NOAA NESDIS

Center for Satellite Applications and Research (STAR)



AVHRR Vegetation Health Product (AVHRR-VHP)

User Guide

Version 1.4

Dec 21, 2013



Prepared by I. M. Systems Group, Inc. Mr. Wei Guo (Wei.Guo@noaa.gov)

Contents

Introduction	3
2 File name convention	3
File attributes	
Scientific dataset	

1. Introduction

This document describes the data format of AVHRR derived Vegetation Health Indices Product (below, referred as AVHRR-VHP or VHP). It is the improved version of previous GVI-x data set.

AVHRR-VHP products are generated by program avhrr_gvi.exe and vh.exe (C++ program developed by Wei.Guo@noaa.gov). The input of this software package is AVHRR GAC data, outputs are VH products in NetCDF format. For convenience, 16km sampled data files are also available in HDF format. The file structure is almost the same.

There are 3 weekly files will be released to users:

ND file: (*ND.nc) raw NDVI and Brightness Temperature of channel 4

(BT4). SDS names: NDVI and BT4

 ${\tt SM}$ file: noise reduced (smoothed) NDVI and BT4 data. ${\tt SDS}$ names: ${\tt SMN}$

and SMT.

VH file: vegetation health indices. (SDS names: VCI, TCI and VHI)

Table	: I valiables of Avnkk vnP products
Data type	content
NVI	NDVI,
BT4	Brightness Temperature,
SMN	Smoothed NDVI,
SMT	Smoothed Brightness Temperature,
VCI	Vegetation Condition Index,
TCI	Temperature Condition Index
VHI	Vegetation Health Index

Table 1 variables of AVHRR VHP products

The AVHRR-VHP products are self-explained NetCDF files. Please refer the attributes of the file and SDS for detail.

2. File name convention

Example: VHP.G04.C07.NP.P2013018.ND.nc Format: VHP.Grr.Ccc.xx.Pyyyywww.pp.nc

where,

GVIX	Prefix of the file name;
rr	Resolution in km
xx	Satellite ID, example: NC - NOAA 7 NF - NOAA 9 NH - NOOA 11 NJ - NOAA 14
	NL - NOAA 16 NN - NOAA 18

	NP - NOAA 19
CC	two-digits, number of days per composite period;
	07: for weekly (i.e. 7 days)composite
УУУУ	four-digits, year number of the processed period;
WWW	Three-digits, period number;
pp	Product file type:
	ND: raw NDVI and BT4
	SM: smoothed (noise removed) data, including SMN and SMT
	VH: vegetation health indices including VCI, TCI and VHI

3. File Attributes

VHP file contains the following file attributes (table 2). They provide general information about the product.

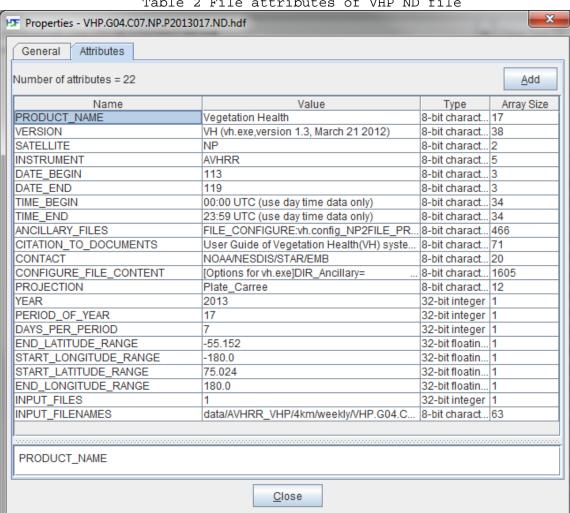


Table 2 File attributes of VHP ND file

4. Scientific dataset

The variables in the VHP file are saved as scaled 16-bits integers. The scaling parameters and equations are attached to the scientific dataset (SD) as attributes.

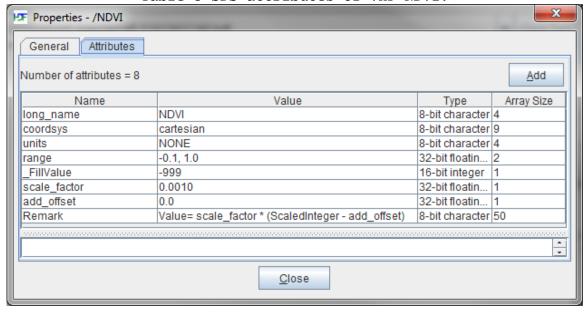


Table 3 SDS attributes of VHP NDVI.

Data arrays are in geographic projection (grid with equal latitude and longitude interval). The size of data array can be found by calling NETCDF function or using interactive tools such as HDFview. The array is in row major order. The first point of array is at the north-west corner of the grid. Then it goes eastward and then southward.

For 4km VHP product, the arrays are with size 10000x3616, Covers latitude [-55.152 to 75.024], longitude [-180.0, 180.0] (outside border of the spatial area of VHP product).

The size of grid pixel:

dLon = dLat = (360.0/10000)

For any pixel [i,j] in the array, the position of pixel's center is calculated as:

```
Latitude = (75.024 - (j+0.5) *dLat) (j: counts from 0 to 3615)
longitude = (-180.0 + (i+0.5) *dLon) (i: counts from 0 to 9999)
```

The spatial coverage of data array are described by the file attributes of NETCDF file, example:

```
START_LATITUDE_RANGE = 75.024

START_LONGITUDE_RANGE = -180.0

END_LATITUDE_RANGE = -55.152

END_LONGITUDE_RANGE = 180.0
```

In the new version (data of 2014), these attributes' names were changed as below (example):

```
geospatial_lat_max = 75.024
```

```
geospatial_lat_min = -55.152
geospatial_lat_units = degrees_north
geospatial_lon_max = 180.0
geospatial_lon_min = -180.0
geospatial_lon_units = degrees_east
```

(End)