

A summary of 2016 beta release for wildland fires, prescribed and agricultural burns for USA and outside USA

YEAR 2016 EMISSIONS MODELING PLATFORM PURPOSES

J. VUKOVICH (USEPA)

OCT 4, 2018

Outline

- ▶ Summarize states, tribes, and other agencies submitted data (voluntary)
- ▶ Other fire information used
- ▶ Other input data changes
- ▶ International fires (Canada and Mexico)
- ▶ Tentative schedule leading up to beta release (~ Oct 31)

Summary of data submitted by states, tribes and other agencies

- ▶ Georgia: an entire fire emissions inventory replacement (WF, Rx, Ag)
- ▶ North Carolina: total replacement of Rx and WF events, period-specific, lat-lon, acres-burned
- ▶ Kansas: day-specific, lat-lon, acres-burned for Flint Hills Rx burns for days 58-125; also reclassify fuels for some ag burns
- ▶ Colorado: day-specific, lat-lon, acres-burned, Rx burns
- ▶ Idaho: day-specific, lat-lon, acres-burned Ag burns
- ▶ Nez Perce tribe (ID): day-specific, lat-lon, acres-burned Ag burns
- ▶ Washington: lat-lon, acres-burned, fuel loading, emissions for ag burns but not day-specific; also use 2014NElv2 non-point burning (Rx pile burns) in similar manner for year 2016
- ▶ Minnesota: lat-lon day-specific, corrected acres-burned for Rx and Ag burns (move some alpha version Rx burns to Ag burns)

How S/L/T data was used

- ▶ Georgia: used the fire emissions inventory replacement (WF, Rx, Ag)
 - ▶ QA vs. county/other totals provided by GA
- ▶ North Carolina: total replacement of Rx and WF events, day-specific, lat-lon, acres-burned
 - ▶ emissions calculated using Blue Sky
- ▶ Kansas: day-specific, lat-lon, acres-burned for Flint Hills Rx burns for days 58-125; also reclassify fuels for some ag burns
 - ▶ Ag fuels reclassified
 - ▶ Rx emissions calculated inside and outside of SF2-Bluesky
- ▶ Colorado: day-specific, lat-lon, acres-burned, Rx burns
 - ▶ Fire information used as input into SmartFire2

How S/L/T data was used (2)

- ▶ Idaho: day-specific, lat-lon, acres-burned Ag burns
 - ▶ Used for Ag burn processing (EPA Pouliot)
- ▶ Nez Perce tribe (ID): day-specific, lat-lon, acres-burned Ag burns
 - ▶ Used for Ag burn processing (EPA Pouliot)
- ▶ Washington: lat-lon, acres-burned, fuel loading, emissions for ag burns but not day-specific; also use 2014NElv2 non-point burning (Rx pile burns) in similar manner for year 2016
 - ▶ Used as point source, month-specific inventory to supplement Pouliot-derived ag burn emissions
- ▶ Minnesota: lat-lon day-specific, corrected acres-burned for Rx and Ag burns (move some alpha version Rx burns to Ag burns)
 - ▶ Used as fire information input into SmartFire2
 - ▶ Some Rx burns moved to Ag burn processing (Pouliot)

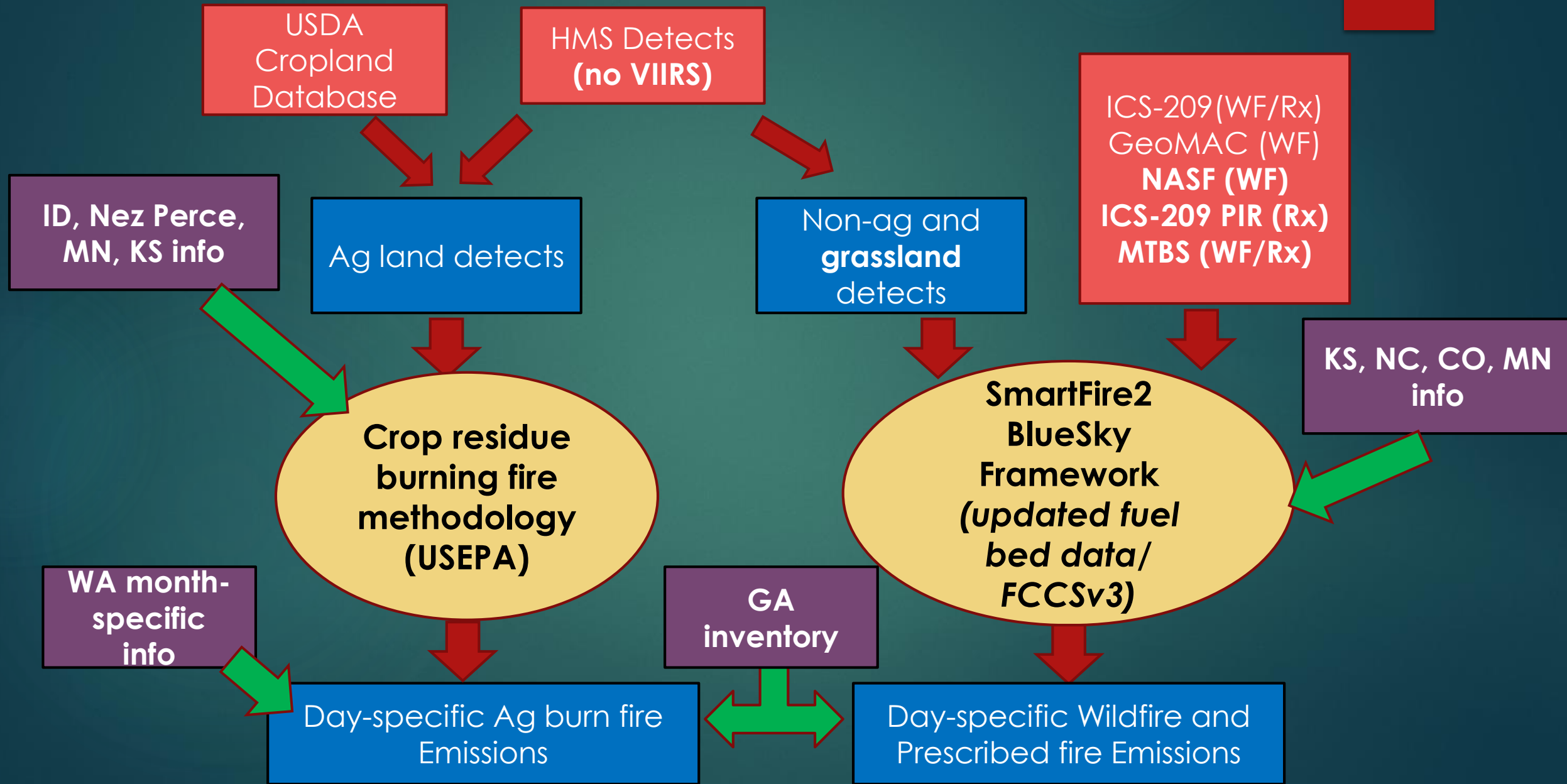
Other fire information used and changed in 2016 beta fire inventory

- ▶ National Association of State Foresters (NASF) fire information data
 - ▶ National database that is a collection of wildfire events from state forest agencies
 - ▶ Contains lat-lon, acres-burned, start and end date, name and other info
 - ▶ Some QA and edited as necessary for burn durations and lat-lons
 - ▶ Helped with fire size, location, type, and other identification
- ▶ HMS fire detects for year 2016
 - ▶ Visible Infrared Imaging Radiometer Suite (VIIRS) detects included in the HMS dataset for the first time in year 2016 but very late in the year (Nov and Dec only)
 - ▶ USFS AIRFIRE team recommended removing these VIIRS detects for year 2016 only (removed in beta)

Other fire information used and changed in 2016 beta fire inventory (2)

- ▶ Replaced year 2007-ish fuel-bed 1km resolution input data to Fuel Characteristic Classification System version 2 (FCCSv2)
 - ▶ Used Landfire v1.4 (year 2014) fuel bed at 200m resolution
 - ▶ Updated to FCCSv3
- ▶ Move all grassland fire detects (Cropland Data Layer) to the SF2-Bluesky processing
- ▶ ICS-209 related changes
 - ▶ Improve duration information for small fires
 - ▶ ICS 209 Planned Ignition Release (PIR) table: fire information for Rx fires
- ▶ Added HAPS via emissions factors post BlueSky
- ▶ **Monitoring Trends in Burn Severity (MTBS): Wildfire and Rx Fire burn area shapefiles (<https://www.mtbs.gov>)**

Fire Emissions Processing at High-Level for 2016 beta



Preliminary 2016 beta national totals

- ▶ Total acres burned ~ 14.8M
 - ▶ Wildfire acres burned = 4.9M (NIFC has ~5.5M total)
 - ▶ Prescribed burn acres = 7.9M
 - ▶ Ag burn acres ~ 2M
- ▶ Total emissions (WF and Rx)
 - ▶ PM2_5 = 1.83M tons
 - ▶ VOC = 4.9M tons
 - ▶ NOX = 300K tons

International Fire inventory

- ▶ Fire Inventory from NCAR (FINN) global dataset
 - ▶ Recently discovered leap-year error (Feb 29-Dec 31 fires displaced one day)
 - ▶ FINN author corrected this error and EPA verified (in beta release)
 - ▶ FINN used for Mexico for all of 2016 and for some months in Canada
- ▶ Environment Canada inventory
 - ▶ Year 2016 inventory with some missing winter months
 - ▶ Use FINN to fill in missing time periods
 - ▶ Fort McMurray fire (1.5M acres; May-Aug)
- ▶ More analysis of these inventories in coming months

Schedule to 2016 beta release for fires

- ▶ Rest of October
 - ▶ QA initial summaries of beta inventory (draft)
 - ▶ Ensure state-submitted data used as desired
 - ▶ Ensure other new data used correctly
 - ▶ Focus on top wildfires and states with high wildfire/Rx acres burned totals
 - ▶ Generate county maps of emissions, emissions densities, others
 - ▶ Examine acres burned-fuels totals
 - ▶ Other reports desired by Workgroup (send ideas!)
 - ▶ Time for tweaks 2016 draft beta before release
 - ▶ Working on technical documentation
- ▶ Nov 1st: another 2016 Fire Workgroup call
 - ▶ Any last minute business for beta release?
 - ▶ Continue working on tech doc
 - ▶ International fire analysis summary

List of Possible Improvements for 2016v1

- ▶ National fire information datasets
 - ▶ Forest Service Activity Tracking System (FACTS) data from the USFS-USDA
 - ▶ WF and Rx fire info/shapefiles
 - ▶ US Fish and Wildlife Service database
 - ▶ WF and Rx fire info
 - ▶ National Fire Plan Operations and Reporting System (NFPORS) database from Dept of Interior
- ▶ More state-submitted data or changes
- ▶ Possible interaction with USFS-AIRFIRE team and their latest BlueSky software tools?