



PICES-2025
Nov 8-14, 2025 | Yokohama, Japan

Innovative Approaches and
Applications to Foster Resilience
in North Pacific Ecosystems



From Science to Standards:

*ISO/TC8/WG15 and the International Pathway for Ocean-Based
mCDR*

Speaker: Yanli Lei

**Institute of Oceanology, Chinese Academy of Sciences
ISO/TC8/WG15, Manager & Convenor**

Ocean Negative Carbon Emissions

ONCE



ICES
CIEM

Global ONCE
for Carbon Neutralization



ISO/TC8/WG15: Ocean Negative Carbon Emissions and Carbon Neutrality (ONCE-CN)

Convenor: Yanli Lei

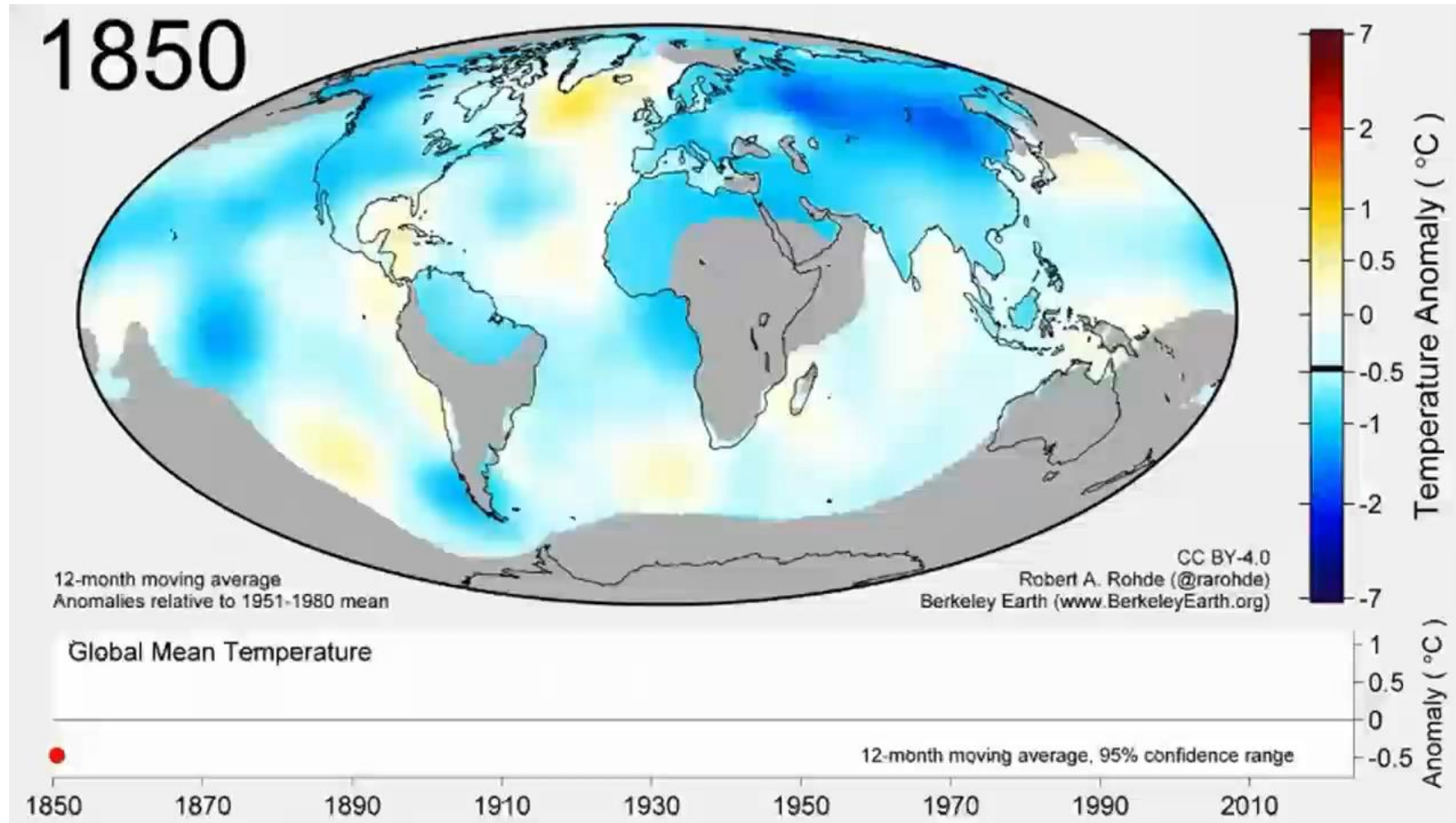
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Scope:

Standardization of technologies and engineering related to ocean negative carbon emission and carbon neutrality, used in quantification and assessment of marine environmental carbon, marine biological carbon and sediment carbon, as well as negative carbon emission techniques application to marine ranching, sewage alkalization, artificial upwelling etc.

Global temperature changes since Industrial Revolution



The Berkeley Earth video extrapolates data from meteorological instruments since their inception in 28 countries, including ancient historical records

Berkeley Earth: Global Average Temperature Changes from 1850 to 2022

Human activities vs Global change

The impact of human activities on climate change

COP30 “The 30th United Nations Climate Change Conference”
Conference of the Parties ;

The highest decision-making body under the United Nations Framework Convention on Climate Change (UNFCCC)

《United Nations Framework Convention on Climate Change》



- The high carbon development model brings systemic risks
- Climate feedback mechanism intensifies the speed and irreversibility of change
- Impact on human security and global stability

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International Standards and other deliverables covering almost all aspects of technology, management and manufacturing.

174

Members representing ISO in their country.
There is only one member per country.

827

Technical committees and subcommittees to take care of standards development.

ISO/TC8 Ships and marine technology

ISO/TC8/WG15



Reference ↑	Title	
ISO/TC 8/SC 1	Maritime safety	ISO/TC 8/AG 1 ⓘ Chair's Advisory Group
ISO/TC 8/SC 2	Maritime protection	ISO/TC 8/WG 3 ⓘ Special offshore structures and support vessels
ISO/TC 8/SC 3	Maritime security	ISO/TC 8/WG 4 ⓘ Maritime security
ISO/TC 8/SC 4	Ship recycling	ISO/TC 8/WG 6 ⓘ Ship recycling
ISO/TC 8/SC 5	Smart shipping	ISO/TC 8/WG 10 ⓘ Smart shipping
ISO/TC 8/SC 6	Dredging	ISO/TC 8/WG 11 ⓘ Dredging
ISO/TC 8/SC 7	Aquatic nuisance species	ISO/TC 8/WG 12 ⓘ Aquatic nuisance species
ISO/TC 8/SC 8	Maritime education and training	ISO/TC 8/WG 14 ⓘ Maritime education and training
ISO/TC 8/SC 12	Large yachts	ISO/TC 8/WG 15 ⓘ Ocean Negative Carbon Emissions and Carbon Neutrality
ISO/TC 8/SC 13	Marine technology	
ISO/TC 8/SC 25	Maritime GHG reduction	
ISO/TC 8/SC 26	Smart shipping	
ISO/TC 8/SC 27	Ports and terminals	





ISO/TC8/WG15:

A platform from “science to standards”

- Carbon quantification and assessment
- Carbon-reducing aquaculture practices;
- Coral restoration and planting;
- Artificial mounds, reefs, and upwelling systems;
- Ocean infrastructure and engineered platforms;
- Offshore renewable energy systems;
- Microplastics technologies for ocean carbon neutrality

WG15 welcomes experts from all over the world to develop international standards for scientific best practices and engineering techniques, so that they can be shared worldwide

Thanks for your attention