SnT 2021
CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

CTBTO
PREPARATORY COMMISSION

CTBTO IMS Contribution to SDG: 14 Life Below Water « extended »

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P5.2-175

POSTER

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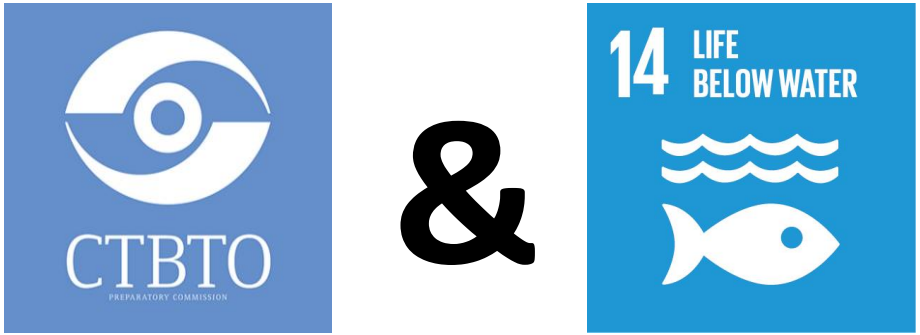
OBJECTIVES

- Hydro-acoustic data processing and analysis from June 2018 to July 2019 in the Indian Ocean;
- Identify the source of events in the studied area;
- Interpret the result as a contribution to SDG:14 Life below water.



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ABSTRACT

- How the IMS of the CTBTO can contribute on SDG14 in the Indian Ocean?
- 12 months of non-stop data from H01W, H08S, H04N and H04S were processed.
- PMCC method was used for hydroacoustic signal detections.
- For each stations we separated the detections in 2 main categories:

  - The first category is the detections which remains present during the entire processing period.
  - The second category is detections that requires further investigations such as Volcanos, land slide, ice breaking, cyclones and life below water.

- Constant detection was respectively observed at station H01W, H08S, H04N between azimuth 140 and 250; azimuth 27 to 35 and 150 to 200; azimuth 0 to 100. We observed that those signals may come from tectonic event and ice breaking.

- For life below water it is still hard to say if we have detected any but this is included in NDC Madagascar's perspective.

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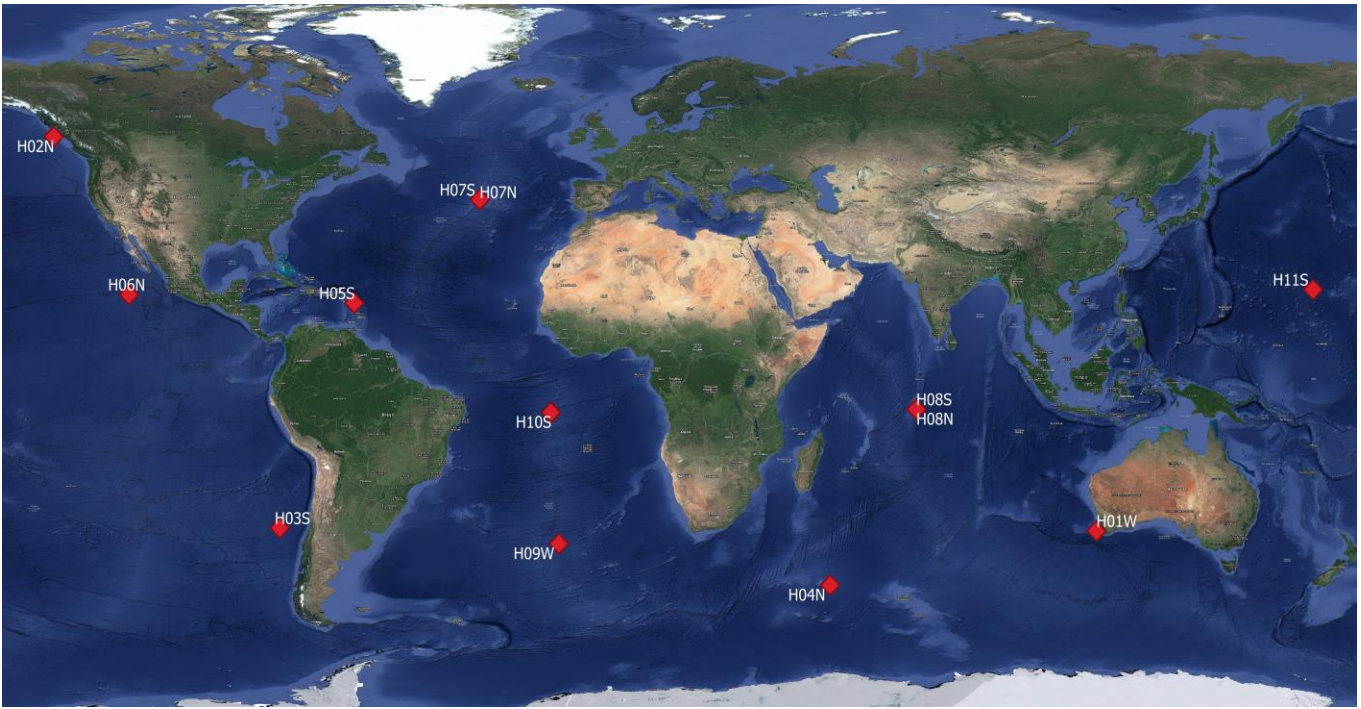
INTRODUCTION



- Hydroacoustic Data (waveform) are collected from the secure web portal of the CTBTO swp.ctbto.org.
- H01, H08, H04 are located in the Indian Ocean (White triangle).
- Water is a very good sound conductor so 11 stations are enough to monitor underwater explosions.
- At least three stations (white) are needed in order to locate an event, it is then necessary to combine the arrival from Hydroacoustic stations with Seismic stations (red)

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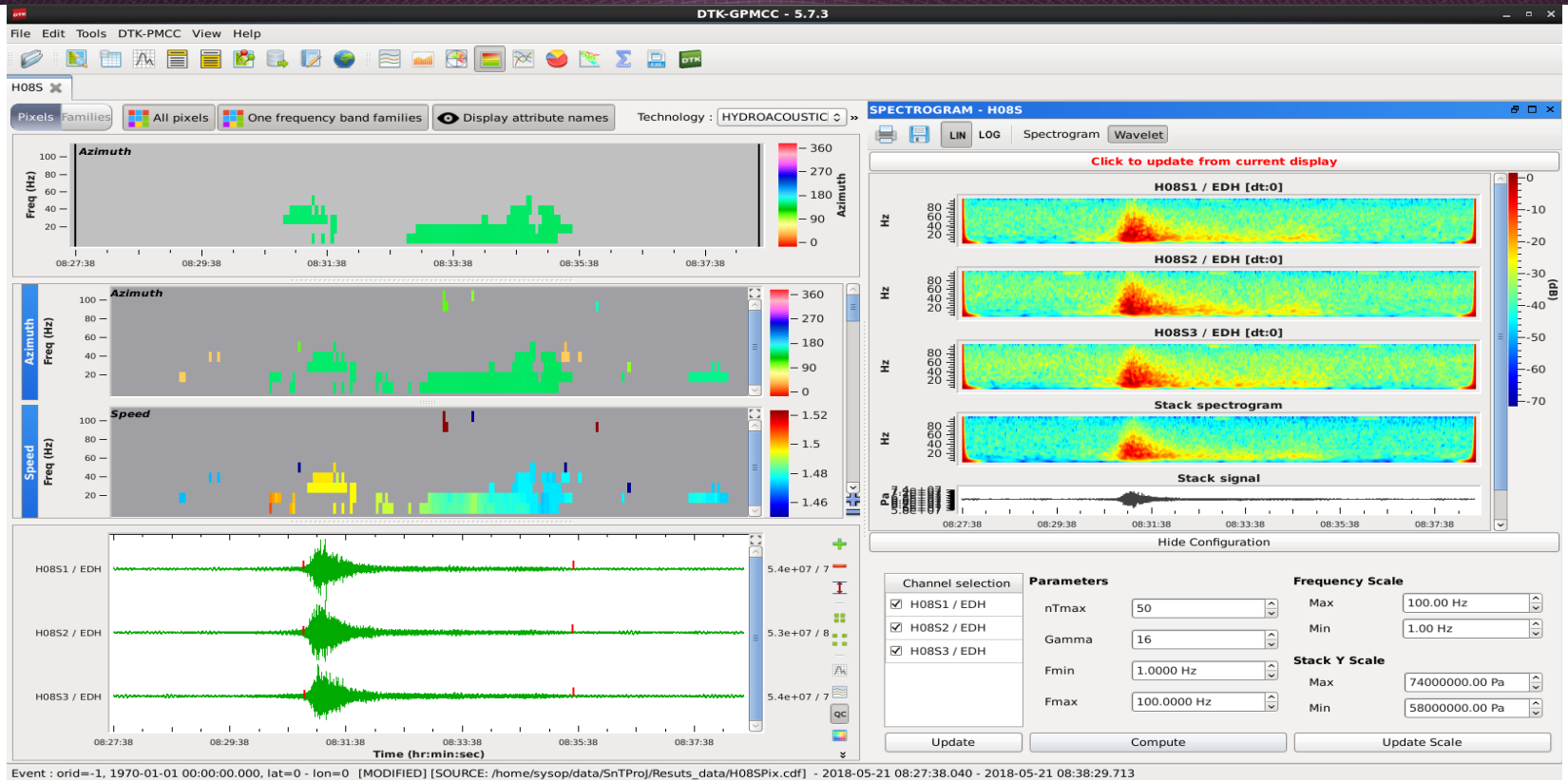
METHODS-Event detection



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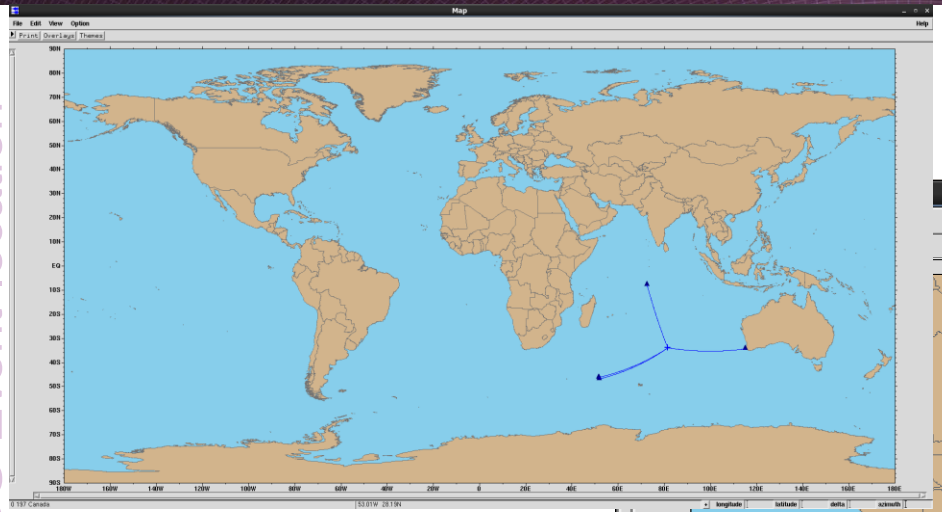
METHODS-Event location

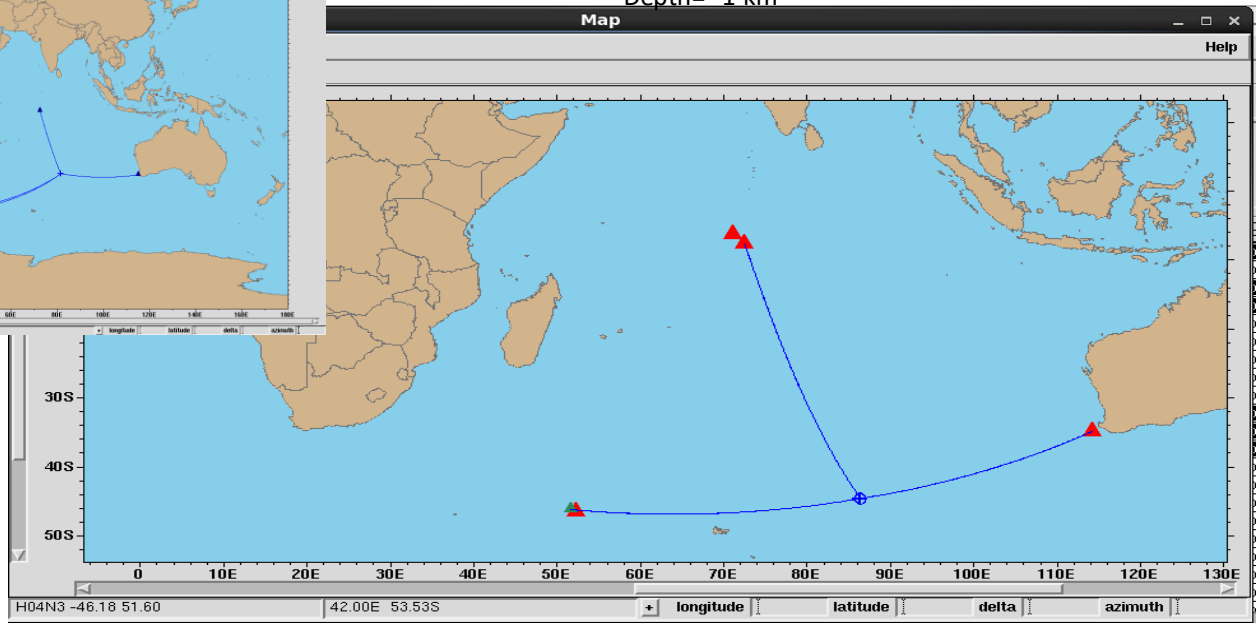


Underwater earthquake on 27th Mars 2019

Lat: -33.9184
Long: 81.5669

Depth= -1 km

Underwater earthquake on 27th Mars 2019
Lat: -11.9185
Long: 66.2836
Depth= -1 km



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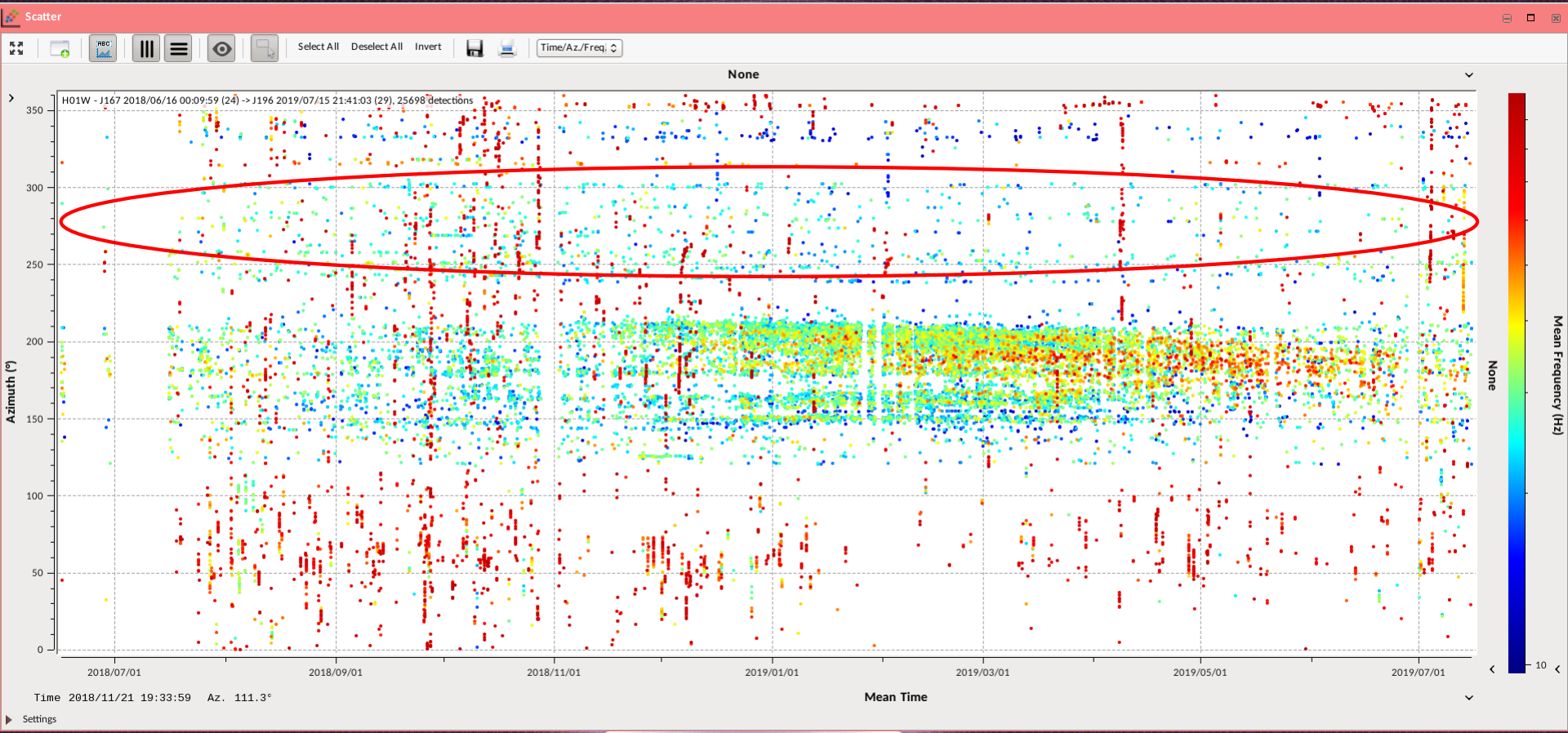

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H08S

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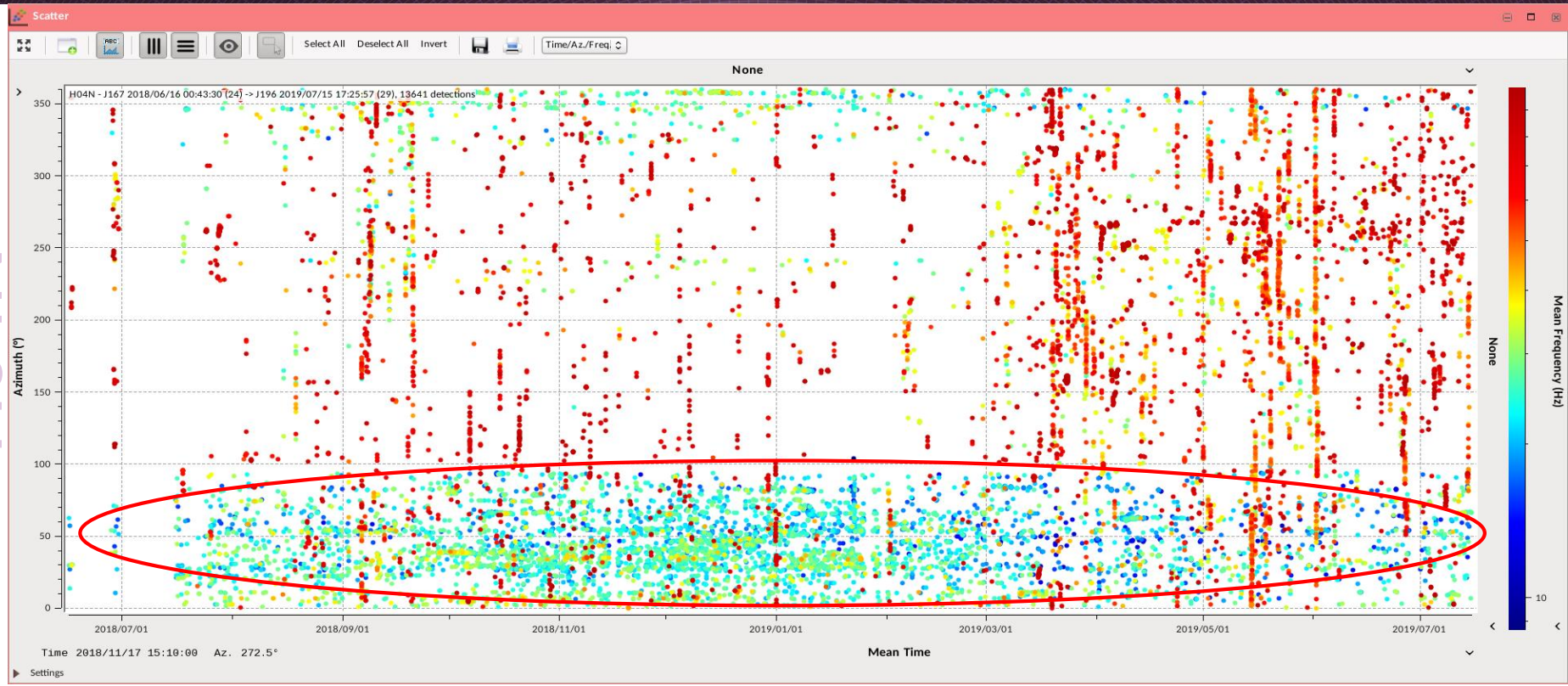
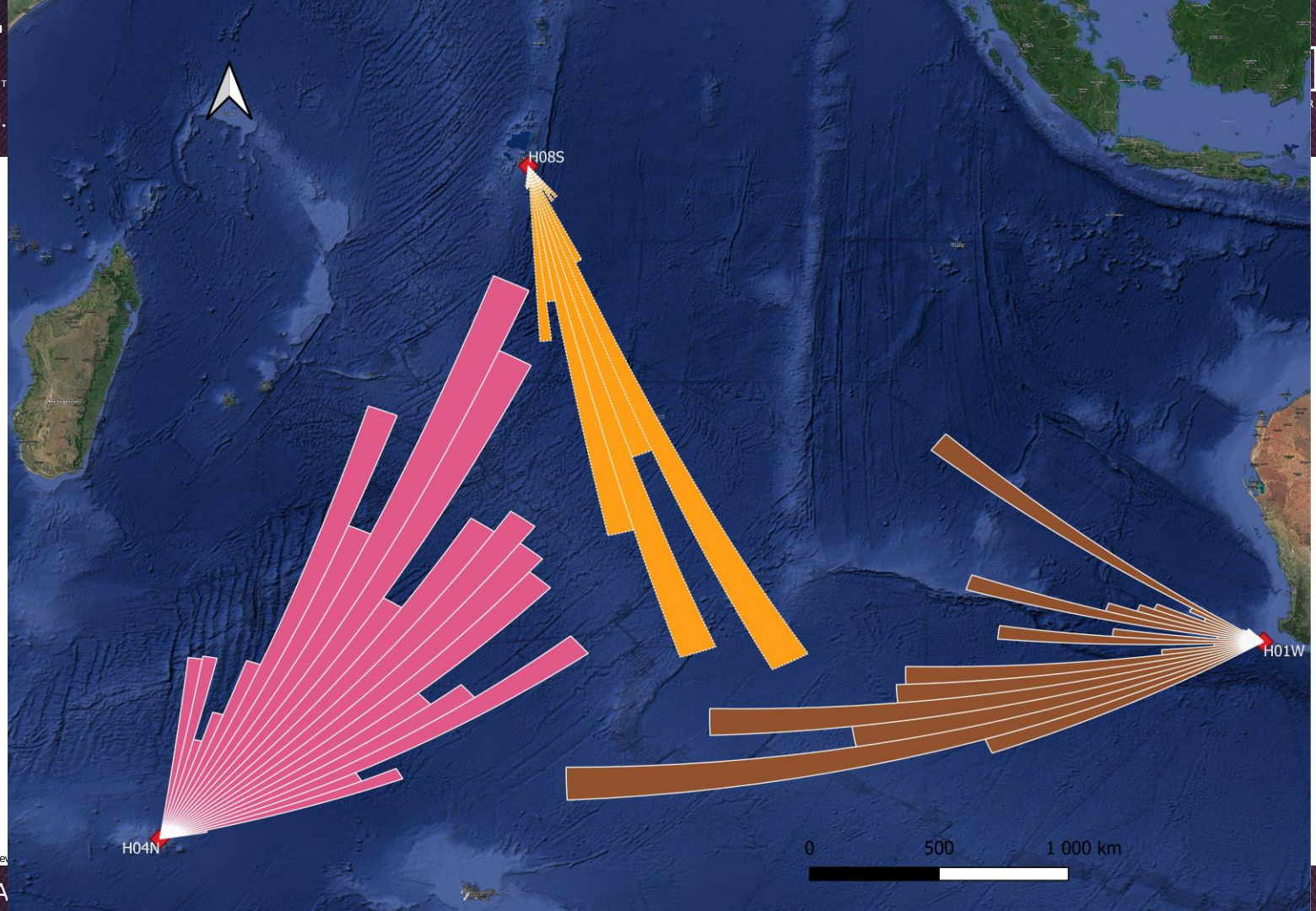
H04N



Discussion



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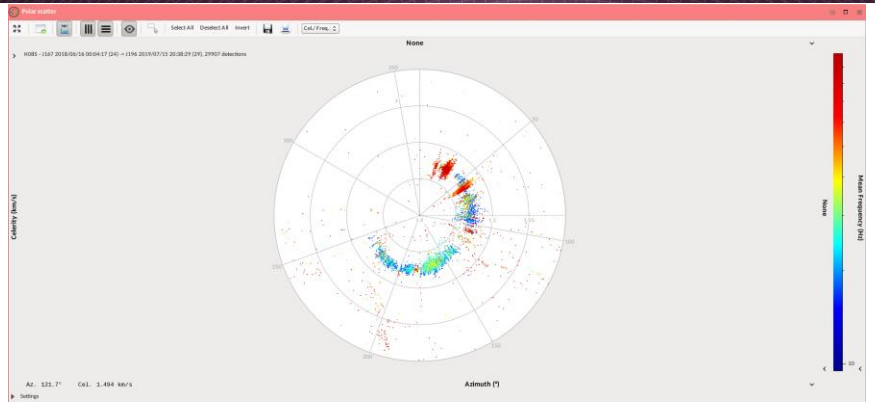
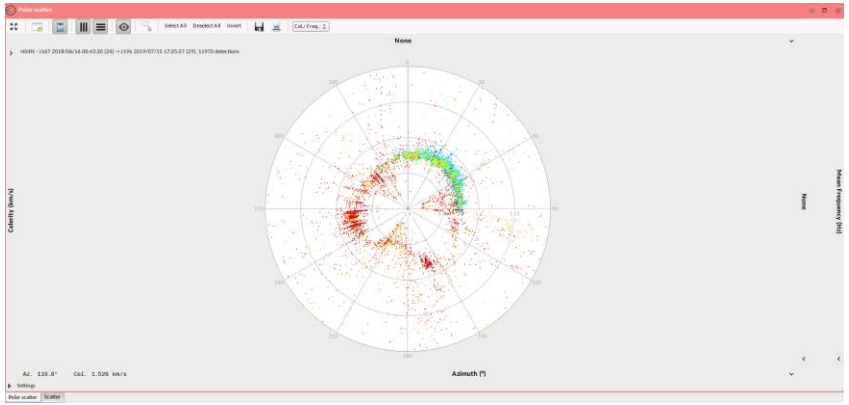
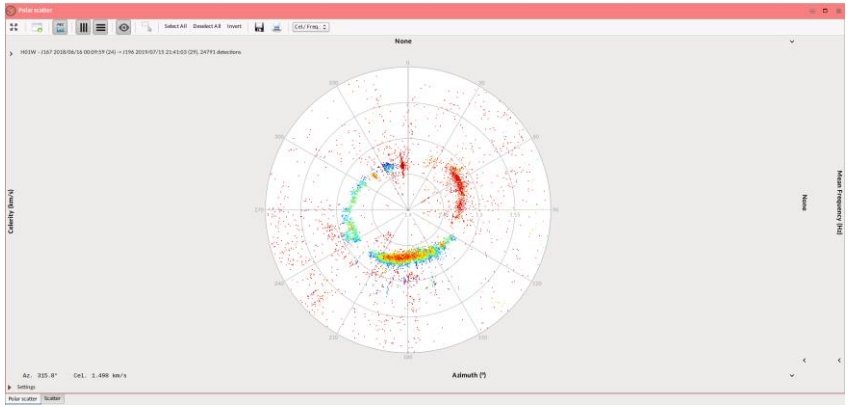
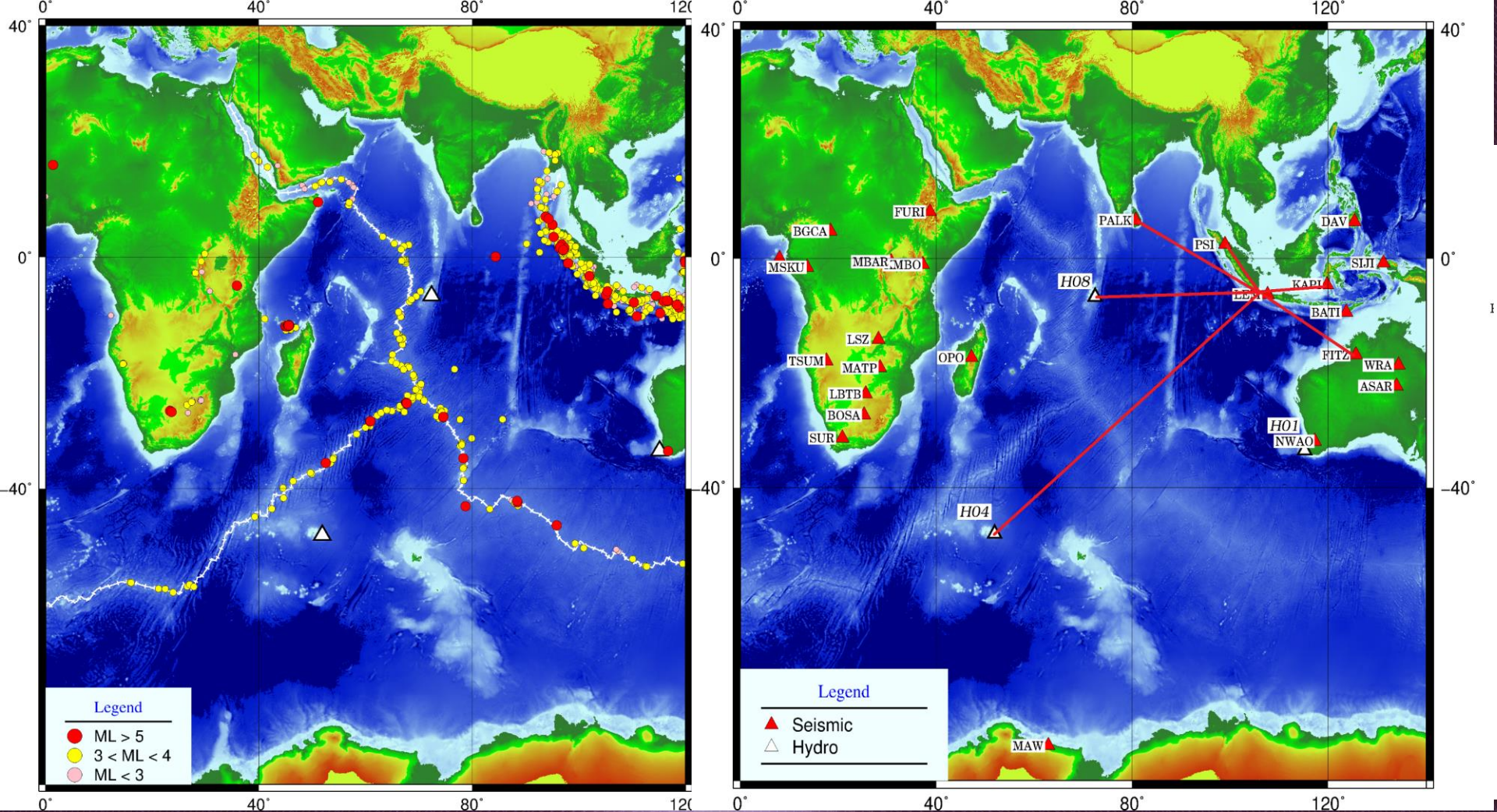
H01W








0°
40°
80°
120°
40°
0°
−40°
Legend
ML > 5
3 < ML < 4
ML < 3
FURI
BGCA
MSKU
MBAR
MBO
LSZ
TSUM
MATP
LBTB
BOSA
SUR
OPO
H08
H04
H01
PALK
PSI
DAV
SIJI
KAPI
BATI
FITZ
WRA
ASAR
NWAO
MAW
Legend
Seismic
Hydro

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CONCLUSIONS

- CTBTO hydroacoustic and seismic data used during this research;
- Volcano, Earhquakes and explosion signals identified and differentiated in the Indian Ocean;

- The next step is to find signals from whales and other species under water;
- Once the whale signals are found the detailed CTBTO IMS SDG:14 «Life below water» contribution strategy can be delivered.