SMOKE Test Case: Part 1

Very Brief Installation Instructions

1. Install SMOKE

2. Install additional IOAPI utilities

3. Setup SMOKE_EMF directories

4. Link SMOKE_EMF directories with your SMOKE installation

5. Import additional emissions datasets and spatial surrogates

Install Smoke

If you have not done so already, download, install, and compile [SMOKE](#) v2.6, following the [Downloading, Installing, and Compiling SMOKE](#) instructions in the User's Manual. (You will need to create a CMAS account, if you have not already done so.) Keep in mind that this is an installation completely independent of the EMF.

Install Additional IOAPI Utilities

In addition to installing SMOKE, you will need to download, install, and compile the following additional [IOAPI utilities](#):

- datshift
- gregdate
- juldate
- m3diff
- m3sta
- m3xtract

Link the EMF and SMOKE

The goal of this SMOKE/EMF setup is to allow the EMF to interact with SMOKE without changes being made to the SMOKE installation, thereby allowing SMOKE to run independently from the EMF.

Setup SMOKE_EMF Directories

1. Download the SMOKE_EMF directory tar ball (smoke_emf_install.tar.gz) from the EPA's ftp site:

   ```
   FTP address: scienceftp.epa.gov

   login: emfbeta

   password: 4aXqKhhu
   ```

2. Extract the SMOKE_EMF directory tar ball into the desired location. For example:

   ```
   $ mv smoke_emf_install.tar.gz /data4
   $ tar xvfz smoke_emf_install.tar.gz
   ```

   The smoke_emf directory structure is:

   ```
   smoke_emf
        -subsys26
                +ioapi
                +smoke26
   ```

3. Create SMOKE data directories. For example, with /data4 as the disk where data will be placed, your directory structure should look like the following:

```
data4
     -smoke_data
          +met
          +intermed
          +output
```

Link SMOKE_EMF Directories with SMOKE Installation

Two links will need to be created between your SMOKE installation and the SMOKE_EMF directories:

1. Make a link between your IOAPI and the SMOKE_EMF IOAPI (the path to your IOAPI depends on your compilation parameters [e.g., Linux2_x86_64ifort]):

   ```
   $ ln -s <path_to_your_ioapi>/Linux2_x86_64ifort
   smoke_emf/subsys26/ioapi/
   ```

2. Next, make a link between your SMOKE executable and SMOKE_EMF SMOKE directory (the path to your SMOKE depends on your compilation parameters [e.g., Linux2_x86_64ifort]):

   ```
   $ ln -s <path_to_your_SMOKE_install>/subsys/smoke/Linux2_x86_64ifort
   smoke_emf/subsys26/smoke26/
   ```

Additional Datasets

Some additional datasets will be needed to run the EMF SMOKE Case.

Emissions Datasets

Download and import the additional emissions datasets (additional_datasets.tar.gz) from the EPA's ftp site:

```
FTP address: scienceftp.epa.gov

login: emfbeta

password: 4aXqKhhu
```

During import, the datasets should be named as follows:

Input Name (in the EMF)	File Name	Dataset Type
gspro_speciated_pm	./additional_datasets/gspro_speciated_pm.txt	Chemical Speciation Profiles (GSPRO)
gsref_speciated_pm	./additional_datasets/gsref_speciated_pm.txt	Chemical Speciation Cross-Reference (GSREF)
repconfig_area_inv_caphap	./additional_datasets/repconfig_area_inv_caphap.txt	Report Configurations (Line-based)
repconfig_point_inv_caphap	./additional_datasets/repconfig_point_inv_caphap.txt	Report Configurations (Line-based)
sectorlist_2005ak_test	./additional_datasets/sectorlist_2005ak_test	Sector List (CSV)
smk_merge_dates_2005	./additional_datasets/merge_dates_2005/*.txt	Smkmerge Dates (External Multifile)

The file run_settings_2005ak_test.txt should NOT be imported into the EMF. This file will be used to help control how SMOKE runs.

Spatial Surrogates

Download and import the 12km and 36km spatial surrogates for Mexico and the US from the EPA.

During import, the spatial surrogates should be named as follows:

- MEX 12km surrogates
- MEX 36km surrogates
- USA 12km surrogates
- USA 36km surrogates

Dataset List

Below is a list of *all* the necessary Datasets and the names that will be expected by the SMOKE Test Case. These should all match prior to importing the Case so that the linking occurs correctly.

Input Name (in the EMF)	File Name
afdust_2002ad_xportfrac	./2005emis/2005ah_tox_05b/afdust/arinv_afdust_2002ad_xportfrac_orl.txt
ag_cap2002nei	./2005emis/2005ah_tox_05b/ag/arinv_ag_cap2002nei_orl.txt
amgref_us_can_allmex3	./ancillary_smoke/amgref_us_can_allmex3.txt
amgref_us_can_allmex3	./ancillary_smoke/amgref_us_can_allmex3.txt
amptpro_2005_us_can	./ancillary_smoke/amptpro_2005_us_can.txt
amptpro_2005_us_can	./ancillary_smoke/amptpro_2005_us_can.txt
amptpro_2005_us_can	./ancillary_smoke/amptpro_2005_us_can.txt
amptref_v3_3	./ancillary_smoke/amptref_v3_3.txt
amptref_v3_3	./ancillary_smoke/amptref_v3_3.txt
amptref_v3_3	./ancillary_smoke/amptref_v3_3.txt
artopnt_2002detroit	./ancillary_smoke/artopnt_2002detroit
CAN 12km surrogates	./ancillary_smoke/12km_surg_revised/CA_*.txt
CAN 36km surrogates	./ancillary_smoke/36US1_surg_revised/CA_*.txt
costcy_for_2002	./ancillary_smoke/costcy_for_2002.txt
emf_jobheader_generic	Use existing one
griddesc_lambertonly	./ancillary_smoke/griddesc_lambertonly.txt
gscnv_cmaq_cb05_tx_pf4	./ancillary_smoke/gscnv_cmaq_cb05_tx_pf4.txt
gspro_combo_2005	./ancillary_smoke/gspro_combo_2005.txt
gspro_hg	./ancillary_smoke/gspro_hg.txt
gspro_integratehaps_cb05_tx_pf4	./ancillary_smoke/gspro_integratehaps_cb05_tx_pf4.txt
gspro_nonhaptog_cb05_tx_pf4_pretier2	./ancillary_smoke/gspro_nonhaptog_cb05_tx_pf4_pretier2.txt
gspro_nox_hono_pf4	./ancillary_smoke/gspro_nox_hono_pf4.txt
gspro_pm25	./ancillary_smoke/gspro_pm25.txt

gspro_speciated_pm	./additional_datasets/gspro_speciated_pm.txt
gspro_speciated_voc	./ancillary_smoke/gspro_speciated_voc.txt
gspro_static_cmaq	./ancillary_smoke/gspro_static_cmaq.txt
gspro_sulf	./ancillary_smoke/gspro_sulf.txt
gspro_tog_cb05_soa_pf4_pretier2	./ancillary_smoke/gspro_tog_cb05_soa_pf4_pretier2.txt
gsref_hg	./ancillary_smoke/gsref_hg.txt
gsref_no_dieselpm	./ancillary_smoke/gsref_no_dieselpm.txt
gsref_nonhapvoc_2005	./ancillary_smoke/gsref_nonhapvoc_2005.txt
gsref_nonhapvoc_general_update	./ancillary_smoke/gsref_nonhapvoc_general_update.txt
gsref_pm25_pf4_nondiesel	./ancillary_smoke/gsref_pm25_pf4_nondiesel.txt
gsref_speciated_pm	./additional_datasets/gsref_speciated_pm.txt
gsref_static_cap_pf4	./ancillary_smoke/gsref_static_cap_pf4.txt
gsref_static_integratehap_emv4	./ancillary_smoke/gsref_static_integratehap_emv4.txt
gsref_static_nox_hono_pf4	./ancillary_smoke/gsref_static_nox_hono_pf4.txt
gsref_sulf	./ancillary_smoke/gsref_sulf.txt
gsref_voc_2005	./ancillary_smoke/gsref_voc_2005.txt
gsref_voc_general	./ancillary_smoke/gsref_voc_general.txt
holidays	./ancillary_smoke/holidays.txt
invtable_hapcapintegate_cb05soa_nomp	./ancillary_smoke/invtable_hapcapintegate_cb05soa_nomp.txt
invtable_hapcapnohapuse_cb05soa_nomp	./ancillary_smoke/invtable_hapcapnohapuse_cb05soa_nomp.txt
lm_no_c3_cap2002v3	./2005emis/2005ck_05b/alm_no_c3/arinv_lm_no_c3_cap2002v3_orl.txt
lm_no_c3_hap2002v4	./2005emis/2005ck_05b/alm_no_c3/arinv_lm_no_c3_cap2002v3_orl.txt
Mactdesc_2002v3	./ancillary_smoke/mactdesc_2002v3.txt
Mcodes	./ancillary_smoke/mcodes.txt
MEX 12km surrogates	Download from the EPA
MEX 36km surrogates	Download from the EPA
Naicsdesc	./ancillary_smoke/naicsdesc.txt
nhapexclude_alm_no_c3_pf4	./ancillary_smoke/nhapexclude_alm_no_c3_pf4.txt
nhapexclude_nonpt_pf4	./ancillary_smoke/nhapexclude_nonpt_pf4.txt
nhapexclude_nothing	./ancillary_smoke/nhapexclude_nothing.txt
nonpt_cap_2005_WRAP_OilGas	./2005emis/2005ck_05b/nonpt/arinv_nonpt_cap_2005_WRAP_OilGas_orl.txt
nonpt_pf4_cap_nopfc	./2005emis/2005ck_05b/nonpt/arinv_nonpt_pf4_cap_nopfc_orl.txt
nonpt_pf4_hap_nopfc	./2005emis/2005ck_05b/nonpt/arinv_nonpt_pf4_hap_nopfc_orl.txt
Orisdesc	./ancillary_smoke/orisdesc.txt
pelvconfig_inline_allpts	./ancillary_smoke/pelvconfig_inline_allpts.txt
pelvconfig_ptfire_inline_pf31	./ancillary_smoke/pelvconfig_ptfire_inline_pf31.txt
pelvconfig_seca_c3	./ancillary_smoke/pelvconfig_seca_c3.txt
pfc_2002_caphap	./2005emis/2005ck_05b/nonpt/arinv_pfc_2002_caphap_orl.txt
Pstk	./ancillary_smoke/pstk.txt
ptfire_2005ag_tox	./2005emis/2005ak_05b/ptfire/ptinv_ptfire_2005ag_tox_orl.txt
ptfire_apr_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_apr_2005ag_tox_nonhapvoc_orl.txt

ptfire_apr_lastdayonly_2005ag_tox_nonhapvoc_txt	./2005emis/2005ak_05b/ptfire/ptday_ptfire_apr_lastdayonly_2005ag_tox_nonhapvoc_txt_orl.txt
ptfire_aug_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_aug_2005ag_tox_nonhapvoc_orl.txt
ptfire_aug_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_aug_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_dec_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_dec_2005ag_tox_nonhapvoc_orl.txt
ptfire_dec_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_dec_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_feb_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_feb_2005ag_tox_nonhapvoc_orl.txt
ptfire_feb_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_feb_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_jan_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jan_2005ag_tox_nonhapvoc_orl.txt
ptfire_jan_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jan_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_jul_2005ag_tox__nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jul_2005ag_tox__nonhapvoc_orl.txt
ptfire_jul_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jul_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_jun_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jun_2005ag_tox_nonhapvoc_orl.txt
ptfire_jun_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_jun_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_mar_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_mar_2005ag_tox_nonhapvoc_orl.txt
ptfire_mar_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_mar_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_may_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_may_2005ag_tox_nonhapvoc_orl.txt
ptfire_may_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_may_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_nov_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_nov_2005ag_tox_nonhapvoc_orl.txt
ptfire_nov_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_nov_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_oct_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_oct_2005ag_tox_nonhapvoc_orl.txt
ptfire_oct_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_oct_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
ptfire_sep_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_sep_2005ag_tox_nonhapvoc_orl.txt
ptfire_sep_lastdayonly_2005ag_tox_nonhapvoc	./2005emis/2005ak_05b/ptfire/ptday_ptfire_sep_lastdayonly_2005ag_tox_nonhapvoc_orl.txt
Ptnonipm_hap2005v2	./2005emis/2005ck_05b/ptnonipm/ptinv_ptnonipm_hap2005v2_orl.txt
Ptnonipm_xportfrac_cap2005v2	./2005emis/2005ck_05b/ptnonipm/ptinv_ptnonipm_xportfrac_cap2005v2_orl.txt
Repconfig_ag_inv	./ancillary_smoke/repconfig/default/repconfig_ag_inv.txt
Repconfig_alm_inv_caphap	./ancillary_smoke/repconfig/default/repconfig_alm_inv_caphap.txt
Repconfig_area_inv_caphap	./additional_datasets/repconfig_area_inv_caphap.txt
Repconfig_area_inv2	./ancillary_smoke/repconfig/default/repconfig_area_inv2.txt
Repconfig_area_invgrid_caphap	./ancillary_smoke/repconfig/default/repconfig_area_invgrid_caphap.txt
Repconfig_point_inv_caphap	./additional_datasets/repconfig_point_inv_caphap.txt
Repconfig_point_inv2	./ancillary_smoke/repconfig/default/repconfig_point_inv2.txt
Repconfig_point_inv2	./ancillary_smoke/repconfig/default/repconfig_point_inv2.txt
Repconfig_point_invgrid_caphap	./ancillary_smoke/repconfig/default/repconfig_point_invgrid_caphap.txt
Repconfig_pt_noplant_invgrid_caphap	./ancillary_smoke/repconfig/default/repconfig_pt_noplant_invgrid_caphap.txt
Repconfig_seca_c3_inv_caphap	./ancillary_smoke/repconfig/default/repconfig_seca_c3_inv_caphap.txt
sccdesc_pf31	./ancillary_smoke/sccdesc_pf31.txt
seca_c3_caps2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_caps2005pf4_orl.txt
seca_c3_haps_central2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_central2005pf4_orl.txt
seca_c3_haps_east2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_east2005pf4_orl.txt
seca_c3_haps_NonUS_central2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_NonUS_central2005pf4_orl.txt

seca_c3_haps_NonUS_east2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_NonUS_east2005pf4_orl.txt
seca_c3_haps_NonUS_west2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_NonUS_west2005pf4_orl.txt
seca_c3_haps_west2005pf4	./2005emis/2005ck_05b/seca_c3/ptinv_seca_c3_haps_west2005pf4_orl.txt
Sectorlist_2005ak_test	./additional_datasets/sectorlist_2005ak_test
sic_desc	./ancillary_smoke/sic_desc.txt
smk_merge_dates_2005	./additional_datasets/merge_dates_2005/*.txt
srgdesc_36km_revised	./ancillary_smoke/srgdesc_36km_revised.txt
USA 12km surrogates	Download from the EPA
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