

# A workflow to generate DAS based earthquake catalogue, applied to an offshore telecommunication cable in central Chile

Baillet M., Trabattoni A., Van den Ende M., Vernet C., Rivet D.  
Université Côte d'Azur, Observatoire de La Côte d'Azur, CNRS, IRD, Géoazur (France)  
Contact: [marie.baillet@geoazur.unice.fr](mailto:marie.baillet@geoazur.unice.fr)



## ERC ABYSS

### Monitoring giant subduction faults using distributed acoustic measurements on the seafloor

#### Supplementary material

- ❖ Other localisation example (slides 2 to 4)
- ❖ Earthquakes families (slide 5)
- ❖ Earthquake special cases (slide 6)
- ❖ Data quality and noise (slides 7 to 9)

# A workflow to generate DAS based earthquake catalogue, applied to an offshore telecommunication cable in central Chile

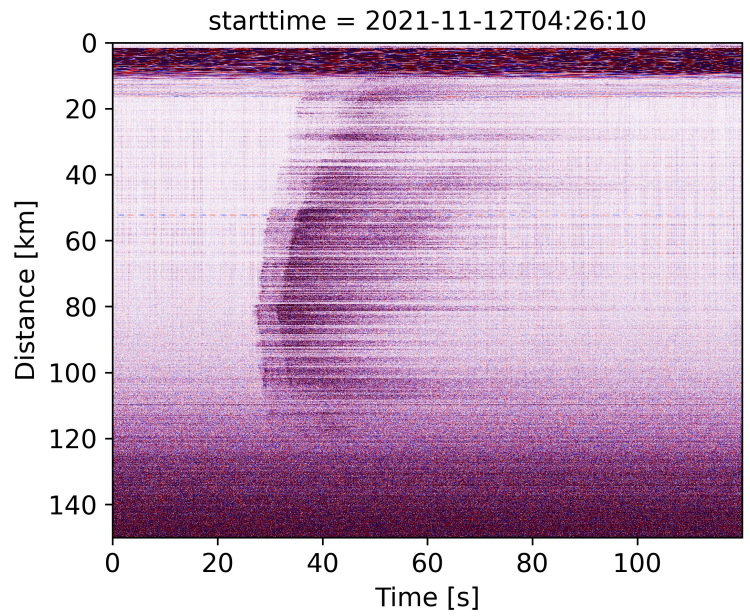


## ❖ Localisation example

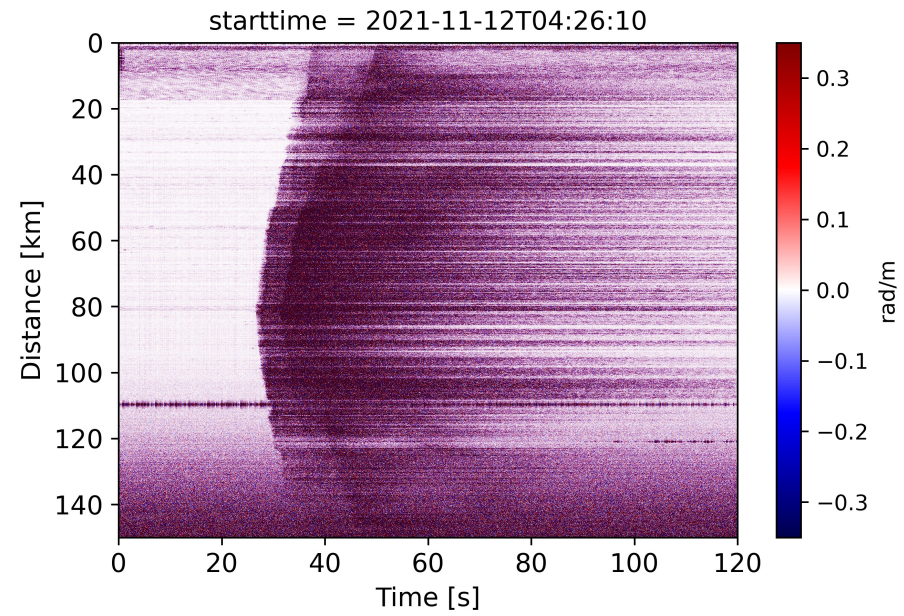


CSN informations

Local magnitude	2.8 MI
Latitude; Longitude	-32.397 ; -72.267
Depth	14.9 km



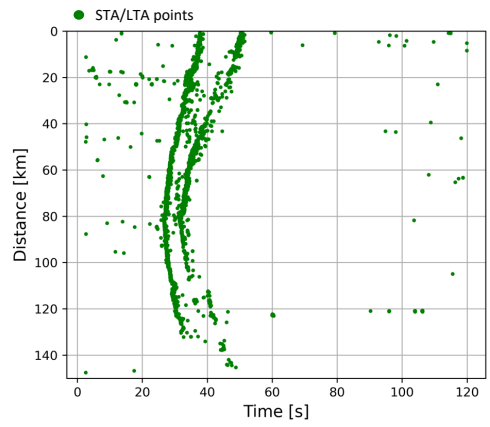
1



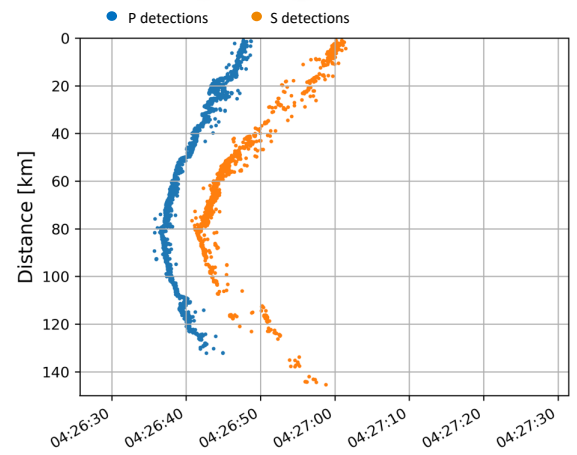
## ❖ Localisation example



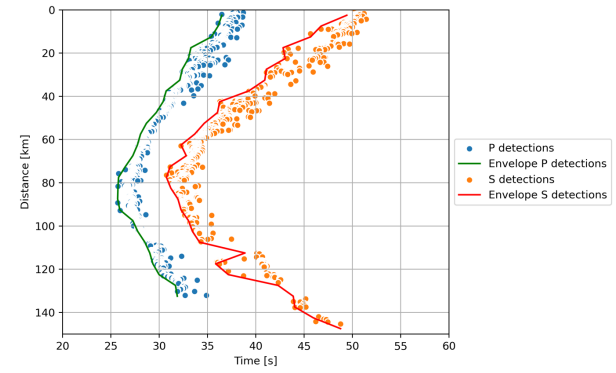
### 2 Phase picking based on STA/LTA



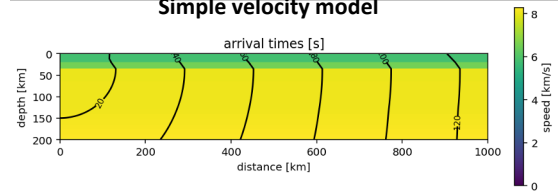
### Steps 3 to 5 + phases separation



### Define the 'first arrivals' envelope



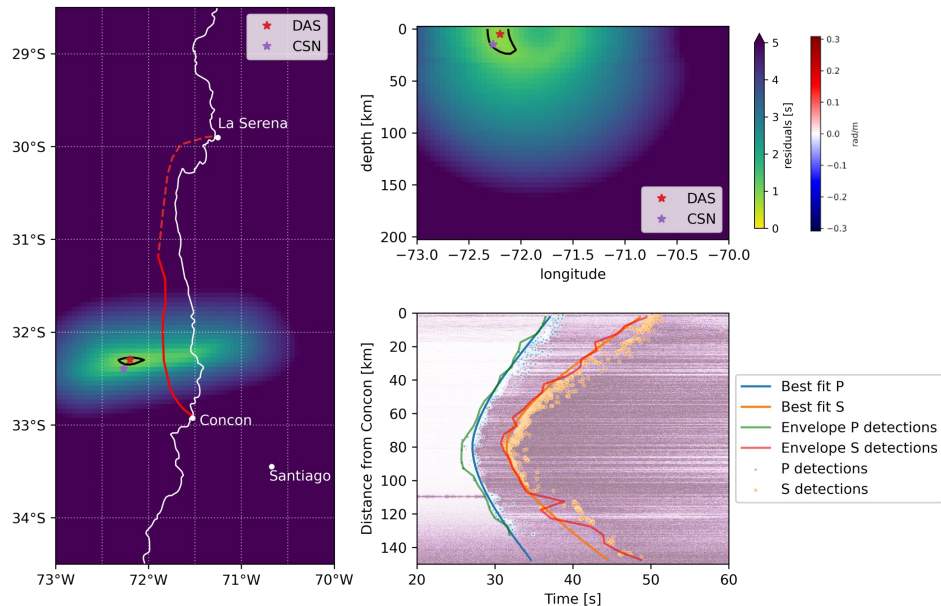
### Simple velocity model



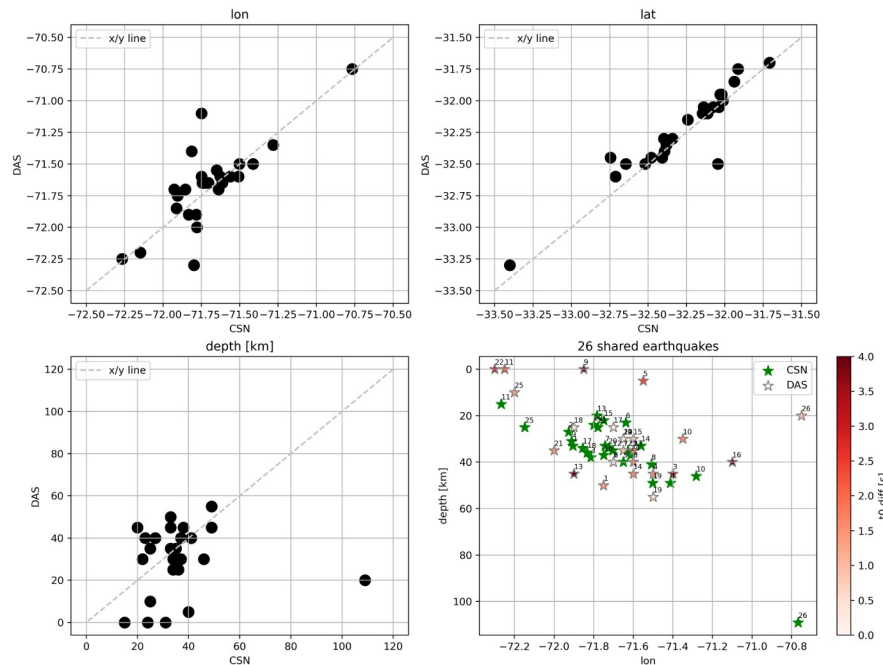
## Localisation example



### Localization results



### Localization comparison for 26 earthquakes located by the CSN network

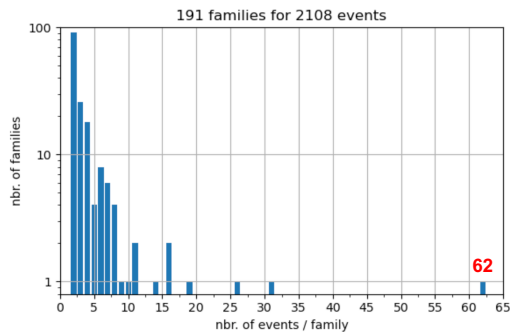


# A workflow to generate DAS based earthquake catalogue, applied to an offshore telecommunication cable in central Chile

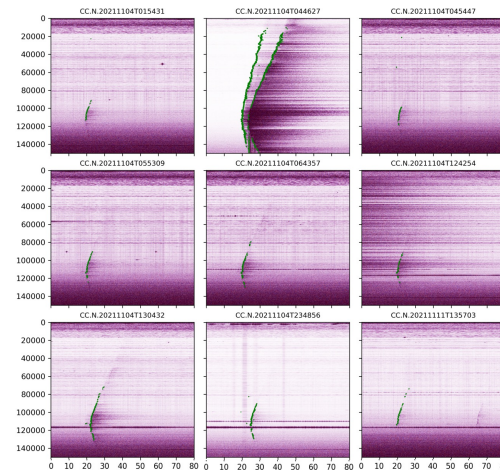
## ❖ Earthquake families



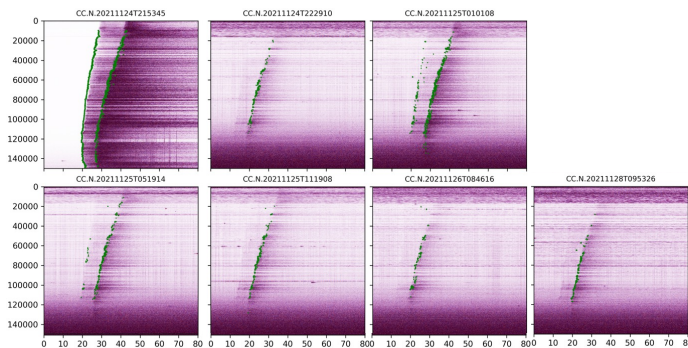
1 family: correlation coefficient  $\geq 0.9$



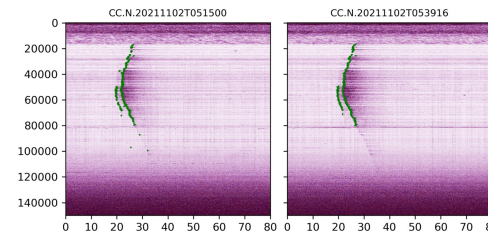
Family n°4: 62 earthquakes



Family n°151: 7 earthquakes



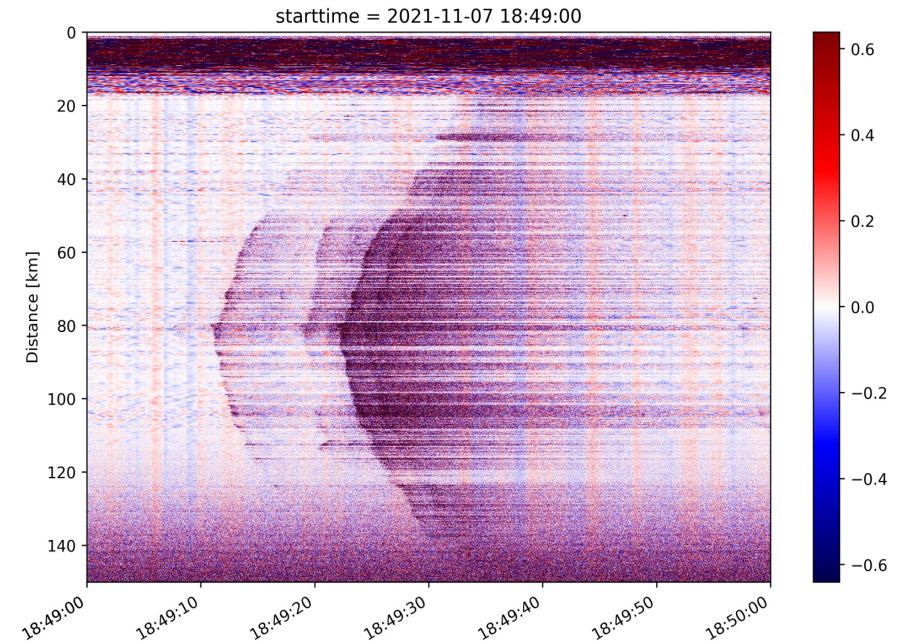
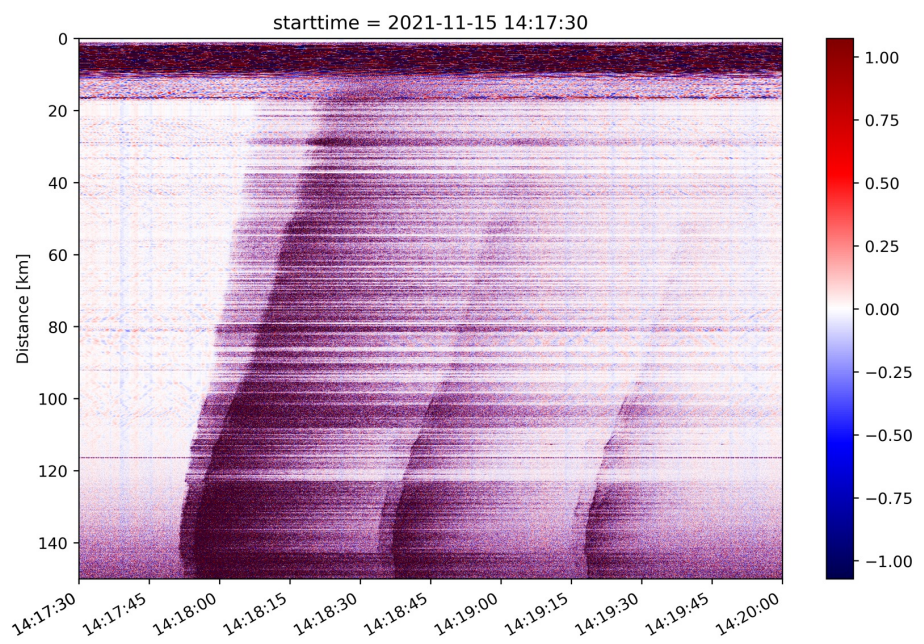
Family n°40: 2 earthquakes



# A workflow to generate DAS based earthquake catalogue, applied to an offshore telecommunication cable in central Chile

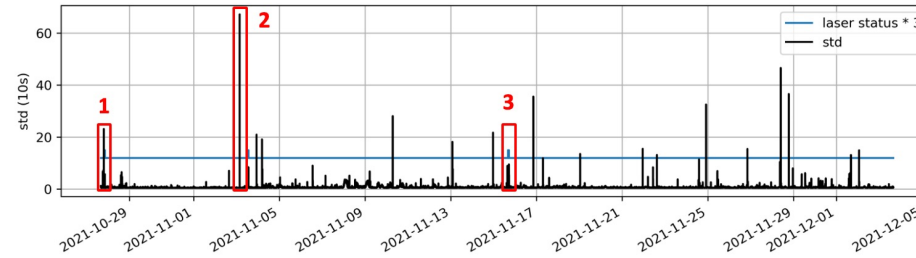


## ❖ Earthquake special cases

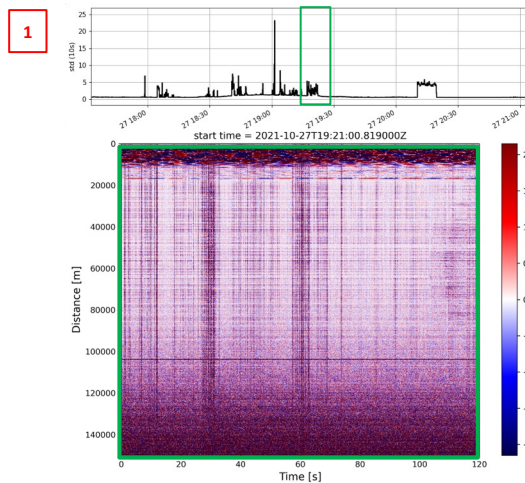


# A workflow to generate DAS based earthquake catalogue, applied to an offshore telecommunication cable in central Chile

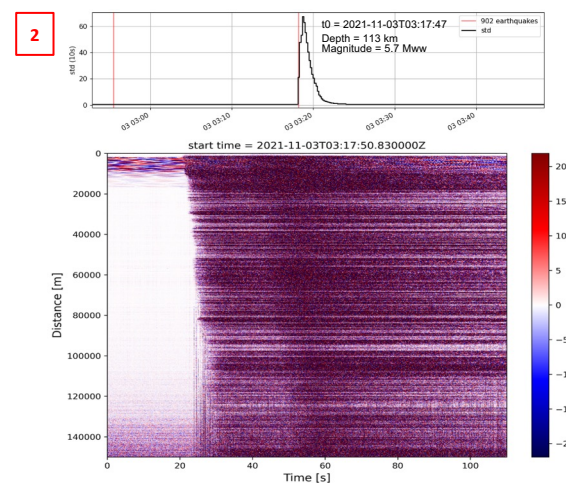
## ❖ Data quality and noises



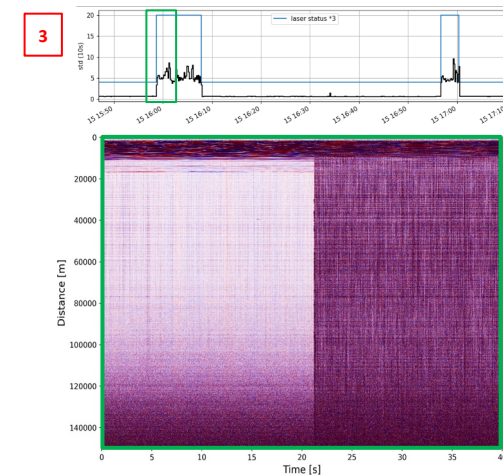
### Different types of noise



### Earthquake shapes



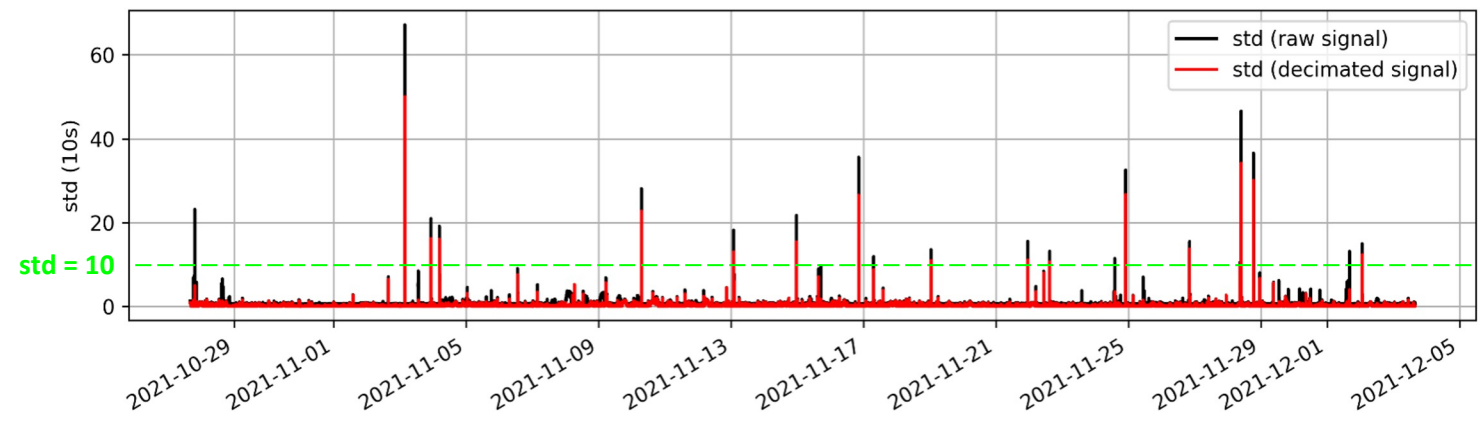
### Laser status variations



## ❖ Data quality and noises



### Fast earthquake detection



According to the CSN public catalogue :  
➡ std > 10 measured on decimated DAS data = earthquakes with MI > 3



## ❖ Data quality and noises



### Other types of noise (raw data)

