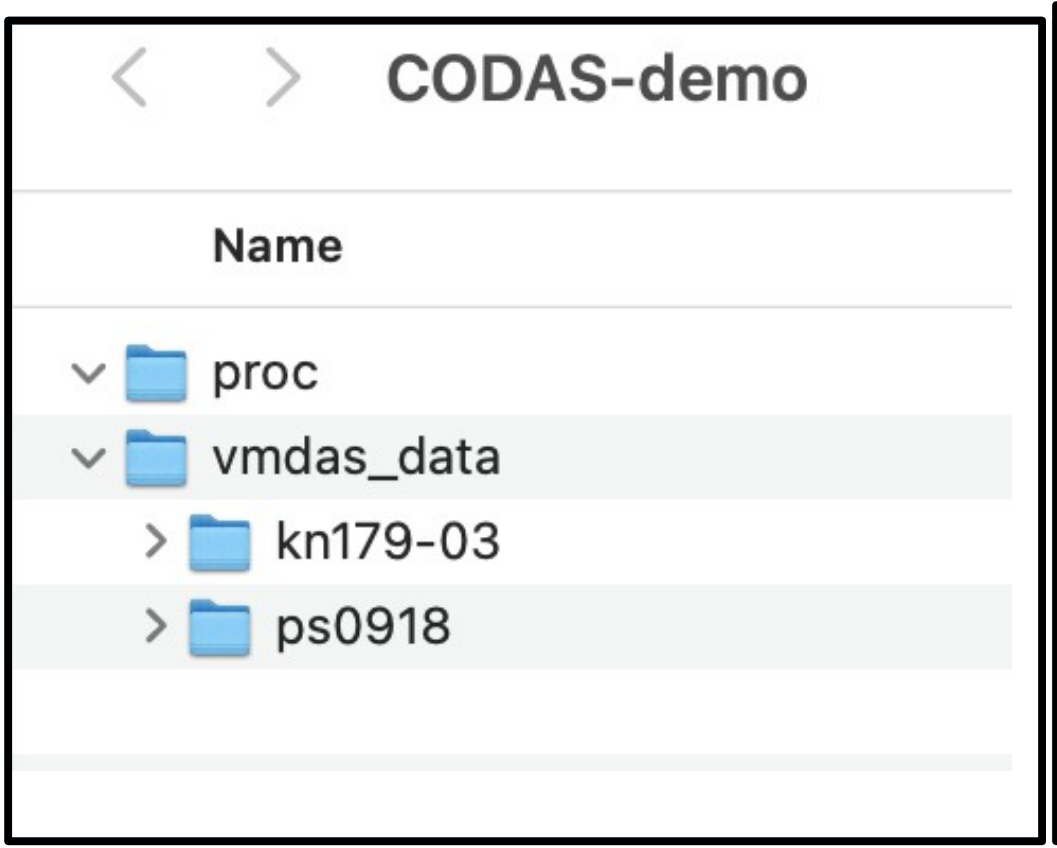
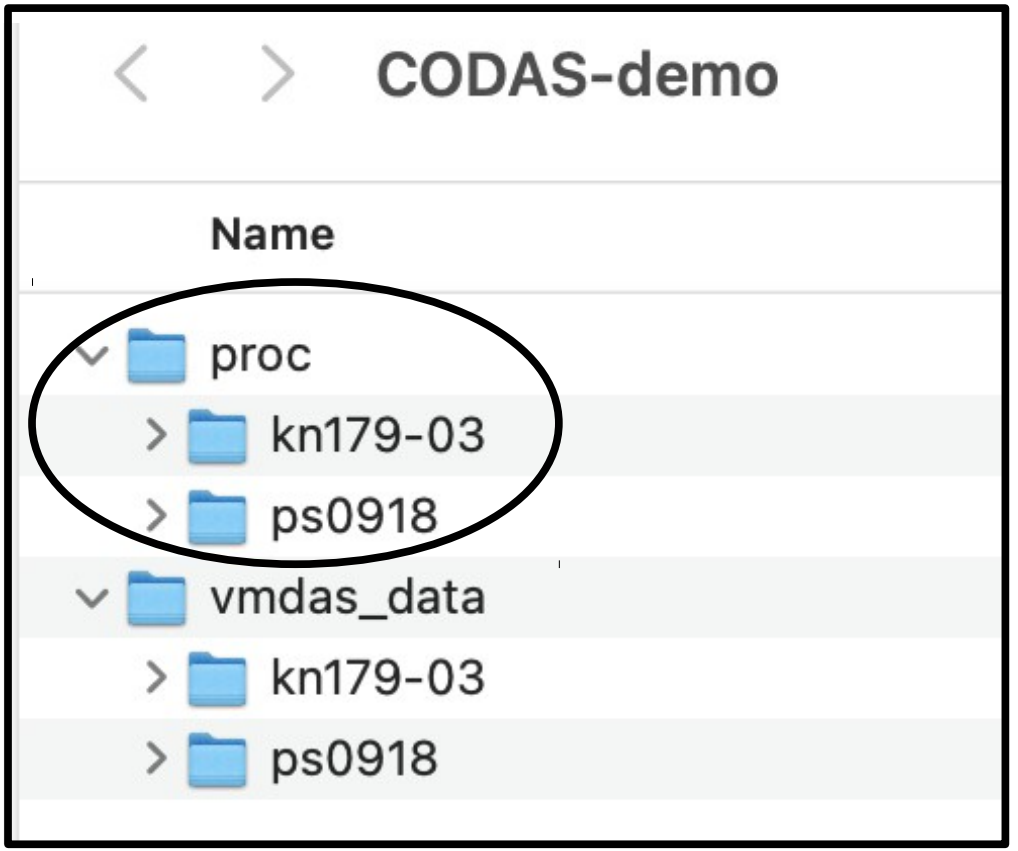
# CODAS VmDAS Processing Demo:

## `adcp_database_maker.py`

## INMARTECH-2023 tutorial



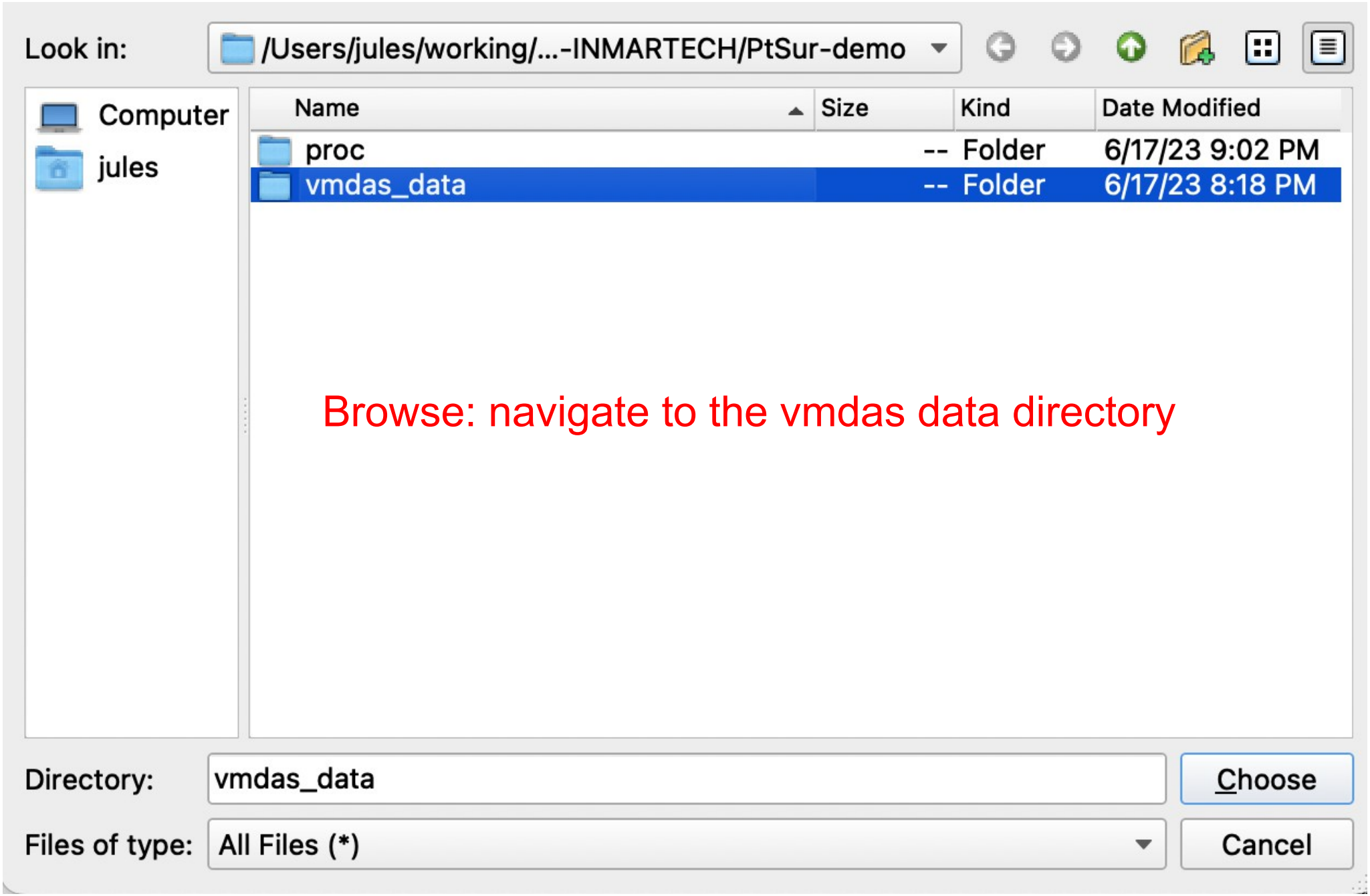

Start with VmDAS data

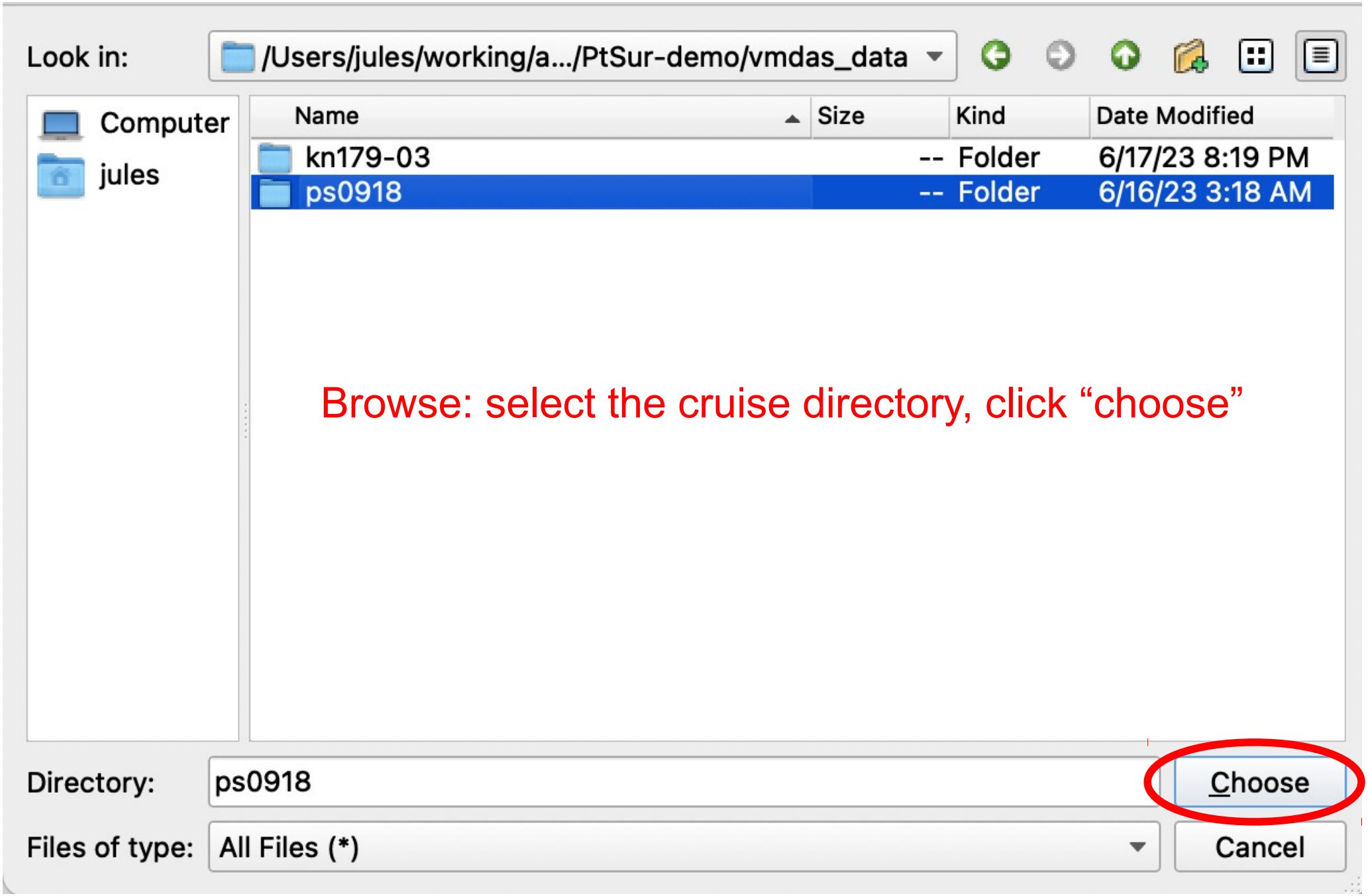


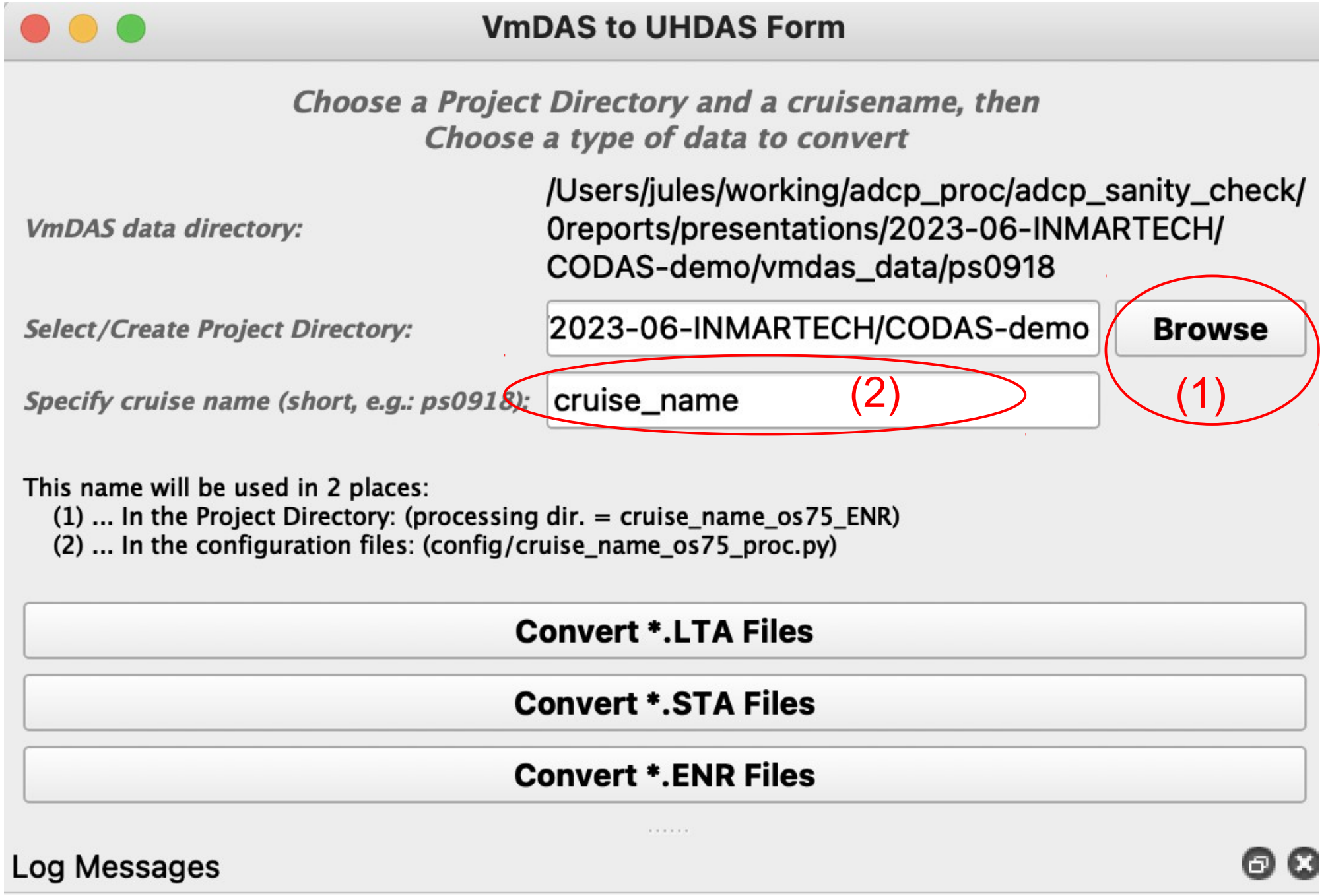

End with ocean velocities in CODAS
(and matlab, netCDF, web view)

```
CODAS-demo
CODAS-demo/proc
CODAS-demo/vmdas_data
CODAS-demo/vmdas_data/kn179-03
CODAS-demo/vmdas_data/ps0918
```

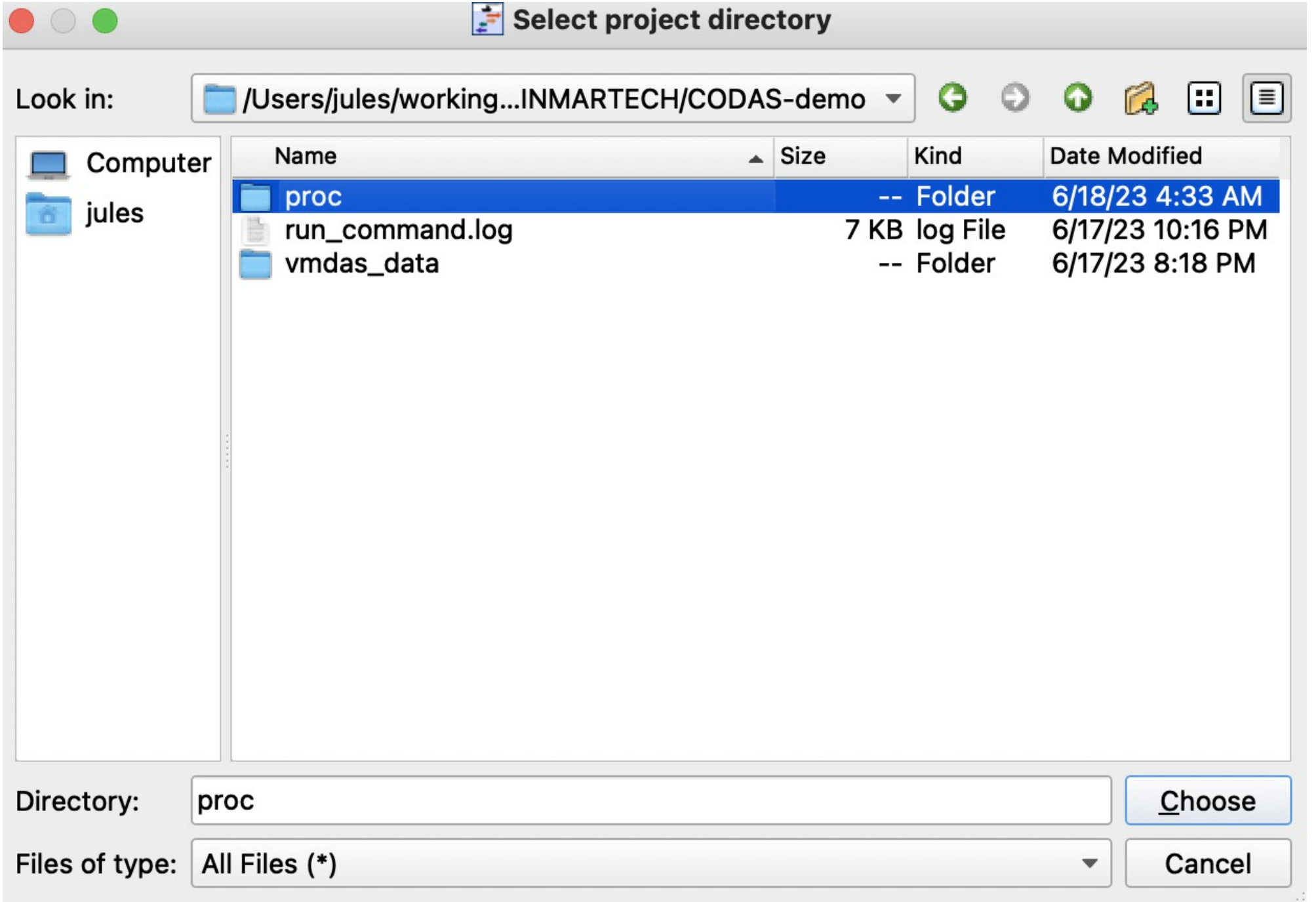
Run **`adcp_database_maker.py`** from here

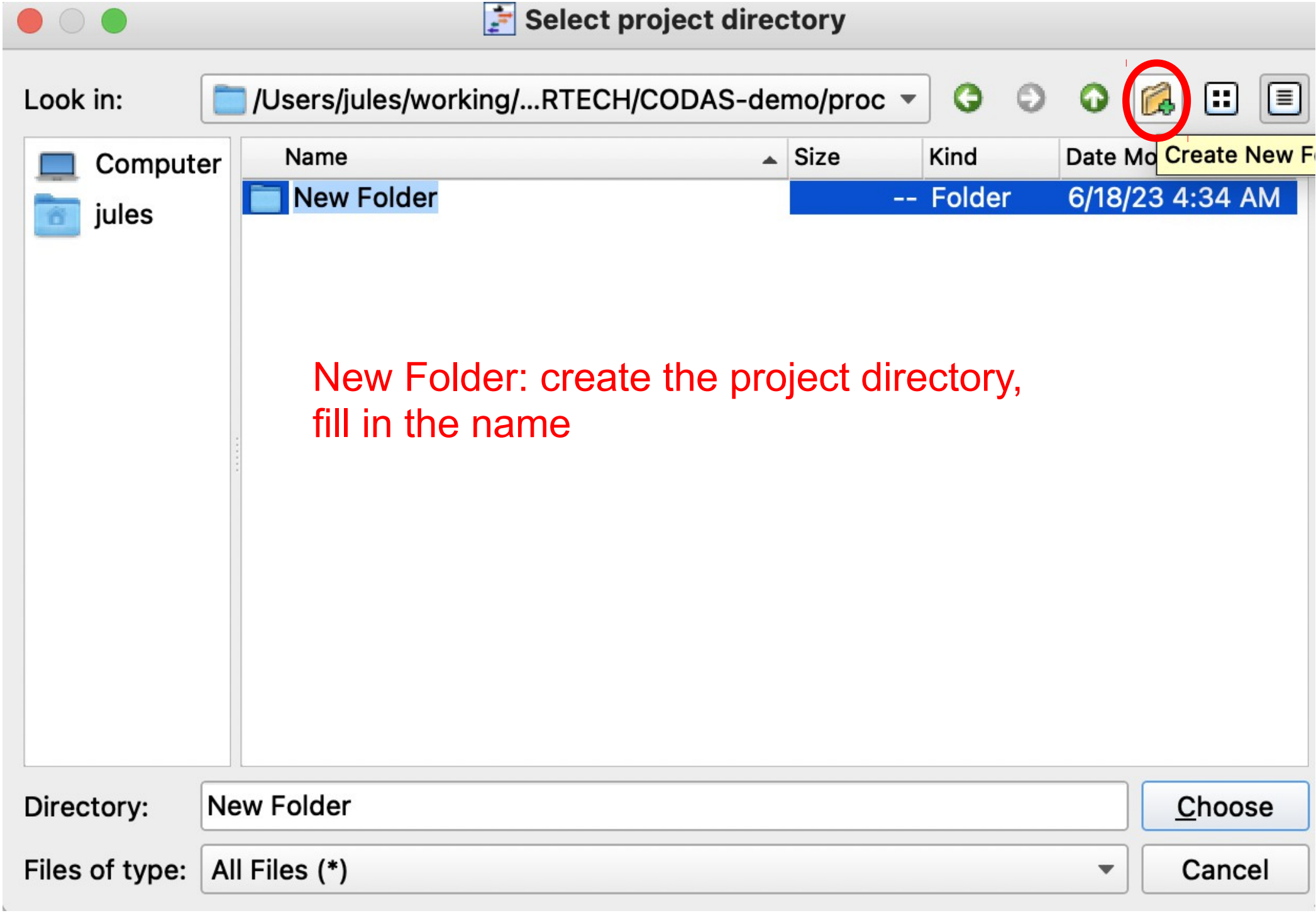

Look in:
/Users/jules/working/...-INMARTECH/PtSur-demo
Computer
jules
Name
Size
Kind
Date Modified
proc
-- Folder
6/17/23 9:02 PM
vmdas_data
-- Folder
6/17/23 8:18 PM
Browse: navigate to the vmdas data directory
Directory:
vmdas_data
Choose
Files of type:
All Files (*)
Cancel

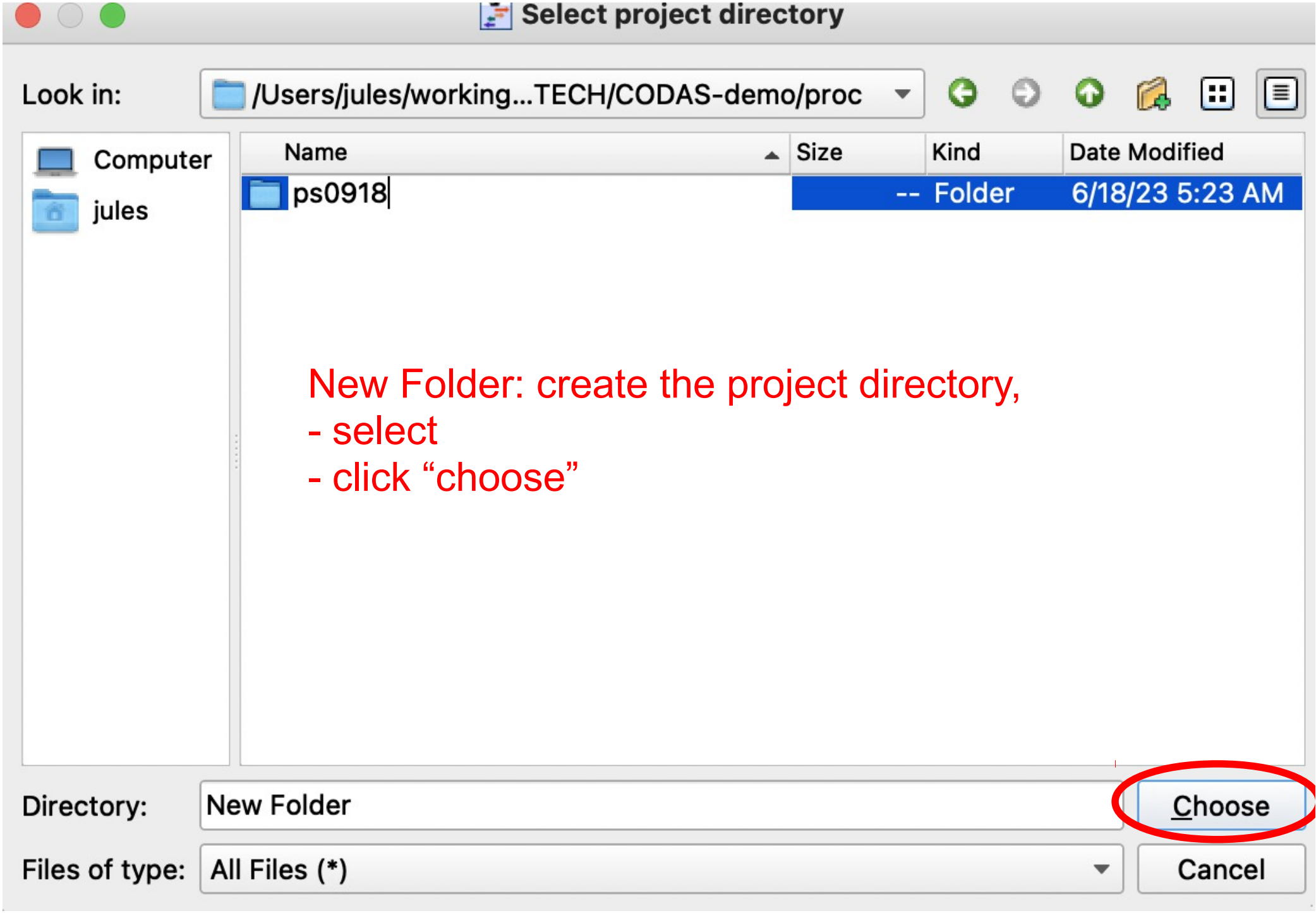

Look in:
/Users/jules/working/a.../PtSur-demo/vmdas_data
Computer
jules
Name
Size
Kind
Date Modified
kn179-03
-- Folder
6/17/23 8:19 PM
ps0918
-- Folder
6/16/23 3:18 AM
Browse: select the cruise directory, click “choose”
Directory:
ps0918
Choose
Files of type:
All Files (*)
Cancel

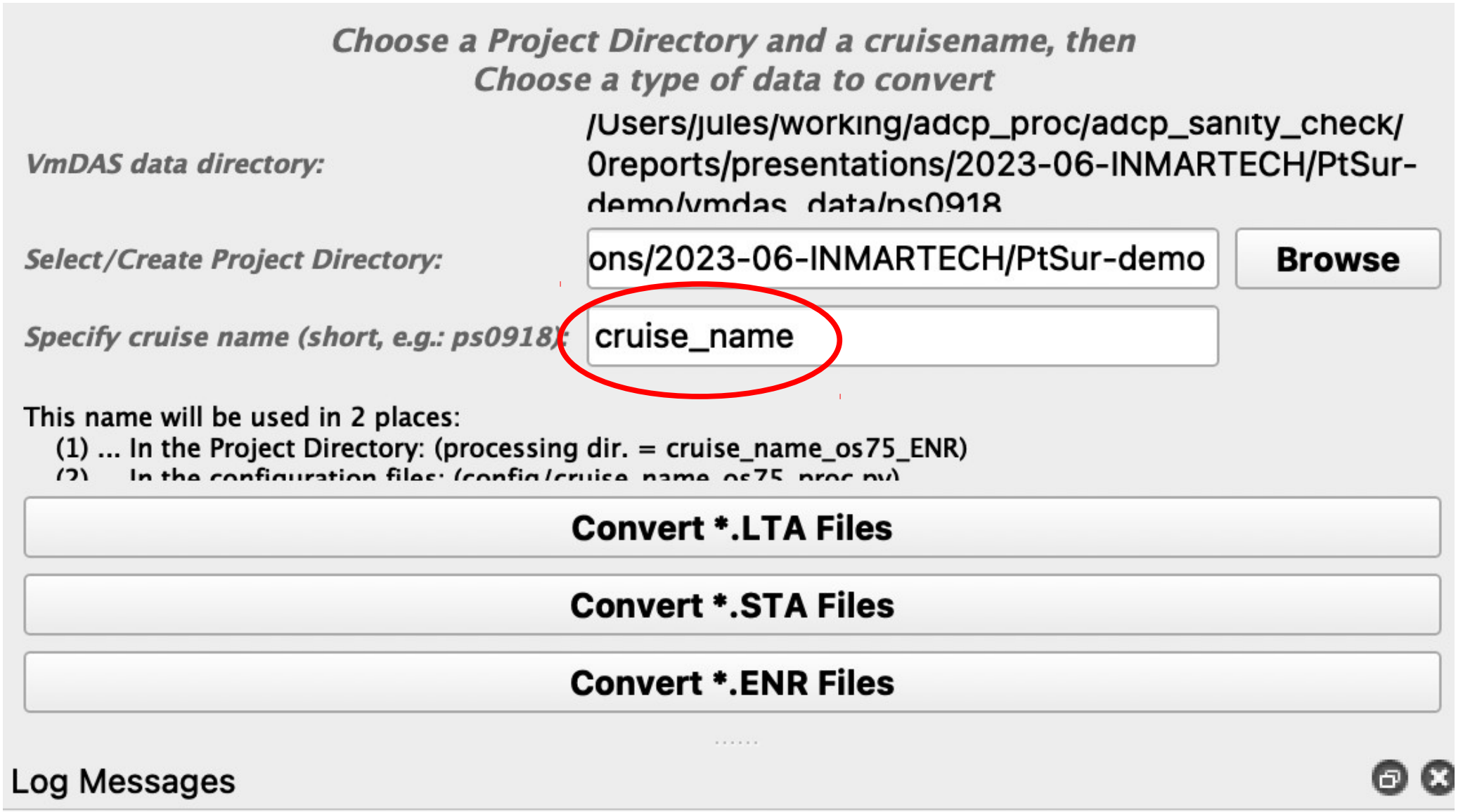



(1) Browse: make a project directory for the data processing
(2) Choose a “cruise name”


Select project directory
Look in:
/Users/jules/working...INMARTECH/CODAS-demo
Computer
jules
Name
Size
Kind
Date Modified
proc
-- Folder
6/18/23 4:33 AM
run_command.log
7 KB log File
6/17/23 10:16 PM
vmdas_data
-- Folder
6/17/23 8:18 PM
Directory:
proc
Choose
Files of type:
All Files (*)
Cancel


Select project directory
Look in:
/Users/jules/working/...RTECH/CODAS-demo/proc
Create New F
Computer
jules
Name
Size
Kind
Date Mo
New Folder
-- Folder
6/18/23 4:34 AM
New Folder: create the project directory,
fill in the name
Directory:
New Folder
Choose
Files of type:
All Files (*)
Cancel


Select project directory
Look in:
/Users/jules/working...TECH/CODAS-demo/proc
Computer
jules
Name
Size
Kind
Date Modified
ps0918
-- Folder
6/18/23 5:23 AM
New Folder: create the project directory,
- select
- click “choose”
Directory:
New Folder
Choose
Files of type:
All Files (*)
Cancel




Fill in cruise name

*Choose a Project Directory and a cruisename, then*
*Choose a type of data to convert*

*VmDAS data directory:* /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/PtSur-demo/vmdas_data/ps0918

*Select/Create Project Directory:* 2023-06-INMARTECH/PtSur-demo/proc **Browse**

*Specify cruise name (short, e.g.: ps0918):* ps0918

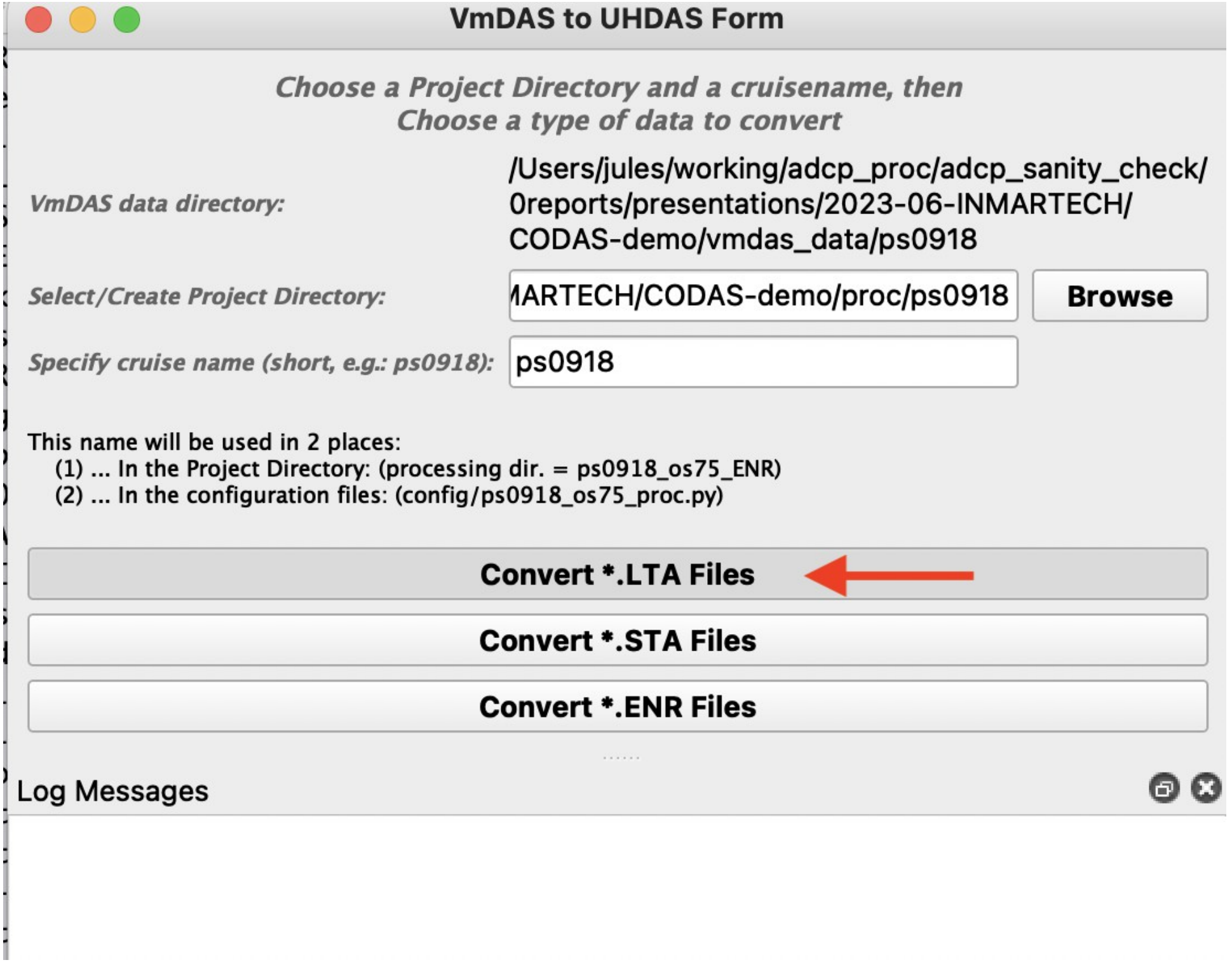
This name will be used in 2 places:
(1) ... In the Project Directory: (processing dir. = ps0918_os75_ENR)
(2) ... In the configuration files: (config/ps0918_os75_proc.py)

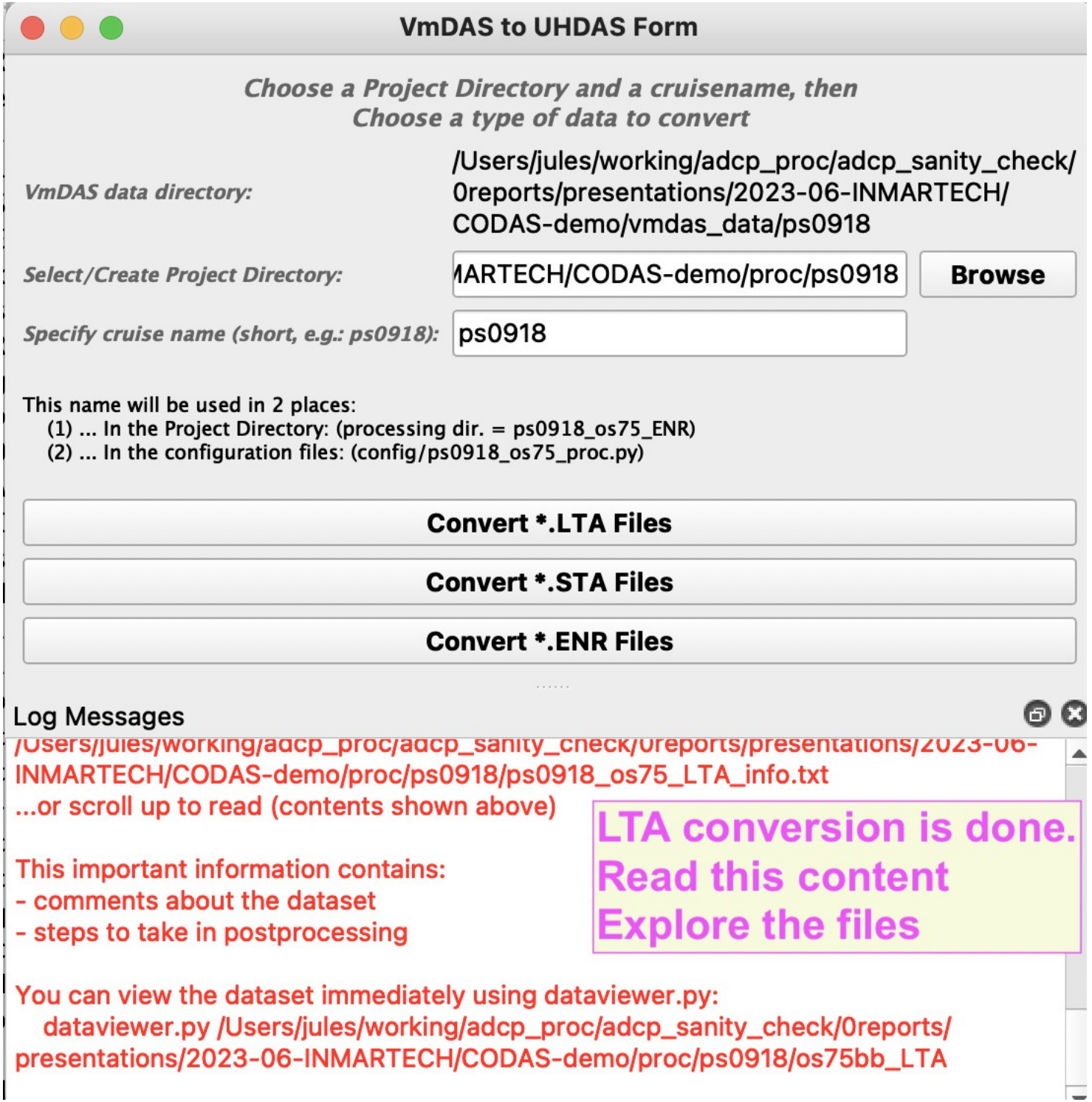
**Convert *.LTA Files**

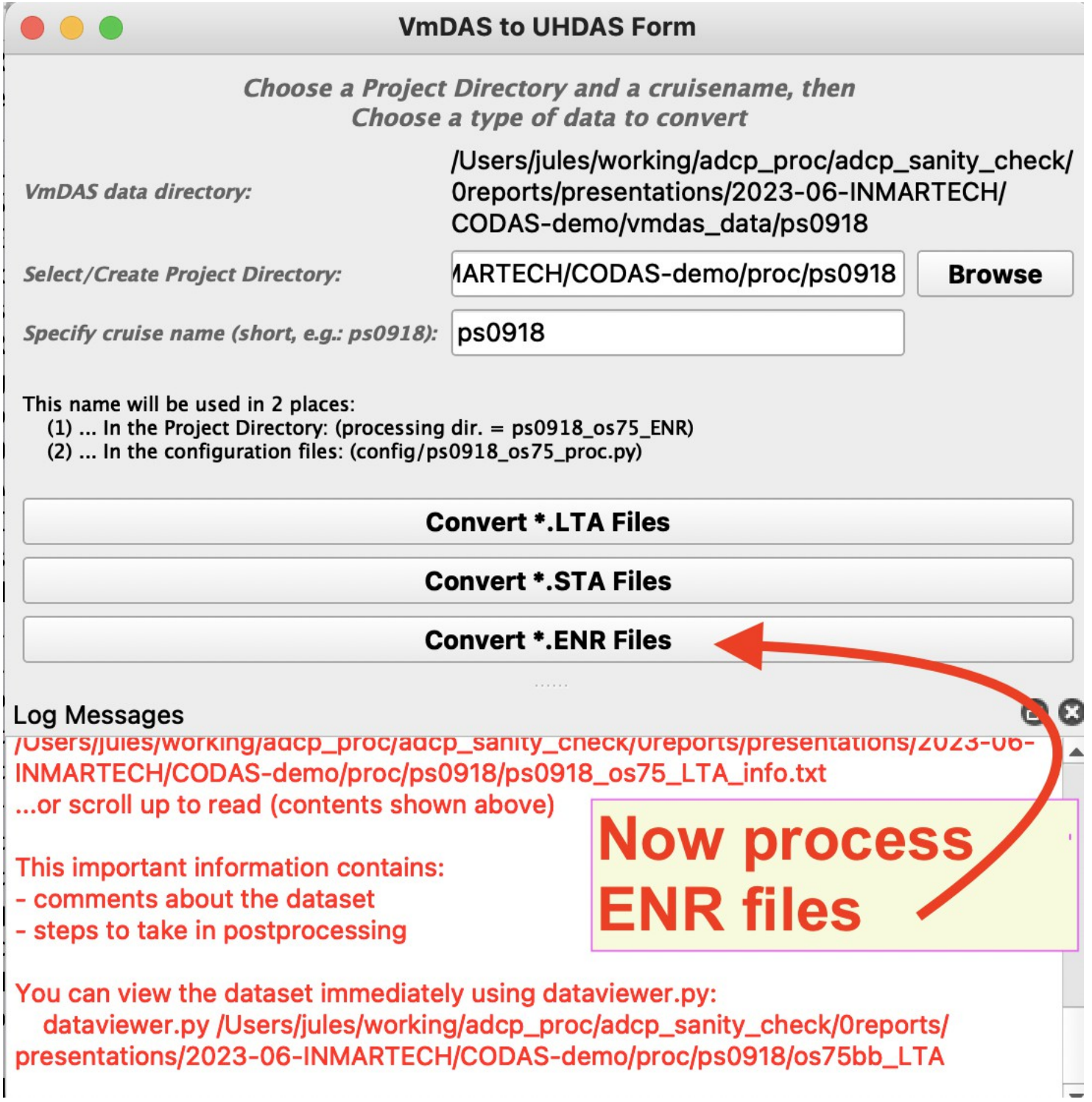
**Convert *.STA Files**

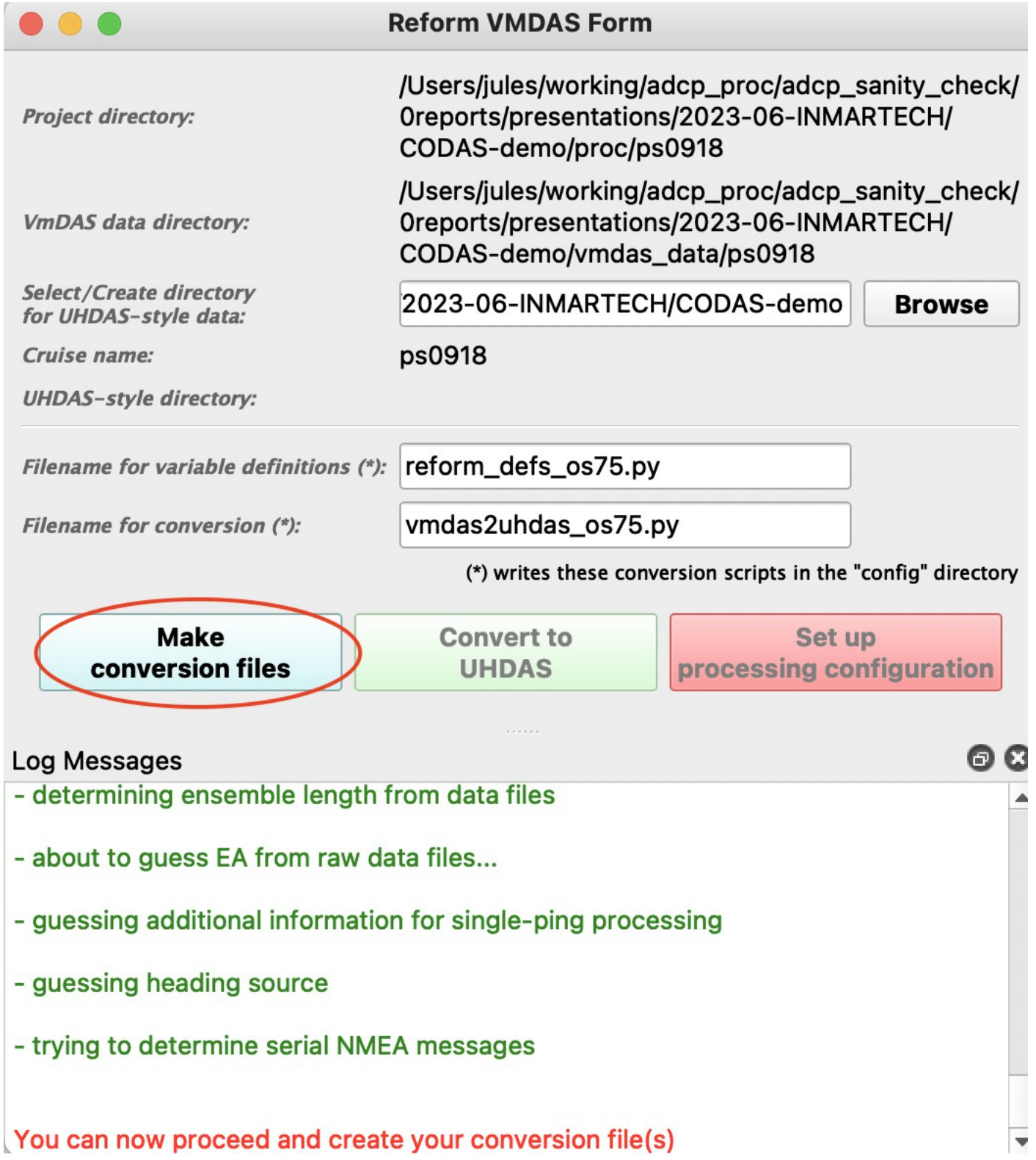
**Convert *.ENR Files**

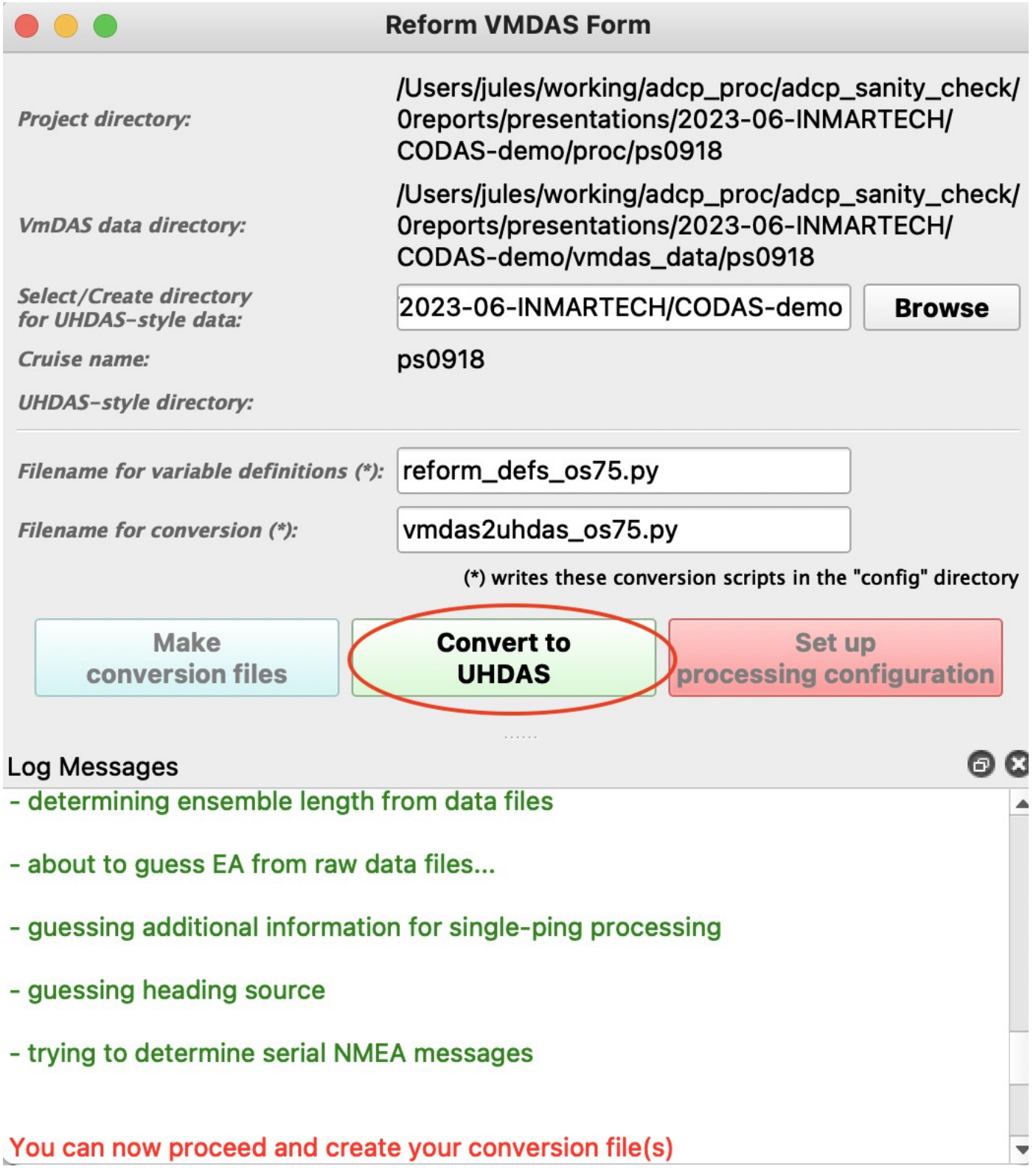
Log Messages

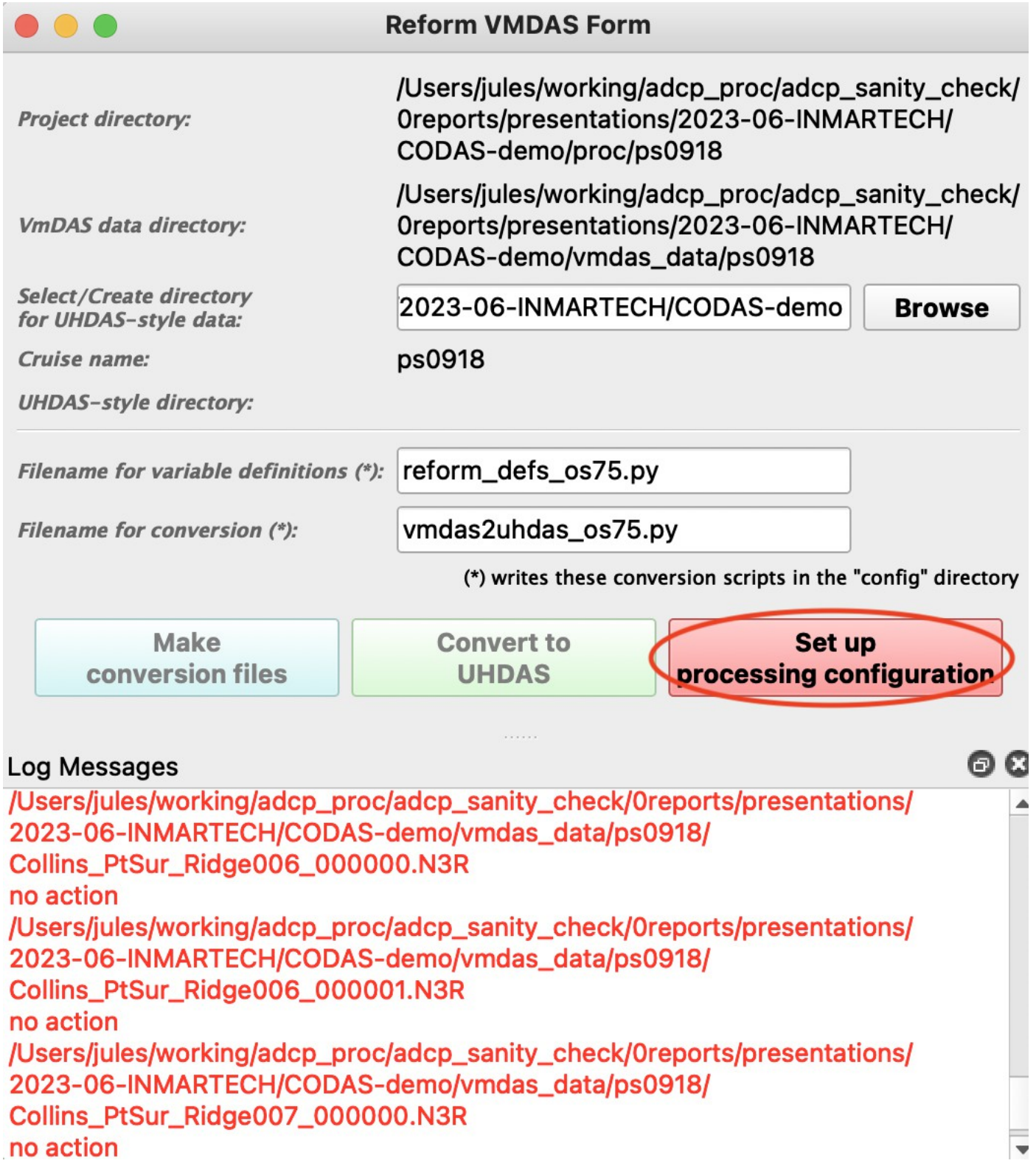

VmDAS to UHDAS Form
Choose a Project Directory and a cruisename, then
Choose a type of data to convert
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/vmdas_data/ps0918
Select/Create Project Directory:
MARTECH/CODAS-demo/proc/ps0918
Browse
Specify cruise name (short, e.g.: ps0918):
ps0918
This name will be used in 2 places:
(1) ... In the Project Directory: (processing dir. = ps0918_os75_ENR)
(2) ... In the configuration files: (config/ps0918_os75_proc.py)
Convert *.LTA Files
Convert *.STA Files
Convert *.ENR Files
Log Messages


VmDAS to UHDAS Form
Choose a Project Directory and a cruisename, then
Choose a type of data to convert
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/vmdas_data/ps0918
Select/Create Project Directory:
MARTECH/CODAS-demo/proc/ps0918
Browse
Specify cruise name (short, e.g.: ps0918):
ps0918
This name will be used in 2 places:
(1) ... In the Project Directory: (processing dir. = ps0918_os75_ENR)
(2) ... In the configuration files: (config/ps0918_os75_proc.py)
Convert *.LTA Files
Convert *.STA Files
Convert *.ENR Files
Log Messages
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-
INMARTECH/CODAS-demo/proc/ps0918/ps0918_os75_LTA_info.txt
...or scroll up to read (contents shown above)
This important information contains:
- comments about the dataset
- steps to take in postprocessing
LTA conversion is done.
Read this content
Explore the files
You can view the dataset immediately using dataviewer.py:
dataviewer.py /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/
presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/os75bb_LTA

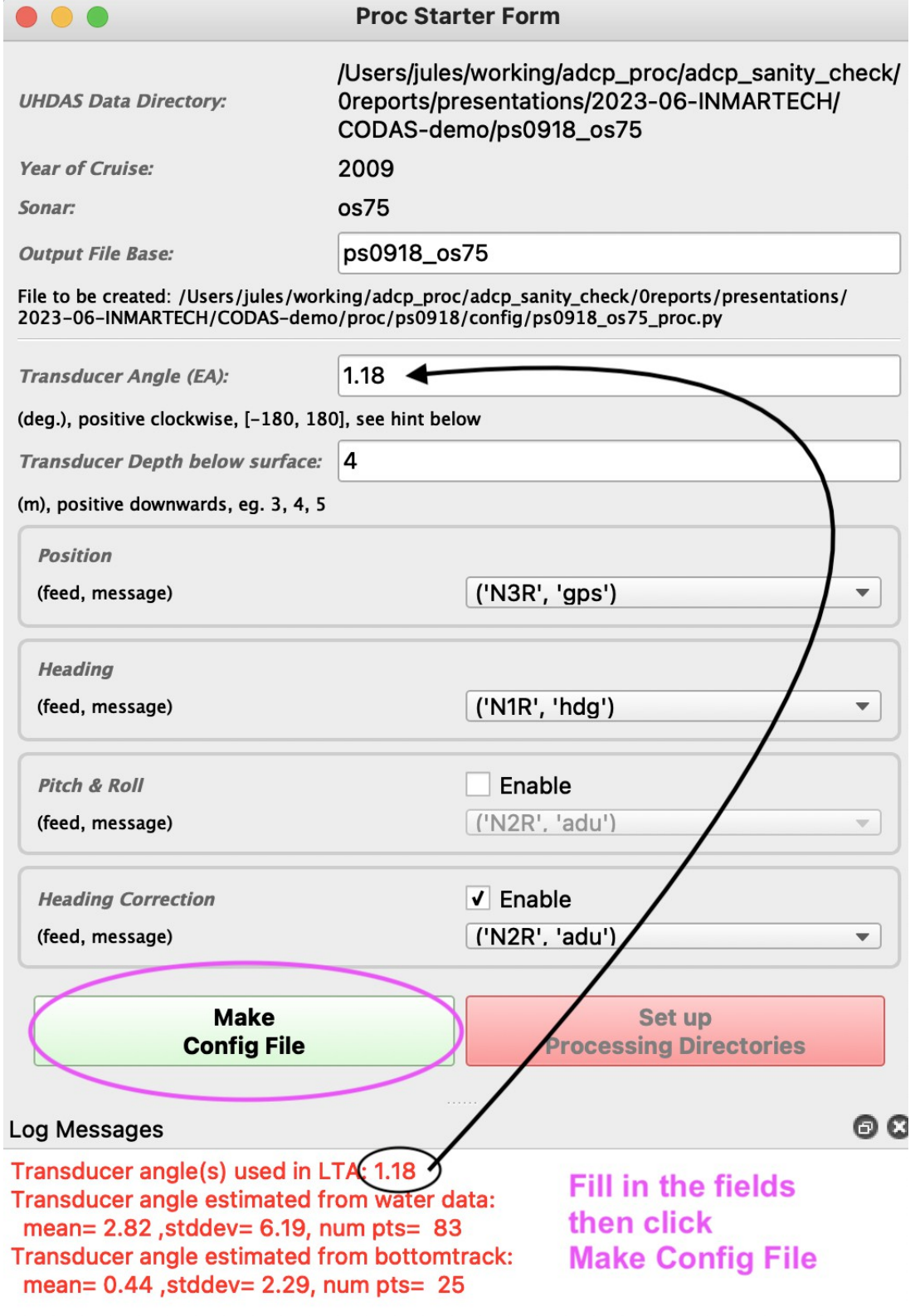

VmDAS to UHDAS Form
Choose a Project Directory and a cruisename, then
Choose a type of data to convert
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/vmdas_data/ps0918
Select/Create Project Directory:
MARTECH/CODAS-demo/proc/ps0918
Browse
Specify cruise name (short, e.g.: ps0918):
ps0918
This name will be used in 2 places:
(1) ... In the Project Directory: (processing dir. = ps0918_os75_ENR)
(2) ... In the configuration files: (config/ps0918_os75_proc.py)
Convert *.LTA Files
Convert *.STA Files
Convert *.ENR Files
Log Messages
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-
INMARTECH/CODAS-demo/proc/ps0918/ps0918_os75_LTA_info.txt
...or scroll up to read (contents shown above)
This important information contains:
- comments about the dataset
- steps to take in postprocessing
You can view the dataset immediately using dataviewer.py:
dataviewer.py /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/
presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/os75bb_LTA
Now process
ENR files

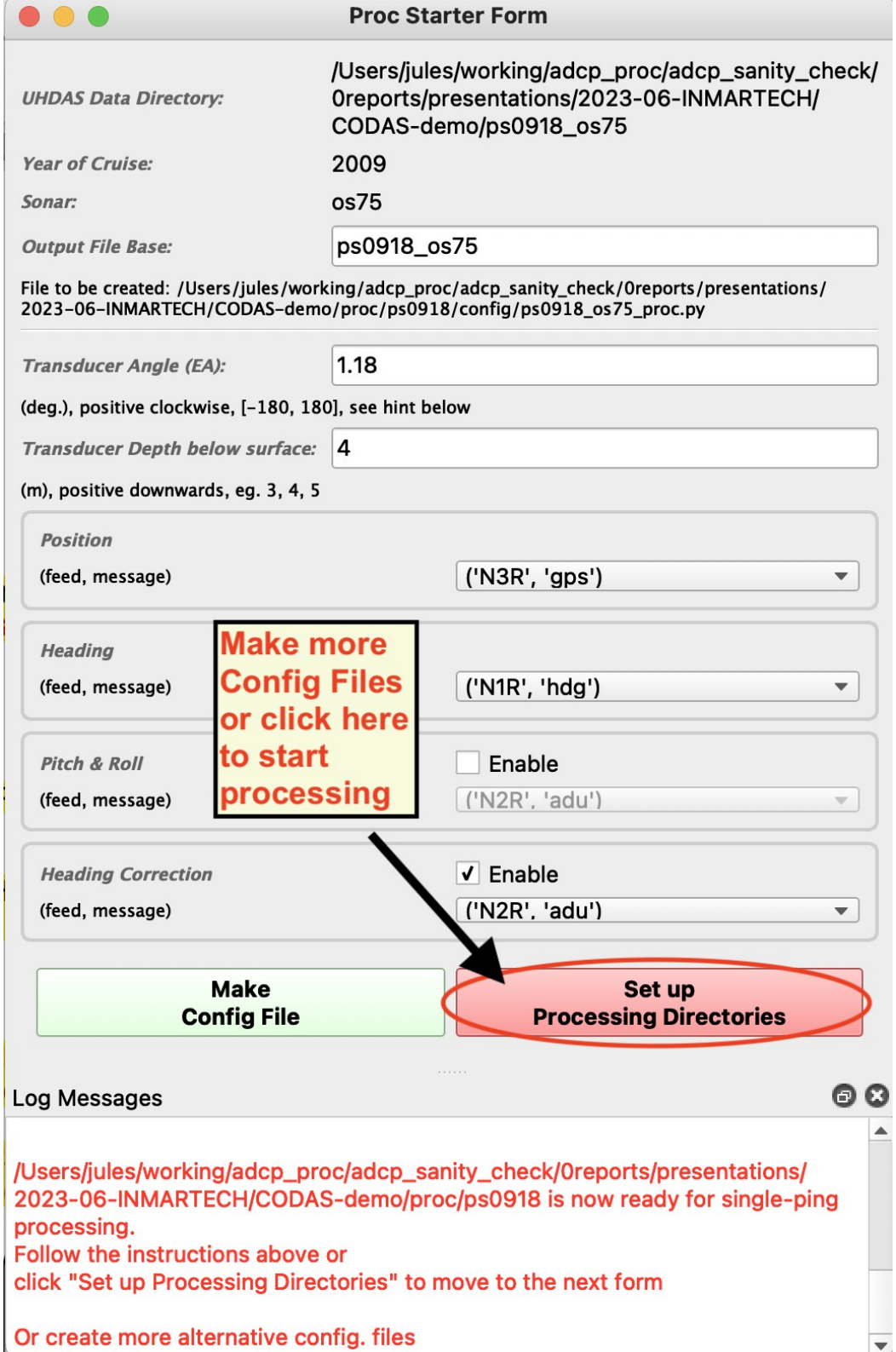

Reform VMDAS Form
Project directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/vmdas_data/ps0918
Select/Create directory for UHDAS-style data:
2023-06-INMARTECH/CODAS-demo
Browse
Cruise name:
ps0918
UHDAS-style directory:
Filename for variable definitions (*):
reform_defs_os75.py
Filename for conversion (*):
vmdas2uhdas_os75.py
(*) writes these conversion scripts in the "config" directory
Make conversion files
Convert to UHDAS
Set up processing configuration
Log Messages
- determining ensemble length from data files
- about to guess EA from raw data files...
- guessing additional information for single-ping processing
- guessing heading source
- trying to determine serial NMEA messages
You can now proceed and create your conversion file(s)

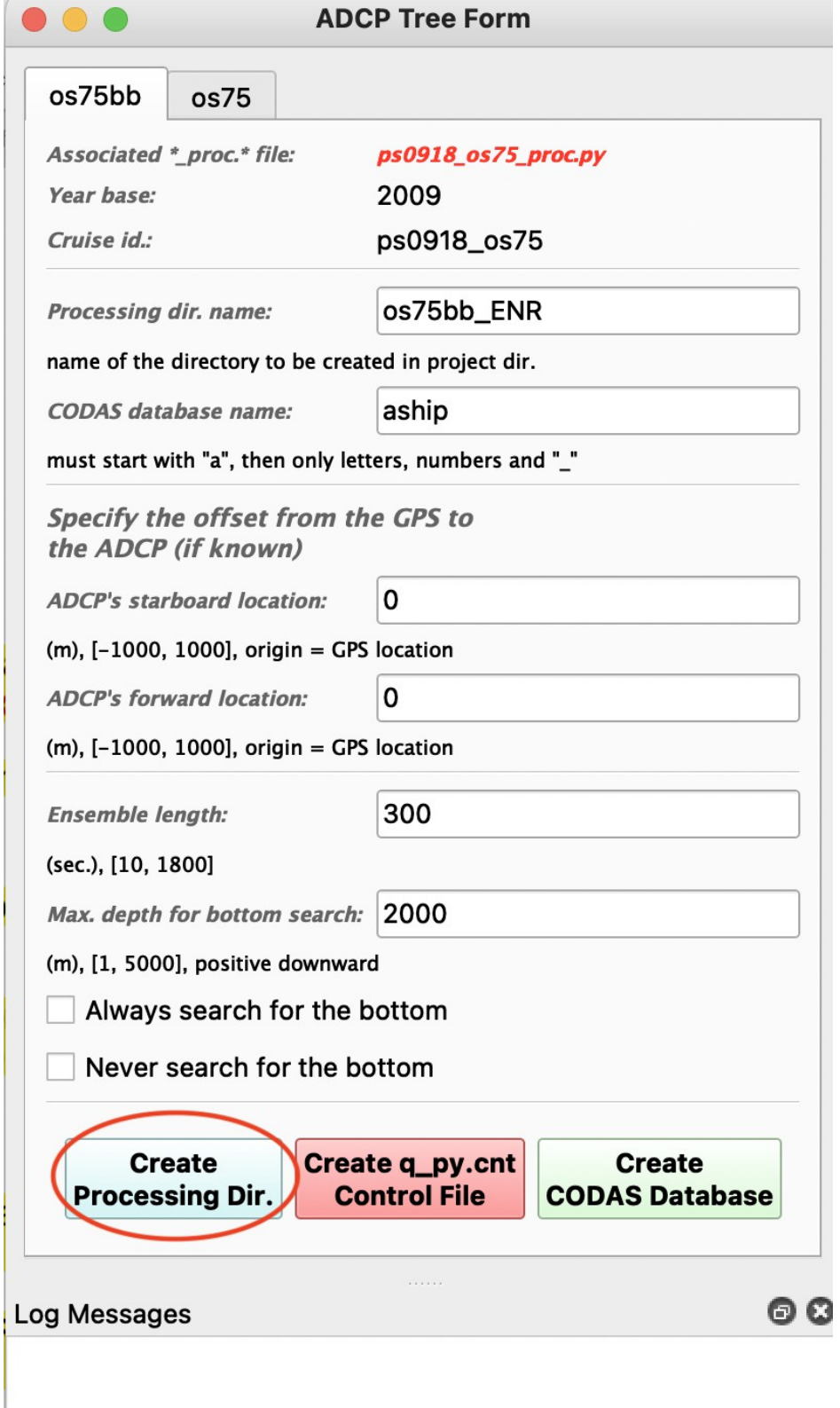

Reform VMDAS Form
Project directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/vmdas_data/ps0918
Select/Create directory for UHDAS-style data:
2023-06-INMARTECH/CODAS-demo
Browse
Cruise name:
ps0918
UHDAS-style directory:
Filename for variable definitions (*):
reform_defs_os75.py
Filename for conversion (*):
vmdas2uhdas_os75.py
(*) writes these conversion scripts in the "config" directory
Make conversion files
Convert to UHDAS
Set up processing configuration
Log Messages
- determining ensemble length from data files
- about to guess EA from raw data files...
- guessing additional information for single-ping processing
- guessing heading source
- trying to determine serial NMEA messages
You can now proceed and create your conversion file(s)

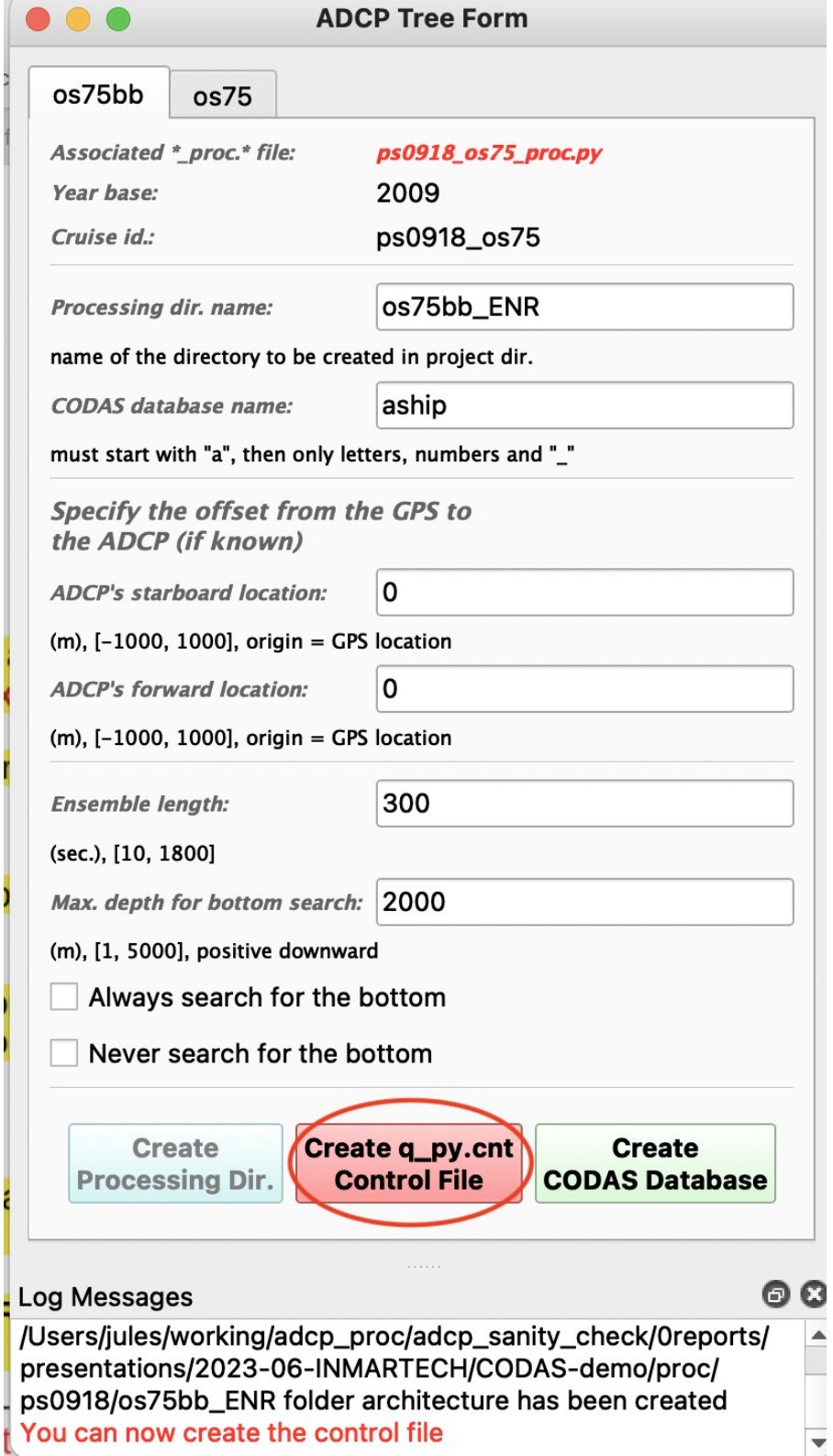

Reform VMDAS Form
Project directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/proc/ps0918
VmDAS data directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/vmdas_data/ps0918
Select/Create directory
for UHDAS-style data:
2023-06-INMARTECH/CODAS-demo
Browse
Cruise name:
ps0918
UHDAS-style directory:
Filename for variable definitions (*):
reform_defs_os75.py
Filename for conversion (*):
vmdas2uhdas_os75.py
(*) writes these conversion scripts in the "config" directory
Make
conversion files
Convert to
UHDAS
Set up
processing configuration
Log Messages
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/
2023-06-INMARTECH/CODAS-demo/vmdas_data/ps0918/
Collins_PtSur_Ridge006_000000.N3R
no action
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/
2023-06-INMARTECH/CODAS-demo/vmdas_data/ps0918/
Collins_PtSur_Ridge006_000001.N3R
no action
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/
2023-06-INMARTECH/CODAS-demo/vmdas_data/ps0918/
Collins_PtSur_Ridge007_000000.N3R
no action

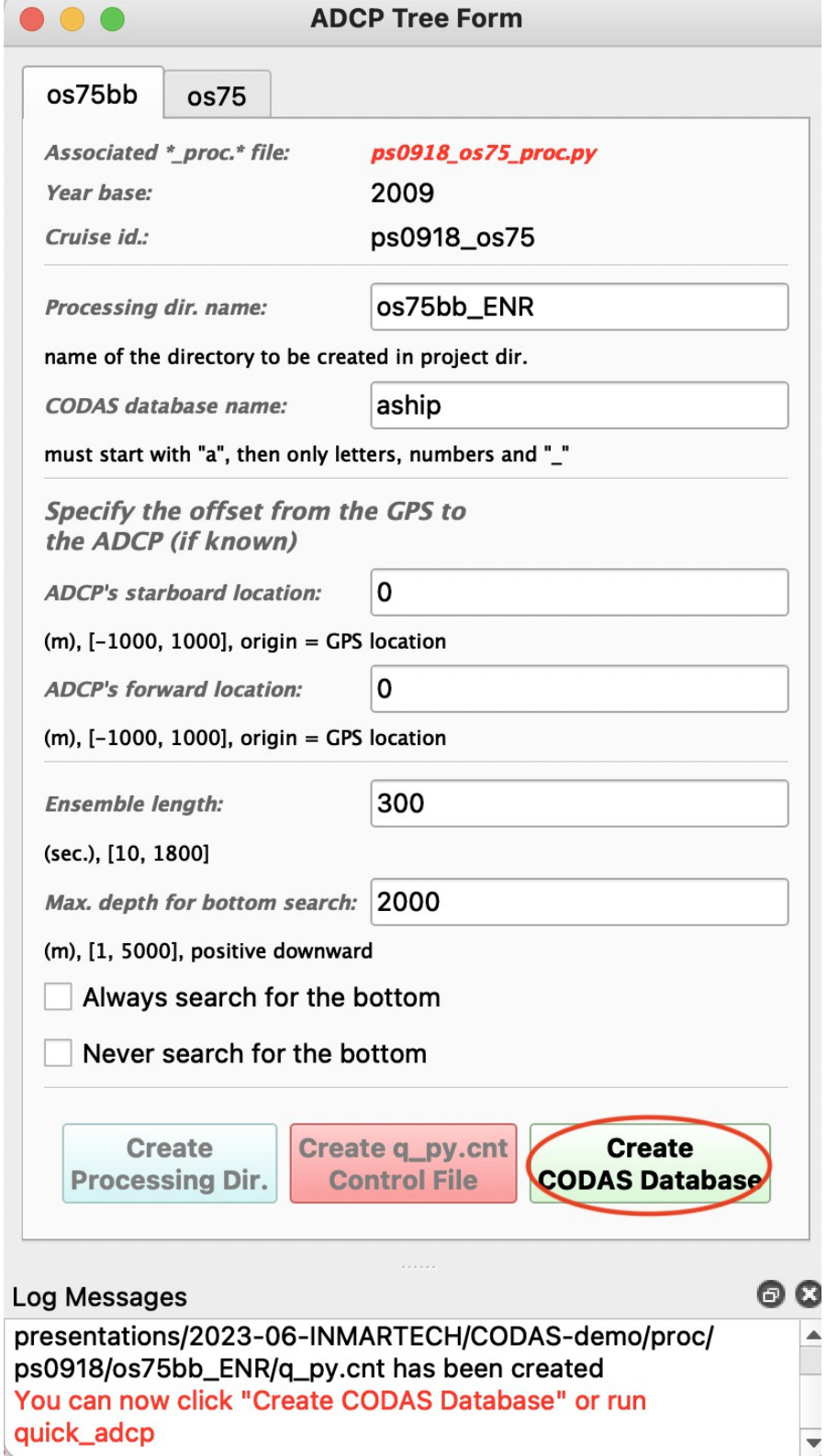

Proc Starter Form
UHDAS Data Directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/
0reports/presentations/2023-06-INMARTECH/
CODAS-demo/ps0918_os75
Year of Cruise:
2009
Sonar:
os75
Output File Base:
ps0918_os75
File to be created: /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/
2023-06-INMARTECH/CODAS-demo/proc/ps0918/config/ps0918_os75_proc.py
Transducer Angle (EA):
(deg.), positive clockwise, [-180, 180], see hint below
Transducer Depth below surface:
(m), positive downwards, eg. 3, 4, 5
Position
(feed, message)
('N2R', 'gps')
Heading
(feed, message)
('N2R', 'at2')
Pitch & Roll
Enable
(feed, message)
('N2R', 'adu')
Heading Correction
Enable
(feed, message)
('N2R', 'at2')
Make
Config File
Set up
Processing Directories
Log Messages
mean= 2.82 ,stddev= 6.19, num pts= 83
Transducer angle estimated from bottomtrack:
mean= 0.44 ,stddev= 2.29, num pts= 25

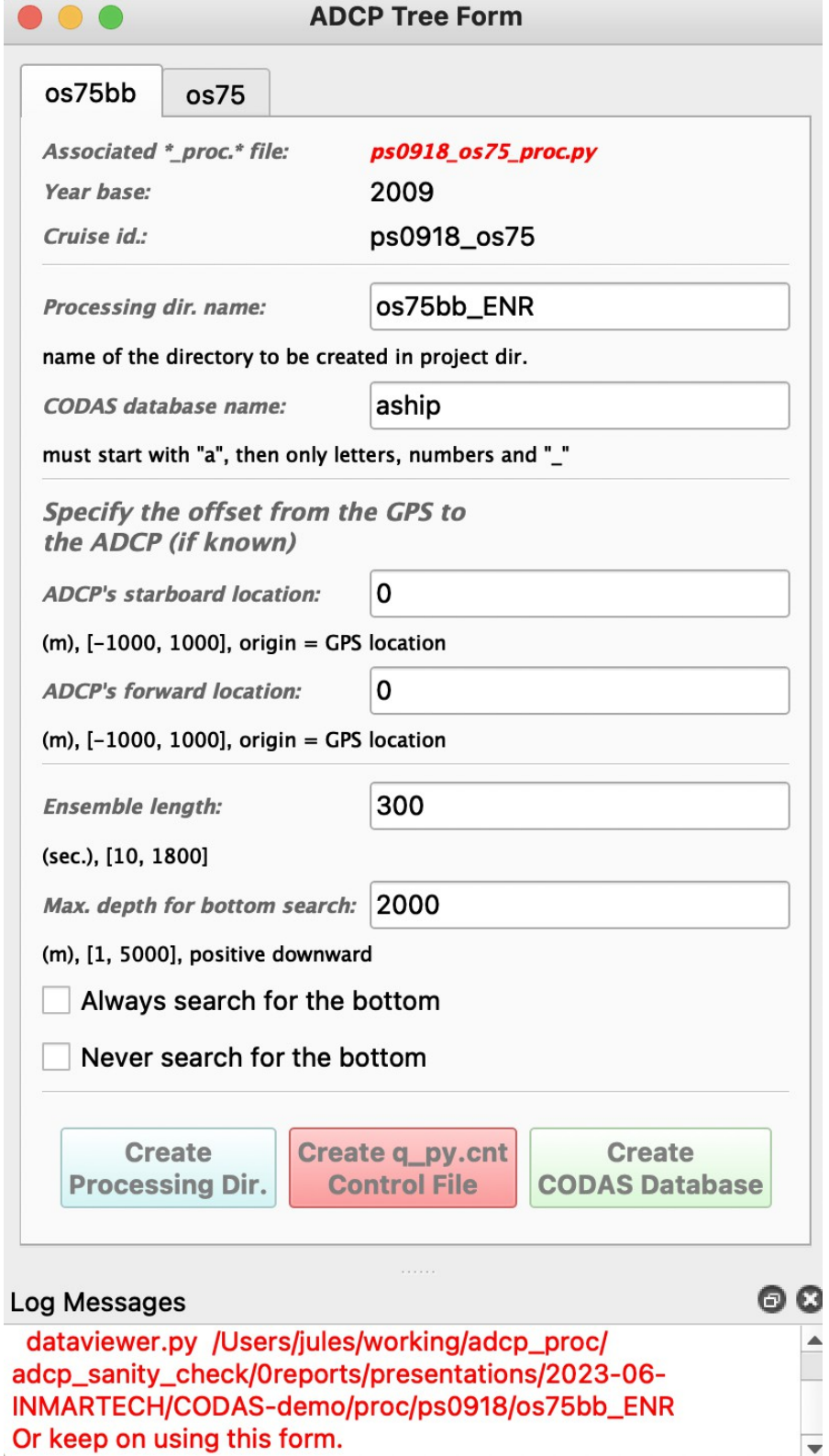

Proc Starter Form
UHDAS Data Directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/ps0918_os75
Year of Cruise:
2009
Sonar:
os75
Output File Base:
ps0918_os75
File to be created: /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/config/ps0918_os75_proc.py
Transducer Angle (EA):
1.18
(deg.), positive clockwise, [-180, 180], see hint below
Transducer Depth below surface:
4
(m), positive downwards, eg. 3, 4, 5
Position
(feed, message)
('N3R', 'gps')
Heading
(feed, message)
('N1R', 'hdg')
Pitch & Roll
Enable
(feed, message)
('N2R', 'adu')
Heading Correction
Enable
(feed, message)
('N2R', 'adu')
Make Config File
Set up Processing Directories
Log Messages
Transducer angle(s) used in LTA: 1.18
Transducer angle estimated from water data:
mean= 2.82 ,stddev= 6.19, num pts= 83
Transducer angle estimated from bottomtrack:
mean= 0.44 ,stddev= 2.29, num pts= 25
Fill in the fields
then click
Make Config File


Proc Starter Form
UHDAS Data Directory:
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/ps0918_os75
Year of Cruise:
2009
Sonar:
os75
Output File Base:
ps0918_os75
File to be created: /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/config/ps0918_os75_proc.py
Transducer Angle (EA):
1.18
(deg.), positive clockwise, [-180, 180], see hint below
Transducer Depth below surface:
4
(m), positive downwards, eg. 3, 4, 5
Position
(feed, message)
('N3R', 'gps')
Heading
(feed, message)
('N1R', 'hdg')
Pitch & Roll
(feed, message)
Enable
('N2R', 'adu')
Heading Correction
(feed, message)
Enable
('N2R', 'adu')
Make more Config Files or click here to start processing
Make Config File
Set up Processing Directories
Log Messages
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918 is now ready for single-ping processing.
Follow the instructions above or
click "Set up Processing Directories" to move to the next form
Or create more alternative config. files


ADCP Tree Form
os75bb
os75
Associated *_proc.* file:
ps0918_os75_proc.py
Year base:
2009
Cruise id.:
ps0918_os75
Processing dir. name:
os75bb_ENR
name of the directory to be created in project dir.
CODAS database name:
aship
must start with "a", then only letters, numbers and "_"
Specify the offset from the GPS to the ADCP (if known)
ADCP's starboard location:
0
(m), [-1000, 1000], origin = GPS location
ADCP's forward location:
0
(m), [-1000, 1000], origin = GPS location
Ensemble length:
300
(sec.), [10, 1800]
Max. depth for bottom search:
2000
(m), [1, 5000], positive downward
Always search for the bottom
Never search for the bottom
Create Processing Dir.
Create q_py.cnt Control File
Create CODAS Database
Log Messages


ADCP Tree Form
os75bb
os75
Associated *_proc.* file:
ps0918_os75_proc.py
Year base:
2009
Cruise id.:
ps0918_os75
Processing dir. name:
os75bb_ENR
name of the directory to be created in project dir.
CODAS database name:
aship
must start with "a", then only letters, numbers and "_"
Specify the offset from the GPS to the ADCP (if known)
ADCP's starboard location:
0
(m), [-1000, 1000], origin = GPS location
ADCP's forward location:
0
(m), [-1000, 1000], origin = GPS location
Ensemble length:
300
(sec.), [10, 1800]
Max. depth for bottom search:
2000
(m), [1, 5000], positive downward
Always search for the bottom
Never search for the bottom
Create Processing Dir.
Create q_py.cnt Control File
Create CODAS Database
Log Messages
/Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/os75bb_ENR folder architecture has been created
You can now create the control file


ADCP Tree Form
os75bb
os75
Associated *_proc.* file:
ps0918_os75_proc.py
Year base:
2009
Cruise id.:
ps0918_os75
Processing dir. name:
os75bb_ENR
name of the directory to be created in project dir.
CODAS database name:
aship
must start with "a", then only letters, numbers and "_"
Specify the offset from the GPS to the ADCP (if known)
ADCP's starboard location:
0
(m), [-1000, 1000], origin = GPS location
ADCP's forward location:
0
(m), [-1000, 1000], origin = GPS location
Ensemble length:
300
(sec.), [10, 1800]
Max. depth for bottom search:
2000
(m), [1, 5000], positive downward
Always search for the bottom
Never search for the bottom
Create Processing Dir.
Create q_py.cnt Control File
Create CODAS Database
Log Messages
presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/os75bb_ENR/q_py.cnt has been created
You can now click "Create CODAS Database" or run quick_adcp


ADCP Tree Form
os75bb
os75
Associated *_proc.* file:
ps0918_os75_proc.py
Year base:
2009
Cruise id.:
ps0918_os75
Processing dir. name:
os75bb_ENR
name of the directory to be created in project dir.
CODAS database name:
aship
must start with "a", then only letters, numbers and "_"
Specify the offset from the GPS to the ADCP (if known)
ADCP's starboard location:
0
(m), [-1000, 1000], origin = GPS location
ADCP's forward location:
0
(m), [-1000, 1000], origin = GPS location
Ensemble length:
300
(sec.), [10, 1800]
Max. depth for bottom search:
2000
(m), [1, 5000], positive downward
Always search for the bottom
Never search for the bottom
Create Processing Dir.
Create q_py.cnt Control File
Create CODAS Database
Log Messages
dataviewer.py /Users/jules/working/adcp_proc/adcp_sanity_check/0reports/presentations/2023-06-INMARTECH/CODAS-demo/proc/ps0918/os75bb_ENR
Or keep on using this form.