

PANSY（南極昭和基地大型大気 レーダー）のデータ処理・ 配信システムとデータ公開

西村耕司

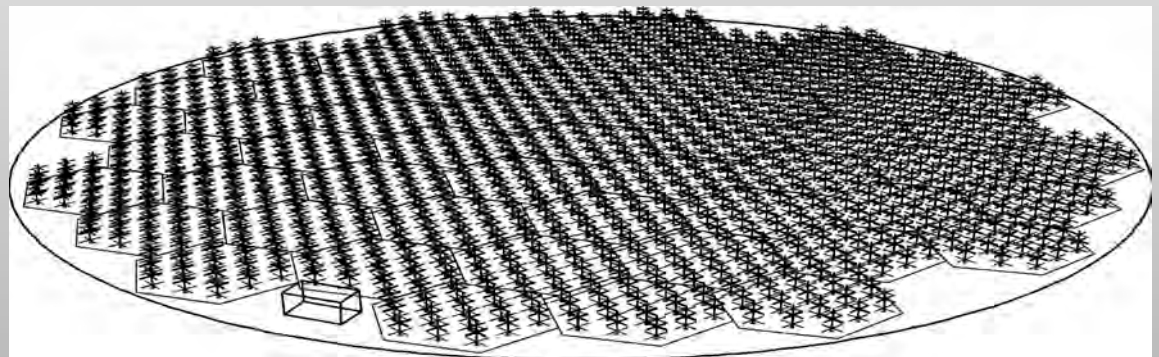
情報・システム研究機構
極域環境データサイエンスセンター／
国立極地研究所

The Program of Antarctic Syowa (PANSY) MST/IS Radar

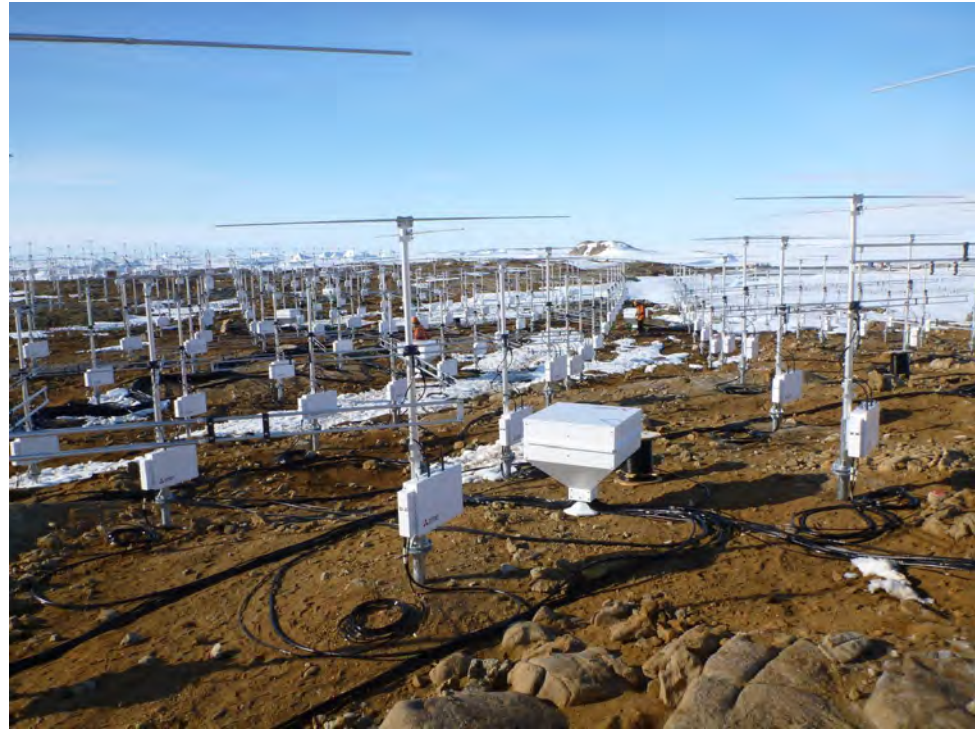
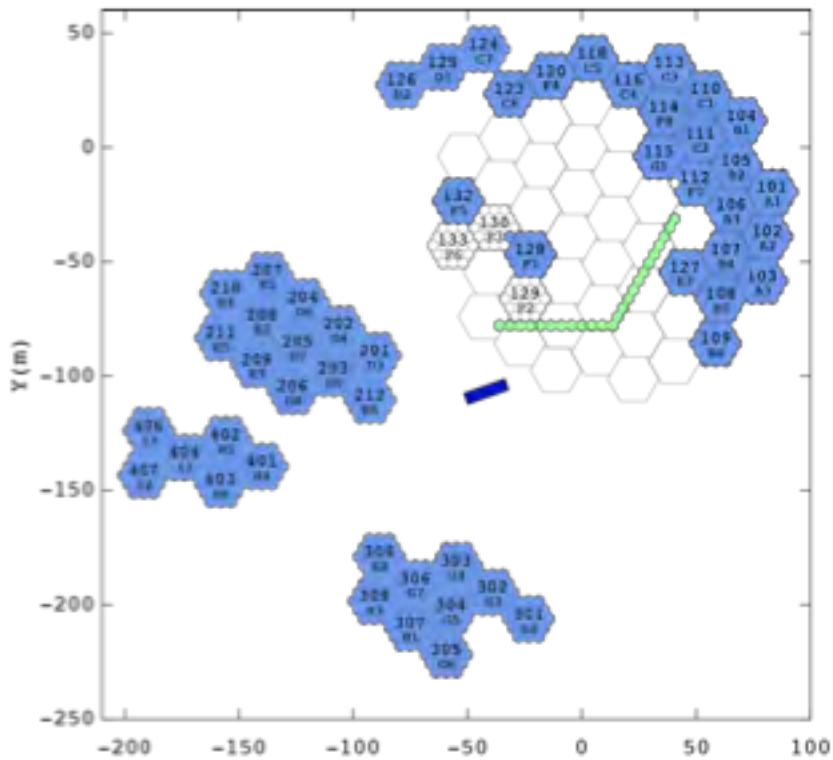
- Height coverage : 1-500km
- Three dimensional winds and plasma parameters
- Fine time and height resolutions

System	Pulse Doppler radar. Active phased array
Center freq.	47MHz
Antenna	A quasi-circular array consisting of 1045 cross- Yagi antennas. Diameter ~160m
Transmitter	1045 solid-state TR modules Peak Power : 500kW
Receiver	55 channel digital receiving systems

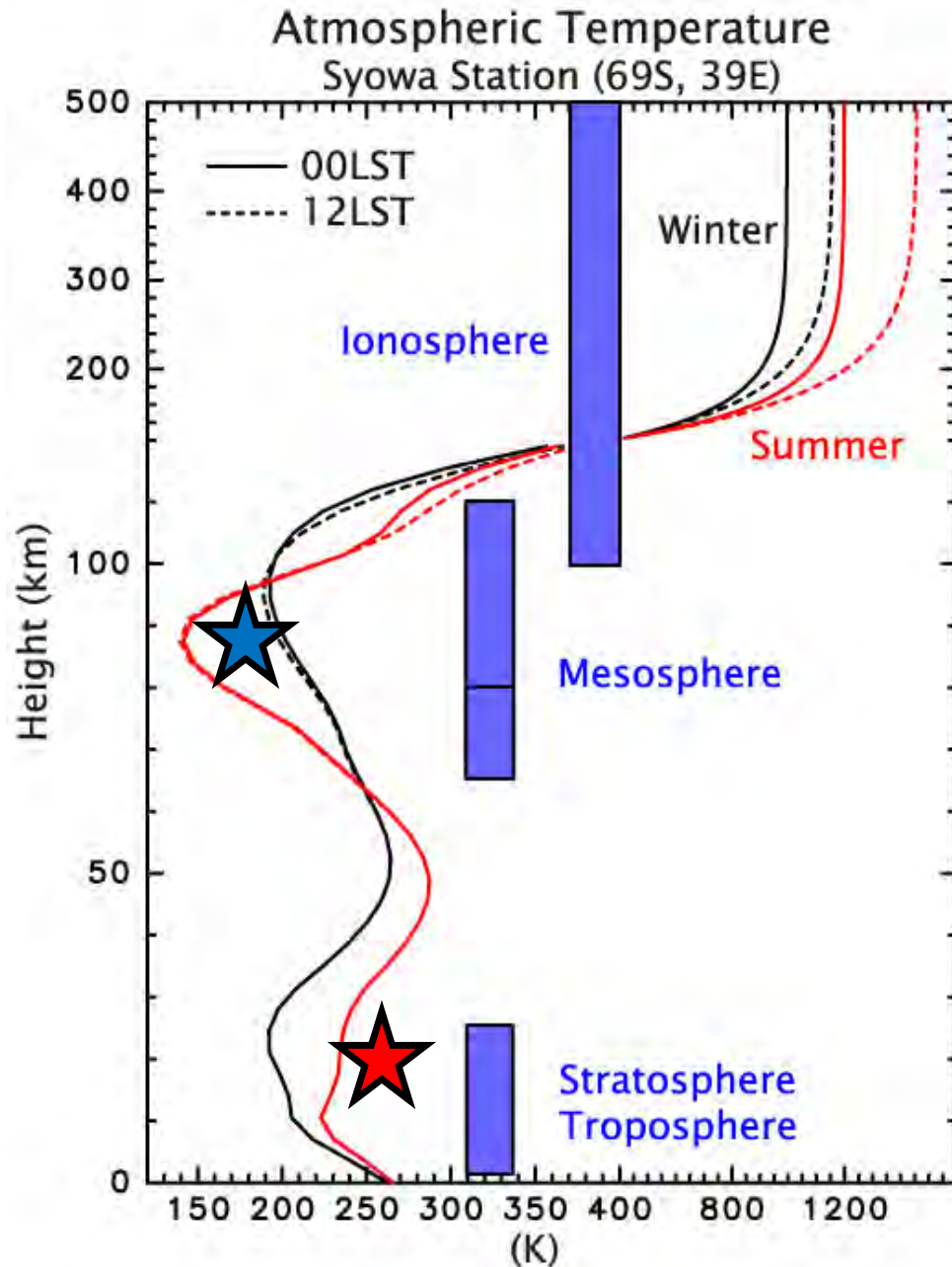
The original plan
was like this



Antenna arrangement has been changed in 2012 to avoid severe snow accumulation.



Temperature Profile above Syowa Sta.



Aurora



PMC



PSC



PANSY & it's Data Archiving Systems

PANSY Radar

Antennas & Power Amps:

Main 1045

FAI (Aux) 24

Aperture 18326 m²

Transmital Pow.

at peak: 500kW

on ave: 25kW

Frequency: 47.0 ± 0.5 MHz

Digital Receiver:

Main: 55 ch

FAI Aux: 8 ch

Radar Output

Data Rate

Regular: 4.3 GByte/day

High-Speed: 1.0 TByte/day

Data Archiving System (PANDA)

At Syowa, PANSY Obs. hut:

Sever: 14

Storage: 500 TByte

At Syowa, Data Proc. Blt:

Sever: 4

Storage: 200 TByte

At NIPR (Tachikawa Campus)

Server: 9

Storage: 400 TByte

At Univ. Tokyo

Sever: some

Storage: 500 TByte

At Kyoto Univ.

Storage: 100 TByte

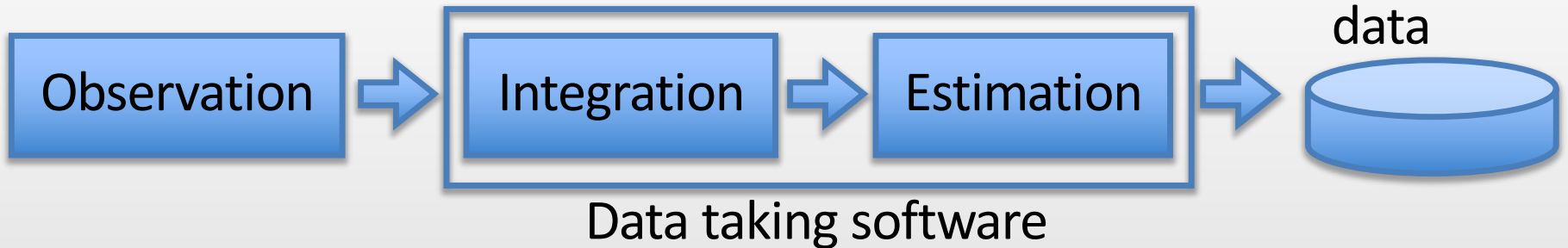
Reduce data are transferred through the satellite.

The full data set is transported on RAID HDDs by the ship once a year.

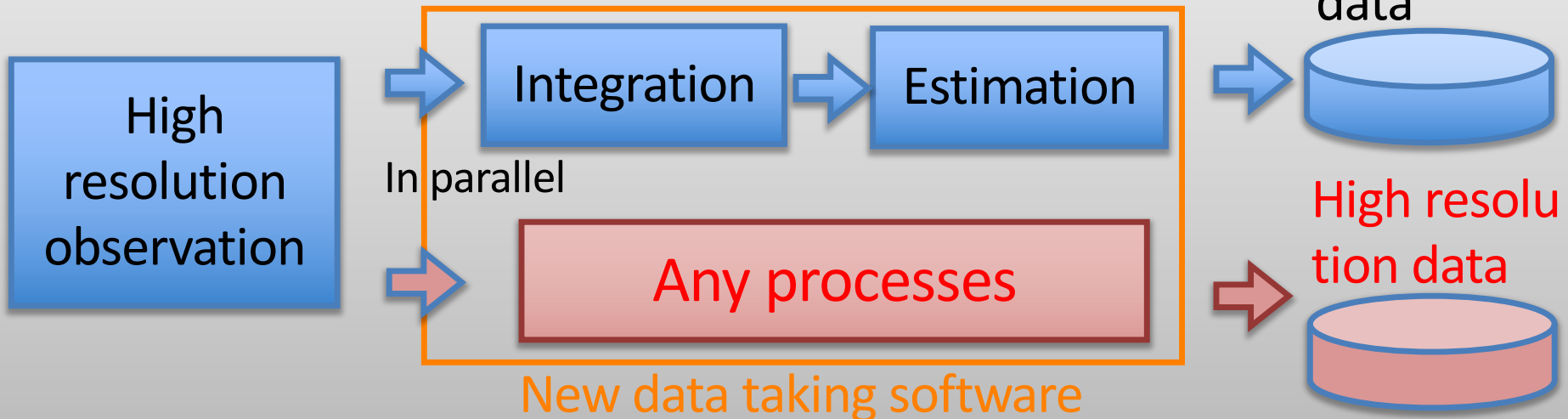
Realtime Parallel Data Processing System (on the host computer, from 2016)

Multiple data processing scheme can be applied realtime in parallel.

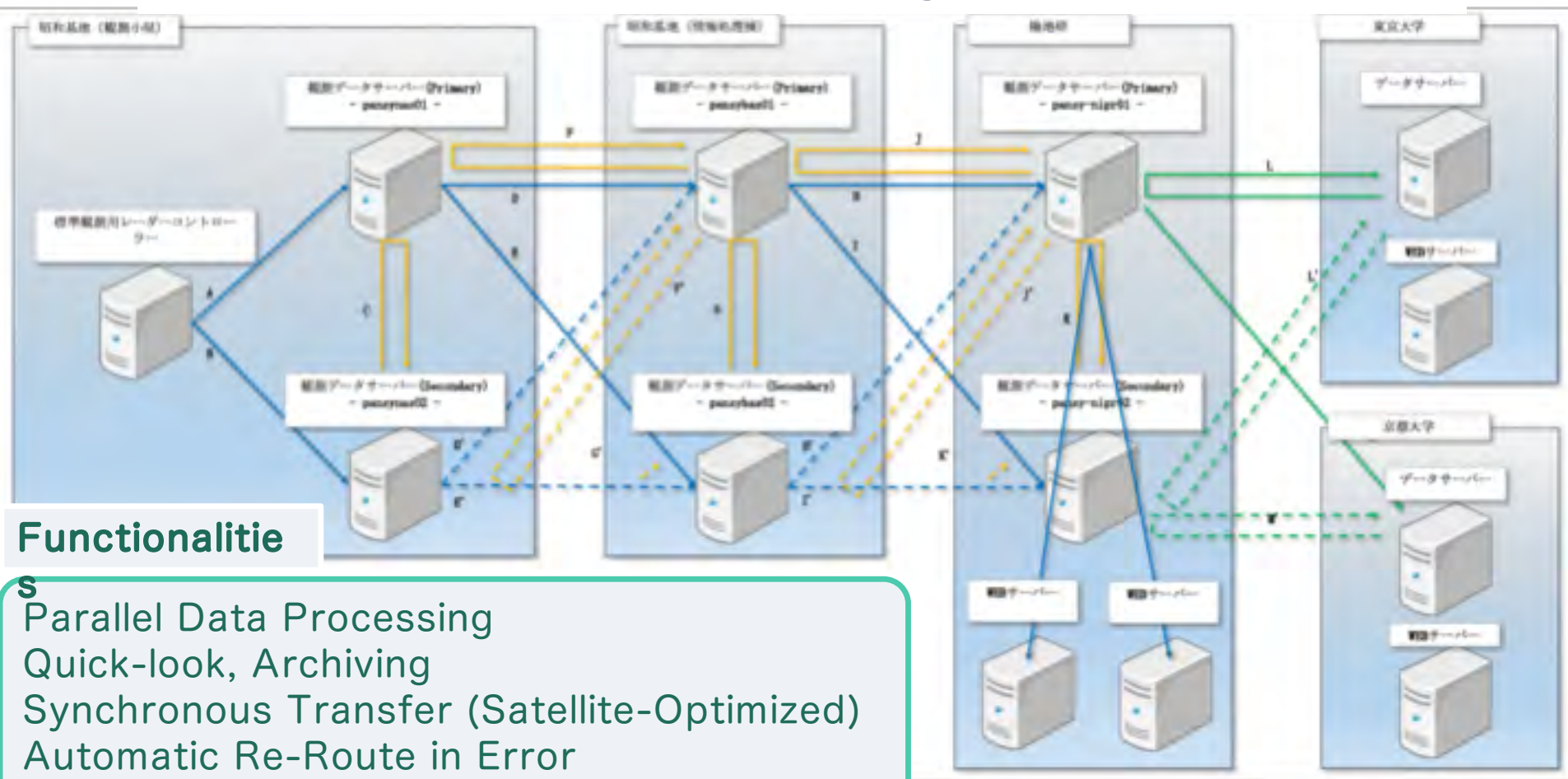
Orthodox data flow



New data flow



PANSY Data Archive System (PANDA)



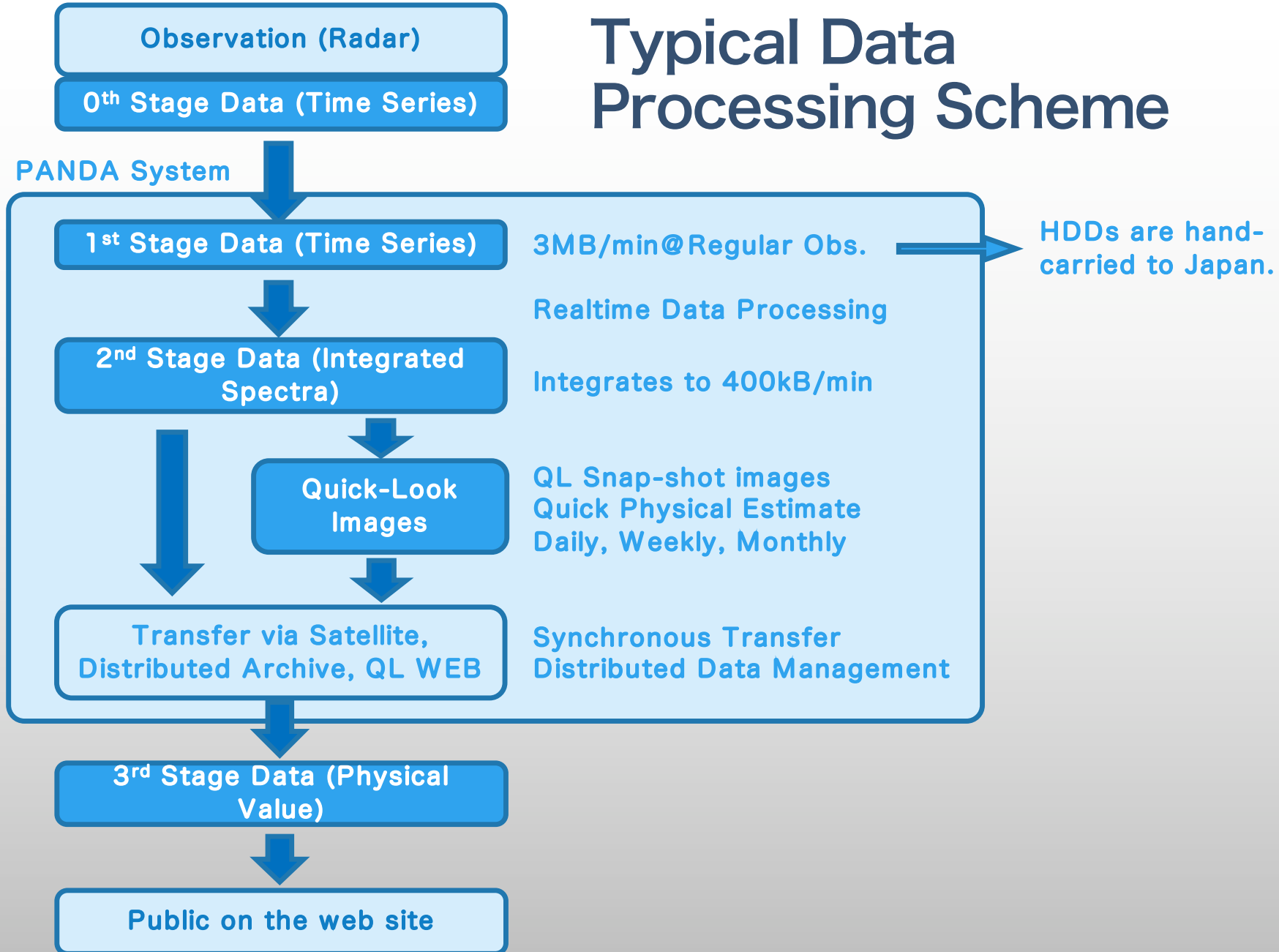
Functionalitie

- Parallel Data Processing
- Quick-look, Archiving
- Synchronous Transfer (Satellite-Optimized)
- Automatic Re-Route in Error
- Automatic Consistency Check
- Automatic Recovery
- Database Management
- Web-based GUI
- Search & Display

Typical Data Processing Scheme

in Syowa Station

in Japan



Quick-Look Viewer (Spectrum Snapshot)

PANSY Quick Look
for Real Time and Archived Data

[Spectra](#) [Time-Height](#) [Observation List](#) [Observation Timeline](#) [Status](#) [Logout](#)

Spectra Images

for Each Observation Data File

Find Images By Date

Year: Month:

Su	Mo	Tu	We	Th	Fr	Sa
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
1	2	3	4	5	6	7

20160418.091814	data00554
20160418.084808	data00555
20160418.102807	data00556
20160418.124144	data00557
20160418.181000	data00558
20160418.233942	data00559

Navigation: Auto Refresh

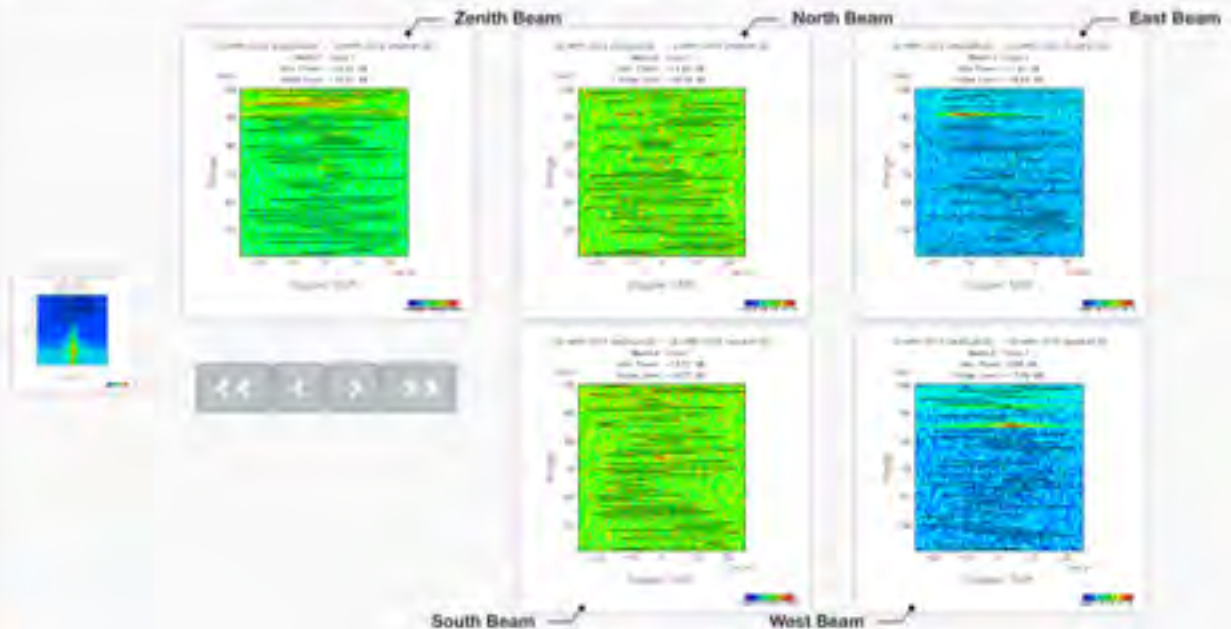
Observation Status

In Observation

[Parameters]

st320nc3.dat mes800nc7.dat

Parameter: mes800nc7 - dopplfit
Observation Times (UT): 19-Apr-2016 04:03:20 - 19-Apr-2016 04:04:41
Observation Data: 20160418.233942/data00559



Quick-Look Viewer (Time-Height Section)

PANSY QuickLook
for Real Time and Archived Data

Spectra Time-Height Observation List Observation Timeline Status Logout

Time-Height Images

Find Images By Date

2017

December

Su	Mo	Tu	We	Th	Fr	Sa
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

< Prev



Next >

Latest

Auto Refresh

Observation Status

Not in Observation

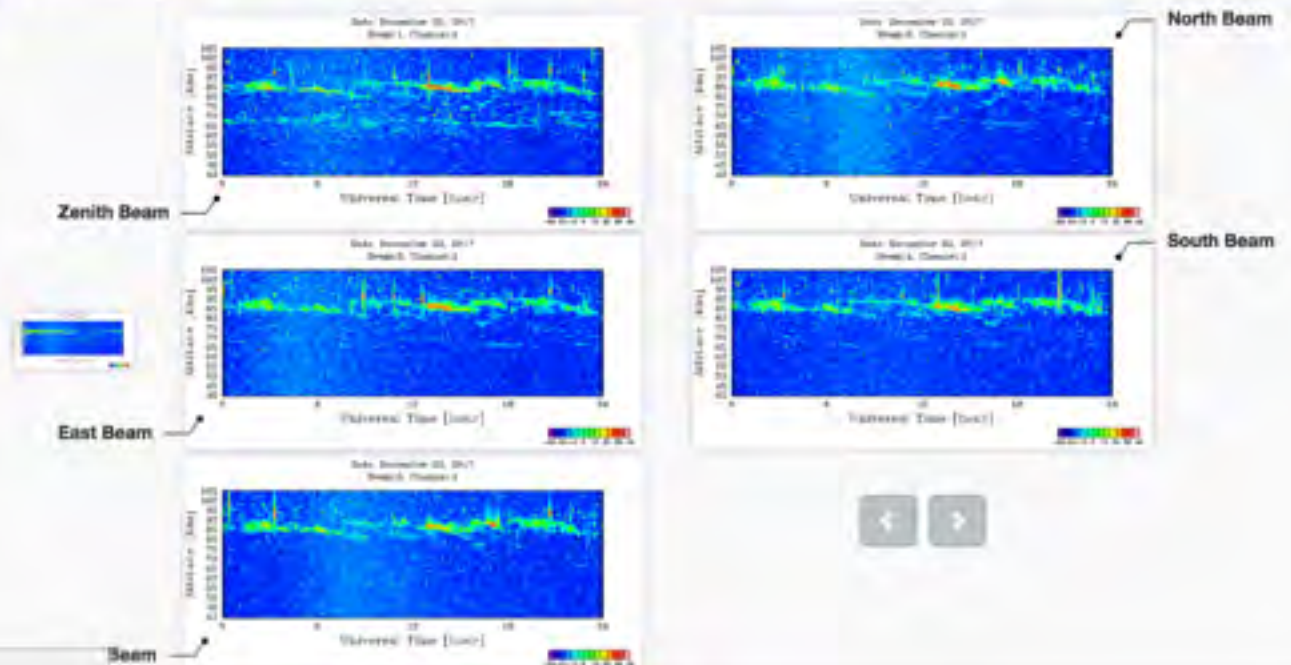
Parameter

mesl00hr [az/mesl00hr] - dep10l

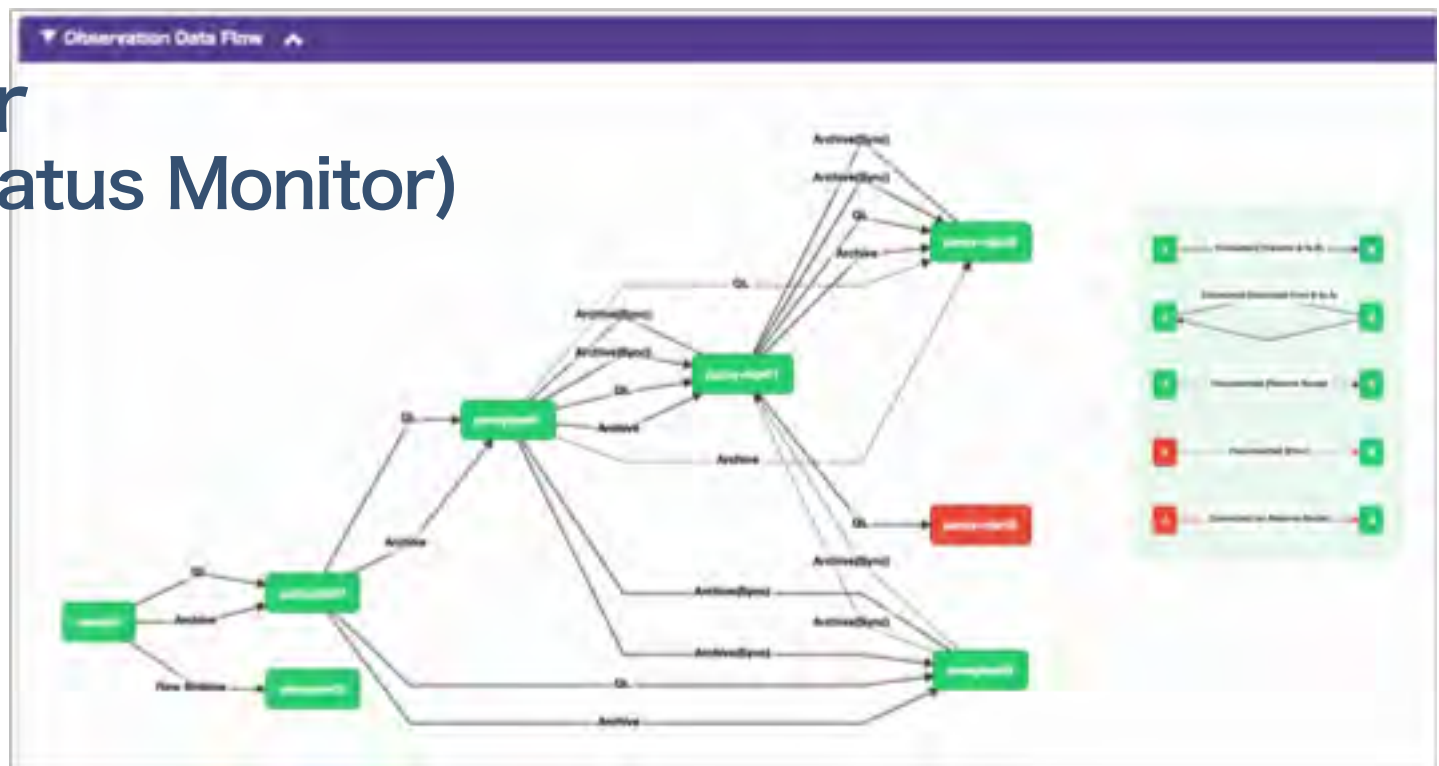
Observation Time (UT)

02-Dec-2017 23:55:09 - 04-Dec-2017 00:06:18

Beam Echo Images



QL Viewer (System Status Monitor)



Status Details

pansy01 - up

Process	Run Status	Process Status	Connection Status			Latest Data
			Server Name	Status	Last Connected Time (UT)	
panda_obsarchiver	up - normal	normal	-	-	-	-
panda_obsarchiver_rawdata	up - normal	normal	-	-	-	-
panda_obs transmitter	up - normal	normal	pansynas03	connected	05-Dec-2017 05:24:23	/data/Archive/2017/20171204.194113_st320nc3_001.tar
panda_obs transmitter_rawdata	up - normal	normal	pansynas02	connected	05-Dec-2017 05:24:50	/data/RawArchive/2017/20171205.045021.tar
panda_obsweeper	up - normal	normal	pansynas03	connected	05-Dec-2017 04:39:50	-
panda_obsweeper_rawdata	up - normal	normal	pansynas02	connected	05-Dec-2017 04:56:10	-

Data Sharing

- Processed wind estimates (6-hourly) are open to the public on the web site.

<http://pansy.eps.s.u-tokyo.ac.jp/data/>

- This will be upgraded to 30-min resolution next year, and the DOIs will be tagged.



The screenshot shows the PANSY website interface. At the top, there is a logo for PANSY (Program of the Antarctic Syowa MST/IS Radar) and a navigation menu with links for HOME, About PANSY, Research Topics, Publications, Members, and Installation. Below the menu, there is a section for "HOME : 観測データ" (HOME : Observation Data) with a banner image and a table of data links for the year 2017. The table is organized by month, with each month having a grid of links for days 1 through 31. The links are color-coded, likely representing different data series or time intervals.

Jan. 2017	Feb. 2017	Mar. 2017
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28	21 22 23 24 25 26 27 28 29 30
31		31
Apr. 2017	May 2017	Jun. 2017
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
	31	
Jul. 2017	Aug. 2017	Sep. 2017
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20	11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30	21 22 23 24 25 26 27 28 29 30
31	31	

Data Sharing

IUGONET (www.iugonet.org)
Metadata database

- Data currently in public are to be registered to IUGONET by Mar 2018.
- Further coming data will also be registered as it will be in public on the web site.

The screenshot shows the IUGONET DataSet web interface. At the top, there is a header with the IUGONET logo and navigation links like 'UDAS web Available!' and 'Rules of the Road'. Below the header, there is a search and filter section with the following structure:

Instrument/Project	Observed Region	ERG Campaign		
Satellite: AKRONG SMART (Telescope) Geomagnetic Indices Induction PWING/PA WV/SLE WV_Radar A-Sent Radar	CHAMP DST (Telescope) WDC Geomag - Kyoto Magnetometer DMT ML Radar GPS/Receivst Others	COISHIC FMI (Telescope) Geomag - Kakioka SuperDARN Lidar EA Radar AWS	Refractor (Telescope) MAGDAS/CPHY EISCAT Ionosonde HF Radar BLST/WP Radar	Musi (Telescope) MM2D Imager Sonometer MW Radar Radioonde

Below the table, there are input fields for 'Keyword:' and 'Timespan:' with a 'Set Detail' button and a 'Search' button.

Information section:
How to create plot [SPEDAS EMIBasic Command and GUI Operating Procedure] was added, 28 Aug. 2017.
We renewed the "how to plot" section in the metadata display page.
The "how to plot" section shows the IDL/SPEDAS commands to plot the found data and helps users to analyze the data with IDL/SPEDAS. The section is divided into three parts as follows.
"GUI #Basic" : IDL/SPEDAS commands minimally required to plot the data.
"GUI #Advanced" : IDL/SPEDAS commands used to create quick-look (QL) plot in the metadata display page.
"GUI" : How to plot the data with SPEDAS-GUI.
Detailed information of SPEDAS: <http://spedas.org/wiki/>

データ公開WEBサイト(公開準備中)

公開側WEB画面

管理者側WEB画面

PANSY Data Archive
About Policy Description Login [guest mode]

home > PANSY MST observation data > Download of PANSY MST observation data

Download of PANSY MST observation data

May, 2015 Stratosphere/Troposphere

Login by approved login is required for download.

Day	Region	Version	3min	30min
1	st	1.0	CSV NetCDF	CSV NetCDF
2	st	1.0	CSV NetCDF	CSV NetCDF
3	st	1.0	CSV NetCDF	CSV NetCDF
4	st	1.0	CSV NetCDF	CSV NetCDF
5	st	1.0	CSV NetCDF	CSV NetCDF
6	st	1.0	CSV NetCDF	CSV NetCDF
7	st	1.0	CSV NetCDF	CSV NetCDF
8	st	1.0	CSV NetCDF	CSV NetCDF
9	st	1.0	CSV NetCDF	CSV NetCDF
10	st	1.0	CSV NetCDF	CSV NetCDF
11	st	1.0	CSV NetCDF	CSV NetCDF
12	st	1.0	CSV NetCDF	CSV NetCDF
13	st	1.0	CSV NetCDF	CSV NetCDF
14	st	1.0	CSV NetCDF	CSV NetCDF
15	st	1.0	CSV NetCDF	CSV NetCDF

PANSY Data Archive
About Policy Description Login [guest mode]

home > PANSY MST observation data

PANSY MST observation data

2015

1	2	3	4	5	6	7	8	9	10	11	12
CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF	CSV NetCDF

PANSY Data Archive
About Policy Description Logout [User : root]

home > User page > Upload release data

Upload release data

Select file Upload

Filename	Region	Time interval	Version	yyyyMMdd	Extension
st_30_V010_20150101.nc	st	30	010	2015/01/01	nc
st_30_V010_20150101.zip	st	30	010	2015/01/01	zip
st_30_V010_20150102.nc	st	30	010	2015/01/02	nc
st_30_V010_20150102.zip	st	30	010	2015/01/02	zip
st_30_V010_20150103.nc	st	30	010	2015/01/03	nc
st_30_V010_20150103.zip	st	30	010	2015/01/03	zip
st_30_V010_20150104.nc	st	30	010	2015/01/04	nc
st_30_V010_20150104.zip	st	30	010	2015/01/04	zip
st_30_V010_20150105.nc	st	30	010	2015/01/05	nc
st_30_V010_20150105.zip	st	30	010	2015/01/05	zip

PANSY Data Archive
About Policy Description Logout [User : root]

User information

Login ID: root

First Name: Manager E-mail: manager@dummy.com

Last Name: System Evening Phone: 000-0000-0000

Purpose of using data: システム管理者用アカウント

The Company: Country: