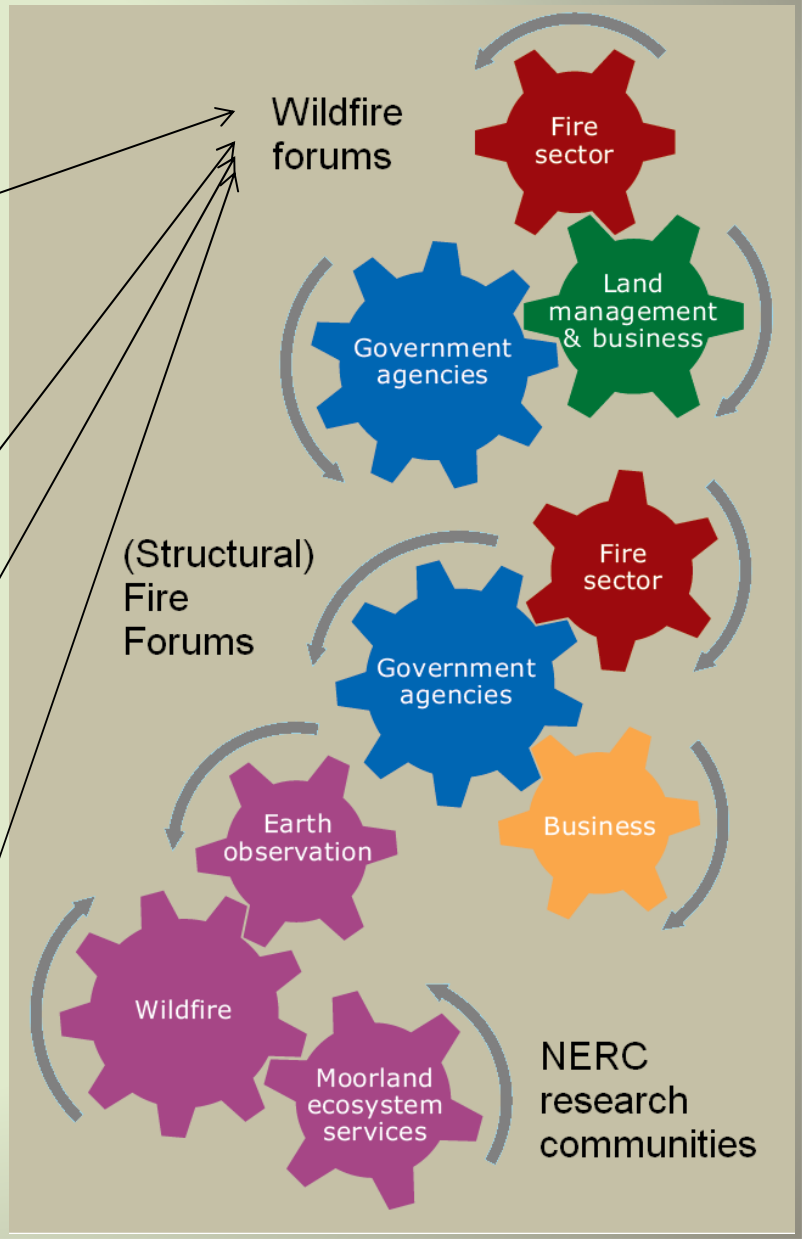
Connect| Who we work with

England and Wales Wildfire Forum
- KfWf advisory panel
- Responses to consultations, e.g: UK Climate Change Risk Assessment and National Adaptation Programme;

CFOA Wildfire Group, Research & Information Workstream; IRS consultation

Local Fire Groups e.g. Lancashire FOG

Moorland management groups
- DEFRA Best Practice Burning Group: wildfire guidance note
- Moors for the Future: public awareness of wildfire risk interactive exhibit
- National Trust: High Peak Moors Vision & Plan



KfWf
Improving management of UK wildfire through knowledge exchange

Connect| Launch of National Trust High Peak Moors Vision and Plan, 20 Sep '13

Heather seeding

http://www.high-peak-moors.co.uk/

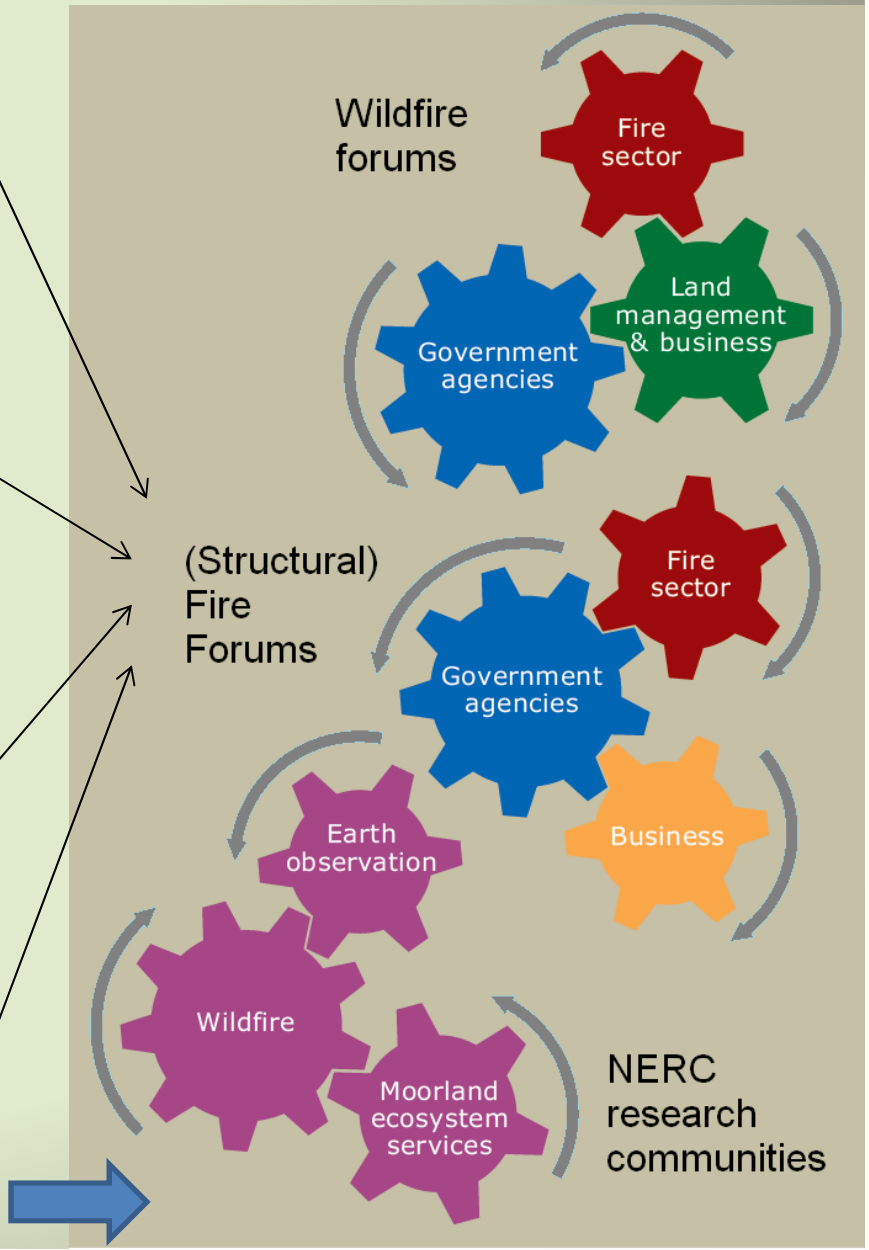
Contributed to 'expert evidence' on wildfire

'Managing the risk of wildfire is a key objective for us.' (p23)

KfWf
Improving management of UK wildfire through knowledge exchange

Connect| Fire sector

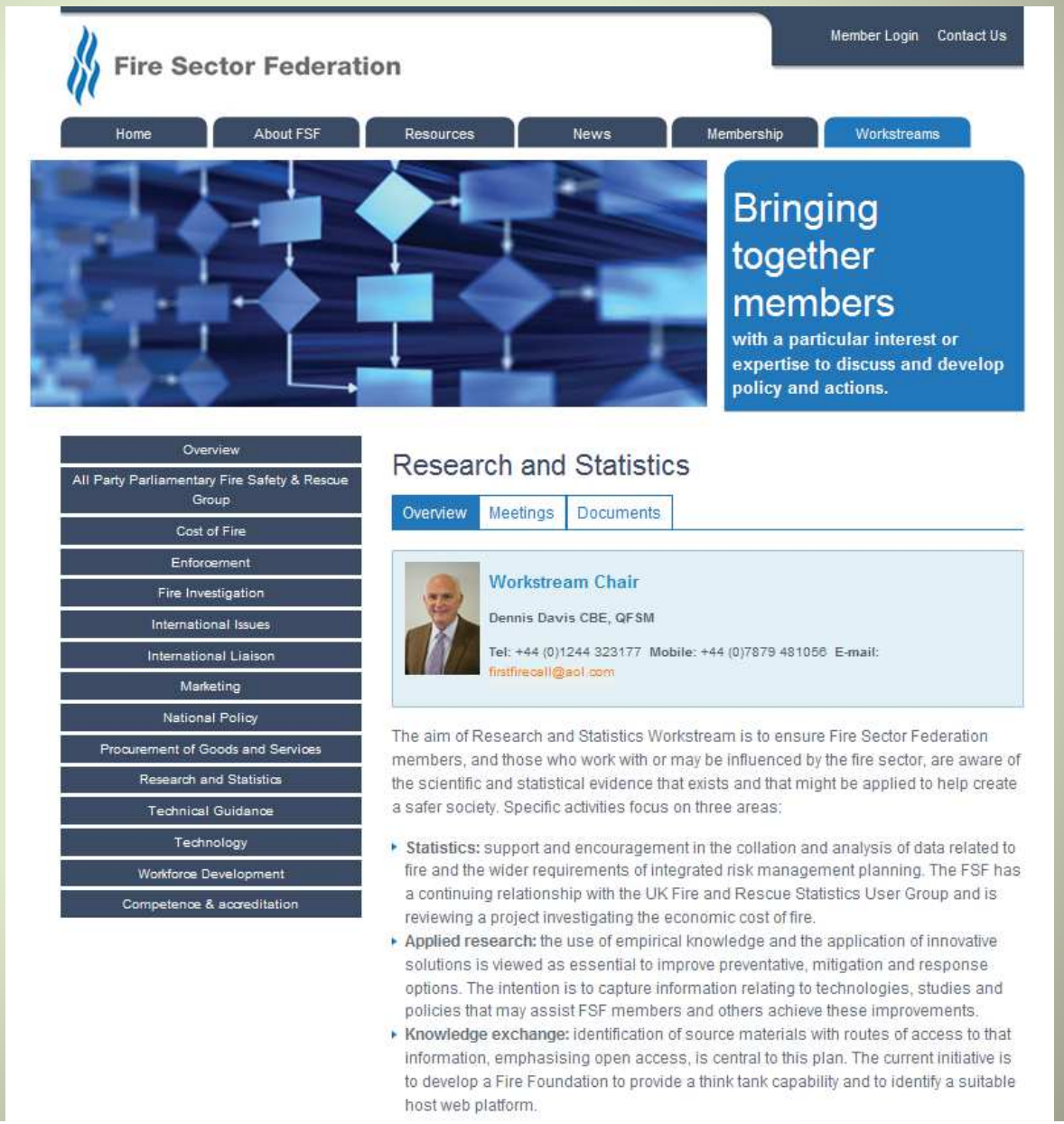
- **DCLG Fire Research Statistics User Group**: wildfire reporting in Incident Recording System
- **Fire Sector Federation** **Fire Research and Statistics Workstream**: raising awareness of wildfire issues Fire Sector Federation
- **Institution of Fire Engineers**: papers at Fire-Related Research conferences, Re12 and Re13
- **Knowledge Infrastructure for the Fire Sector**: Buckinghamshire FRS's Manchester workshop, 6 Sep '13



Improving management of UK wildfire through knowledge exchange

Connect | Fire Sector Federation

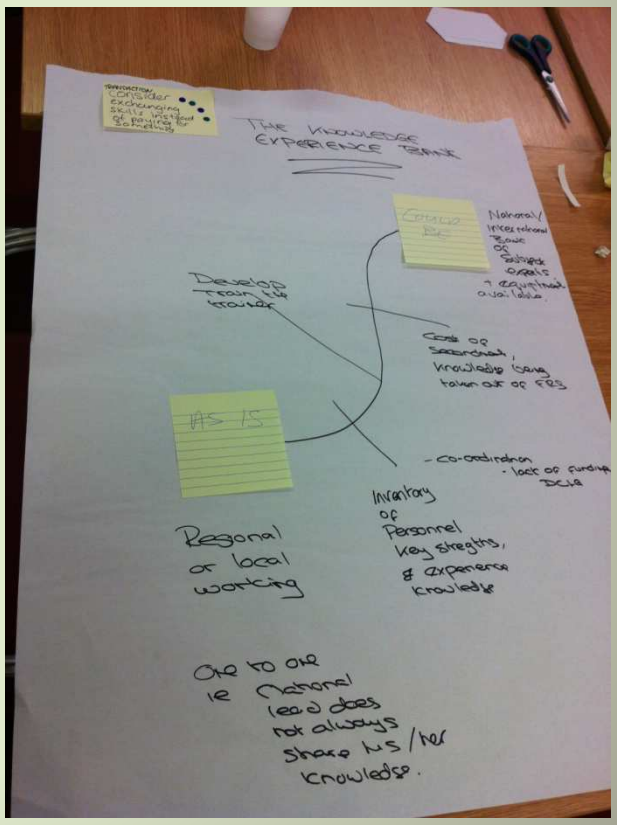
http://firesectorfederation.co.uk/workstreams/research-and-statistics.php



KfWf
Improving management of UK wildfire through knowledge exchange

Connect | Knowledge Infrastructure for the Fire Sector

Buckinghamshire FRS's Manchester workshop, 6 Sep '13



KfWf
Improving management of UK wildfire through knowledge exchange

Connect | Research communities

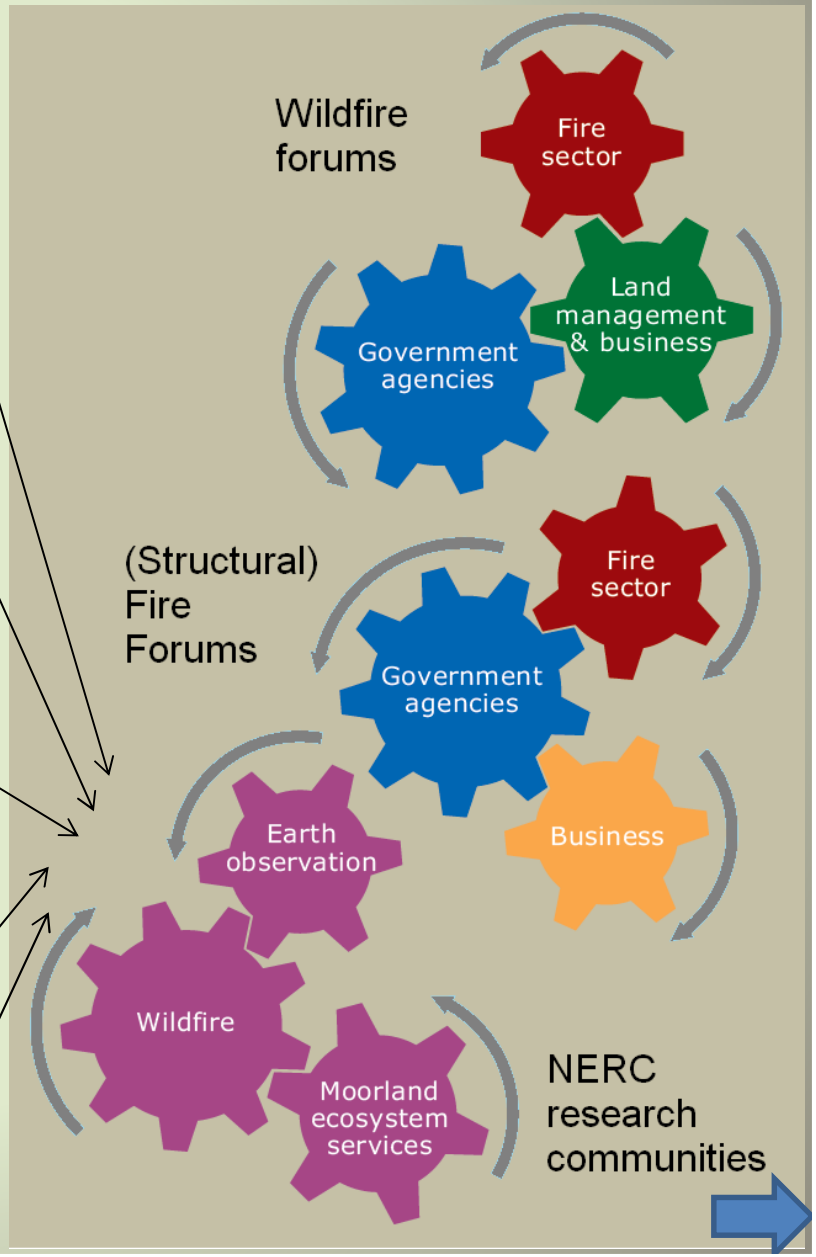
Conferences on remote sensing of fire; e.g. EARSeL Forest Fires Special Interest group

International Assoc of Wildland Fire; Human Dimensions conferences

NERC meetings
- Think Tank on investment in natural hazards and risk, 21 Oct'13
- KE Network

Living with Environmental Change (LWEC) partnership

Survey of UK fire research activity



KfWf

Improving management of UK wildfire through knowledge exchange

EARSeL Workshop Forest Fires
Special Interest Group, 15-17 Oct '13

EARSeL

European Association of Remote Sensing Laboratories

KfWf

Improving management of UK wildfire through knowledge exchange

Apply, Connect| International Assoc of Wildland Fire (virtual) conference

International Association of Wildland Fire

Facilitating *communication* and providing *leadership* for the wildland fire community.

3rd Human Dimensions of Wildland Fire Conference

Responsibility: Research, Management, Communities"

Seattle, Washington, USA

Proceedings of 3rd Human Dimensions of Wildland Fire, April 17 - 19, 2012, Seattle, Washington, USA
Published by the International Association of Wildland Fire, Missoula, Montana, USA

Different risks, different solutions? A discussion on what traditionally fire prone and less fire-prone countries can learn from each other

Cathelijne R. Stoof[A], Brian Oswald[B], E.R. (Lisa) Langer[C], Mathijs Schuijn[D], Julia McMorrow[E], Alette Getz-Smeenk[F], Ester Stalenhoef[G]

[A] Cornell University, Ithaca NY 14853, USA. Cathelijne.Stoof@cornell.edu
[B] Stephen F. Austin State University, Texas, USA. boswald@sfasu.edu
[C] Rural Fire Research Group, Scion, Christchurch, New Zealand. lisa.langer@scionresearch.com
[D] Safety Region Utrecht (VRU), Netherlands. mathijs_schuijn@hotmail.com
[E] University of Manchester, United Kingdom. julia.mcmorrow@manchester.ac.uk
[F] Fire and Rescue Services, VNOG, Netherlands. A.Getz@vnog.nl
[G] National Safety Institute (NIFV), Netherlands. ester.stalenhoef@nifv.nl

KfWf
Improving management of UK wildfire through knowledge exchange

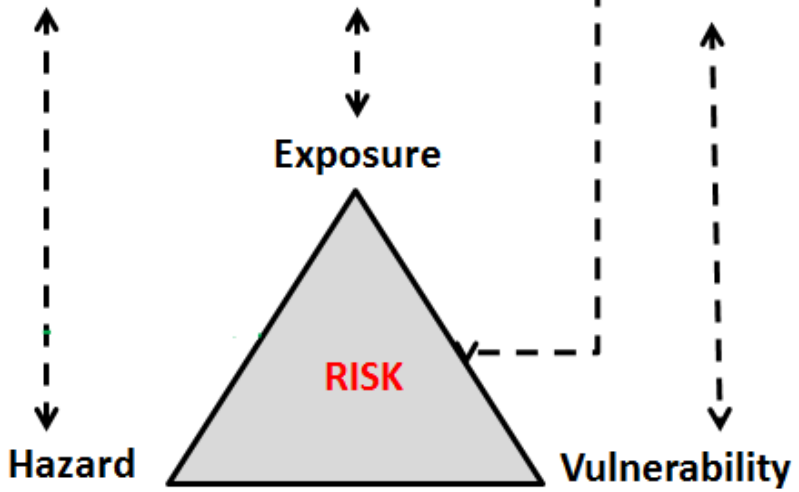
Create | NERC–PURE KTA with Forestry Commission

PURE
Probabalilty, Uncertainty and Risk in the Environment

KTA
Knowledge Transfer Associate

Wildfire Threat Analysis (WTA)
(Moffat & Pearce, 2013)

Risk Triangle
(Crichton, 2001)



KfWf
Improving management of UK wildfire through knowledge exchange

Benefits

For end-users

- Access to NERC-funded science and expertise
- Opportunities to work with researchers and influence the research agenda
- Add value to your datasets

For researchers

- Benefit from end-users' expertise and data
- Increase the impact of your research
- Find out what new research end-users really want

For both

- Links into other networks
- Build partnerships for funding applications
- Improve the evidence base for management, policy making and funding applications

KfWf

Improving management of UK wildfire through knowledge exchange

Thank you for listening

Questions?

Julia.mcmorrow@manchester.ac.uk

www.kfwf.org.uk

KfWf
Improving management of UK wildfire through knowledge exchange

Poster session

1. **Controls on the formation, transport and fate of charcoal from moorland wildfires**. Gareth D CLAY
2. **Assessing prescribed burning performance over a 25 year period: a case-study.** Pierre DENELLE, Katherine A ALLEN, Francisco M SÁNCHEZ RUIZ and Rob H MARRS
3. **Measuring vegetation canopy moisture content with dual-wavelength terrestrial laser scanning** F.M. DANSON, R. GAULTON, S. HANCOCK, & L.A. WALKER
4. **The Geography of vegetation fires in Greater Manchester: adding value to Fire and Rescue Service incident data.** Richard DONLAN
5. ***Development of a mobile app for fire prediction, detection and monitoring** Philip E FROST and Derick SWANEPOEL

* Poster author not present

KfWf
Improving management of UK wildfire through knowledge exchange

Poster session

6. **The effect of drought on fire severity in heather moorland prescribed burning.** Roger GRAU-ANDRES, G Matt DAVIES; Susan WALDRON and Michael BRUCE
7. ***The International Wildfire Simulation Training Project: 3D serious game-based training and exercising of wildfire response professionals.** Philippe MERESSE, Eric TURPIN, Martijn BOOSMAN, Steven VAN CAMPEN, *et al.*
8. **Detecting moorland wildfire scars and their persistence in the landscape using Synthetic Aperture Radar (SAR); Peak District National Park**. Gail MILLIN-CHALABI, Julia MCMORROW and Clive AGNEW
9. **Flammability properties of British moorlands and heathlands vegetation: models for predicting fire ignition and spread.** Victor M SANTANA, Rob H MARRS

* Poster author not present