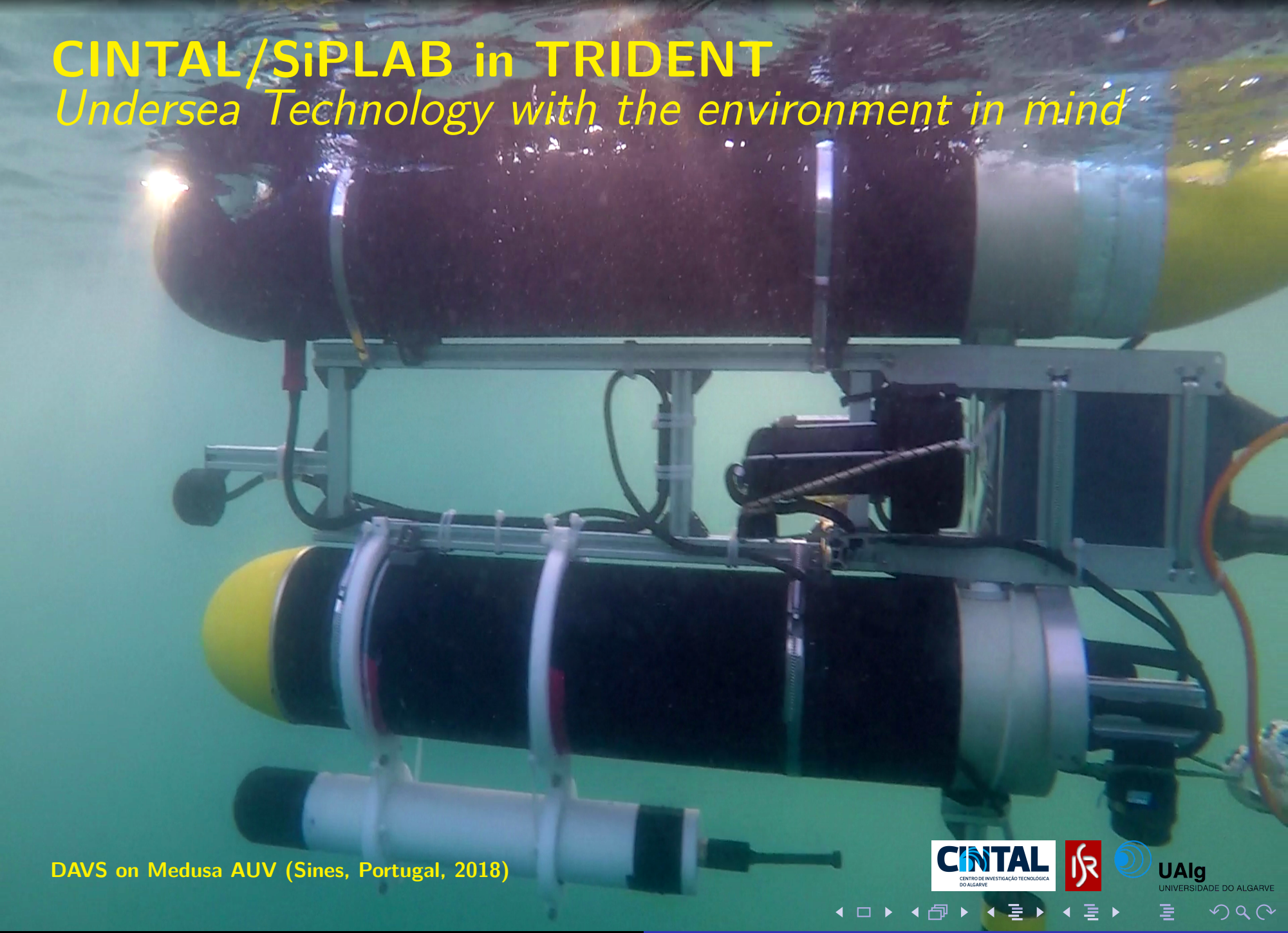
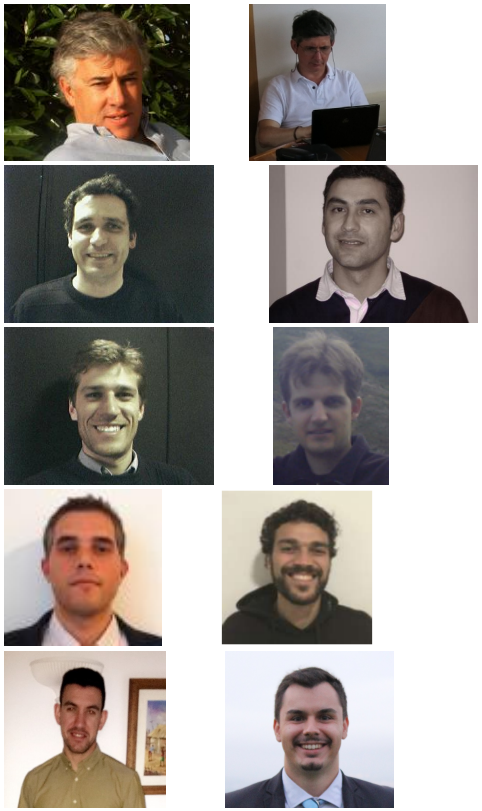
CINTAL/SiPLAB in TRIDENT

Undersea Technology with the environment in mind



DAVS on Medusa AUV (Sines, Portugal, 2018)

The equation that works



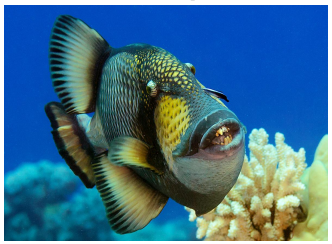
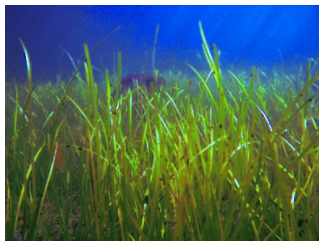
Outputs:
EU projects
patents
PHDs
MSC
papers
conferences
prototypes
tools
sea trials
spin-offs
$\Rightarrow$ **fun**

Our values make the difference

- **the importance of the physical channel**

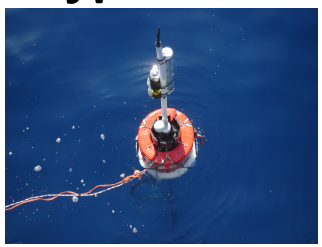


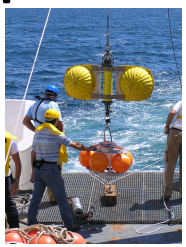
- **environmental respect and awareness**

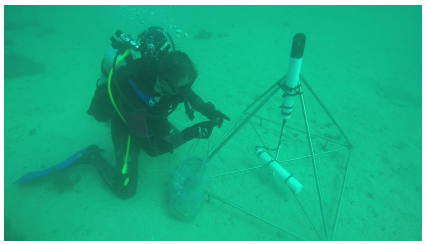

- **theory, prototype development and experiments at sea**


Hawaii,2005


Italy,2007


Portugal,2007


Norway, 2010


Brasil,2019

Our contribution: ocean sound mapping

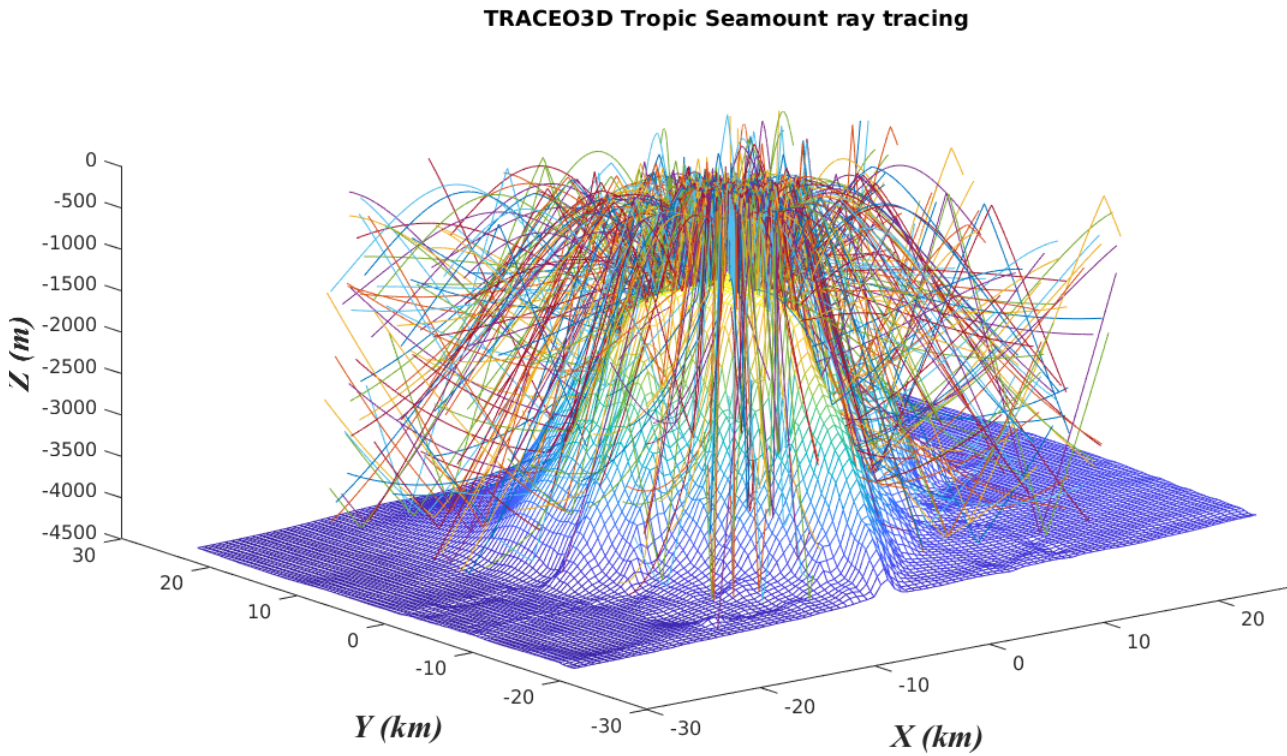
1. **the baseline level**
   - modeled sound map
   - field calibration
2. **bottom noise generation**
3. **near field noise**
   - identify noise sources
   - determine SL, band, directivity
4. **off-site noise measurement**
   - update sound maps
   - field calibrate
5. **ocean noise prediction and monitoring tool**

***from project JONAS (INTERREG 2019-2022)**

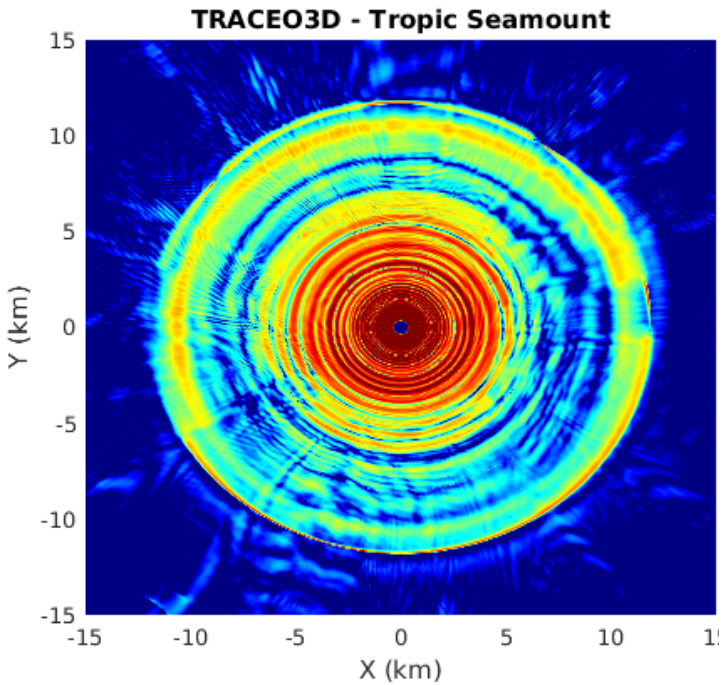
Jesus S.M. *et al.* A methodology for shipping noise field calibration..., JMSE, 2022

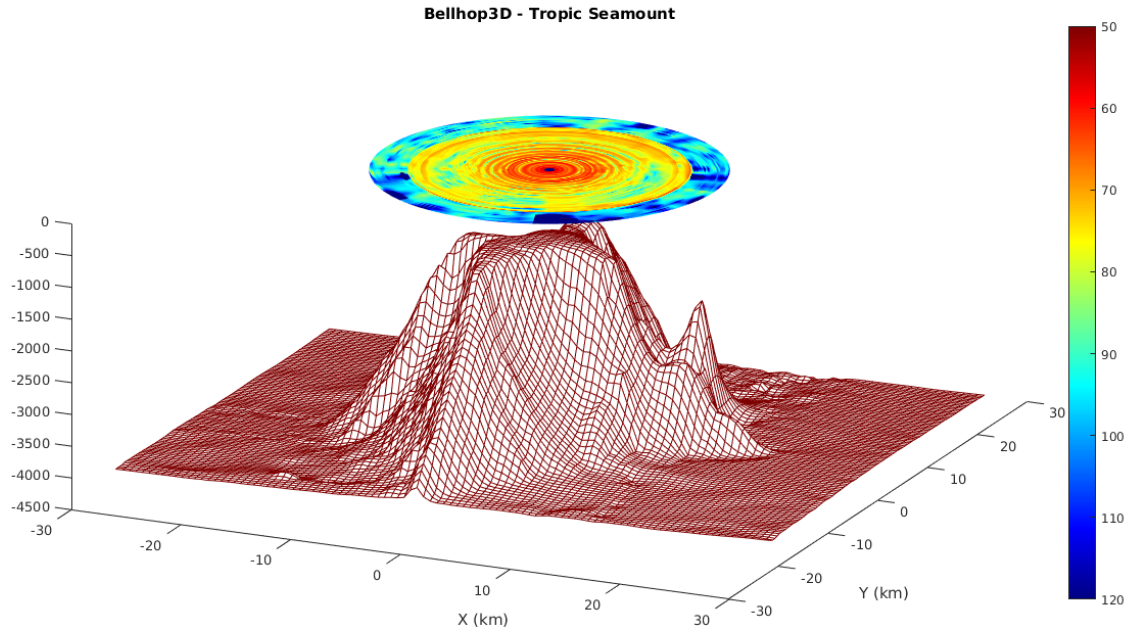
Expected challenges

- what is the level, frequency band and directionality of the noise produced by DSM machinery (bottom, riser, surface ships,...) ?
- near-field measurements: how to cancel interferences of surrounding monitoring equipment ?
- existing equipment (and experience) is up to 1000 m depth !
- other unknown challenges...



⇒ **proposal of workshop on "Acoustics of Deep Sea Mining"**





Thank you for your attention !!