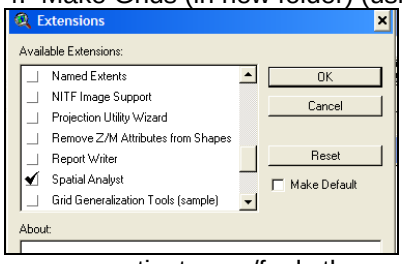
How to crosswalk vegetation data to fuel models (with canopy characteristics), create and combine grids, and create ASII files (for FARSITE).

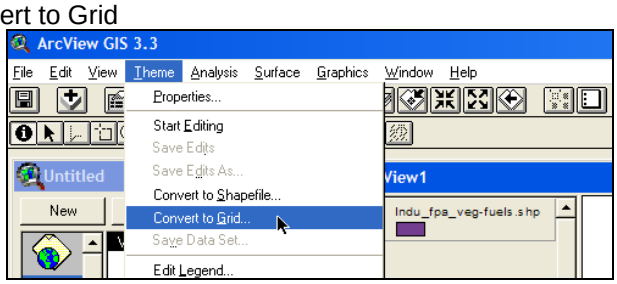
1. Convert vegetation grid to polygon shapefile.
    A. Rename e.g., rnsp_veg_fpa.shp
    B. Add new fields
    Fuel model -
        Field name: fpa_fm
        Field type: number (2)
    Tree height (average in feet) –
        Field name: tree_ht_ft
        Field type: number (4)
    Canopy base height (in feet) –
        Field name: cbh_ft
        Field type: number (4)
    Canopy bulk density (kg/m^3 * 100) –
        Field name: cbd_kgm3x100
        Field type: number (5)
    Canopy cover (%) –
        Field name: can_cov_pct
        Field type: number (3)
    Note: some places have categories 0-4 for canopy cover. Keep if the saem as FARSITE and can be used if they are, otherwise you need to adjust to FARSITE categories or %.
    C. Populate fields with SMEs
2. Nexus (program to calculates canopy bulk density)
http://fire.org/index.php?option=content&task=category&sectionid=2&id=13&Itemid=3
    A. Set options (yellow box)
        -Crown fire ENABLED
        -FARSITE CFB form
        -Foliar moisture effect ENABLED
        -English units
        -Spread rate: chains/hr
    B. Blue box
        -fuel model 8
    Dead fuels:
        1-hr 8 (8%FDFM)
        10-hr 9
        100-hr 10
    Live fuels: 100 (.80)
    Canopy fuels:
        bulk density = 80% canopy x .3 - .24
        Foliar moisture – 100%
        Canopy base ht =
        Canopy fuel load =
    Site: slope 0
    (only put in a value if that is what they are talking about when they are describing torching conditions)
    C. Dark yellow box
        -look at canopy base height
        ACTIVE SPREAD
        -look at what they are & use in GIS
3. Populate CBD
    *CBH
        -if CBH is less then twice the flame length it will crown
        -figure out flame length from fuel model

*If you want to get rid of possibility for Active crown fire, drop CBD # down, e.g., from .24 to .05. Note: hard to get active crown fire below .2)

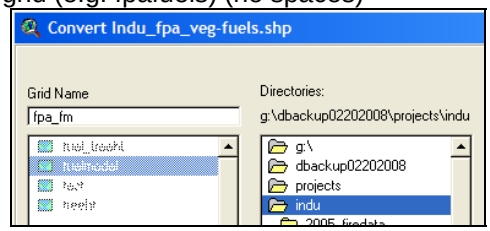
4. Make Grids (in new folder) (using spatial analyst extension for ArcView 3.3)



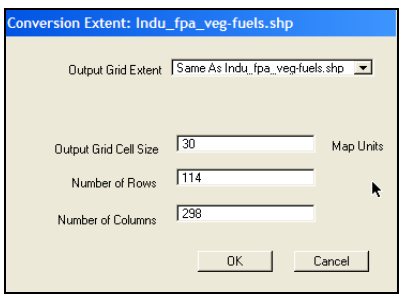
-activate veg/fuels theme
-Theme | convert to Grid

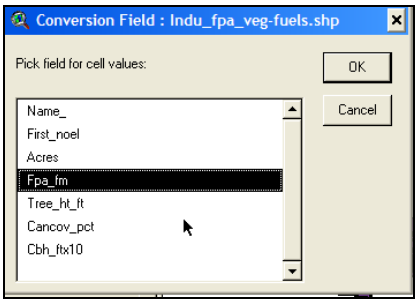


-Give name for first grid (e.g. fpafuels) (no spaces)

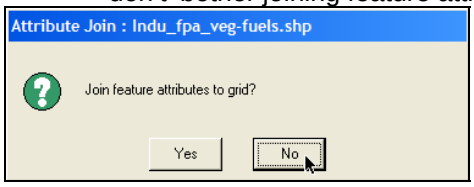


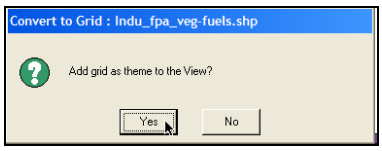
-define grid extent (should be same as elevation grid)
-30 meter
-Pick field (e.g., fpa_fm)





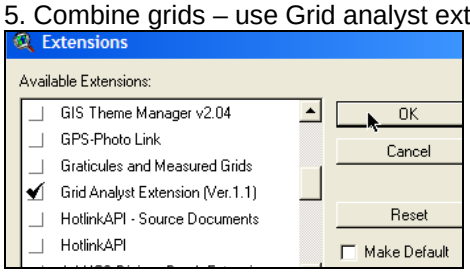
-don't' bother joining feature attributes (when asked)



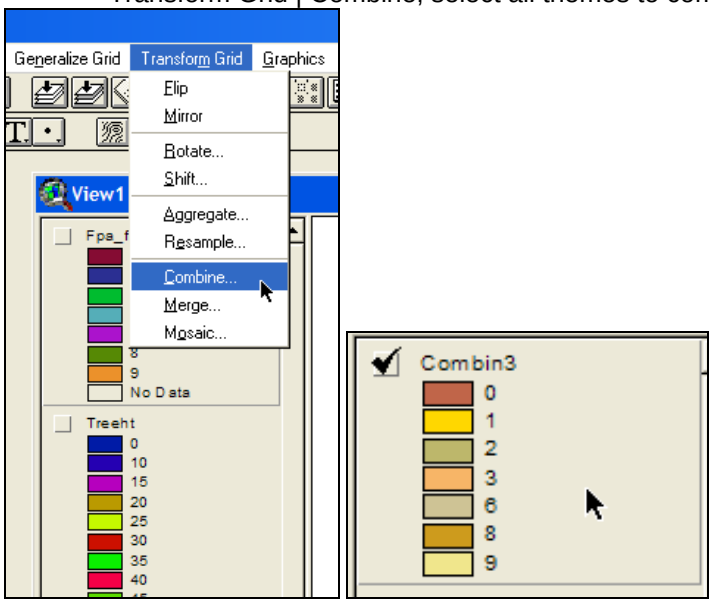


-create grids for all desired fields (6 total)

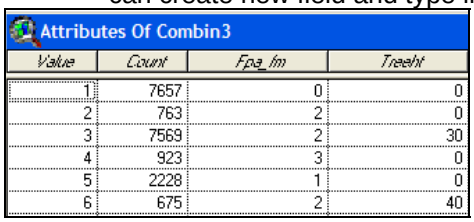
5. Combine grids – use Grid analyst extension (or ArcTools or ArcInfo GRID if you know how)



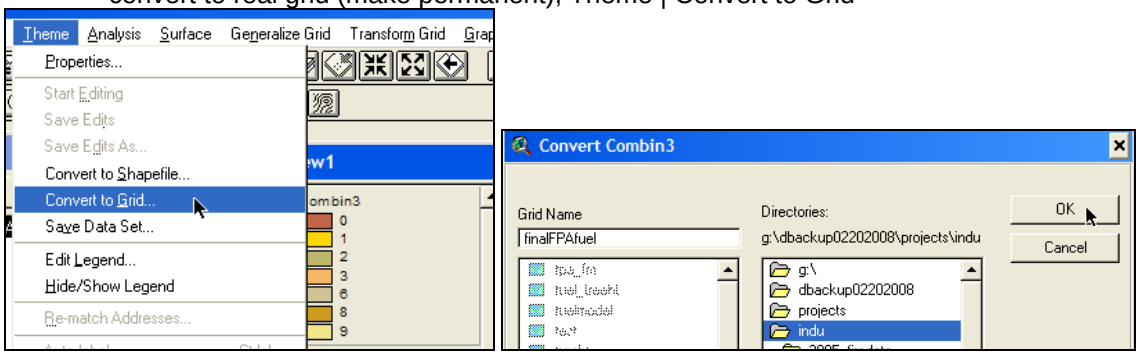
-Transform Grid | Combine, select all themes to combine (must be loaded in map)



-can create new field and type in vegetation alliance descriptions



-convert to real grid (make permanent), Theme | Convert to Grid



6. Grid to ASCII (toolbox)
    -pick combined grid as source
    -VALUE
    Fpa_fuel model (fpafm.asc)
    (batch for each based on value)

7. Create FARSITE landscape
8. Updating fuels with burn severity data
    -burn severity should be a grid, if not turn to grid (e.g., call field “disturbance03”)
    -combine with all original grids
    -add new field (“post fire fuel model” or “fuel04”)

Note also see Fuelsand FARSITEprocess-FPATeam-Documentation+08092004-FINAL.doc. This document prepared from that document as well as a write up from working with Pat and Doug Stephen on the FPA data team in 2004.