New NOHRSC National Snow Analyses (NSA)
Snow Products to be Sent to AWIPS in SHEF
or
AWIPS Headers and How to Modify Your SHEFPARM File

2004 December 21

The NOHRSC maintains an energy-and-mass-balance snow model for the CONUS. Ground-based snow water equivalent and snow depth observations are assimilated into the snow model to update selected model state variables. Additionally, airborne snow water equivalent and satellite derived areal extent of snow cover observations are also assimilated into the model when available. Last year, the NOHRSC distributed over AWIPS in SHEF modeled snow water equivalent (SWIPZ) and areal extent of snow cover (SAIPZ) products on a basin-by-basin basis. This year the NOHRSC will produce and send to AWIPS SHEF products for the following new physical elements:

Snowpack Thickness (starting mid December)
    SDIPZ
    Modeled Snow Depth Over Land
    Basin and Basin Elevation Zone Average (inches)

Blowing Snow Sublimation (starting mid December)
    SBDPZ
    Modeled 24-Hr Blowing Snow Sublimation Over Land
    Basin and Basin Elevation Zone Average (inches)

Melt (staring mid December)
    SMDPZ
    Modeled 24-Hr Snow Melt Over Land
    Basin and Basin Elevation Zone Average (inches)

Snow Average Temperature (starting mid December)
    SEDPZ
    Modeled 24-Hr Average Snow Temperature Over Land
    Basin and Basin Elevation Zone Average (Degrees F)

Snowpack Sublimation (starting mid December)
    SUDPZ
    Modeled 24-Hr Snowpack Sublimation Over Land
    Basin and Basin Elevation Zone Average (inches)

Rain plus Melt (early 2005)
    SPDPZ
    Modeled 24-Hr Rain Plus Snowmelt Over Land
    Basin and Basin Elevation Zone Average (inches)

The new SHEF messages will be distributed over AWIPS under the following header:

SRUS43 KMSR DDHHMM (where DDHHMM is Day Hour Minute)
SCVxxx (where xxx is the RFC region code)

No modifications to the SHEF decoder software is required to decode our new messages. You will, however, have to modify your SHEFPARM file to include the following lines under section *1 (PE CODES AND CONVERSION FACTORS):

    SB 0.0393701
    SM 0.0393701
    SE -1.0
    SU 0.0393701
    SP 0.0393701

Our SHEF decoder with the above SHEFPARM parameters on the following test SHEF message:

SRUS30 KWOH 231601
RRSRSA
:&&HADS SOR REPORT FOR USER RSA
.A SLMC1 20041123 DH1500/SWIRG 2.44
.A SLMC1 20041123 DH1500/SBDPZ 2.54
.A SLMC1 20041123 DH1500/SMDPZ 2.64
.A SLMC1 20041123 DH1500/SEDPZ 2.74
.A SLMC1 20041123 DH1500/SUDPZ 2.84
.A SLMC1 20041123 DH1500/SPDPZ 2.94

yielded the following results:

```
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SWIRGZ
    2.4400 Z  -1.000  0000 0 0          " "
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SBDPZZ
    2.5400 Z  -1.000  2001 0 0          " "
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SMDPZZ
    2.6400 Z  -1.000  2001 0 0          " "
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SEDPZZ
    2.7400 Z  -1.000  2001 0 0          " "
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SUDPZZ
    2.8400 Z  -1.000  2001 0 0          " "
SLMC1    2004-11-23 15:00:00  0000-00-00 00:00:00  SPDPZZ
    2.9400 Z  -1.000  2001 0 0          " "
```

The above results are consistent with how we employ the SHEF decoder with our observation posting logic. HSD has submitted a change request to update the SHEFPARM file at the national level and that should be effective in OB5 scheduled for completion in the spring of 2004. Also, we have made a request to create a "modeled" product type in the SHEF database. The "modeled" type parameter in the national SHEF database should be implemented in OB6 or OB7.

Detailed information on the SHEFPARM file:

The SHEFPARM file contains basic parameters employed by your SHEF message decoder program. Among these parameters are the two-character designators for the various physical elements that your SHEF decoder is expected to process. Modification of the SHEFPARM file allows the Weather Service to define and encode new hydrometeorlogical physical elements without having to change the SHEF message decoder's logic.

Our office has defined five new hydrometeorlogical physical elements (see above.) Consequently, your SHEFPARM file needs to be updated in order for your SHEF message decoder to recognize and process these new data.

Depending on your AWIPS installation (LINUX vs HPUX), your SHEFPARM file will be located in either:
    LINUX: /awips/hydroapps/lx/shefdecode/input   or
    HPUX: /awips/hydroapps/shefdecode/input

You should probably make a backup of your SHEFPARM file before editting it. The top of the SHEFPARM file should look something like this:

```
$   6/19/91   'HYD.RFS.SYSTEM(SHEFPARM)'
$
$  DEFINE SHEF PARAMETER INORMATION
$
$   030227      Andy Rost, NOHRSC, Spliced in new version of SHEFPARM
$                       from David Street at the research lab
$  6/19/91   ADD E AND F EXTREMUM CODES
$  1/14/91   ADD Y CODES
$  960322     This file includes the following that are not in the
$        Feb 1996 documentation:
$          PE codes (*1) .... YD,YG,YH,YI,YJ
$          TS codes (*3) .... MA,MC,MH,MK,MS,MT,MW
$          Qualifiers (*7) .. E,F,R,Q,T,S,V
$
SHEFPARM
*1              PE CODES AND CONVERSION FACTORS
AD 1.0
AF 1.0
AG 1.0
:
:
:
```

Just after the header, in the section defined as "PE CODES AND CONVERSION FACTORS", you should see a bunch of two-character codes followed by floating point numbers. These are the hydrometeorlogical physical element codes and their conversion factors. Its this section of the file that you need to edit. Scroll down to the codes beginning with the character "S" and insert (in alphabetical order) the following lines:

    SB 0.0393701

SM 0.0393701
    SE -1.0
    SU 0.0393701
    SP 0.0393701

This should be all you have to do in order for your SHEF message decoder to recognize and process our new data.

For additional information, please contact Andy Rost (Andy.Rost@noaa.gov) at the NOHRSC.