

***Outline: Problems with yacc and Flex when compiling WRF/CHEM v 3.0 with KPP

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** KPP compilation instructions

*** Berkley YACC

Important note: since version 2.2.1, you do not need to change yacc to bison because developers switched to it. Currently, WRF works with older version 2.1 of KPP.

Be careful as yacc on some computers is alias to GNU bison. You need to be using Berkley yacc. Install it from

<http://invisible-island.net/byacc/byacc.html>

and set PATH to where you installed it. Please check

\$ which yacc

to be sure that you use new Berkley yacc instead of system yacc before you continue.

*** If you do not have the correct script paths

On rare occasions, some systems do not set the correct KPP path. One solution is to edit the compile_wkc file found at WRFV3/chem/KPP/compile_wkc. Here you should replace all linker.csh by ./linker.csh (2 replacements) and replace all write_decom.csh by ./write_decom.csh (1 replacement)

Another solution is to add “./” to your environmental path statement that are set when you login to your system. This edit will allow the compile procedure to run these scripts.

*** FLEX tweaking

This part can be a little tricky. We use modern flex and for this you need to change two lines in chem/KPP/kpp/kpp-2.1/src/scan.l file.

Find the line

```
yy_buffers[ yy_buf_level ] = yy_current_buffer;
```

replace it by the line:

```
yy_buffers[ yy_buf_level ] = YY_CURRENT_BUFFER;
```

Find the line

```
olddb = yy_current_buffer;
```

replace it by the line:

```
olddb = YY_CURRENT_BUFFER;
```

Now run in chem/KPP/kpp/kpp-2.1/src/ directory

```
$ flex scan.l
```

Now you need to edit lex.yy.c in that directory. Copy and paste the following lines in the beginning of that file:

```
#define INITIAL 0
#define CMD_STATE 1
#define INC_STATE 2
#define MOD_STATE 3
#define INT_STATE 4
#define PRM_STATE 5
#define DSP_STATE 6
#define SSP_STATE 7
#define INI_STATE 8
#define EQN_STATE 9
#define EQNTAG_STATE 10
#define RATE_STATE 11
#define LMP_STATE 12
#define CR_IGNORE 13
#define SC_IGNORE 14
#define ATM_STATE 15
#define LKT_STATE 16
#define INL_STATE 17
#define MNI_STATE 18
#define TPT_STATE 19
#define USE_STATE 20
#define COMMENT 21
#define COMMENT2 22
#define EQN_ID 23
#define INL_CODE 24
```

Yes! We are done with the tricky part!

*** Deleting -ll link

Open file chem/KPP/kpp/kpp-2.1/src/Makefile

delete all (there are two) entrances of -ll there. Be sure to do this or the linking will probably fail!

*** Fixing paths for integr_edit.exe

Open file chem/KPP/util/write_decomp/Makefile

Find the line

integr_edit.exe \$(MECH)

and replace it with

./integr_edit.exe \$(MECH)

*** Compilation of KPP

Now you can compile the KPP code

\$./compile 2>&1 | tee compile_kpp.log

it will take approximately 2-3 minutes.