

# NEREIDAS setup and operation onboard RV SOCIB

*SOCIB-Research Vessel Facility*

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## 1. INTRODUCTION

The aim of this document is to describe a standardized procedure to conduct the setup and operation onboard of the acquisition system NEREIDAS at the SOCIB RV.

## 2. RELATED DOCUMENTS

- [RVF Data Management Plan](#)
- [NEREIDAS manual](#)

## 3. NEREIDAS CONFIGURATION

Changes of the configuration occurs when a new cruise starts. This change should be done only once at the beginning of each cruise.

- Open a terminal in the linux computer of the vessel (172.16.137.54) with socib user
- Edit the file `/home/socib/scbvessel_utils/config/env.def`
- Set the value of the cruise to the name of the cruise (first line of the file), for example:
  - `export SCBVESSEL_UTILS_CRUISENAME="20190729_CanalesSummner"`
- Save the changes

There are some unusual cases when other variables of the `env.def` file should be changed, for example:

- When the path to the data changes
- When the IP or ports of the sensor changes

Json calibration files may be modified if the calibration of the termosol is changed.

For more information about these changes read the [NEREIDAS manual](#).

## 4. PROCEDURE DEVELOPMENT

### 4.1. Before the cruise

- Open a terminal in the linux computer of the vessel (172.16.137.54) with socib user
- Verify that the calibration file at `~/scbvessel_utils/config/proc/proc_calib.json` is correct.
- Start the acquisition service

**socib@SCBDC:**~\$ `sudo service scbvessel_nereidas_raw start`

- Verify that the service is up

**socib@SCBDC:~\$** sudo service scbvessel\_nereidas\_raw status

```
socib@SCBDC:~/scbvessel_utils/bin/nereidas$ sudo service scbvessel_nereidas_raw status
● scbvessel_nereidas_raw.service - scbvessel_nereidas_raw
   Loaded: loaded (/etc/systemd/system/scbvessel_nereidas_raw.service; enabled; vendor preset: enabled)
   Active: failed (Result: timeout) since mar 2019-07-23 12:51:22 GMT; 2 days ago
   Process: 26464 ExecStart=/home/socib/scbvessel_utils/bin/scbvessel_nereidas_raw -v (code=killed, signal=TERM)
   Main PID: 26464 (code=killed, signal=TERM)

Warning: Journal has been rotated since unit was started. Log output is incomplete or unavailable.
socib@SCBDC:~/scbvessel_utils/bin/nereidas$ sudo service scbvessel_nereidas_raw start
socib@SCBDC:~/scbvessel_utils/bin/nereidas$ sudo service scbvessel_nereidas_raw status
● scbvessel_nereidas_raw.service - scbvessel_nereidas_raw
   Loaded: loaded (/etc/systemd/system/scbvessel_nereidas_raw.service; enabled; vendor preset: enabled)
   Active: active (running) since vie 2019-07-26 06:37:51 GMT; 2s ago
   Main PID: 23499 (scbvessel)
   CGroup: /system.slice/scbvessel_nereidas_raw.service
           └─23499 /bin/bash /home/socib/scbvessel_utils/bin/scbvessel_nereidas_raw -v
              └─23521 /bin/bash /home/socib/scbvessel_utils/bin/scbvessel_nereidas_raw -v
                 └─23522 tee -a /home/socib/scbvessel_utils/logs/nereidas_raw 201907.log
                    └─23523 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_nereidas_raw -v
                       └─24013 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_sbe21 -N NEREIDAS_TERMO...
                          └─24064 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_gettcp_geonica2000 -N NEREIDAS_METEO -s meteo -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/meteo.nmea/{DDMMYY}
                             └─24256 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_nmeasensor -N GP0GA,GPRMB,GPZDA,GPVTG -s gps -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gps.nmea/{DDMMYY}
                                └─24271 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_sonda -N SDDPT -s sonda -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/sonda.nmea/{DDMMYY}
                                   └─24272 cat /tmp/tmp.30S91K001f
                                      └─24314 tcpdump -c 4 -A -s0 -n dst port 2020
                                         └─24316 grep -v 2020\JUDP
                                            └─24341 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_sbe21 -N NEREIDAS_TERMO...
                                               └─24343 cat /tmp/tmp.vb09kSB3mN
                                                  └─24356 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_nmeasensor -N HEHDT -s gyro -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gyro.nmea/{DDMMYY}
                                                     └─24395 netcat -ul -q 1 3030
                                                        └─24515 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_nmeasensor -N GP0GA,GPRMB,GPZDA,GPVTG -s gps -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gps.nmea/{DDMMYY}
                                                           └─24537 sleep 10
                                                              └─24554 netcat -ul -q 1 -w 5 5602
                                                                 └─24568 cat /tmp/tmp.5m4bxUHSM0
                                                                    └─24570 /bin/bash /home/socib/scbvessel_utils/bin/nereidas/scbvessel_getudp_nmeasensor -N HEHDT -s gyro -n /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gyro.nmea/{DDMMYY}
                                                                       └─24591 netcat -ul -q 1 -w 5 4002
                                                                          └─24601 cat /tmp/tmp.A3E4PyD0p

jul 26 06:37:52 SCBDC scbvessel[23499]: ASCII file basename is /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gps.raw/{DDMMYY}.gps.raw
jul 26 06:37:52 SCBDC scbvessel[23499]: Output columns are: TIMESTAMP,WIND_SPEED_MS,WIND_DIRECTION_DEGREES,WIND_GUS_MS,HUMIDITY_PERCENTAGE,PRESSURE_HPA,TEMPERATURE_CELSIUS
jul 26 06:37:52 SCBDC scbvessel[23499]: FIFO file is /tmp/tmp.A3E4PyD0p
jul 26 06:37:52 SCBDC scbvessel[23499]: Starting udp sniffer: save2fifo /tmp/tmp.5m4bxUHSM0 &
jul 26 06:37:52 SCBDC scbvessel[23499]: ASCII file basename is /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gyro.raw/{DDMMYY}.gyro.raw
jul 26 06:37:52 SCBDC scbvessel[23499]: netcat -ul -q 1 5602 >> /tmp/tmp.5m4bxUHSM0;
jul 26 06:37:52 SCBDC scbvessel[23499]: cat /tmp/tmp.5m4bxUHSM0 | while read -r line; do echo "${date +%s})," >> scbvessel_filldate /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gps.raw/{DDMMYY}
jul 26 06:37:52 SCBDC scbvessel[23499]: Starting udp sniffer: save2fifo /tmp/tmp.A3E4PyD0p &
jul 26 06:37:52 SCBDC scbvessel[23499]: netcat -ul -q 1 4002 >> /tmp/tmp.A3E4PyD0p;
jul 26 06:37:52 SCBDC scbvessel[23499]: cat /tmp/tmp.A3E4PyD0p | while read -r line; do echo "${date +%s})," >> scbvessel_filldate /datos/BaseDatosContinua/ORI/20190729_CanalesSummner/{MM-YYYY}/gyro.raw/{DDMMYY}
```

- Verify that raw data is recorded

Data should be recorded at /datos/BaseDatosContinua/ORI/20190729\_CanalesSummner if the name of the cruise that was defined in the env.def is 20190729\_CanalesSummner.

There should be the following directories when all the sensors are on:

- gps.nmea
- gps.raw
- gyro.nmea
- gyro.raw
- meteo.bin
- meteo.nmea
- meteo.raw
- sonda.nmea
- sonda.raw
- termosal.bin
- termosal.nmea
- termosal.raw

Notice that the termosal is started outside the harbor so the folders termosal.XXX will be created later when leaving the harbor. It is worth taking a look at the beginning of the mission to make sure there are no issues with the termosal acquisition.

If any of these folders do not show it is an indication that the sensor is not visible by NEREIDAS. Verify that the sensor is on, that the rs232 connection is fine and that the moxa does not have any configuration issue.

Every day a new file will be created in each of these directories. The verification procedure may be done at the beginning of the day to make sure that the raw data is acquired. At any point in the mission, you can also use **tail -f file** on the created to verify that the files are increasing with new raw data.

- Verify that the processing service is up

**socib@SCBDC:**~\$ sudo crontab -l

You should see the following lines (Watch up for commented lines!!):

```
# Crear proc y ail de los ultimos ~5 minutos cada 5 minutos
*/1 * * * * /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
*/1 * * * * Sleep 10; /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
*/1 * * * * Sleep 20; /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
*/1 * * * * Sleep 30; /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
*/1 * * * * Sleep 40; /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
*/1 * * * * Sleep 50; /home/socib/scbvessel_utils/bin/scbvesselnereidas_proc -t 12 >> /home/socib/scbvessel_utils/logs/crontab_nereidas_proc_py.log
```

If you do not see the lines, edit the crontabs:

**socib@SCBDC:**~\$ sudo crontab -e

- Verify that the processed data is created

The processed data is organized by months-year at /datos/BaseDatosContinua/SCB. Open the terminal and go to the folder of the current month (e.g. 07-2019). You should see three folders:

- meteo.proc
- posicion.proc
- termosol.proc

Each day the processing service should create a file containing the processed data. Use tail -f to verify that the files are adding as expected.

- Verify that data synchronization with DC is set

**socib@SCBDC:**~\$ sudo crontab -u socib -l

The following lines should be uncommented.

```
*/5 * * * * rsync -avz /datos/BaseDatosContinua/SCB/ vessel@portal.socib.es:/socib/raw/RT/vessel
```

```
*3 * * * * rsync -azv --remove-source-files /datos/BaseDatosContinua/RT/ vessel@portal.socib.es:/socib/raw/RT/vessel/socib_rv
```

Edit the crontab if required:

```
socib@SCBDC:~$ sudo crontab -u socib -e
```

## 4.2. After the end of the cruise (at Palma harbour)

- Open a terminal in the linux computer of the vessel (172.16.137.54) with socib user
- Start the acquisition service

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw stop
```

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw status
```

- Open a terminal in the linux computer of the vessel (172.16.137.54) with socib user
- Start the acquisition service

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw start
```

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw status
```

- Open a terminal in the linux computer of the vessel (172.16.137.54) with socib user
- Start the acquisition service

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw stop
```

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw status
```

```
socib@SCBDC:~$ sudo service scbvessel_nereidas_raw status
scbvessel_nereidas_raw.service - scbvessel_nereidas_raw
Loaded: loaded (/etc/systemd/system/scbvessel_nereidas_raw.service; enabled; vendor preset: enabled)
Active: inactive (dead) since vie 2019-07-26 06:52:45 GMT; 3s ago
Main PID: 23499 (code=killed, signal=TERM)

jul 26 06:52:45 SCBDC scbvessel[23499]: /home/socib/scbvessel_utils/bin/nereidas/scbvessel_nereidas_raw: línea 49: 24064 Terminado
jul 26 06:52:45 SCBDC scbvessel[23499]: /home/socib/scbvessel_utils/bin/nereidas/scbvessel_nereidas_raw: línea 49: 24256 Terminado
jul 26 06:52:45 SCBDC scbvessel[23499]: /home/socib/scbvessel_utils/bin/nereidas/scbvessel_nereidas_raw: línea 49: 24350 Terminado
jul 26 06:52:45 SCBDC scbvessel[23499]: Process sonda is done
jul 26 06:52:45 SCBDC scbvessel[23499]: Process meteo is done
jul 26 06:52:45 SCBDC scbvessel[23499]: Process gps is done
jul 26 06:52:45 SCBDC scbvessel[23499]: Process gyro is done
jul 26 06:52:45 SCBDC scbvessel[23499]: Process termosal is done
jul 26 06:52:45 SCBDC scbvessel[23499]: STOPPED NEREIDAS SERVICE
jul 26 06:52:45 SCBDC systemd[1]: Stopped scbvessel_nereidas_raw.

scbvessel_getudp_sonda -N SDDPT -s sonda -n /datos/BaseDatosContin
scbvessel_getudp_nmeasensor -N GP6GA,GPWIB,GP2DA,GPVTG -s gps -n /
scbvessel_getudp_nmeasensor -N HEHDT -s gyro -n /datos/BaseDatosCo
```

- Transfer ORI data to Data Center
  - Copy data folder  
/datos/BaseDatosContinua/ORI/20190729\_CanalesSummner  
(assuming that the name of the cruise that was defined in the env.def is 20190729\_CanalesSummner) to an external drive
  - Copy data folder to /socib/raw/ORI/vessel