Release Notes for SAFNWC/PPS version 2014-patch20151201
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1 December 2015   .

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0) About this release
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NB! There will be changes in the output product format.

This is release v2014-patch201501201 of the SAFNWC/PPS
software package. It contains four sub-packages, packed in
one tar-ball:

        - ahamap_v2014_patch201501201.patch
        - acpg_v2014_patch201501201.patch
        - cpp_v2014_patch20151201.patch
        - pps_nwp_v2014_patch20151201.patch

It is supposed to be installed on top of:
PPS v2014-patch20150327.

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1) Why you should care!
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This patch collects a number of problems that different users
has experienced.

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2) Summary of main changes since version 2014-patch20150327
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* Added time as a third dimension in the datasets, for the
  PPS products in netCDF-format.
* Make it possible to process several NPP scenes from the same
  orbit.
* Now installing the script ppsCheckNwp.py. (Though the script
  is not new.)
* pps_nwp is faster
* A few bug fixes.
* In ICD1: A more detailed description of how to best choose
  NWP-data.

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3) Installation
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If you use the binaries for installing, please see
PPSbinaryinstallation.pdf


If you install from source code:
- You can unpack the patch anywhere.
- For ahamap, acpg and cpp, the patch should be applied to the
  v2014-patch20150327 source code.
- For pps_nwp the patch should be applied to the v2014 source
  code. (pps_nwp-0.4.10)

How to:
> gunzip pps_v2014_patch20151201.tar.gz
> tar xvf pps_v2014_patch20151201.tar

> cd ahamap_v2014
> patch -p1 < path_to_the_patch/ahamap_v2014
_patch20151201.patch

> cd acpg_v2014
> patch -p1 < path_to_the_patch/acpg_v2014_patch20151201.patch

> cd cpp_v2014
> patch -p1 < path_to_the_patch/cpp_v2014_patch20151201.patch

> cd pps_nwp-0.4.10
> patch -p1 < path_to_the_patch/pps_nwp_v2014
_patch20151201.patch

Afterwards, reinstall these programs, see
Installation_Notes_PPS_v2014_patch20150327.pdf.
NB! You have to do "make distclean" and a new configure
     command, to get it correct.
NB! There are changes in the environment variables.



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4) Interface changes since PPS version 2014-patch20150327
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Configuration
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Please note that there are changes in pps_basic_configure.py
and in .profile/source_me -so make sure you use the new
configuration files and environment variables.

pps_basic_configure.py, new variables:
   CSPP_DATADIR
   AHAMAP_ADDITIONAL_AVHRR_NODATA_VALUES
   NOISE_FILTERING_FOR_AVHRR2_SATELLITES
.profile_pps/source_me, new variables:
   SM_CSPP_DATA_DIR
   SM_NOISE_FILTERING_FOR_AVHRR2_SATELLITES
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    changed variable (only in source_me): PATH

The new settings in pps_basic_configure.py is not supposed to
be modified by user, but you might want to change these:
SM_CSPP_DTA_DIR: If you want to store your CSPP input data
    (NPP data) in another place than default
    ($DATA_DIR/import/PPS_data/source).
SM_NOISE_FILTERING_FOR_AVHRR2_SATELLITES: If you want to apply
    noise filtering for AVHRR/2 (historical) satellites. See
    description below.


Output
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In the netCDF files (PPS products with extension .nc), there
has been added a time dimension to all the prodcut datasets.
So now the dimensions are: (time,ny, nx)

The extent of the time dimension is 1 -thus there is not more
data then before in the files. The time used is the mean value
of start_time and end_time.
This format will be used also in the comming PPS releases, so
it is worth while adapting to the new format.

A bug-fix for the start/end time of the scene: Sometimes the
output file name is changed (corrected), the tenth of second
might be different than before.


Calling
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There is a new opportunity for calling the main python
scripts,
while using NPP_data:
After --platform_orbit npp 12345 you can add --satday 20151113
--sathour 0127
The advantage is that you thus can use several scenes from
the same npp-orbit, you just place them in different
directories before starting to process PPS. It is your choise
how many granules you put in each directory, you may have one
granule per directory, if wanted.

An example:
If you have the directories (import/PPS_data/source):
  npp_20151113_0127_12345
  npp_20151113_0130_12345
You call PPS like this:
  python ppsRunAllParallel.py --platform_orbit npp 12345
        --satday 20151113 --sathour 0127
  python ppsRunAllParallel.py --platform_orbit npp 12345
        --satday 20151113 --sathour 0130
You will get output products for two scenes of that orbit.


You can as well run the same way as before:
  python ppsRunAllParallel.py --platform_orbit npp 12345
And then is expected, as before, that there is only one
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directory containing npp granules from each orbit.

For processing NOAA and Metop data, there are no differences.
--satday and --sathour can be used, or omitted, just as
before.

Using noise filtering

Filtering of noisy channel data is now available. This is only
available for satellites with AVHRR/2, i.e. from noaa7 to
noaa14, and only for the GAC-format. (It is developed
specially for the CM-SAF needs.)

How to:
- Set the environment variable:
  SM_NOISE_FILTERING_FOR_AVHRR2_SATELLITES to 1.
- After calling ppsMakeGacAvhrr.py, make a call to
  ppsGacFilter37.py:
  python ppsGacFilter37.py --gacfile <path>/<gac file name>
  or
  python ppsGacFilter37.py --gacfile <path>/<sunsat angles
          file name>
- After that call all the other GAC-scripts as usual.

The filtered data is used as input to Cloud Mask, Cloud Type
and CPP. For more information about how the filtering is
actually performed, see the separately provided document:
PPS_Filtering_AVHRR2_Noise.pdf

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5) Software changes since PPS version 2014-patch20150327
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All changes relates to acpg, unless specified:

* Added time as a third dimension in the datasets, for the PPS
  products in netCDF-format. Though the extent in the time
  dimension is only 1. (See section 4):Output)
* Make it possible to process several NPP scenes from the same
  orbit. (See section 4):Calling)
* Configurable were to put NPP input data (See section 4):
  Configuration)
* Bug fix for the start time of the granule; previously there
  was sometimes a rounding error giving a time a tenth of a
  second off, causing processing errors.
* Now installing the script ppsCheckNwp.py. (Though the script
  is not new.)
* Processing NWP data is faster. The benefit is biggest when
  running many short scenes. (Update in pps_nwp only.)

* Filtering of noisy channel data is an option added. But only
  for historical satellites. (See section 4): 'Using noise
  filtering') (Updates in both ACPG and CPP.)

* Updated the nodata handling, to better deal with imager data
  from different sources.

* Some updates in the code needed for the creation of binaray
  packages. (Updates in: AHAMAP, ACPG and CPP)
* Fixing a problem in ACPG, about handling the CPP print-outs.
  This problem occured in cases where the stderr was too
  large.


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6) Documentation
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Some of the documents have been updated since
v2014-patch20150327 or since v2014. You will find the most
recent versions on the NWCSAF Help Desk.

Especially we want to emphasize:
* Data Output Format (DOF), describing the new output format
  of the netCDF-files (time as a dimension).
* Interface Control Document for Internal and External
  Interfaces (ICD1), which has got a description of which
  NWP data are used in the PPS reference system and also a
  more detailed description of how to best choose NWP-data.
  (Though there are no changes in this patch concerning what
  NWP-data PPS can ingest.)


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7) Reference data
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One sets of reference data with final results and
intermediate (temporary) output of PPS running version 2014
on the test data is available:

    PPS_refdata_v2014_patch20151201_c20832.tgz

There are three cases of hrtp data, noaa18, metop02 and npp.
There are one Global Metop case and one GAC case.

It contains intermediate and final output of running the PPS
on the test data included in the acpg-subpackage. This
reference dataset was generated on the development
environment at SMHI (Red Hat Enterprise Linux Client
release 7.2 with gcc/fortran 4.8.5).

The following local environment was used:

AHAMAP Version: v2014-patch20151201
ACPG Version :   v2014-patch20151201
CPP Version   :   v2014-patch20151201
pps_nwp version: 0.4.10-6-g9e7e

AAPP: 7.6
RTTOV: 11.1
HL-HDF: 0.8.1+git20130416

GRIB-API: 1.12.
HDF5 Version :   1.8.12

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PROJ Version   :    4.8.0
Python version:    2.7.5
pillow         :    2.0.0  (replacing PIL)
ZLIB Version   :    1.2.7
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