

HEFS Release 0.1.1
Beta-1 Install Notes
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1 Overview

The HEFS v0.1.1 Beta-1 install package includes the files necessary to install and execute the following HEFS software components:

- Graphics Generator: A FEWS explorer plug-in for viewing data and configuring products
- MEFPE: A FEWS explorer plug-in that guides the user through the parameter estimation process for MEFPE.
- MEFPE Grid Model Adapter: A general adapter for converting gridded forecast data used for MEFPE, the NCEP GFS forecasts and NCEP CFSv2 forecasts, to a format usable by the MEFPE software.
- MEFPE Model Adapter: A general adapter for execution of MEFPE within a CHPS workflow.
- EnsPostPE: A FEWS explorer plug-in that guides the user through the parameter estimation process for EnsPost.
- EnsPost Model Adapter: A general adapter for execution of EnsPost within a CHPS workflow.
- EVS: An interface that runs external to CHPS and is used for verifying ensemble forecasts.
- EVS Model Adapter: A general adapter to allow for execution of EVS non-interactively within a CHPS workflow.

For phase 1 of beta testing for HEFS release 0.0.1 includes testing the following components:

- Graphics Generator
- MEFPE
- MEFPE Grid Data Model Adapter
- EnsPostPE
- EVS

For all components a complete test environment will be provided, including a FEWS bin directory, HEFS bin directory, configurations, and local data stores. Instructions for installing that test environment will be provided separately from this document.

The install instructions herein provide instructions for the configuring and installing the MEFPE Grid Data Model Adapter. Also provided are general instructions applicable to all components of the HEFS software.

2 Preconditions

HEFS release 0.1.1 installs within Delft-FEWS version 2011.02, build number 34489 (patched from 33297) using OHD-CORE-CHPS version 2.1.b.

3 Installation Instructions

For phase 1 of beta testing for HEFS release 0.1.1, the only component that requires installation is the MEFP Grid Data Model Adapter. The steps required for installation are divided into two sections:

1. General installation instructions, describing steps that are required for all components and need only be performed once for all components.
2. MEFP Grid Data Model Adapter instructions, describing steps specific to that component.

Perform all steps in both sections to install the MEFP Grid Data Model Adapter.

3.1 General Installation Instructions

The steps described in this section must be performed in order for any of the delivered software components to execute.

1. Log-on to chps9 (i.e. the chps3 equivalent for the test system) as user fevs.
2. Locate an existing stand-alone that is to be synchronized with the central database. The location of this stand-alone's root directory will be referred to below as `<sa_root_dir>`.
3. Open Firefox and download the file

```
release-package.HEFS-0.1.1.20120430.tar.gz
```

from <http://165.92.28.30/release/HEFS/hefs-0.1.1>. Save the file to `<sa_root_dir>`.

4. Untar the package in `<sa_root_dir>`:

```
tar -zxvf release-package.HEFS-0.1.1.20120430.tar.gz
```

NOTE: The directory `exampleAdapterConfigFiles` contains example configuration files referred to in the instructions below and in HEFS configuration reference manuals.

5. Create the bin directory for files necessary for HEFS model adapter execution and create a link within the configuration being edited:

```
cd <sa_root_dir>
mkdir -p /awips/chps_share/hefs/bin
mkdir -p /awips/chps_share/hefs/evs

mkdir Models/hefs
ln -s /awips/chps_share/hefs/bin Models/hefs/bin
cp HEFS-0.1.1/Models/hefs/bin/* /awips/chps_share/hefs/bin/.
cp HEFS-0.1.1/Models/hefs/evs/* /awips/chps_share/hefs/evs/.
```

6. Copy configuration files and directories into place that do not require any changes to be used by RFCs:

```
cd <sa_root_dir>
mkdir -p Config/ModuleConfigFiles/hefs
mkdir -p Config/WorkflowFiles/hefs
cp -r HEFS-0.1.1/Config/IdMapFiles/IdImportHEFS*.xml
  Config/IdMapFiles/.
cp -r HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData*.xml
  Config/ModuleConfigFiles/hefs/.
cp -r HEFS-0.1.1/Config/ModuleConfigFiles/import/*HEFS*.xml
  Config/ModuleConfigFiles/import/.
cp -r HEFS-0.1.1/Config/UnitConversionFiles/*
  Config/UnitConversionsFiles/.
cp -r HEFS-0.1.1/Config/WorkflowFiles/hefs/*
  Config/WorkflowFiles/hefs/.
cp -r HEFS-0.1.1/Models/hefs/grids Models/hefs/.
cp -r HEFS-0.1.1/Models/hefs/mefpRootDir Models/hefs/.
cp -r HEFS-0.1.1/Import/* Import/.
```

7. Modify the file <sa_root_dir>/global.properties (or <sa_root_dir>/sa_global.properties for stand-alone), adding the following lines:

```
HEFSMODELSDIR=%REGION_HOME%/Models/hefs
HEFSBINDIR=$HEFSMODELSDIR$/bin
MEFP_ROOT_DIR=$HEFSMODELSDIR$/mefpRootDir
```

8. Create the bin directory for files necessary for HEFS model adapter execution and create a link for the fss'

```
a. mkdir -p /awips/chps_local/hefs/bin
b. cp HEFS-0.1.1/Models/hefs/bin/* /awips/chps_local/hefs/bin/.
c. cd /awips/chps_local/fss/??rfc/FSS00/FewsShell/
  (?? should be replaced with the 2 letter RFC acronym)
d. cd ??rfc
  (?? should be replaced with the 2 letter RFC acronym)
e. mkdir -p Models/hefs
f. ln -s /awips/chps_local/hefs/bin Models/hefs/bin
g. cd <sa_root_dir>
h. cp -r HEFS-0.1.1/Models/hefs/grids Models/hefs/.
i. Repeat steps c-h for each FSS
```

9. Modify the fss global properties file

- a. `cd /awips/chps_local/fss/??rfc/FSS00/FewsShell/`
(?? should be replaced with the 2 letter RFC acronym)
- b. `cd ??rfc`
(?? should be replaced with the 2 letter RFC acronym)
- c. modify the `fss_global.properties` file to add the following

```
HEFSMODELSDIR=%REGION_HOME%/Models/hefs
HEFSBINDIR=$HEFSMODELSDIR$/bin
MEFP_ROOT_DIR=$EXPORT_FOLDER_ROOT$/mefpRootDir
```
- d. repeat step a-c for each FSS
- e. `cd <sa_root_dir>`
- f. `cp -r HEFS-0.1.1/Models/hefs/mefpRootDir $EXPORT_FOLDER_ROOT$/.`

Note: When executed on the live system, the `MEFP_ROOT_DIR` is a central directory with significant disk space and accessible to all the fss'. The example value shown above uses `$EXPORT_FOLDER_ROOT$`.

3.2 **Configuring HEFS Grid importing and MEFP Grid Data Model Adapter**

GFS and CFSv2 “raw” forecast files contain forecasts for the entire CONUS and entire world, respectively, and must be preprocessed for use by MEFP. The CHPS modules MEFP Grid Data Model Adapter has been created for this purpose. The MEFP Grid Data Model Adapter takes GFS and CFSv2 (.grib2) data that has been ingested into CHPS and converts them to ASCII GFS (.agfs) and CFSv2 (.acfsv2) files for use by MEFP. This is a two-step process:

1. Import grid data into CHPS using `ImportHEFSGrids` workflow and interpolate the grids to cover only an extended CONUS domain.
2. Run the Grid Data Model Adapter to create the equivalent ASCII files.

Notes:

- a) The configuration changes described below should be made to an existing (latest) RFC standalone configuration (SA). The SA will be uploaded to the central database using the FEWS configuration management (CM) tool
- b) Executing the new `ImportAndConvertHEFSGrids` workflow assumes the RFC has already setup a cron to download NCEP's GFS and CFSv2 grids
 - o The cron should run once a day to pull the 12Z CFSv2 grids (prate, tmax, and tmin) and the 00Z GFS grids
 - Because of the lag at NCEP the CFSv2 grid is actually for yesterday's 12Z run
 - At OHD we use two separate crons
 - the CFSv2 cron runs at 14Z and
 - the GFS cron runs at 8Z)
 - The scripts used at OHD for grabbing CFSv2 data is in [Appendix B](#)

- The script used at OHD for grabbing GFS data is in [Appendix C](#)
 - The cron should populate subdirectories of the root import directory currently used for ingesting grids into the live system. Our configurations assume:
 - the precipitation and temperature GFS grids are added to the same directory. This should be a unique directory (i.e. not already used for other grids - we suggest using a GFS subdirectory name)
 - The CFSv2 grids are placed into separate subdirectories (prate, tmax, and tmin) and need a common parent directory (e.g. CFSv2). These should also be unique directories not used for other grids
- c) The new ImportAndConvertHEFSGrids workflow referenced below needs to be scheduled using the FEWS Admin Interface tool (AI). This job should:
 - Be scheduled to run once a day after the cron jobs to grab the data from NCEP is executed
 - Be configured to shift back in time to run with a T0 of today's 12Z
 - The data should expire after 3 days**

** After speaking to Deltares, 3 days is our initial best estimate. If performance becomes a problem (i.e. synching, large db) you may choose to decrease this or modify the grid to cover just the RFC area

The MEFP grid importing installation process is as follows:

1. Confirm that these necessary files and directories were put in place under <sa_root_dir> via the *General Installation Instructions Step 6*:

```

Config/IdMapFiles/IdImportHEFSCFS.xml
Config/IdMapFiles/IdImportHEFSGFS.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_PRECIP.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_TMAX.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_TMIN.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_GFS_PRECIP.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_GFS_TEMP.xml
Config/ModuleConfigFiles/hefs/MEFPGridData_Setup.xml
Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_FMAP.xml
Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_TMAX.xml
Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_TMIN.xml
Config/ModuleConfigFiles/import/ImportHEFS_GFS.xml
Config/ModuleConfigFiles/import/InterpolateHEFS_CFSv2.xml
Config/ModuleConfigFiles/import/InterpolateHEFS_GFS.xml
Config/UnitConversionsFiles/ImportGFSUnits.xml
Config/WorkflowFiles/hefs/ImportHEFSGrids.xml
Config/WorkflowFiles/hefs/MEFPGridData_Forecast.xml
Import/CFSv2
Import/GFS
Import/CFSv2/prate
Import/CFSv2/tmax
Import/CFSv2/tmin
Models/hefs/grids/grids_cfs_fmap
Models/hefs/grids/grids_cfs_tmax
Models/hefs/grids/grids_cfs_tmin
Models/hefs/grids/grids_gfs_fmap
Models/hefs/grids/grids_gfs_tmp

```

2. Edit the file <sa_root_dir>/Config/RegionConfigFiles/Locations.xml. Insert the following within the <locations... element and after the <geoDatum> element:

```
<location id="HEFS_GFS" name="GFS Location">
  <description> HEFS_GFS </description>
  <shortName> HEFS_GFS </shortName>
  <x>0</x>
  <y>0</y>
</location>
<location id="HEFS_GFS_USA" name="GFS_USA Location">
  <description> HEFS_GFS_USA </description>
  <shortName> HEFS_GFS_USA </shortName>
  <x>0</x>
  <y>0</y>
</location>
<location id="HEFS_CFSv2" name="CFSv2 Location">
  <description> HEFS_CFSv2</description>
  <shortName> HEFS_CFSv2</shortName>
  <x>0</x>
  <y>0</y>
</location>
<location id="HEFS_CFSv2_USA" name="CFSv2_USA Location">
  <description> HEFS_CFSv2_USA </description>
  <shortName> HEFS_CFSv2_USA </shortName>
  <x>0</x>
  <y>0</y>
</location>
```

3. Edit the file <sa_root_dir>/Config/RegionConfigFiles/Grids.xml file to include CFSv2 and GFS information. Insert the following within the <grids... element:

```
<!-- Added for MEFP CFSv2 & GFS grid importing -->
<regular locationId="HEFS_CFSv2_USA">
  <description>grid def. for imported CFSv2 data</description>
  <rows>38</rows>
  <columns>92</columns>
  <geoDatum>WGS 1984</geoDatum>
  <firstCellCenter>
    <x>-130.3125</x>
    <y>55.275311</y>
    <z>0</z>
  </firstCellCenter>
  <xCellSize>0.9375</xCellSize>
  <yCellSize>0.944877</yCellSize>
</regular>
<regular locationId="HEFS_CFSv2">
  <description>grid def. for imported CFSv2 data</description>
  <rows>190</rows>
  <columns>384</columns>
  <geoDatum>WGS 1984</geoDatum>
  <firstCellCenter>
    <x>0.0</x>
    <y>89.290860</y>
    <z>0</z>
  </firstCellCenter>
  <xCellSize>0.9375</xCellSize>
  <yCellSize>0.944877</yCellSize>
</regular>
<regular locationId="HEFS_GFS">
  <description>grid def. for imported GFS data</description>
  <rows>73</rows>
  <columns>144</columns>
  <geoDatum>WGS 1984</geoDatum>
  <firstCellCenter>
    <x>0.0</x>
    <y>90</y>
    <z>0</z>
  </firstCellCenter>
  <xCellSize>2.5</xCellSize>
  <yCellSize>2.5</yCellSize>
</regular>
<regular locationId="HEFS_GFS_USA">
  <description>grid def. for imported GFS data</description>
  <rows>12</rows>
  <columns>25</columns>
  <geoDatum>WGS 1984</geoDatum>
  <firstCellCenter>
    <x>-125</x>
    <y>52.5</y>
    <z>0</z>
  </firstCellCenter>
  <xCellSize>2.5</xCellSize>
  <yCellSize>2.5</yCellSize>
</regular>
```


4. Edit the file <sa_root_dir>/Config/RegionConfigFiles/ModuleInstanceDescriptors.xml. Insert the following within the <moduleInstanceDescriptors... element:

```

<!-- MEFP Grid Data -->
<moduleInstanceGroup id="MEFPGridData">
  <moduleInstanceDescriptor id="ImportHEFS_CFSv2_FMAP">
    <description>Imports CFSv2 Grib Precip Forecasts</description>
    <moduleId>TimeSeriesImportRun</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="ImportHEFS_CFSv2_TMIN">
    <description>Imports CFSv2 Grib Tmin Forecasts</description>
    <moduleId>TimeSeriesImportRun</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="ImportHEFS_CFSv2_TMAX">
    <description>Imports CFSv2 Grib Tmax Forecasts</description>
    <moduleId>TimeSeriesImportRun</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="InterpolateHEFS_CFSv2">
    <moduleId>Interpolation</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="ImportHEFS_GFS">
    <description>Imports GFS Grib Forecasts</description>
    <moduleId>TimeSeriesImportRun</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="InterpolateHEFS_GFS">
    <moduleId>Interpolation</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_Setup">
    <description>Create Grid XML files</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_GFS_PRECIP">
    <description>GFS precip to MEFP</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_GFS_TEMP">
    <description>GFS temp to MEFP</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_CFSv2_PRECIP">
    <description>CFSv2 precip to MEFP</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_CFSv2_TMAX">
    <description>CFSv2 tmax to MEFP</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
  <moduleInstanceDescriptor id="MEFPGridData_CFSv2_TMIN">
    <description>CFSv2 tmin to MEFP</description>
    <moduleId>GeneralAdapter</moduleId>
  </moduleInstanceDescriptor>
</moduleInstanceGroup>

```

5. Edit the file <sa_root_dir>/Config/RegionConfigFiles/WorkflowDescriptors.xml. Insert the following within the <workflowDescriptors... element:

```
<!-- HEFS Grid Data Adapter -->
<workflowDescriptor id="ImportHEFSGrids" forecast="false"
    visible="true" name="ImportHEFSGrids" allowApprove="false">
    <description>Import the HEFS grids from the Import directory and
        delete the files after importing</description>
</workflowDescriptor>
<workflowDescriptor id="MEFPGridData_Forecast"
    forecast="false" visible="true" name="MEFP Grid Data"
    allowApprove="false">
    <description>Generate MEFP Grid Files</description>
</workflowDescriptor>
<workflowDescriptor id="ImportAndConvertHEFSGrids" forecast="false"
    visible="true" name=" ImportAndConvertHEFSGrids"
    allowApprove="false">
    <description>Parent workflow to run ImportHEFSGrids and
        MEFPGridData_Forecast </description>
</workflowDescriptor>
```

6. Create the file `<sa_root_dir>/Config/WorkflowFiles/hefs/ImportAndConvertHEFSGrids.xml` With the following contents

```
<?xml version="1.0" encoding="UTF-8"?>
<workflow xmlns="http://www.wldelft.nl/fews"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.wldelft.nl/fews
http://chps1/schemas/workflow.xsd" version="1.1">
  <activity>
    <runIndependent>false</runIndependent>
    <workflowId>ImportHEFSGrids</workflowId>
  </activity>
  <activity>
    <runIndependent>false</runIndependent>
    <workflowId>MEFPGridData_Forecast </workflowId>
  </activity>
</workflow>
```

7. Edit the file `<sa_root_dir>/Config/RegionConfigFiles/UnitConversionsDescriptors.xml`. Insert the following within the `<unitConversionDescriptors... element>`:

```
<unitConversionsDescriptor id="ImportGFSUnits"/>
```

8. Modify the file `<sa_root_dir>/sa_global.properties`, setting the following 2 variables:

```
IMPORT_FOLDER_CFSv2= <location for CFSv2 data>
IMPORT_FOLDER_GFS= <location for GFS data>
```

For example:

```
IMPORT_FOLDER_CFSv2=$IMPORT_FOLDER_ROOT$/CFSv2
IMPORT_FOLDER_GFS=$IMPORT_FOLDER_ROOT$/GFS
```

Note: The fss global properties file referenced in *General Installation Instructions* Step 9 should also be updated with the 2 variables

9. Synchronize the configuration with the OC via the CM tool:
 - a. Run the CM tool.
 - b. Download**
 - c. Login to the CM - . (i.e. `./bin/fews.sh xxx_oc cm &`)
 - d. Select the top level rfc node in the left tree (Config directory)
 - e. Click Import
 - f. Navigate to the modified Config directory
 - g. Click OK
 - h. Click Validate once the processing is completed
 - i. Click Upload once the validation is completed.
 - j. Click OK on the window that pops up displaying list of modified/new configuration files
 - k. Enter a comment describing the changes made when prompted to
 - l. Exit the CM tool.

** it is best to first download the latest Config from the central database to your localdatastore to make sure you are working with the latest config.

To verify the installation please use tests MEFP-3 and MEFP-4 (see Test procedures)

4 Appendix A : Install Package Contents

The installation package includes these files:

```
HEFS-0.1.1/Config/IconFiles/  
HEFS-0.1.1/Config/IconFiles/graphGenChartBG.png  
HEFS-0.1.1/Config/IconFiles/graphGenEditor.png  
HEFS-0.1.1/Config/IconFiles/graphGenViewer.png  
HEFS-0.1.1/Config/IdMapFiles/IdExportPiService.xml  
HEFS-0.1.1/Config/IdMapFiles/IdExportPiService.xml  
HEFS-0.1.1/Config/IdMapFiles/IdImportHEFSCFS.xml  
HEFS-0.1.1/Config/IdMapFiles/IdImportHEFSGFS.xml  
HEFS-0.1.1/Config/IdMapFiles/IdImportPiService.xml  
HEFS-0.1.1/Config/IdMapFiles/IdImportPiService.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_PRECIP.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_TMAX.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_CFSv2_TMIN.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_GFS_PRECIP.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_GFS_TEMP.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/hefs/MEFPGridData_Setup.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_FMAP.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_TMAX.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/ImportHEFS_CFSv2_TMIN.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/ImportHEFS_GFS.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/InterpolateHEFS_CFSv2.xml  
HEFS-0.1.1/Config/ModuleConfigFiles/import/InterpolateHEFS_GFS.xml  
HEFS-0.1.1/Config/PiServiceConfigFiles/GraphGen.xml  
HEFS-0.1.1/Config/PiServiceConfigFiles/HEFSensPostPE.xml  
HEFS-0.1.1/Config/PiServiceConfigFiles/HEFSGraphGen.xml  
HEFS-0.1.1/Config/PiServiceConfigFiles/MEFPPE.xml  
HEFS-0.1.1/Config/UnitConversionsFiles/ImportGFSUnits.xml  
HEFS-0.1.1/Config/WorkflowFiles/hefs/ImportHEFSGrids.xml  
HEFS-0.1.1/Config/WorkflowFiles/hefs/MEFPGridData_Forecast.xml  
HEFS-0.1.1/exampleAdapterConfigFiles/graphgen/GraphGen_Test_Products.xml  
HEFS-0.1.1/exampleAdapterConfigFiles/graphgen/GraphGen_Test1_Product.xml  
HEFS-0.1.1/exampleAdapterConfigFiles/graphgen/GraphGen_Test2_Product.xml  
HEFS-0.1.1/exampleAdapterConfigFiles/graphgen/ModuleInstanceDescriptors.xml  
HEFS-0.1.1/exampleAdapterConfigFiles/graphgen/WorkflowDescriptors.xml  
HEFS-0.1.1/fewsBin/commons-io-1.3.1.jar  
HEFS-0.1.1/fewsBin/commons-math-2.0.jar  
HEFS-0.1.1/fewsBin/GraphicsGeneratorHelp.pdf  
HEFS-0.1.1/fewsBin/guava-11.0.jar  
HEFS-0.1.1/fewsBin/hefsplugins.jar  
HEFS-0.1.1/fewsBin/hefsutils.jar  
HEFS-0.1.1/fewsBin/ohdcommonchps.jar  
HEFS-0.1.1/fewsBin/ohdgraphgen.jar  
HEFS-0.1.1/installFiles/graphgen/ahpsInstallationImport.xml  
HEFS-0.1.1/installFiles/graphgen/ahpsSettingsImport.xml  
HEFS-0.1.1/installFiles/graphgen/hefsInstallationImport.xml  
HEFS-0.1.1/installFiles/graphgen/hefsSettingsImport.xml  
HEFS-0.1.1/Models/hefs/bin/BrowserLauncher2-all-1_3.jar  
HEFS-0.1.1/Models/hefs/bin/castor-0.9.5.jar  
HEFS-0.1.1/Models/hefs/bin/ChartDirector.jar  
HEFS-0.1.1/Models/hefs/bin/commons-codec-1.3.jar  
HEFS-0.1.1/Models/hefs/bin/commons-httpclient-3.0.1.jar  
HEFS-0.1.1/Models/hefs/bin/commons-io-1.3.1.jar  
HEFS-0.1.1/Models/hefs/bin/commons-lang-2.1.jar  
HEFS-0.1.1/Models/hefs/bin/commons-logging-1.1.jar  
HEFS-0.1.1/Models/hefs/bin/commons-math-2.0.jar  
HEFS-0.1.1/Models/hefs/bin/commons-net-1.4.1.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_FEWS.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_FEWS_castor.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_FEWS_OpenAPI.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_PI.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_PI_castor.jar  
HEFS-0.1.1/Models/hefs/bin/Delft_Util.jar  
HEFS-0.1.1/Models/hefs/bin/epp3_precip_epp  
HEFS-0.1.1/Models/hefs/bin/epp3_precip_parms  
HEFS-0.1.1/Models/hefs/bin/epp3_temp_epp  
HEFS-0.1.1/Models/hefs/bin/epp3_temp_parms  
HEFS-0.1.1/Models/hefs/bin/evs/EVS.jar  
HEFS-0.1.1/Models/hefs/bin/FastInfoset-1.2.6.jar
```

HEFS-0.1.1/Models/hefs/bin/get_apps_defaults
HEFS-0.1.1/Models/hefs/bin/guava-11.0.jar
HEFS-0.1.1/Models/hefs/bin/hefsmodels.jar
HEFS-0.1.1/Models/hefs/bin/hefsplugins.jar
HEFS-0.1.1/Models/hefs/bin/hefsutils.jar
HEFS-0.1.1/Models/hefs/bin/jcalendar-1.3.0p.jar
HEFS-0.1.1/Models/hefs/bin/jcchart.jar
HEFS-0.1.1/Models/hefs/bin/jcip-annotations-1.0.jar
HEFS-0.1.1/Models/hefs/bin/jcommon-1.0.12.jar
HEFS-0.1.1/Models/hefs/bin/jdic-0.9.1.jar
HEFS-0.1.1/Models/hefs/bin/jdom.jar
HEFS-0.1.1/Models/hefs/bin/jep-2.3.0.jar
HEFS-0.1.1/Models/hefs/bin/jfreechart-1.0.9.jar
HEFS-0.1.1/Models/hefs/bin/jsch-0.1.35.jar
HEFS-0.1.1/Models/hefs/bin/junit.jar
HEFS-0.1.1/Models/hefs/bin/log4j-1.2.14.jar
HEFS-0.1.1/Models/hefs/bin/map06_sbmap06
HEFS-0.1.1/Models/hefs/bin/matanalysis
HEFS-0.1.1/Models/hefs/bin/mc_shared.jar
HEFS-0.1.1/Models/hefs/bin/mydoggy-api-1.4.3.jar
HEFS-0.1.1/Models/hefs/bin/mydoggy-plaf-1.4.3p.jar
HEFS-0.1.1/Models/hefs/bin/mydoggy-res-1.4.3.jar
HEFS-0.1.1/Models/hefs/bin/ohdcommonchps.jar
HEFS-0.1.1/Models/hefs/bin/ohdgraphgen.jar
HEFS-0.1.1/Models/hefs/bin/patch.jar
HEFS-0.1.1/Models/hefs/bin/postgresql-8.4-702.jdbc4.jar
HEFS-0.1.1/Models/hefs/bin/run_epp3_dataprep_parmgen
HEFS-0.1.1/Models/hefs/bin/runcalbmata
HEFS-0.1.1/Models/hefs/bin/sbtxtn
HEFS-0.1.1/Models/hefs/bin/TableLayout-20050920.jar
HEFS-0.1.1/Models/hefs/bin/tar-2.5.jar
HEFS-0.1.1/Models/hefs/bin/wsd14j-1.6.1.jar
HEFS-0.1.1/Models/hefs/bin/xalan.jar
HEFS-0.1.1/Models/hefs/bin/xercesImpl.jar
HEFS-0.1.1/Models/hefs/bin/xfire-all-1.2.6.jar
HEFS-0.1.1/Models/hefs/bin/xml-writer.jar
HEFS-0.1.1/Models/hefs/grids/grids_cfs_fmap/
HEFS-0.1.1/Models/hefs/grids/grids_cfs_tmax/
HEFS-0.1.1/Models/hefs/grids/grids_cfs_tmin/
HEFS-0.1.1/Models/hefs/grids/grids_gfs_fmap/
HEFS-0.1.1/Models/hefs/grids/grids_gfs_tmp/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/.systemFiles/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/backupParameters/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/parameters/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/parameters/logFiles/
HEFS-0.1.1/Models/hefs/hefsEnsPostPERunArea/piXMLFiles/
HEFS-0.1.1/Models/hefs/mefppeRunArea/
HEFS-0.1.1/Models/hefs/mefppeRunArea/.systemFiles/
HEFS-0.1.1/Models/hefs/mefppeRunArea/.systemFiles/griddedDataSFTPParameters.xml
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/index/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/logFiles/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/precip_parms/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/sbmap/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/sbtxtn/
HEFS-0.1.1/Models/hefs/mefppeRunArea/backupParameters/temp_parms/
HEFS-0.1.1/Models/hefs/mefppeRunArea/bin/epp3_precip_parms
HEFS-0.1.1/Models/hefs/mefppeRunArea/bin/epp3_temp_parms
HEFS-0.1.1/Models/hefs/mefppeRunArea/historicalData/
HEFS-0.1.1/Models/hefs/mefppeRunArea/import/control/
HEFS-0.1.1/Models/hefs/mefppeRunArea/import/index/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/index/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/logFiles/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/precip_parms/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/sbmap/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/sbtxtn/
HEFS-0.1.1/Models/hefs/mefppeRunArea/parameters/temp_parms/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/cfs_pmon/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/cfs_psubmon/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/cfs_tmon/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/cfs_tsubmon/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/gfs_pfcst24_ensmean/
HEFS-0.1.1/Models/hefs/mefppeRunArea/processedASCIIGrids/gfs_tfcst12_ensmean/
HEFS-0.1.1/Models/hefs/mefppeRunArea/rfcForecastData/mos_tfcst/
HEFS-0.1.1/Models/hefs/mefppeRunArea/rfcForecastData/rfc_pfcst06/

HEFS-0.1.1/Models/hefs/mefppeRunArea/rfcForecastData/rfc_pobs06/
HEFS-0.1.1/Models/hefs/mefppeRunArea/rfcForecastData/rfc_tfcst/
HEFS-0.1.1/Models/hefs/mefppeRunArea/rfcForecastData/rfc_tobs/
HEFS-0.1.1/Models/hefs/mefppeRunArea/working/
HEFS-0.1.1/Models/hefs/mefpRootDir/control_template/template_epp3_precip_ctl.in
HEFS-0.1.1/Models/hefs/mefpRootDir/control_template/template_epp3_temp_ctl.in
HEFS-0.1.1/Models/hefs/mefpRootDir/opercfs/
HEFS-0.1.1/Models/hefs/mefpRootDir/opergfs/
HEFS-0.1.1/testFiles/enspostpe/enspostpeRunArea.testProcedure.tar.gz
HEFS-0.1.1/testFiles/EVS_flow_ensemble_forecasts.fcst
HEFS-0.1.1/testFiles/EVS_flow_observations.obs
HEFS-0.1.1/testFiles/EVS_flow_test_project_file.evs
HEFS-0.1.1/testFiles/EVS_test_READ_ME
HEFS-0.1.1/testFiles/graphgen/chartEngine/inputs.default.xml
HEFS-0.1.1/testFiles/graphgen/chartEngine/inputs.hmos.xml
HEFS-0.1.1/testFiles/graphgen/chartEngine/inputs.precip.xml
HEFS-0.1.1/testFiles/graphgen/chartEngine/inputs.temp.xml
HEFS-0.1.1/testFiles/graphgen/import/testProcedureImport.xml
HEFS-0.1.1/testFiles/mefppe/mefppeRunArea.testProcedure.tgz
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pfcst06/
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pfcst06/tmdclhlf.pfcst06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pfcst06/tmdclhmf.pfcst06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pfcst06/tmdclhuf.pfcst06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pobs06/
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pobs06/tmdclhlf.pobs06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pobs06/tmdclhmf.pobs06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_pobs06/tmdclhuf.pobs06
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_tfcst/
HEFS-0.1.1/testFiles/mefppe/rfcForecastTestImport/rfc_tobs/

5 Appendix B: CFSv2 download script

```
#!/bin/bash
HOST='ftp.ncep.noaa.gov' # change the ipaddress accordingly
USER='anonymous' # username also change
PASSWD='xiaobiao.fan@noaa.gov' # password also change
DIR1='/pub/data/nccf/com/cfs/prod/cfs/cfs.$(date --date="yesterday"
+"%Y%m%d")/12/time_grib_01

FILE1='prate.01.*.daily.*'
FILE2='tmax.01.*.daily.*'
FILE3='tmin.01.*.daily.*'

cd /fs/hefs/testdata/live_operational_archive/CFSv2
mkdir cfs.$(date --date="yesterday" +"%Y%m%d")
cd cfs.$(date --date="yesterday" +"%Y%m%d")
mkdir 12
cd 12
mkdir time_grib_01
cd time_grib_01

ftp -inv $HOST <<END_SCRIPT
quote USER $USER
quote PASS $PASSWD
bin
cd $DIR1
mget $FILE1
mget $FILE2
mget $FILE3
bye
END_SCRIPT

cd ../../..
tar -zcvf cfs.$(date --date="yesterday" +"%Y%m%d").tgz cfs.$(date --date="yesterday"
+"%Y%m%d")
cd cfs.$(date --date="yesterday" +"%Y%m%d")/12/time_grib_01

mv tmin.*.grb2 /fs/shared/tmp/data
mv tmax.*.grb2 /fs/shared/tmp/data
mv prate.*.grb2 /fs/shared/tmp/data

exit 0
```

6 Appendix C: GFS download script

```
#!/bin/bash
HOST='ftp.ncep.noaa.gov' # change the ipaddress accordingly
USER='anonymous' # username also change
PASSWORD='xiaobiao.fan@noaa.gov' # password also change
DIR1=/pub/data/nccf/com/cdc/prod/ens.$(date -u +"%Y%m%d")

FILE1='enspost*.prcp.grib2'
FILE2='enspost*.t995.grib2'

cd /fs/hefs/testdata/live_operational_archive/GFS
mkdir ens.$(date -u +"%Y%m%d")
cd ens.$(date -u +"%Y%m%d")

ftp -inv $HOST <<END_SCRIPT
quote USER $USER
quote PASS $PASSWORD
bin
cd $DIR1
mget $FILE1
mget $FILE2
bye
END_SCRIPT

cd ..
tar -zcvf ens.$(date -u +"%Y%m%d").tgz ens.$(date -u +"%Y%m%d")
cd ens.$(date -u +"%Y%m%d")
mv enspost.t00z.prcp.grib2 /fs/shared/tmp/data/enspost.t00z.$(date -u +"%Y%m%d").prcp.grib2
mv enspost.t00z.t995.grib2 /fs/shared/tmp/data/enspost.t00z.$(date -u +"%Y%m%d").t995.grib2

exit 0
```