SnT 2025 CTBT: SCIENCE AND TECHNOLOGY CONFERENCE
8 SEPTEMBER ONLINE DAY
9 TO 12 SEPTEMBER AT HOFBURG PALACE, VIENNA & ONLINE

Acoustic Propagation Modelling on the Cloud

LIGHTNING TALK

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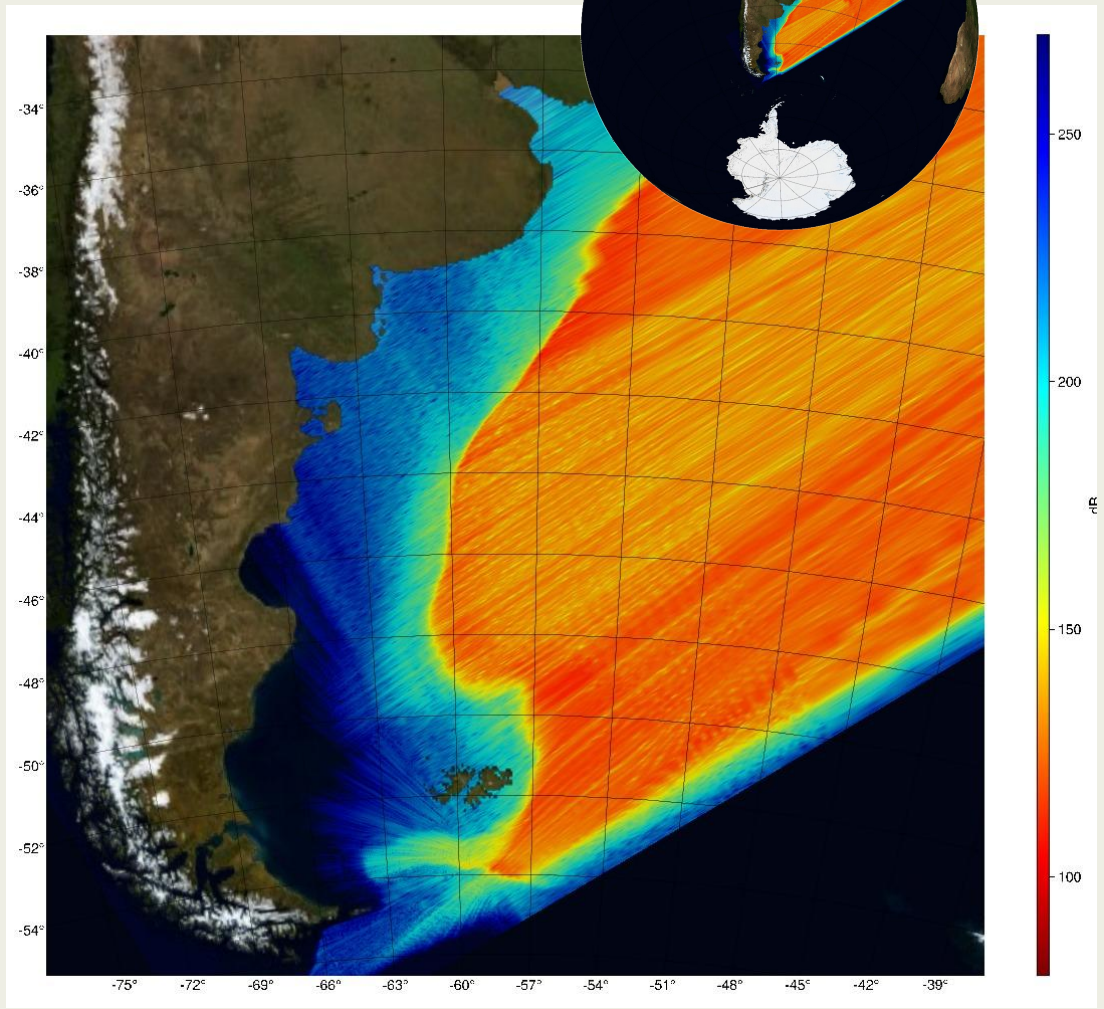
3D parabolic-equation model in *Julia* to simulate acoustic **transmission loss** (TL) in the ocean.



- **3D models** capture **diffraction** effects, offering more realistic insights into underwater acoustic propagation.
- The code runs on a desktop CPU, **GPU** or in the **Cloud**.

Frequency (Hz)	Screen nodes (n_z x n_y)	Runtime
5	10.6 M	5 min 15 s
10	40.3 M	30 min 54 s
16	107.5 M	2h 01 min 7 s

A run at 28 Hz, with **229.5M screen nodes**, ran **under 11 GiB VRAM**.

Takeaways

- **Cloud computing** provides access to high-performance resources at relatively **low cost**, making this approach particularly valuable for small institutions and research groups in low-income countries.
- **Spot pricing** cut cost a lot; **checkpointing** is key for long runs.
- The aim is to **make larger 3D simulations more feasible without having to own HPC**.

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