

NW AIRQUEST Meeting
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Fire Emissions – Air Quality
Planning Inventories and
Contributions to Regional Ozone



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The Grand Canyon Visibility Transport Commission



- Fire is essential in the West
- Historic land management, climate have altered (worsened) fire events
- Fire is an episodic contributor to visibility-impairing aerosols
- All types of fire (not just large wildfires) are important

"Modeling indicates that, at certain times, increased visibility impairment from fire is likely to exceed the potential visibility improvements associated with other GCVTC recommendations"

The Grand Canyon Visibility Transport Commission



- All planned fire events (Rx and agricultural) must be addressed as part of a visibility protection strategy.
- Require all fire programs to incorporate smoke effects in planning and application.
- Implement a consistent emissions tracking system for wildfire, Rx and Ag burning.

"Modeling indicates that, at certain times, increased visibility impairment from fire is likely to exceed the potential visibility improvements associated with other GCVTC recommendations"

Fire Emissions Joint Forum (FEJF)

Formed to support the WRAP in implementing the recommendations of the GCVTC

Key Subject Matter Areas of the FEJF

1. Smoke Management Programs (SMPs)
 - Evaluate and enhance capabilities of SMPs to incorporate the addressing of smoke effects into prescribed fire programs.
2. Fire Categorization (Natural vs. Anthropogenic fire types)
 - Critical to interpret regional modeling results and to develop emission reduction strategies that improve visibility.

Fire Emissions Joint Forum (FEJF)

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Key Subject Matter Areas of the FEJF (continued)

3. Fire emissions/assessment

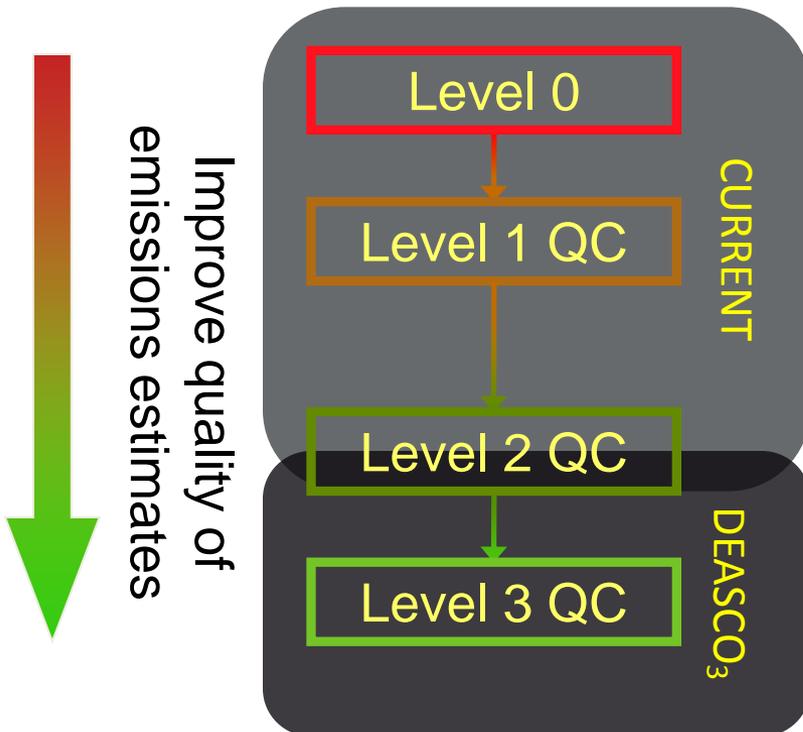
- Improve methods to gather/utilize fire activity data, estimate fuel loading and consumption, estimate emissions, and characterize fire emissions in regional modeling analyses. For use in retrospective air quality analyses (i.e., SIP-grade emission inventories).
- Develop and implement a *Fire Tracking System*: for real-time use by SMPs for regional coordination AND to produce SIP-grade emission inventories for retrospective air quality analyses.

4. Alternatives to Burning

- Inform the development of policies to reduce emissions associated with fire, investigate and quantify the emissions/air quality effects of Alternatives to Burning, Emission Reduction Techniques

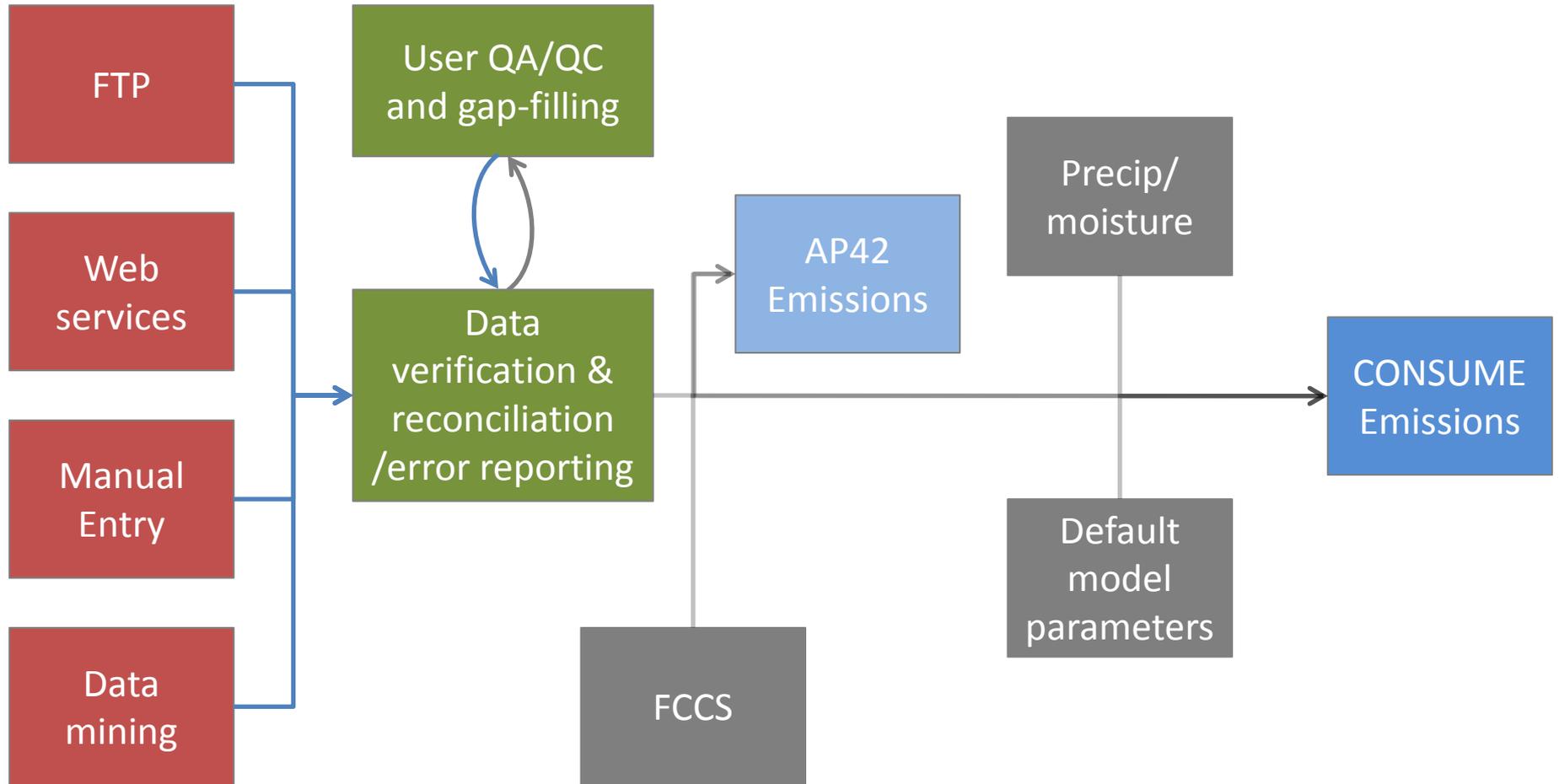
Fire Emissions Tracking System

- Storage device for fire activity data
- Real-time information tool for SMPs
- Portal for all fire activity/emissions within WRAP modeling domain.

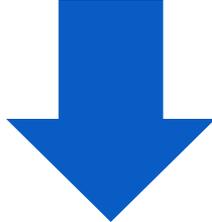
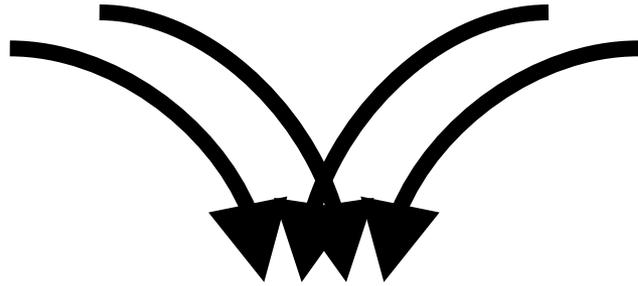


Source	WF	WFU	RX	AG	NFR	Last Submit	Domain
ICS-209	○	○	-	-	-	01/17/12	WRAP CONUS
AK	☑	☑	☑	N.D.	N.D.	11/23/11	State/Federal > 40 ac
AZ	-	-	☑	N.D.	N.D.	01/18/12	State-Wide
CA - PFIRS	-	-	☑	N.D.	N.D.	10/13/10	State-Wide
CO	-	-	○	N.D.	N.D.	04/07/12	State-Wide
Idaho DEQ	-	-	-	☑	-	04/12/12	State-Wide
MT - Agriculture	-	-	-	N.D.	-	No Data	State-Wide
MT/ID Airshed Grp.	-	-	○	-	N.D.	01/17/12	State/Federal Lands
ND	-	-	☑	N.D.	N.D.	06/27/11	State-Wide
NM	-	☑	☑	☑	☑	04/12/12	State-Wide
NV	-	-	N.D.	N.D.	N.D.	No Data	State-Wide
OR - Dept. of Forestry	-	-	☑	-	N.D.	12/14/11	Federal/State/Private
OR - Agriculture	-	-	-	N.D.	-	No Data	State-Wide
SD	-	-	☑	N.D.	N.D.	04/09/12	State-Wide
UT	-	-	N.D.	N.D.	N.D.	No Data	State-Wide
WA - DNR	-	-	☑	-	-	01/17/12	State-Wide
WA - Dept. of Ecology	-	-	-	☑	N.D.	01/17/12	State-Wide
WY	-	-	☑	N.D.	N.D.	04/09/12	State-Wide
Nez Perce Tribe	-	-	☑	○	N.D.	04/12/12	Nez Perce Tribal Land

Current FETS Process



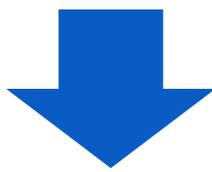
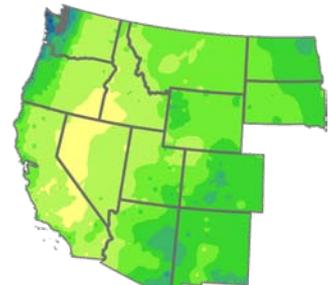
Activity Data



Loading



Moisture

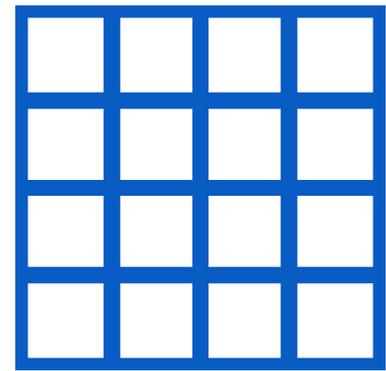


Emissions Model

FETS

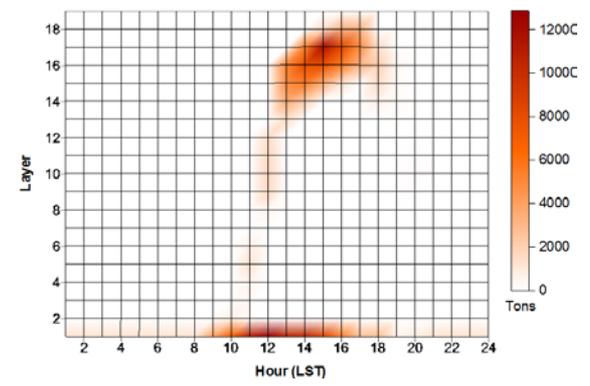
DEASCO₃

distribute emissions

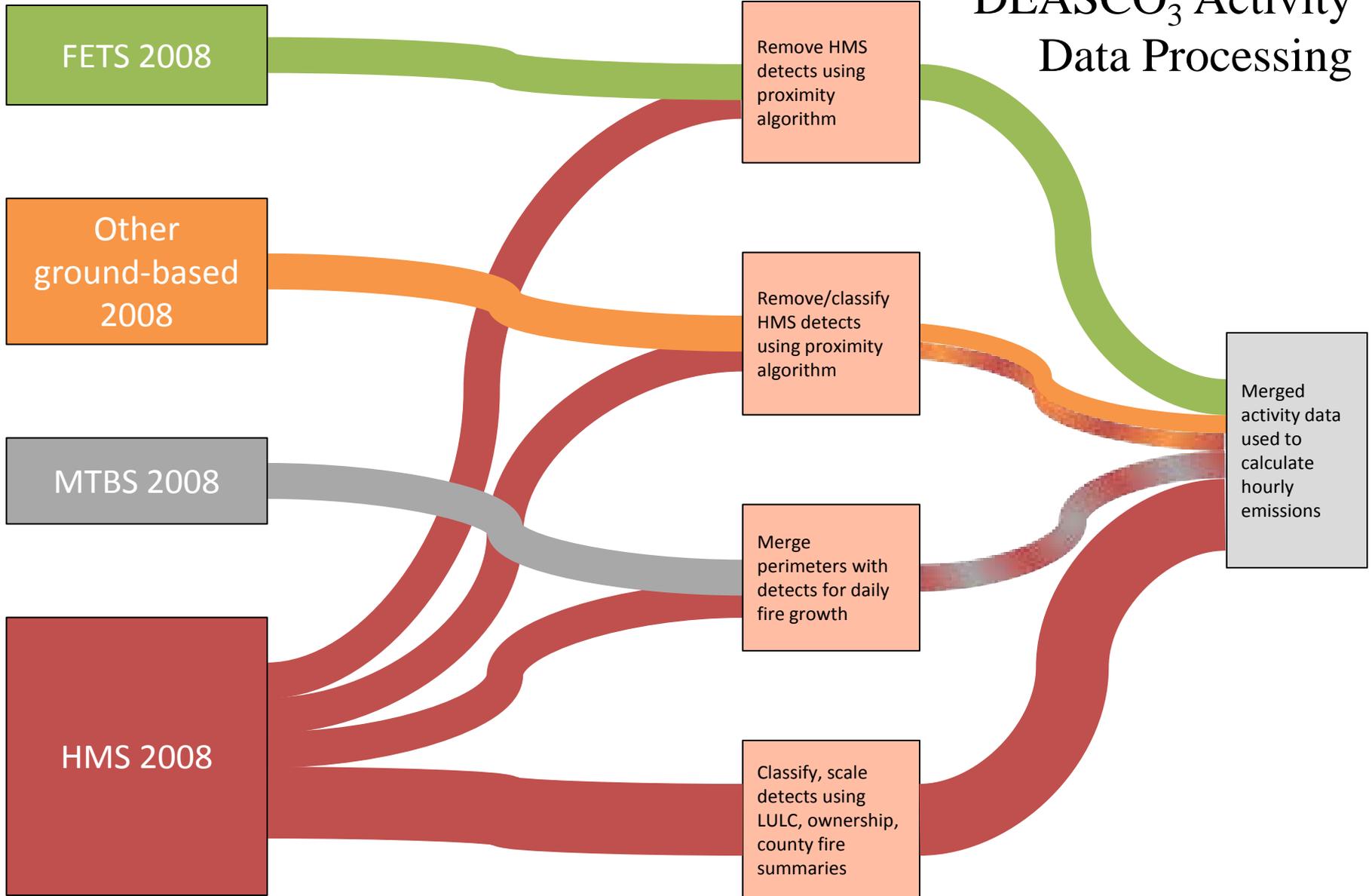


Chemical Profiles

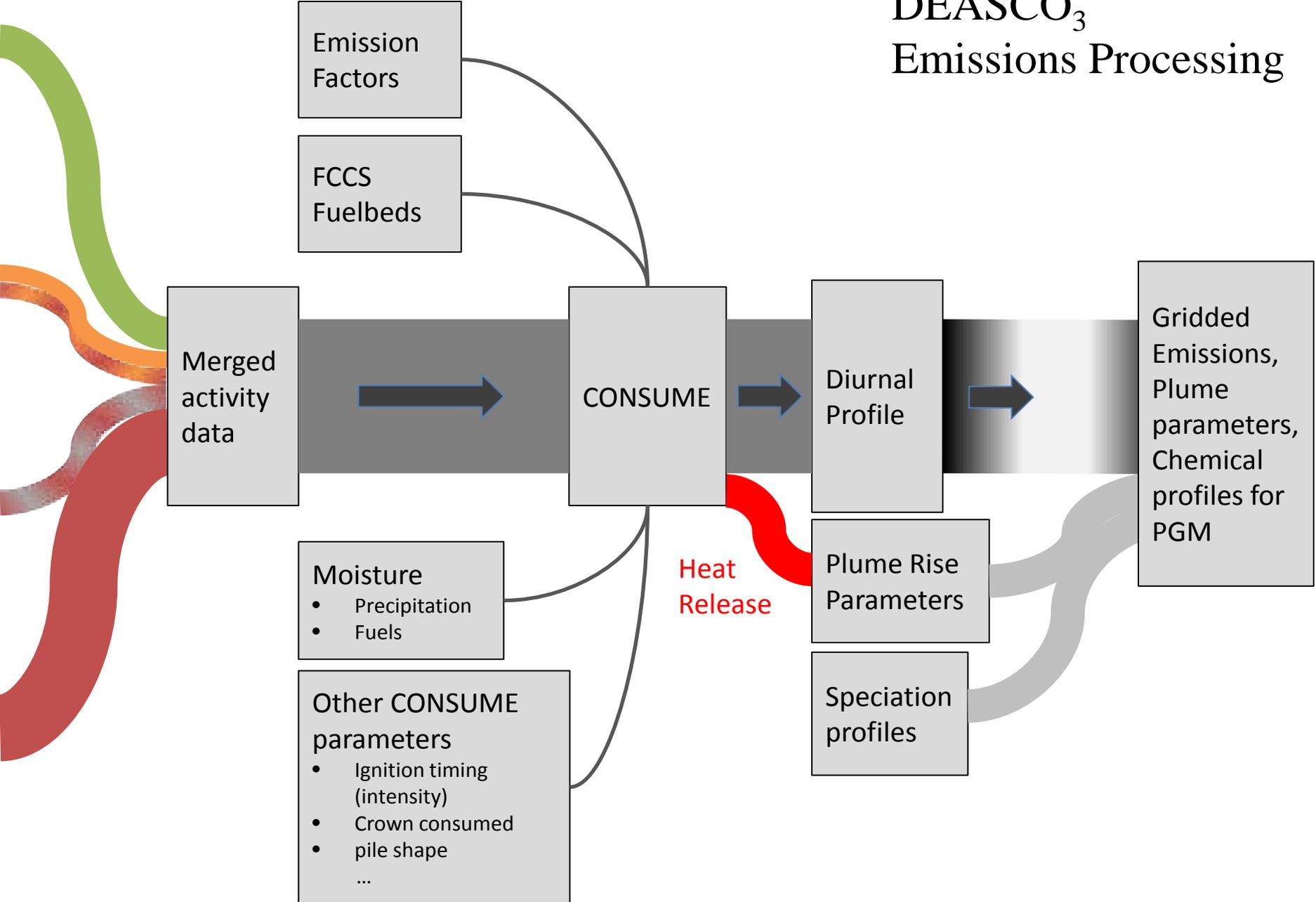
Loft emissions



DEASCO₃ Activity Data Processing

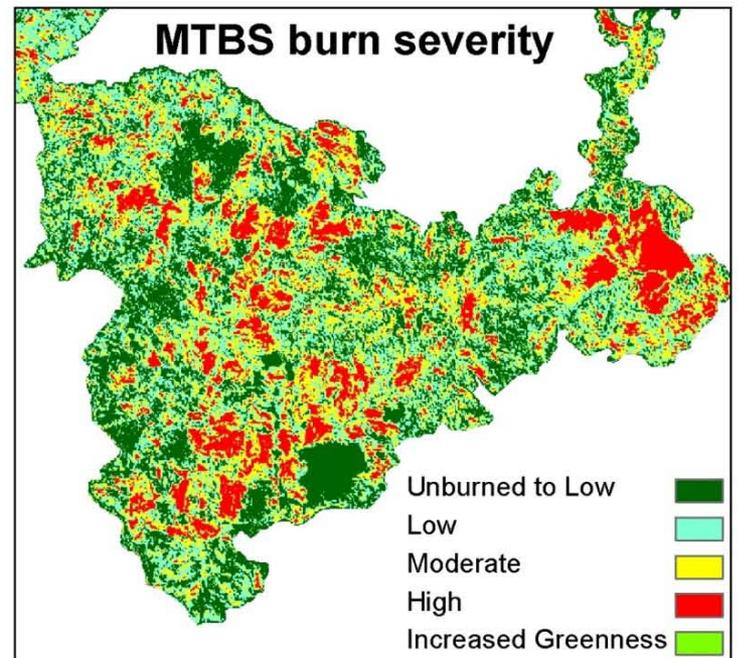
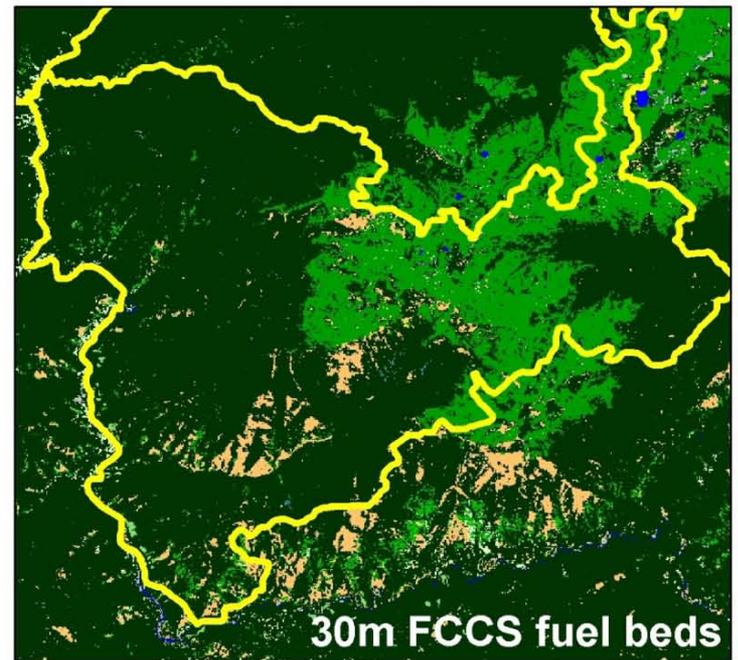
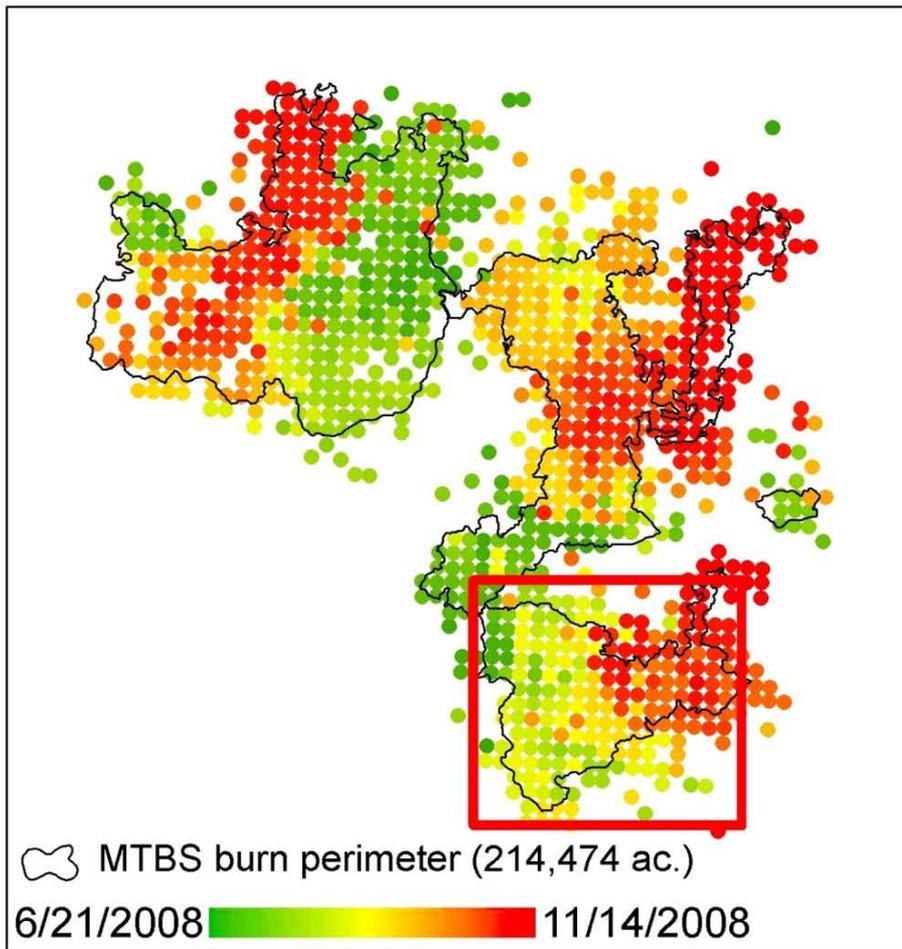


DEASCO₃ Emissions Processing



Uncertainties

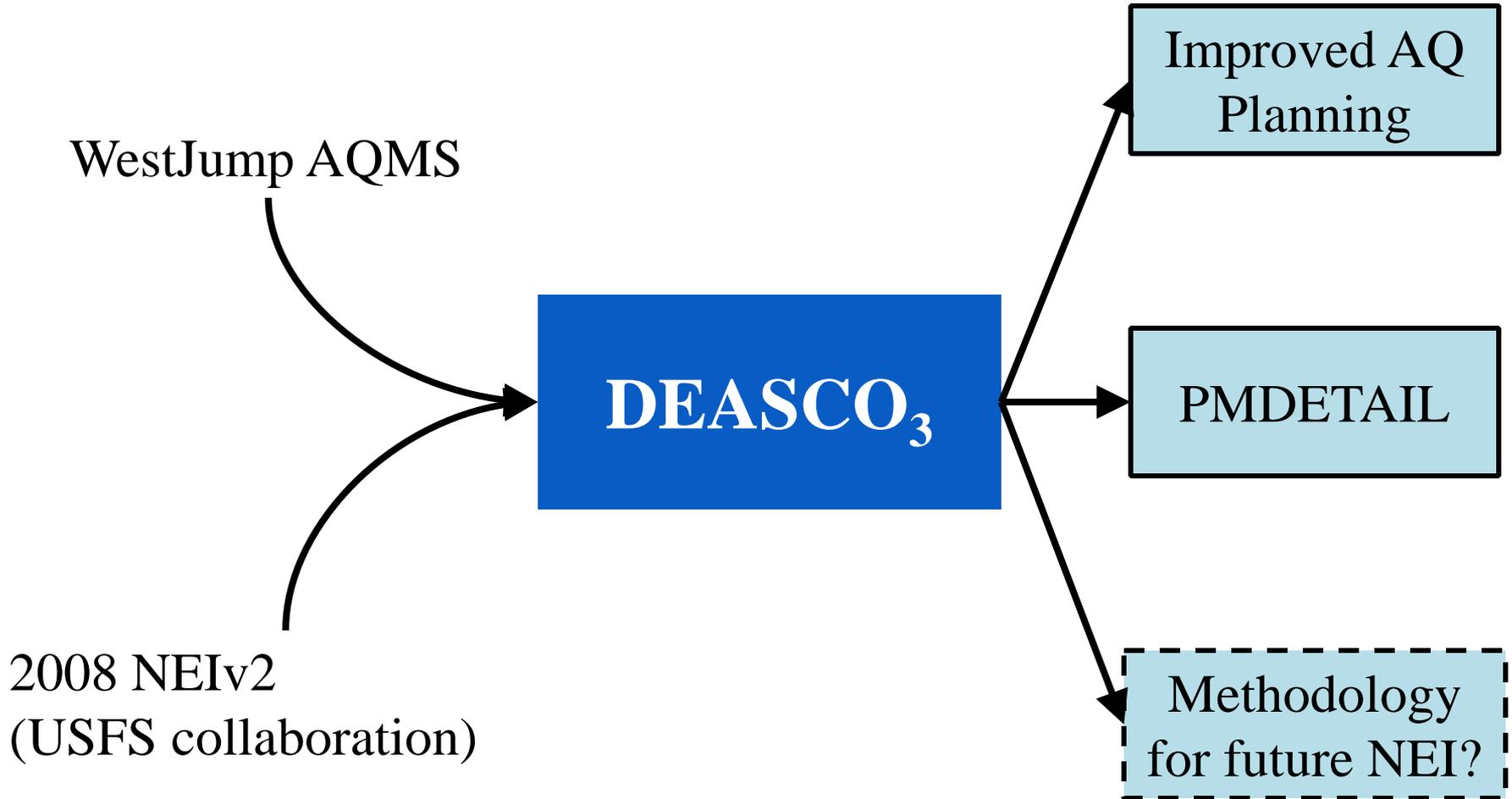
- *Fuel loads
- *Burned area
 - large wildfires (daily growth)
 - Prescribed fire (timing and size)
- *Fuel consumption
- Emission factors
- Chemical profile
- Plume rise



DEASCO3 project - purpose & goals

- **Assess fire's impact on elevated ozone episodes with retrospective studies in the West and Southeastern U.S., using empirical and photochemical modeling analyses**
 - Support future collaborative FLM-state ozone air quality planning
 - Develop “lessons learned”, basic analysis rules for fire-ozone episodes, and online tools for FLM-state air quality planning
 - Prepare and implement planning-grade fire emissions inventories in the FETS suitable for SIP work by states and FLMs
 - Publish data and analysis results in transparent and reproducible formats
- http://www.wrapair2.org/pdf/JSFP_DEASCO3_TechnicalProposal_November19_2010.pdf

Leveraging



FETS Reporting in the NW

Agency	Burn Proposal timing	Burn Accompl. Timing	Coverage
OR Dept. Forestry	7am, 11am	1 week – 6 months	Rx Burns on Fed, State lands
OR Dept. Ag (ODEQ)	--	annually	Ag burning in Willamette Valley
Idaho DEQ (Ag)	7am – 12pm	1 – 7 days	All Idaho Ag
Nez Perce Tribe	early morning	7 – 30 days	All Tribal Ag, Rx
MT/ID Airshed Grp	5pm day prior	0 – 90 days	Some private, all State & Fed
WA DNR	7am, 11am	1 week – 12 months	State, Fed Rx
WA ECY	--	1-7 days	Ag, some private Rx