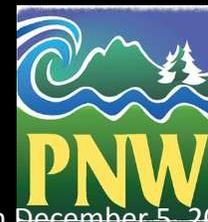


Communicating about smoke: public opinions about information sources and sufficiency

Christine S. Olsen, PhD and Stacey Sargent Frederick
Department of Forest Ecosystems & Society
Oregon State University
christine.olsen@oregonstate.edu



Eric L. Toman, PhD
School of Natural Resources and Environment
The Ohio State University



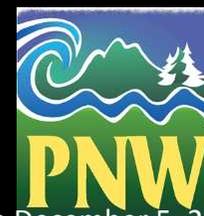
Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

Who hates smoke? Some ideas about how to talk to them

Christine S. Olsen, PhD and Stacey Sargent Frederick
Department of Forest Ecosystems & Society
Oregon State University
christine.olsen@oregonstate.edu

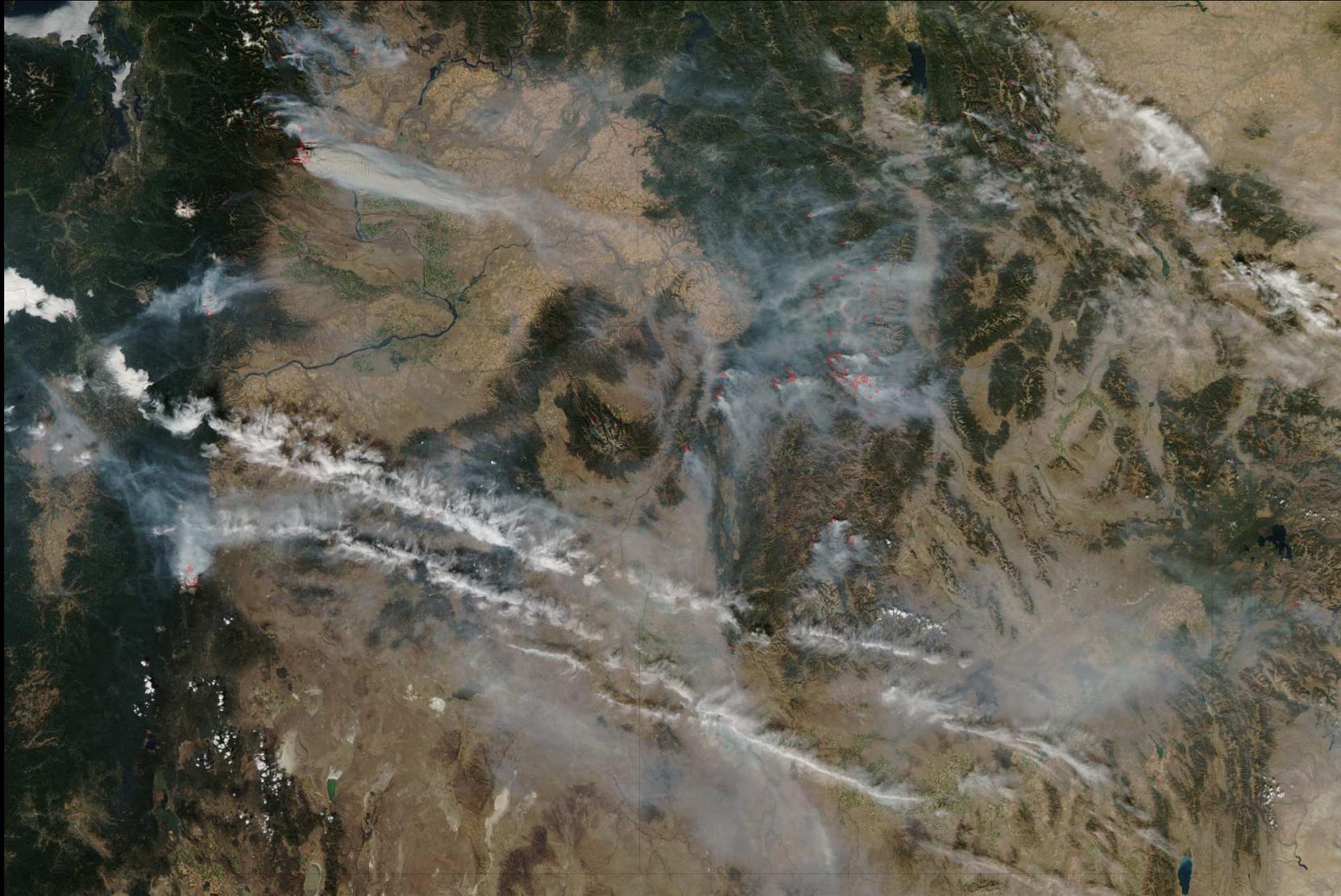


Eric L. Toman, PhD
School of Natural Resources and Environment
The Ohio State University



Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

Rationale



NASA

Fires in Washington in Summer 2012

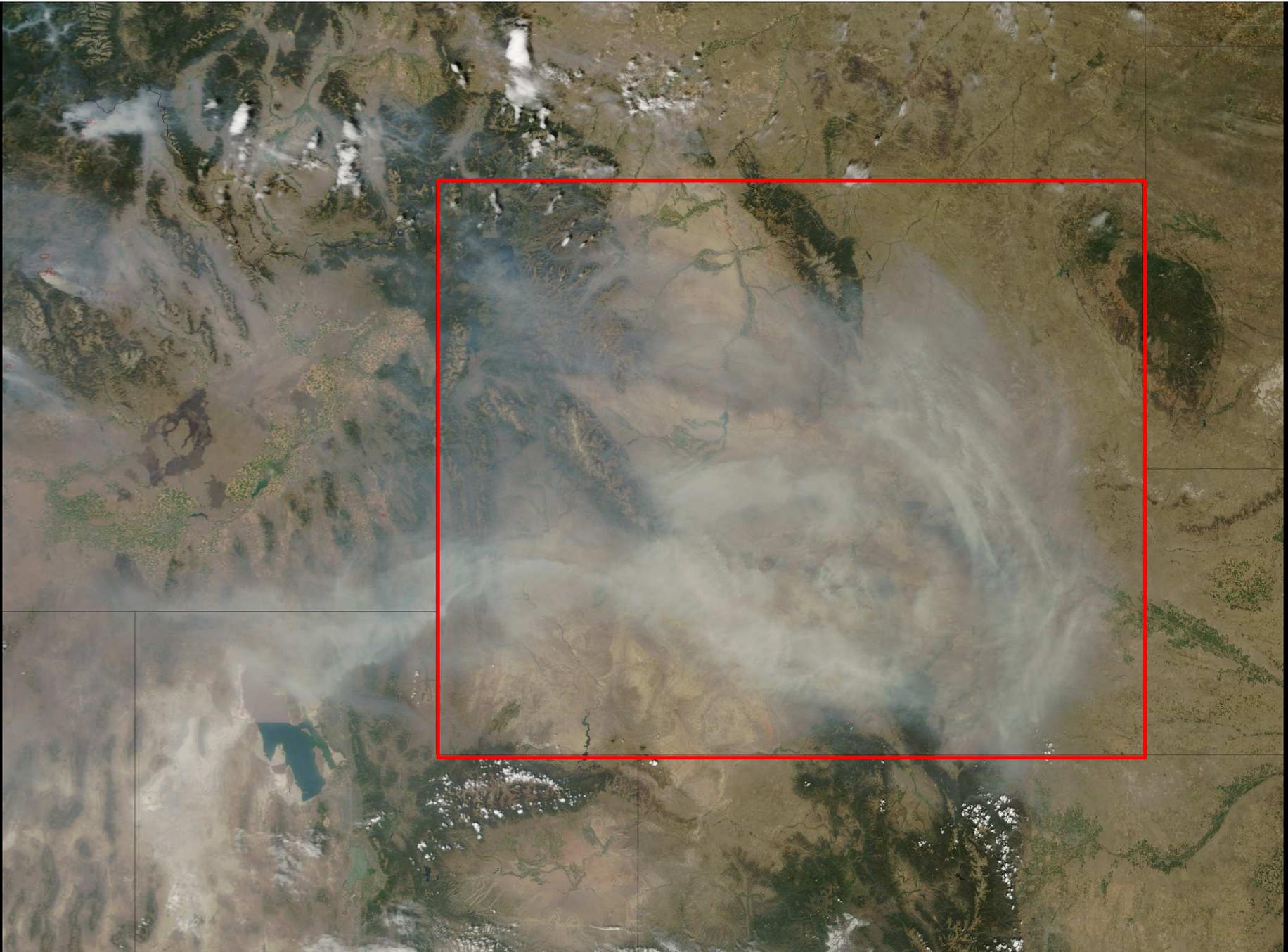
Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012



NASA

Fires in Idaho in Summer 2012 – creates “smoke valleys”

Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012



NASA

Wyoming smoked over by CA, OR, ID, and NV fires – August 2012

Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

Rationale

- Smoke can affect ability to use fire as a management tool
- Few studies examine social side of smoke

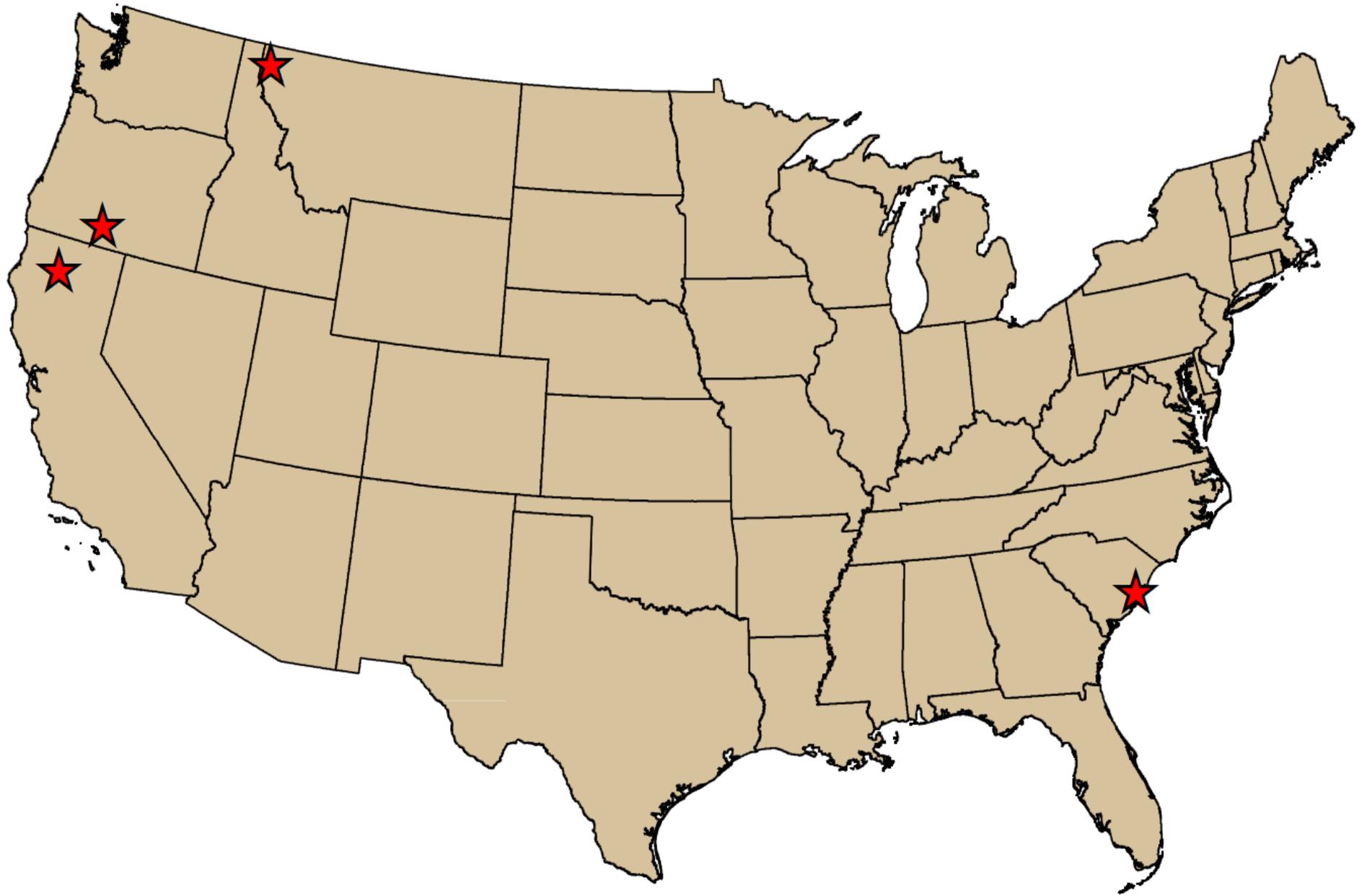
This study:

- Better understand those who are not tolerant
- Better understand what influences tolerance
- Target communication as potential influencer

Methods

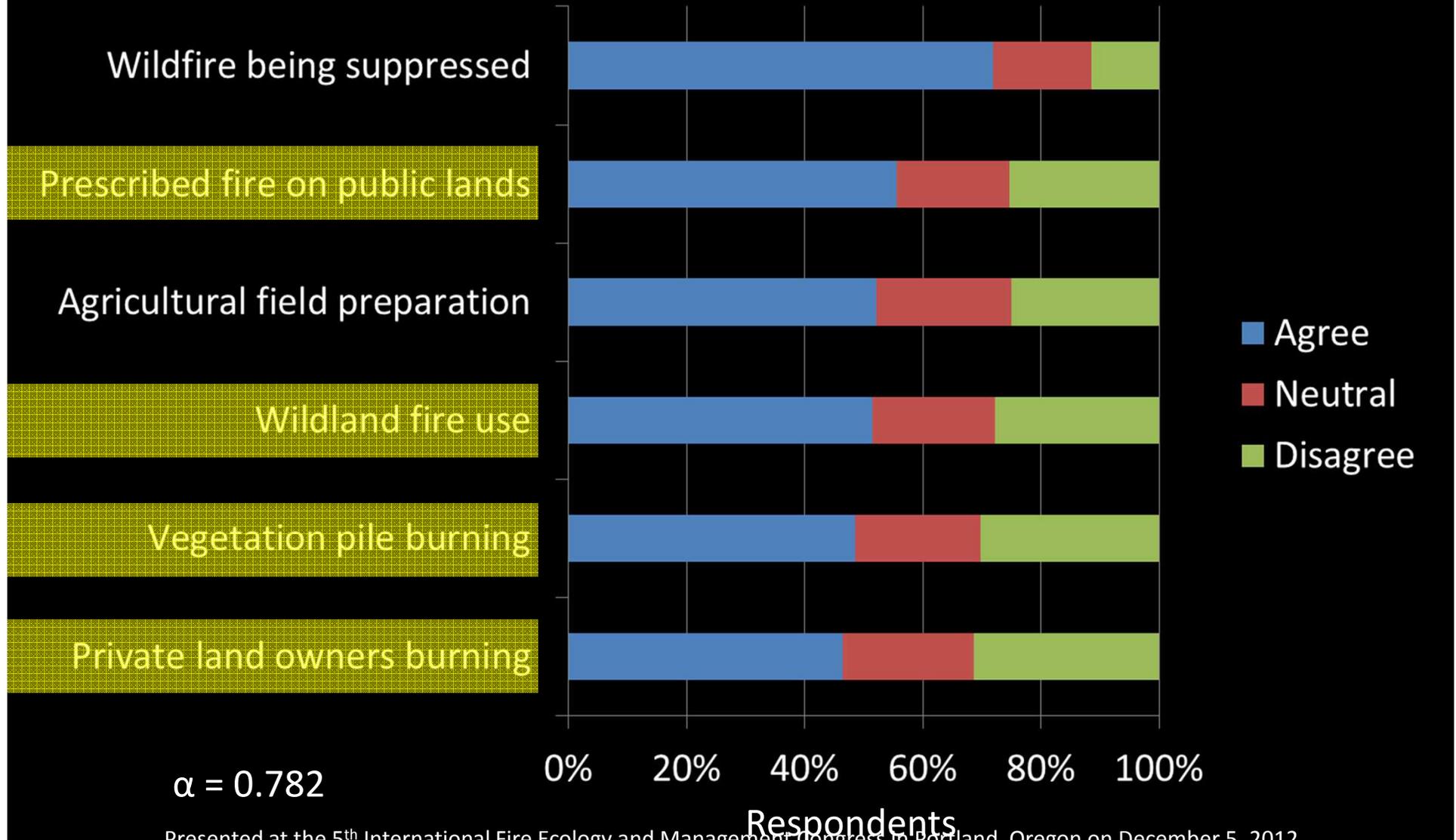
- Mail survey
 - Based on interviews
 - Modified Dillman approach
 - Random samples
 - 4 sites, diverse characteristics
- Questions addressed:
 - Smoke
 - Communication
 - Forest management activities
 - Agency interactions





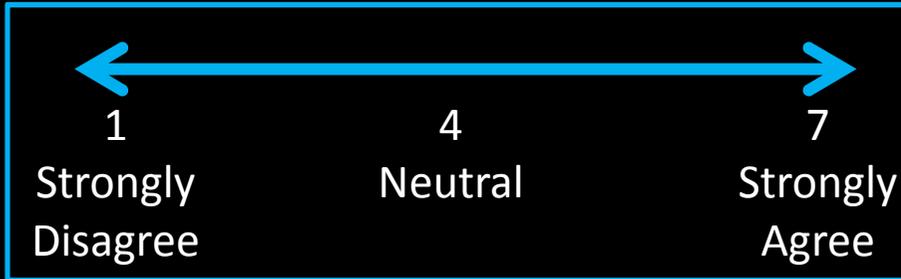
Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

Smoke is Acceptable



Cluster Groups

1. PF on public lands
2. WFU
3. Veg pile burning
4. Private burning

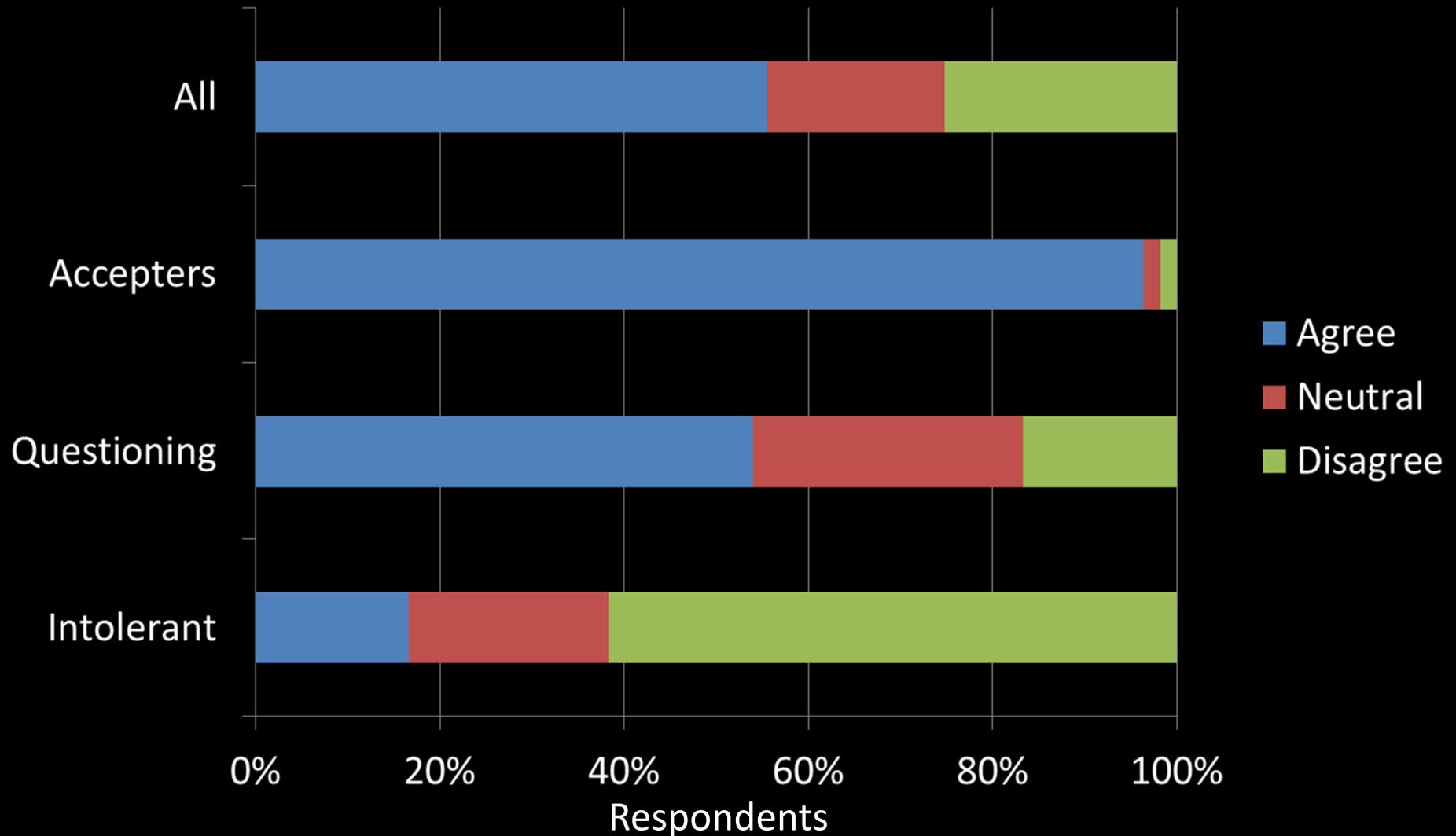


Group	N	Response Centers	Smoke Acceptance Scale Mean (SD)
Accepters	378	6	24.5 (2.4)
Questioning	283	4 and 5	18.0 (2.2)
Intolerant	253	2 and 3	10.7 (3.0)

Cluster F-stats in the 384-825 range, $p < .001$

Scale by cluster F-stat = 2020, $p < .001$, all post-hocs sig at $p < .001$

PF on public land



$\chi^2 = 430.237, p < .001, V = .485$

Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

Who Are They?

Variable	Total Sample	Accepters %	Questioning %	Intolerant %	Effect Size (V)
Age	60.8 years				
Income	44% < \$40k				
Tenure	27.5 years				
Proximity	3.4 miles				
Female		39	39	49	.094
Bachelor's degree		45	31	35	.125
Retired		42	53	52	.098
Forestry job		26	19	10	.155
NR comm group		15	11	6	.062
Use fire – veg		47	43	25	.187
Use fire – debris		49	46	23	.228
Woodstove		47	46	33	.108

All $p < .001$

Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012

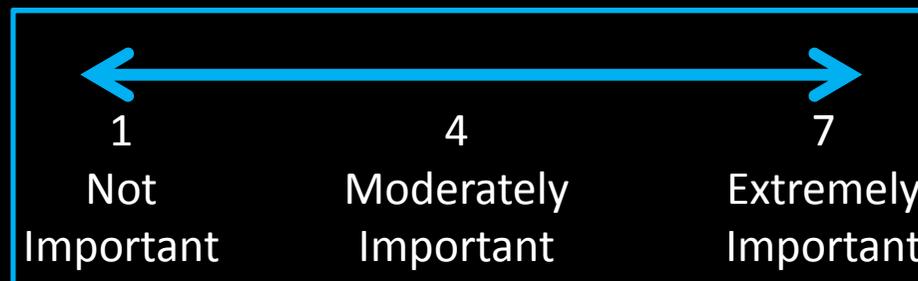
Who Are They?

Values regarding natural resources?

- Environmental consequences
- Economic consequences
- Local economy
- Ecological restoration
- Recreation access
- Scientists involved in plans
- Affect on person property

No notable differences!

Means range: 4.8-5.5



Knowledge

On a scale of 0 to 100...

How much do you know about smoke?

How much do you need to know to make good decisions?

Cluster	Mean difference	Don't Know Enough (%)
Accepters	2.4	42
Questioning	8.3	53
Intolerant	12.1	61

ANOVA F-stat = 7.576, $p < .001$

Accepters different than Questioning and Intolerant at $p < .05$ (Scheffe)

Communication

Source	% Experience
TV/radio PSA	68
Family/friends	59
Billboards/road signs	51
Informational brochures	33
Visitor center/interp sign	33
General websites	25
State air quality call line	22
Newsletters	22
State air quality website	21
Gov't public mtgs	17
EPA website	12
Flyers/door-hangers	11

No Cluster Differences

Communication

Source	% Accepters	% Questioning	% Intolerant	Effect Size (V)
Newspapers/magazines*	56	67	64	.096
Conversations with agency staff*	32	26	21	.093
Forest Agency websites**	29	21	17	.114
Educational workshops*	16	10	8	.100

* $p < .05$; ** $p < .01$

Use Newspapers and Magazines to target the Questioning and Intolerant?

Experience with Smoke

Have you or anyone in your household experienced...	% Yes Accepters	% Yes Questioning	% Yes Intolerant	Effect Size (V)
...unpleasant odors from smoke	68	81	85	.169
...a road closure or delay due to smoke	31	35	44	.103
...discomfort from smoke	43	59	78	.274
...personal health effects from smoke	17	24	48	.275

All $p < .001$



Perceptions of Smoke Impacts

Smoke near my community would result in... (likeliness)	% Accepters	% Questioning	% Intolerant	Effect Size (V)
Negative impacts to scenery	27	41	64	.228
Reduced tourism and recreation visits	23	38	62	.261
Reduced opportunities for me to recreate	15	36	59	.265
Negative impacts to my family's health	29	49	73	.261
Negative impacts to my health	25	46	67	.242
Reduced ability to work on my property	11	29	52	.260
Negative impacts to my ability to work	10	18	35	.198
Negative impacts to my ability to travel	15	28	44	.202

All $p < .001$

Questions about severity of impacts followed same pattern

Linear Regression

Independent Variables	Beta
Experienced discomfort from smoke	-.227***
Experienced health effects from smoke	-.139**
Conversations with agency staff	.078*
Forest Agency websites	.105**
Level of trust in local Forest Service staff	.151***

Dependent variable: Smoke Acceptance Scale

F-stat = 28.367, $p < .001$, Adj. $R^2 = .161$

* $p < .05$; ** $p < .01$; *** $p < .001$

Eliminated: female, bachelor's degree, experienced unpleasant odors, experienced property damage, difference in knowledge, newspapers/magazines, educational workshops, trust in local air quality district, trust in state forestry

Summary

Intolerant:

- Experienced discomfort or health effects
- Believe impacts are likely and will be severe
- Perceive greater gap in knowledge
- Less likely to use fire on property
- More women
- Less likely to have forestry job or belong to NR group
- Use newspapers & magazines

Summary

Influences acceptance of smoke:

- Experience discomfort from smoke (neg)
- Experience health effects from smoke (neg)

- Have conversations with agency staff (pos)
- Use Forest Agency websites (pos)
- Have more trust in local Forest Service staff (pos)

Implications for Communication

- Target those with negative past experiences
 - Personal contact
 - Builds trust
- Consider newspaper/magazine campaign for general awareness and knowledge building
- Address likeliness/severity of smoke impacts in outreach
- Keep websites updated and user friendly

Next Steps

- Non-response bias check
- Further analysis and model-building
- Development of experimental interventions – test on site
- One site will be resurveyed a year later



Questions



NASA

Southern California fires – October 2003

Presented at the 5th International Fire Ecology and Management Congress in Portland, Oregon on December 5, 2012