AWFCG
Fire Research Needs

Preliminary List 2010

Climate Change

- How is/will climate change impact consumption/burn duration/ succession/fire effects?
- Changes in fire regime/fire return intervals associated with climate change, especially in tundra.
- Length of fire season
- Carbon emission/impacts
- Early season vs late season/management impacts (when growth occurs/shifting weather patterns)
- Climate change impacts on fuel treatments/planning for alternate successional pathways
- Occurrence of holdover fires – why? (fall/winter)
- Revisit – conversion date

Education/ Information

- Are agency manager's perception of public understanding of fire information messages accurate?
- Human dimensions research on public response to fire information delivery methods and message content (e.g. firewise, smoke issues, fire info). Are social media/inciweb/press releases reaching target audiences?

Fire Behavior

- Fire behavior (expected) and flame lengths in Calamagrostis fuels (grass model) on the Kenai Peninsula for May & June prior to green-up
- Fire behavior by fuel type compared to CFFDRS indices. Calibration of CFFDRS fuel/fire model.
- Fire behavior validation research related to the 40 fuel models (calibration and verification)
- Fire behavior modeling (FS Pro) validation. Are the models capturing our drought conditions?

Fire Danger

- Case studies on fires and CFFDRS indices Over winter or default for drought codes (CFFDRS), Investigate behavior/occurrence of fire that overwinter. Tie to early season fire danger predictions.
- Soil moisture fluctuations throughout the spring melts and the summer drying
- Standardized methodology for RAWS snow free dates (i.e. MODIS, aerial surveys, fuels/aspect differences)
- We desperately need to have better correlation between CFFDRS indices and fuel moisture and corresponding fire behavior and validation.
- CFFDRS - do we need to overwinter or default indices? Are there variations across regions?

Fire Effects

- How long does it take for large wood to decompose post-fire?
- What will come back post fire, are we going to a grass fuel type?
- Impacts of fire on subsistence management.
- Monitor trends in burn severity? Are we seeing changes in burn severity?
- What effects does 1000's of acres of down timber have on animal movement? Or impacts on winter trails/human movement?
- Develop alternative method to map burn severity due to discrepancies in dNBR/CBI methods.

Fire Effects (cont)

- Effect of fire and wetland dynamics (drying, thermokarst)
- What are the impacts of shorten fire return intervals?
- What rehabilitation needs to be done post-fire? What are the impacts of dozerline in forested and tundra areas? What direction should we go in rehab of fire lines?

Fire Regime

- Long term fire history information (past 6000 yrs) and (300 yrs to current) - fire return intervals, fire size information

Fuels

- Landfire fuel model validation. Did our fuel model crosswalk accurately reflect our fuel?
- Improve landcover classifications/mapping, update recent burns in landcover/fuels maps.
- Understanding better how "intense" a fire will be in old burns (had high intensity fire in a 1999 fire this year).
- Updated aerial fuels mapping.
- What situations result in fires re-burning recent fire scars? Is it fuels (vegetation) or fuel moisture?

Fuels Treatments

- Length of effectiveness/long term research and cost of maintenance for fuel treatment.
- Calamagrostis fuels mitigation. Avoiding re-establishment of Calamagrostis & site conversion.
- Use of fuels treatment residuals in bio energy applications Energy value and rotation of biomass harvests linked to fuels management.
- Mechanical treatment methods and timing to minimize bark beetle infestations (Interior Alaska specific)
- Data & approaches to determining effectiveness of fuels treatments in reducing fire & smoke.

Predictive Models

- Ability to predict Initial Attack success given weather and fuels.
- Ability to predict the fire season early (May 15th), in order to know if in trouble and will need help with IA.
- Do we want limited fires during drought conditions? Seasonal forecast for the upcoming fire season

Smoke

- Smoke impacts on public health; elderly, perceived vs actual.
- Improved models for predicting smoke plume trajectories.
- Improved air pollutant emission factors for Alaskan fuels.

Weather

- Trend in lightning activity and predictions for the future.
- We have to be able to better predict fire weather in AK. We cannot make good long range management decisions when we can't predict weather beyond a couple days.
- Improvement of fire weather forecasting.

Suppression Tactics

- Cost of suppression/fire management (early season)
- Cost - long term issues (carbon/vegetation) – ability to model
- Decision model
- Production rates for suppression tactics

Survey - Ranking of research topics

- Deadline for new topics = 1st week of November
- Survey monkey = 2nd week of Nov