




# Status of marine minerals

Joint study groups symposium

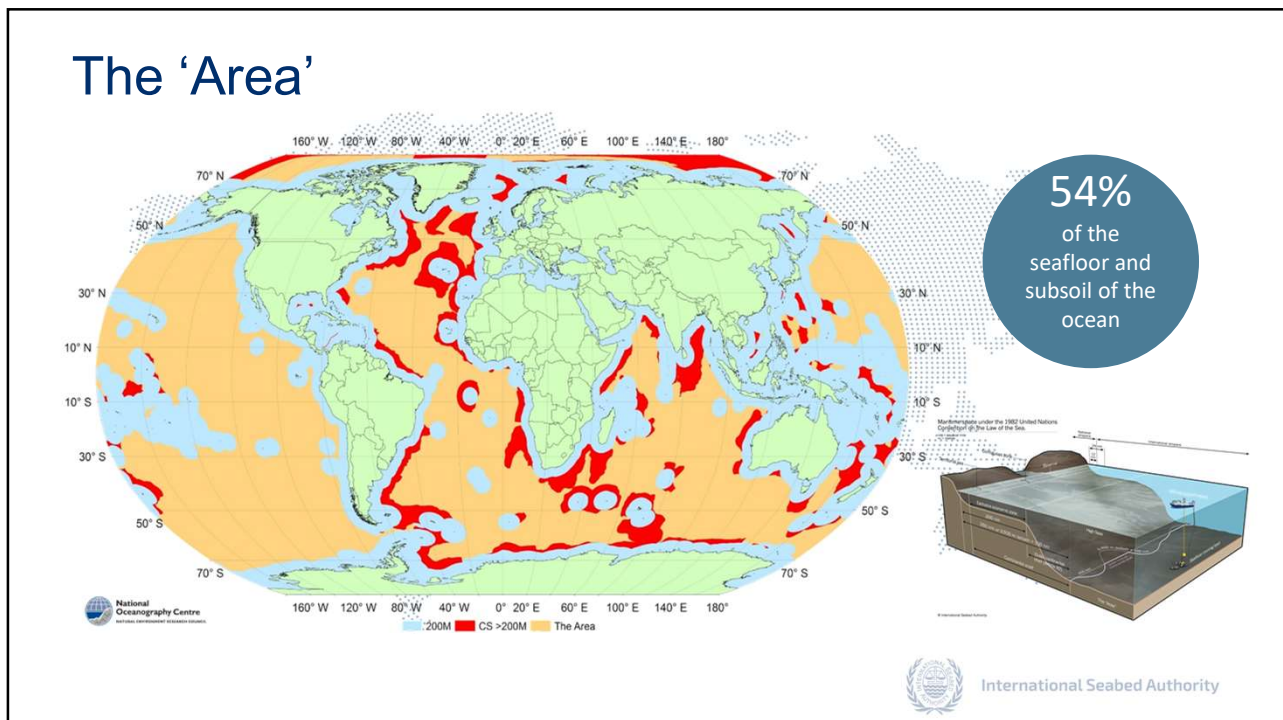
Michael W. Lodge

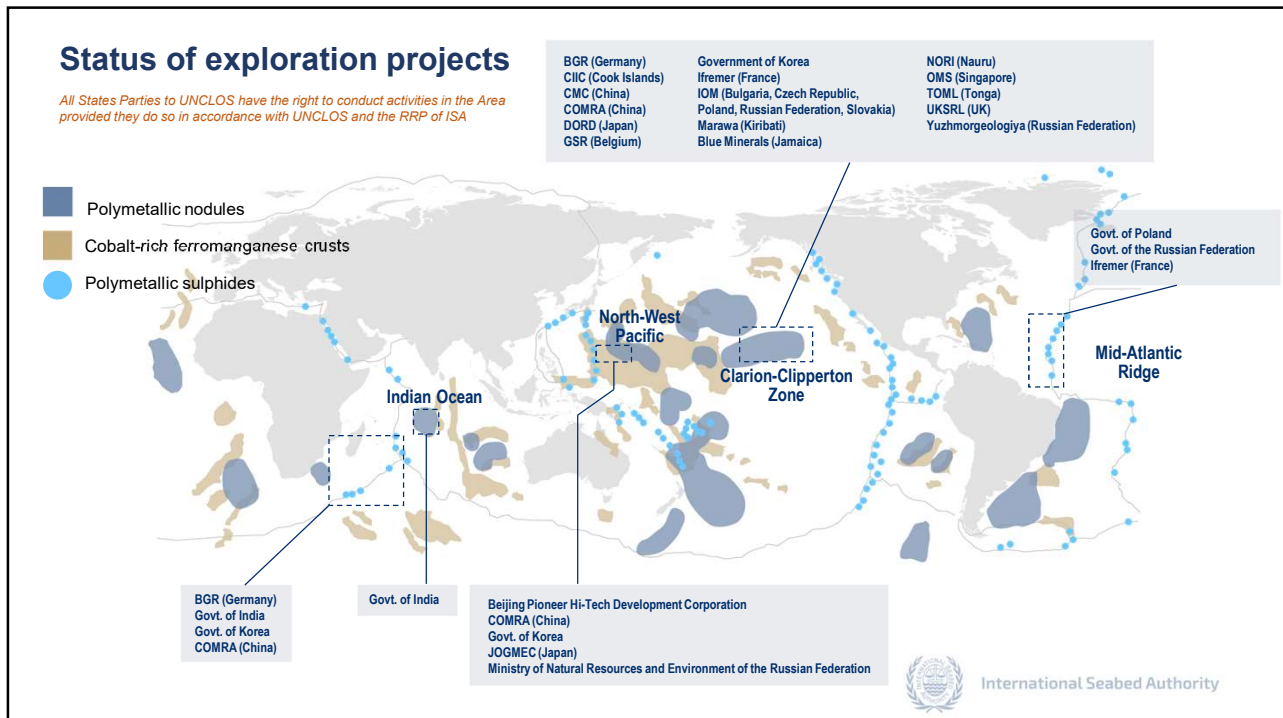
April 2024

[isa.org.jm](http://isa.org.jm)



International Seabed Authority

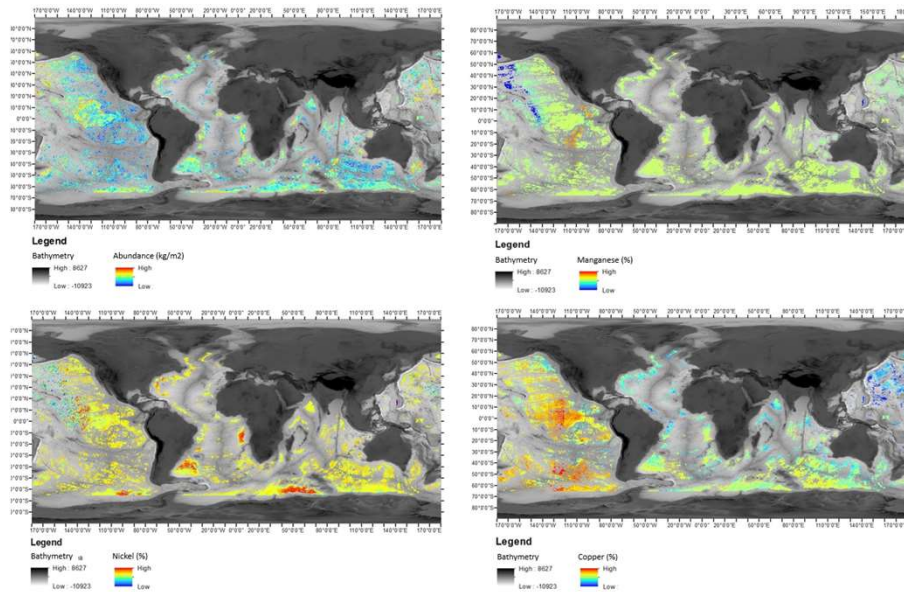




## Global polymetallic nodules resources - 3 trillion t

CCZ estimated 274 Mt Ni @ 1.3%, 226 Mt Cu @ 1.07%  
 CIOB estimated 4.17 Mt Ni @ 1.14%, 3.99 Mt Cu @ 1.09%  
 Peru basin estimated 273 Mt Ni @ 1.03%, 126 Mt Cu @ 0.6%

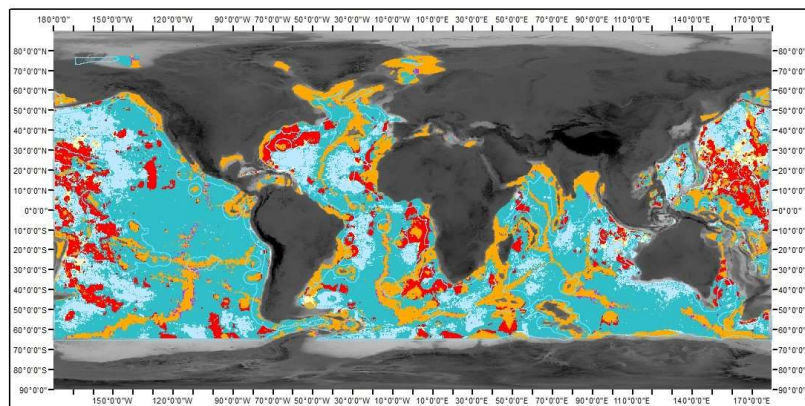




2024: Predictive AI model for inferred nodule resources in the Area = 388 billion tonnes, containing 9,666 Mt Ni, Cu and Co



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Similar AI models for polymetallic sulphides and cobalt-crust resources

Josso et al (2023) predicts that 34 million km<sup>2</sup> of seafloor have a probability >50% of hosting Fe-Mn crusts (16 million km<sup>2</sup> on continental shelves)

Polymetallic sulphides bound to mid-ocean ridges. Prospective resources between 600-3.000 Mt.



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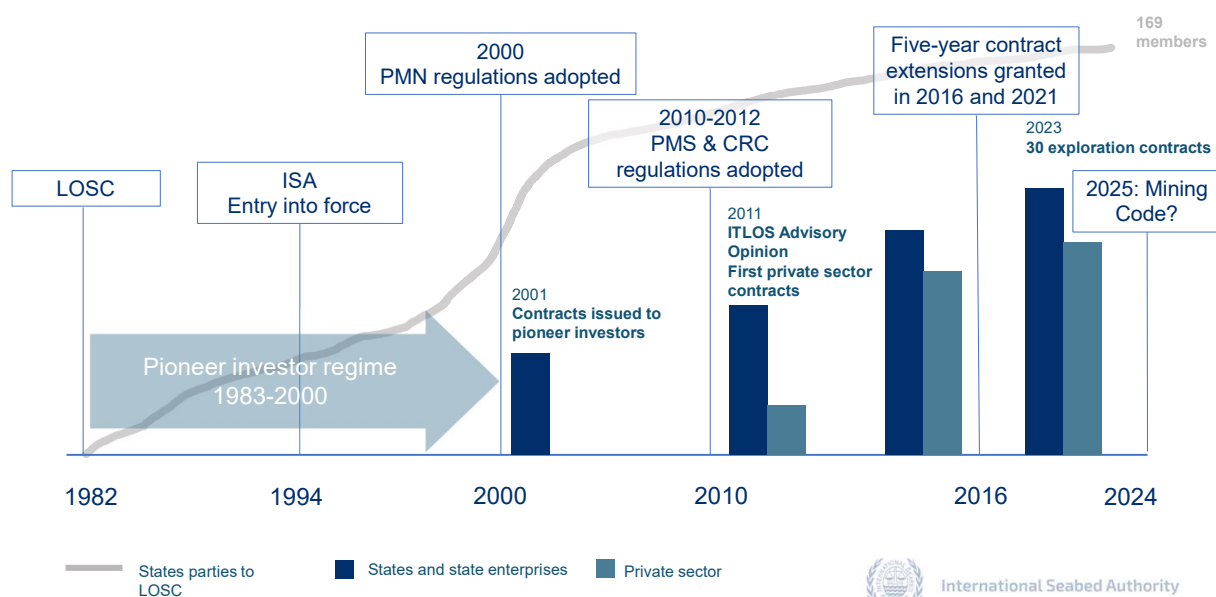


## Mining Code

- *Payment mechanism and financial terms*
- *Standards and Guidelines*
- *Regional Environmental Management Plans*
- *Inspection mechanism*
- *Environmental thresholds and definition of serious harm*



## Animated timeline of ISA





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