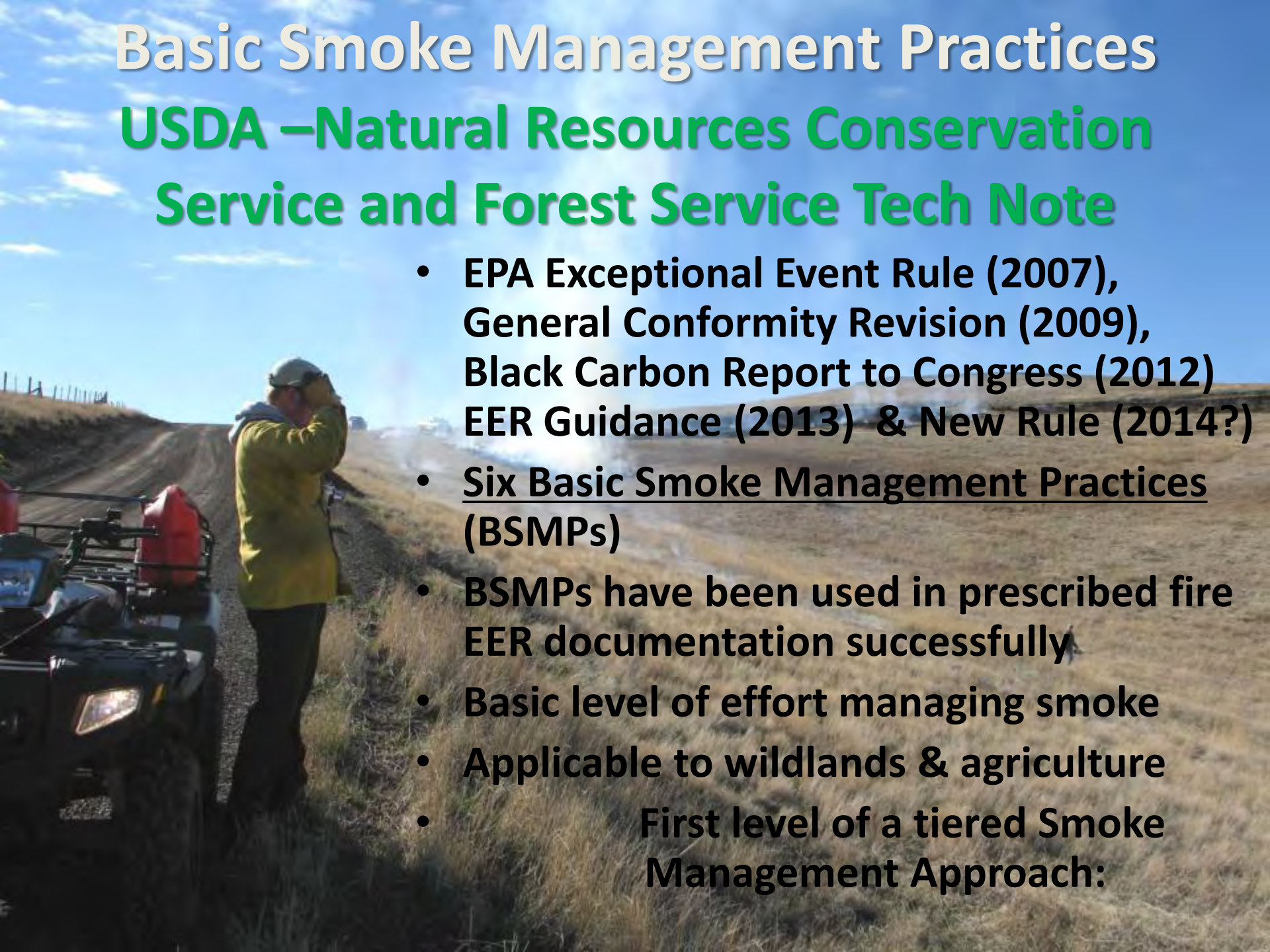
Basic Smoke Management Practices

USDA –Natural Resources Conservation Service and Forest Service Tech Note



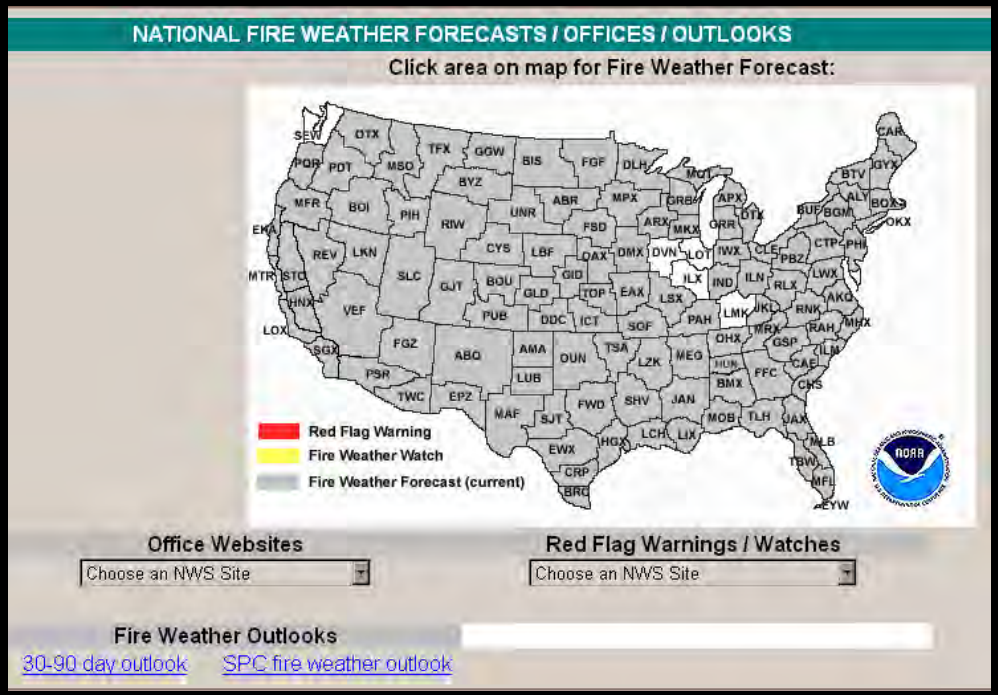
- EPA Exceptional Event Rule (2007), General Conformity Revision (2009), Black Carbon Report to Congress (2012) EER Guidance (2013) & New Rule (2014?)
- Six Basic Smoke Management Practices (BSMPs)
- BSMPs have been used in prescribed fire EER documentation successfully
- Basic level of effort managing smoke
- Applicable to wildlands & agriculture
- First level of a tiered Smoke Management Approach:

BSMP 1: Evaluate smoke dispersion conditions to minimize smoke impacts

- Before
  - Identify smoke sensitive areas
  - Identify meteorological conditions
- During
  - (critical) Obtain latest meteorological forecast
  - Obtain AQ conditions (AIRNOW) or state/local
  - Verify forecast with observations (RAWS or other)
- After, burn operations
  - Assess smoldering conditions

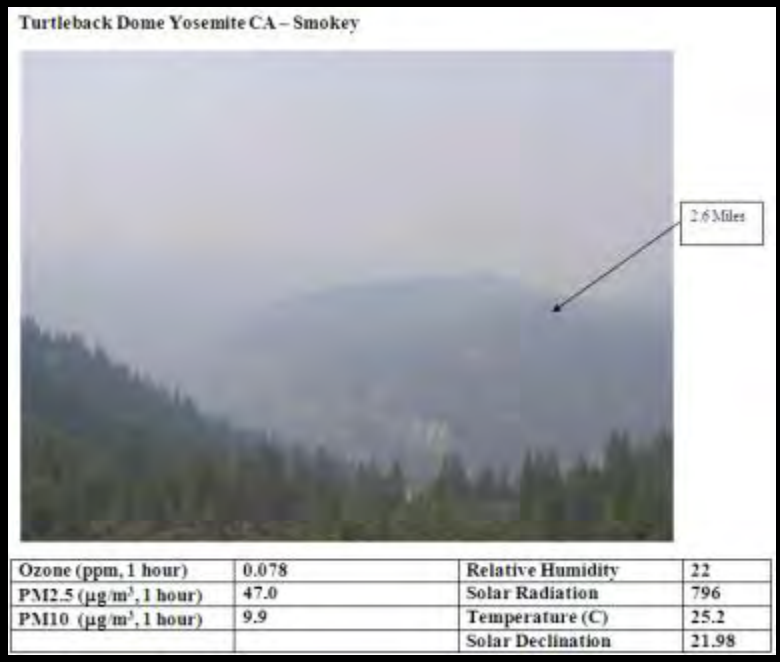
NOAA NWS Fire Weather Forecasts and Observations

- Parameters:
  - Temperature
  - Relative Humidity
  - 20 ft winds
  - Transport winds
  - Smoke Dispersal
  - Mixing Height
  - Haines Index
  - Ventilation
- Text Products
- http://fire.boi.noaa.gov/
- http://www.noaawatch.gov/themes/fire.php
  - Rangeland Fire Danger Forecasts
- Spot weather forecasts and Hysplit run



BSMP 2: Monitor the effects of the fire on air quality

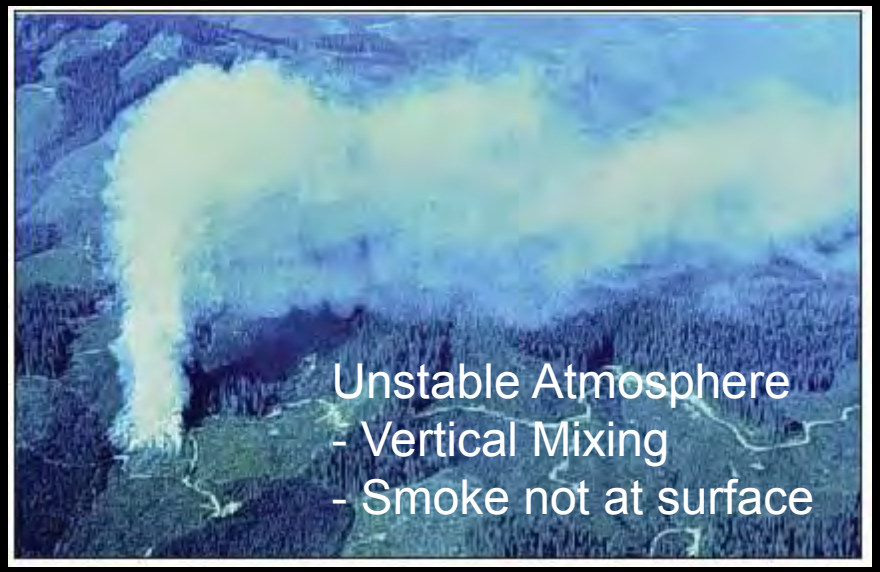
- Assess air quality conditions/forecasts
- Monitoring effects of fire on air quality
  - Where does the smoke go?
  - How high does it go?
  - Does the smoke disperse or is tight and dense?
- Methods – Visual monitoring documented by:
  - notes, photographs, aircraft observations, satellite imagery, air quality monitoring data, and post-burn evaluations.
- Note air quality near sensitive receptors



US Forest Service Smoke Photo Series

Smoke Behavior
Atmospheric Dispersion

- Knowledge of the atmosphere can help with managing smoke
- Fire Weather and Dispersion Modeling can inform no/no-go burn decisions to optimize dispersion



Smoke Behavior
Valley Flows


Photo by Roger Ottmar.

- Smoke caught under a valley inversion

- Smoke can be transported by down-valley winds in the morning

BSMP 3: Record-keeping

- Keep a personal burn/smoke journal.
- What records to keep?
  - Weather (forecasted and observed)
  - BSMPs applied
  - Fire activity (location, area burned, date, ignition time, etc.)
  - Fuels burned and acreage
  - Smoke behavior & impacts (if any)
- Assess conditions and burns that meet goals, and provide lessons learned
- Documentation can be key if there is an air quality exceedance and the state seeks to exclude the data. This can be years later.

BSMP 4: Communication – Public Notification

- Notify appropriate authorities (ex. air regulators, public health officials, local fire dept).
- Notify those in the public potentially affected by smoke
- Develop smoke contingency plans (SSA's, roads, etc.)
- If an impact occurs, implement contingency actions to reduce exposure (ex. Communication about impacts & response, mop-up, reducing area burned).

BSMP 5: Consider use of emission reduction techniques (ERTs)

- Ensure objectives are not compromised as ERT's are site specific
- ERTs can include:
  - reducing fuel burned
  - increasing burning efficiency
  - Backing fire…
- NRCS Practices considered ERTs: Brush Management, Clearing and Snagging, Firebreak, Forest Stand Improvement, Fuel Break, Prescribed Grazing, and Woody Residue Treatment.
- Document use of ERT's for NEPA, SMP, SIP or EER use later.

BSMP 6: Share the Airshed – Coordination of Area Burning

- Communication among fire managers burning in the same vicinity on the same day
- Coordinate and plan ignitions so as not to overwhelm the ability of the atmosphere to disperse the smoke
- Current smoke/AQ information
  - AIRNOW (http://www.airnow.gov) or from local/state air quality monitoring networks.
  - NOAA Hazard Mapping System – current satellite fire detections (http://www.osdpd.noaa.gov/ml/land/hms.html)
- Share communications with public

Tiered Smoke Management Approaches
BSMPs→SMP→ESMP

- Basic Smoke Management Practices
  - The building block of all smoke management effort
- Smoke Management Program (SMP) (state-level per EER/GC)
  - Recognizes 1998 Interim Policy SMP elements
- Enhanced Smoke Management Program (ESMP) (Regional Haze Rule – Section 309)
  - Recognizes ESMP Development that establishes elements needed when prescribed fire contributes to visibility impairment or nonattainment

Information

- Basic Smoke Management Practices Tech Note
  - http://myfirecommunity.net/NeighborhoodPublic/Neighborhood279/BasicSmokeManagementPractices.pdf
- NWCG Smoke Committee
  http://www.wildfirelessons.net/communities/viewcommunities/groupdetails/?CommunityKey=3c1cbb43-8381-4db8-b0bb-5dfbe796173e
- WFSTAR – 2014 Annual Fire Refresher Video - Smoke: Knowing the Risks
  www.nwcg.gov/wfstar/library_medical.html
  And Guidebook available
- Comments on BSMP's and Tech Note
  - Pete Lahm – Forest Service plahm@fs.fed.us
- Forest Service - Prescribed Fire & Smoke Management Video: http://www.youtube.com/playlist?list=PLNsZX2SBTlVnYQ1OKnrDqpZAZfqEiWO-k