Climate Change Risks to Marine Ecosystems and Fisheries with a focus on projections for the North Pacific

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(FishMIP)

FishMIP
Fisheries & Marine Ecosystem Model Intercomparison Project

UNIVERSITY of TASMANIA
IMAS
Institute for Marine and Antarctic Studies

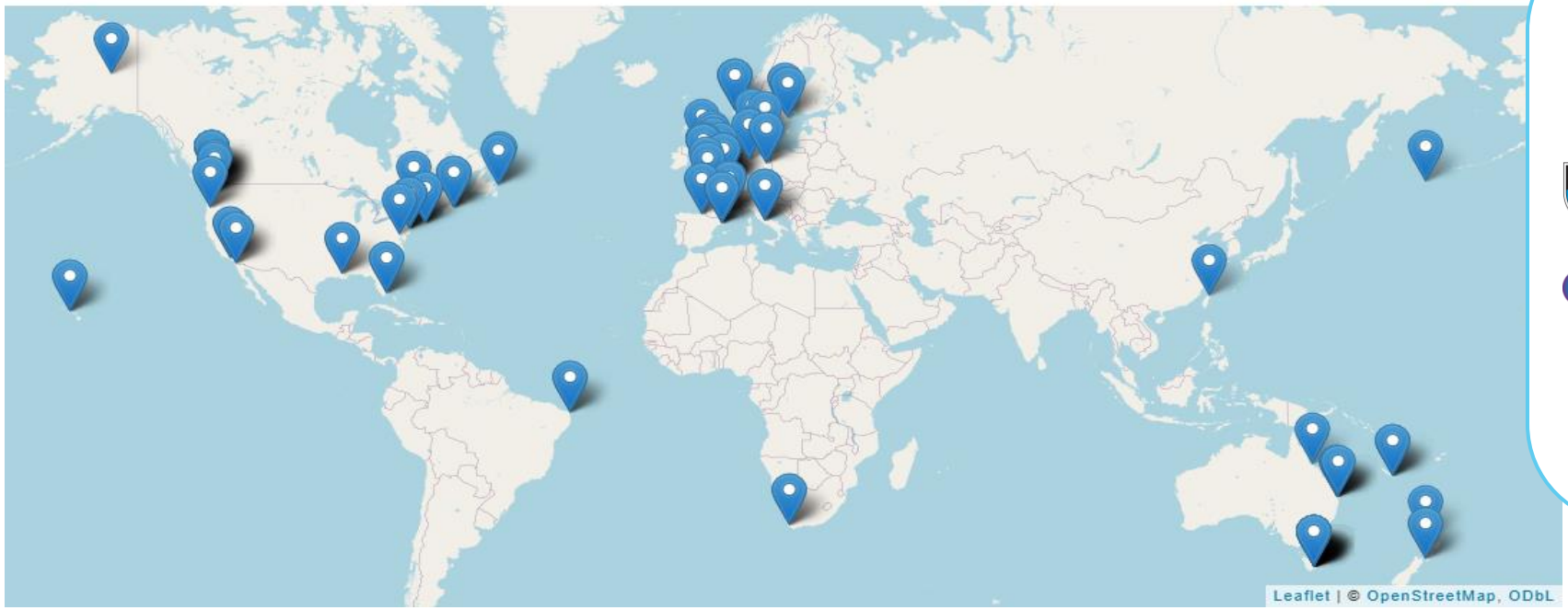
2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Australian Government
Australian Research Council

The Fisheries and Marine Ecosystem Model Intercomparison Project (FishMIP)

Established global network of 150+ members providing model projections of long-term impact of climate change on marine ecosystems and fisheries since 2013.

Locations of our members



Science coordination team

University of Tasmania
IMAS
Institute for Marine and Antarctic Studies

University of Cape Town
iYunivesithi yaseKapa • Universiteit van Kaapstad

Dalhousie University

Scripps Institution of Oceanography
UC San Diego

Griffith University
Queensland, Australia

IRD
Institut de Recherche pour le Développement
France

LSU

Marine Institute

Current Support

ISIMIP
Inter-Sectoral Impact Model Intercomparison Project

Australian Government
Australian Research Council

Food and Agriculture Organization of the United Nations

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State-of-the-art global model ensemble

Blanchard & Novaglio et al. 2024 (DOI:10.4060/cd1379en), with co-author contributions from 30 different institutes around the world.

Multi-model mean % change in fish biomass

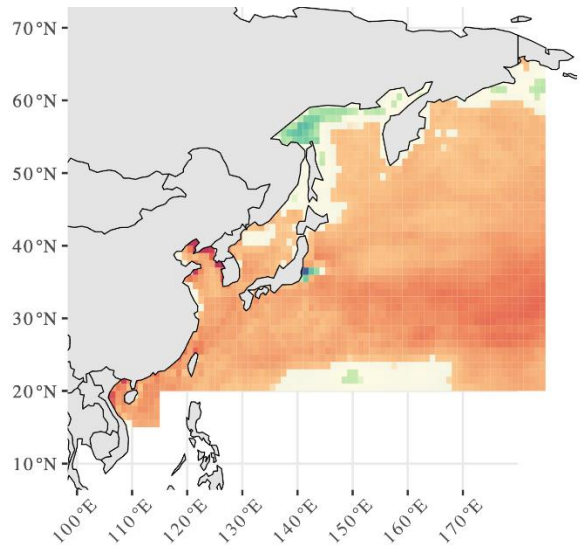
Northwest Pacific

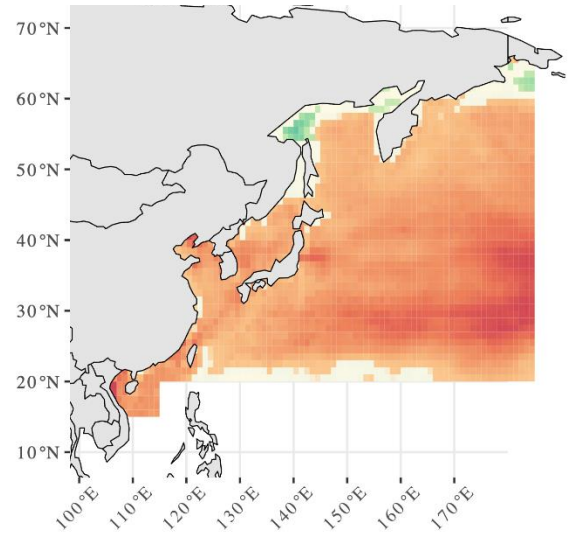
FAO Major Fishing Area 61

FAO report

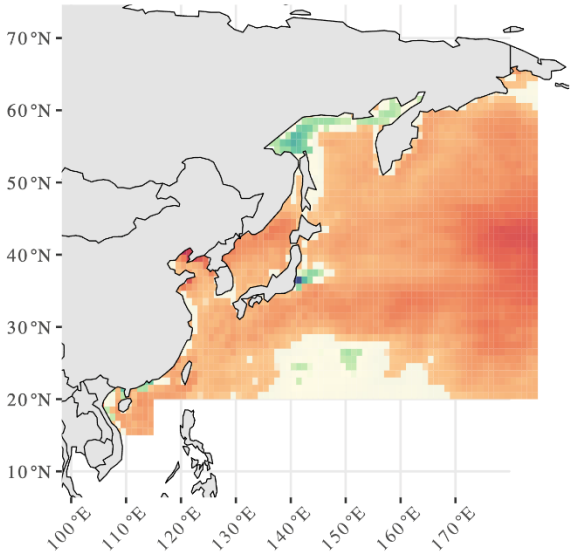
Low emissions

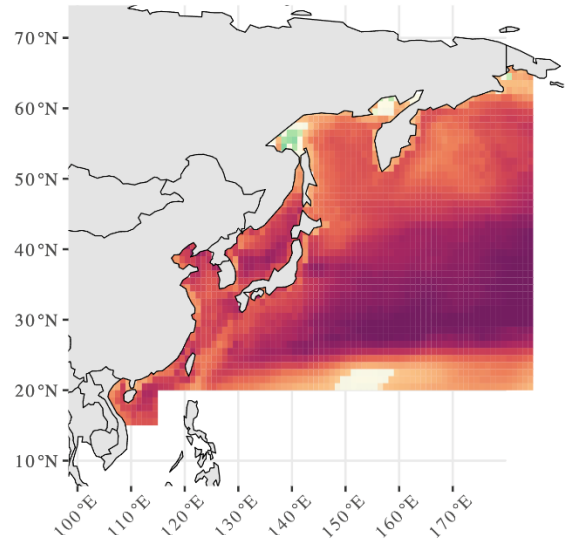
High emissions



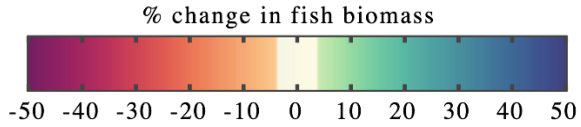


Mid-century 2050





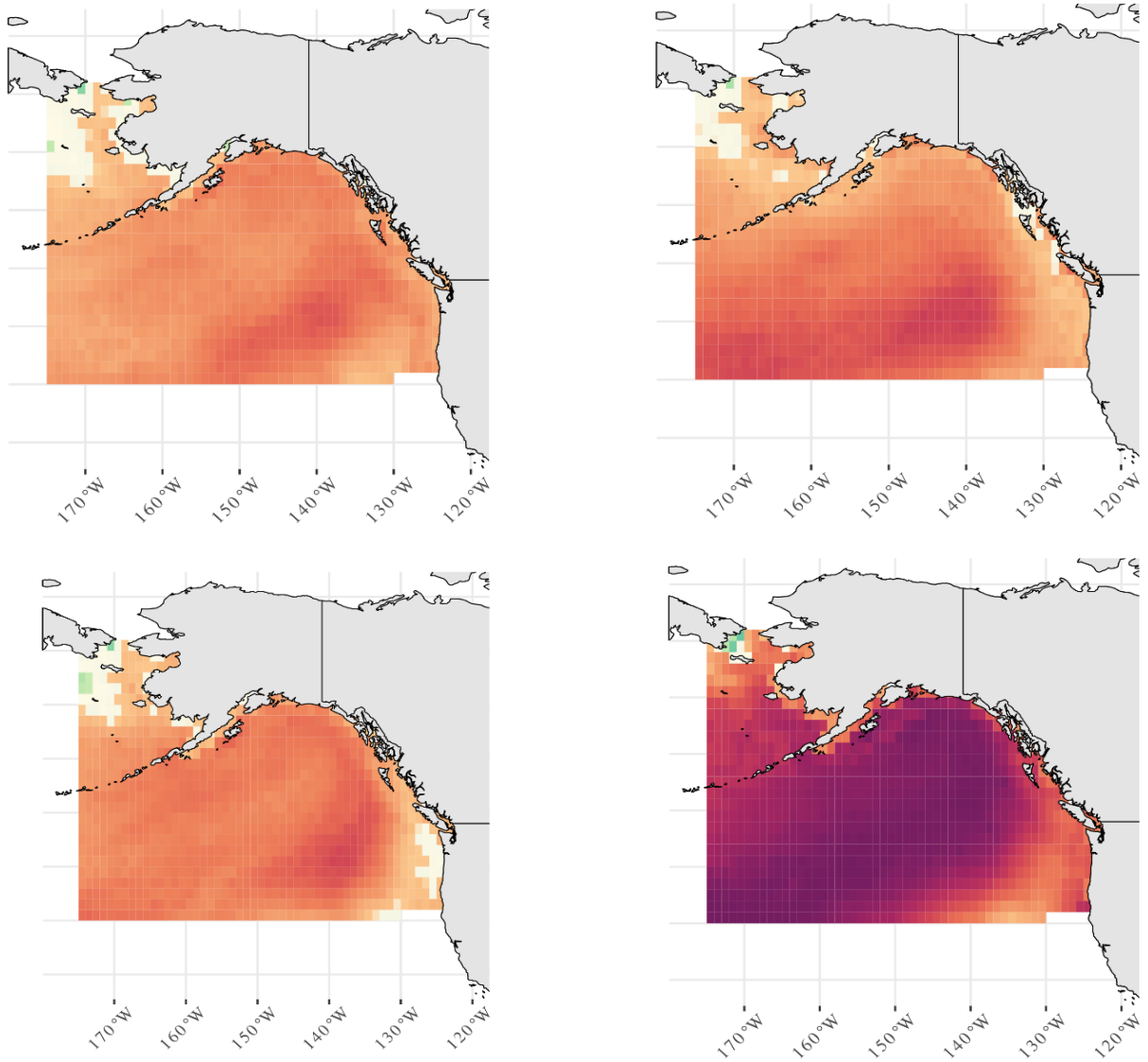
End-of-century 2100



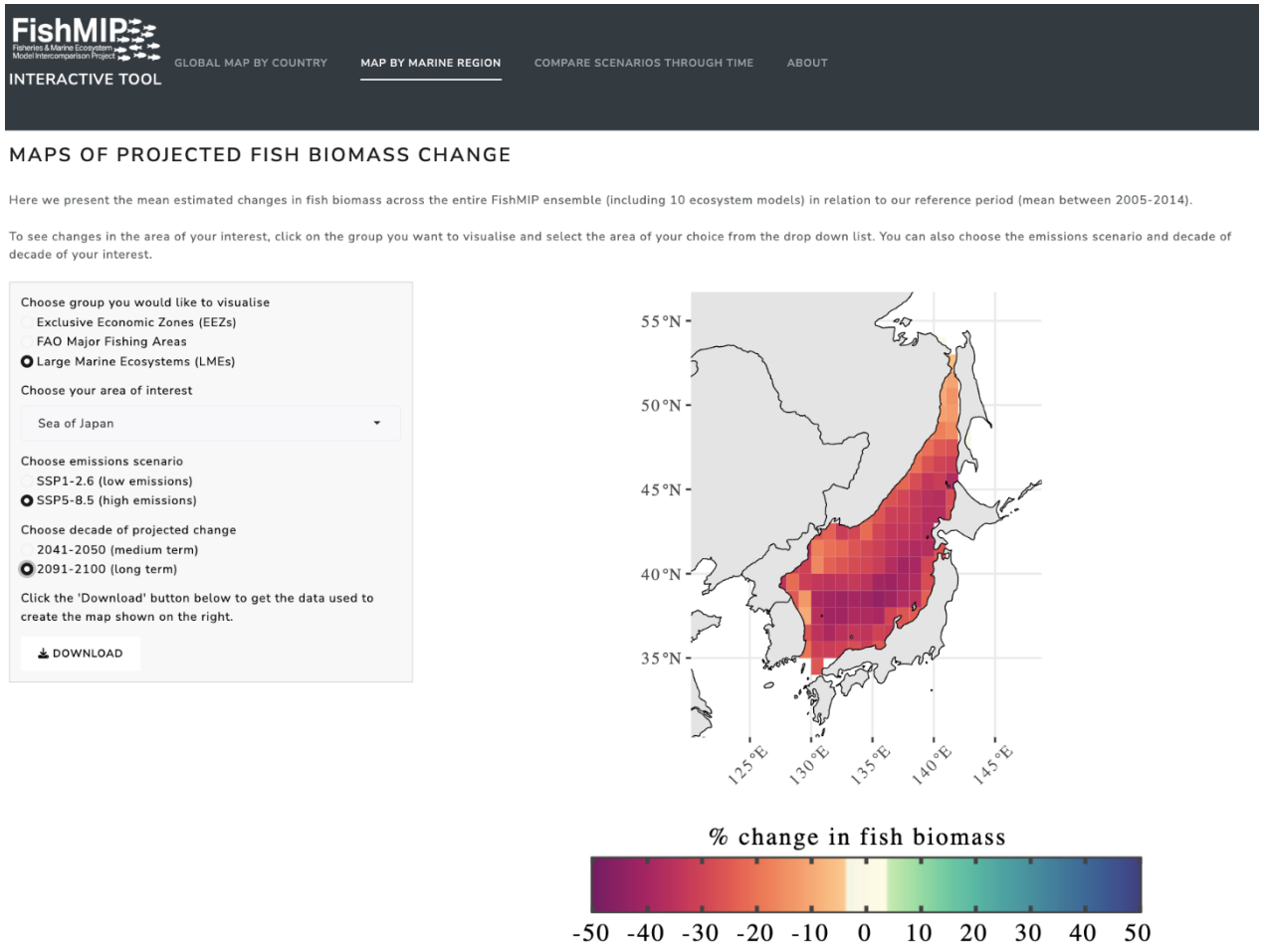
Northeast Pacific

FAO Major Fishing Area 67

FAO report



FishMIP tools support national and regional climate risk assessments and adaptation plans

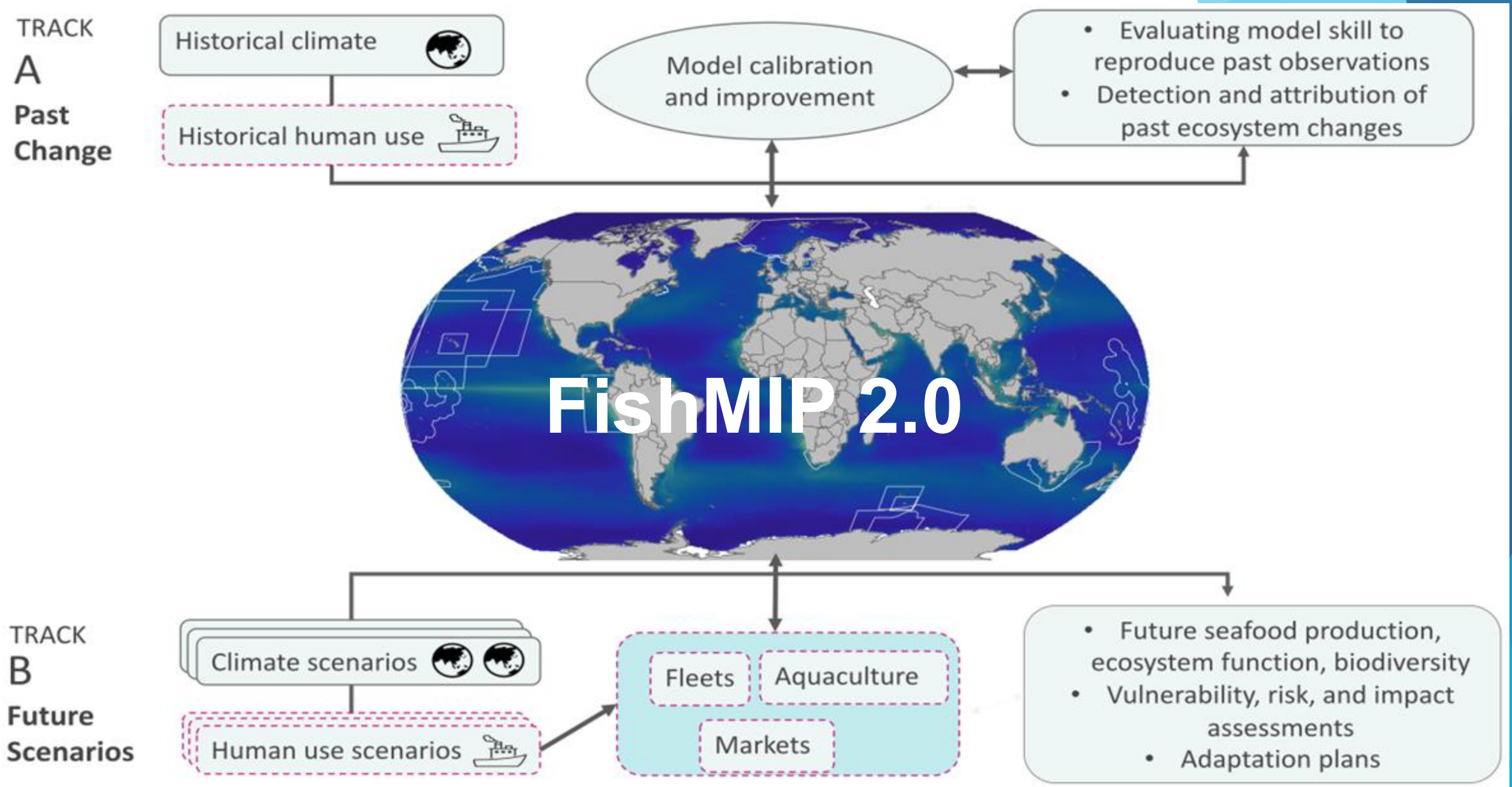


Browse our online tools: www.fishmip.org/pages/tools.html

FishMIP ensemble results used in:

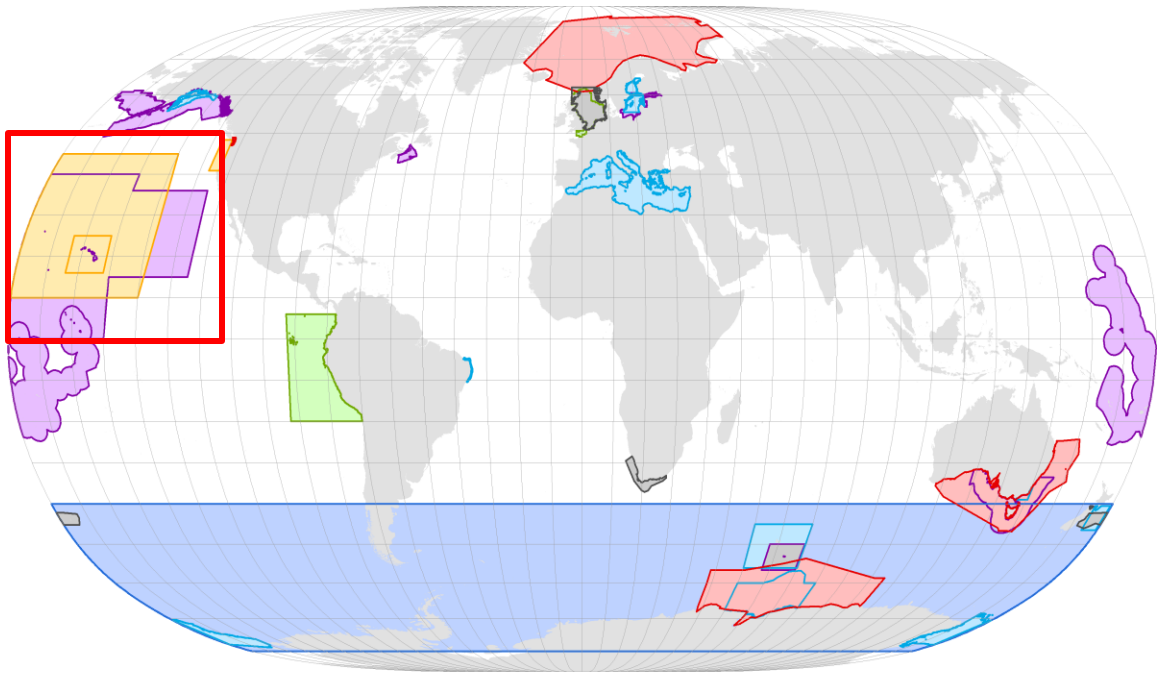
- National and Regional Climate Change Risk Assessments (e.g., Australia, Pacific Community, Marine Stewardship Council)
- Conservation planning (e.g., North Atlantic, MPAs)

Explore the *beta* version of our app using the QR code below



References: Blanchard et al. 2024. DOI: 10.1029/2023EF004402, Maury et al. 2025. DOI: 10.1029/2024EF004851

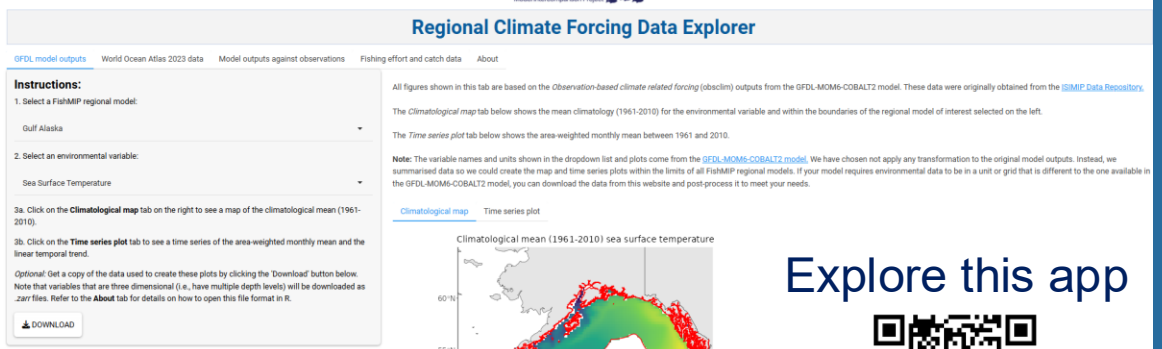
Tools for regional marine ecosystem modelers and end-users



Multiple models
Benguela (3x)
Chatham Rise (2x)
North Sea (2x)
Tasman + Golden Bays (3x)
Atlantis
East Antarctica
Nordic + Barents Sea
Puget Sound
South East Australia
Ecotran
Central North Pacific
Main Hawai'ian Islands
Northern Californian current
EwE
Baltic Sea
North Easth Brazil
Cook Strait
East Bass Strait
Kergulen Plateau
Mediterranean
Northern Gulf of Alaska
Prydz Bay
Ross Sea
MICE
Southern Ocean
Mizer
Baltic Sea
Central South Pacific
East Bering Strait
East Scotian Shelf
Gulf of Alaska
Hawai'i basd longline
Kerguelen Bay
Prydz Bay
South East Australia
OSMOSE
Northern Humboldt
North Sea

FishMIP

Regional Climate Forcing Data Explorer

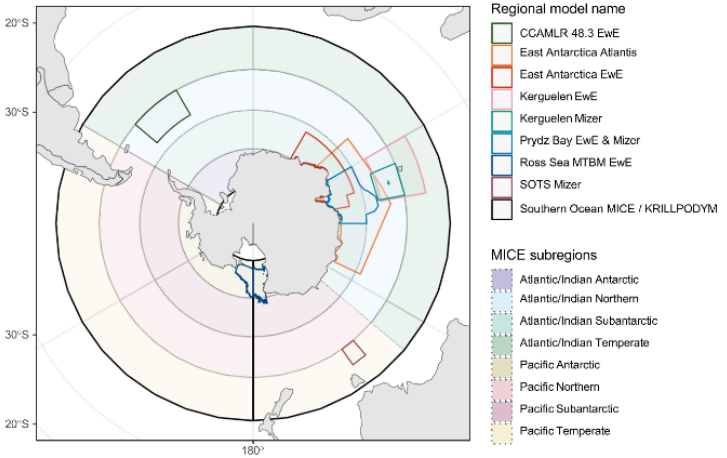


Explore this app

Shiny

SOMEME

ACEAS
Australian Centre for Excellence in Antarctic Science



References: Ortega-Cisneros et al. 2025. DOI: 10.1029/2024EF004826, Murphy et al. 2025. DOI: 10.1029/2024EF004849

Key messages

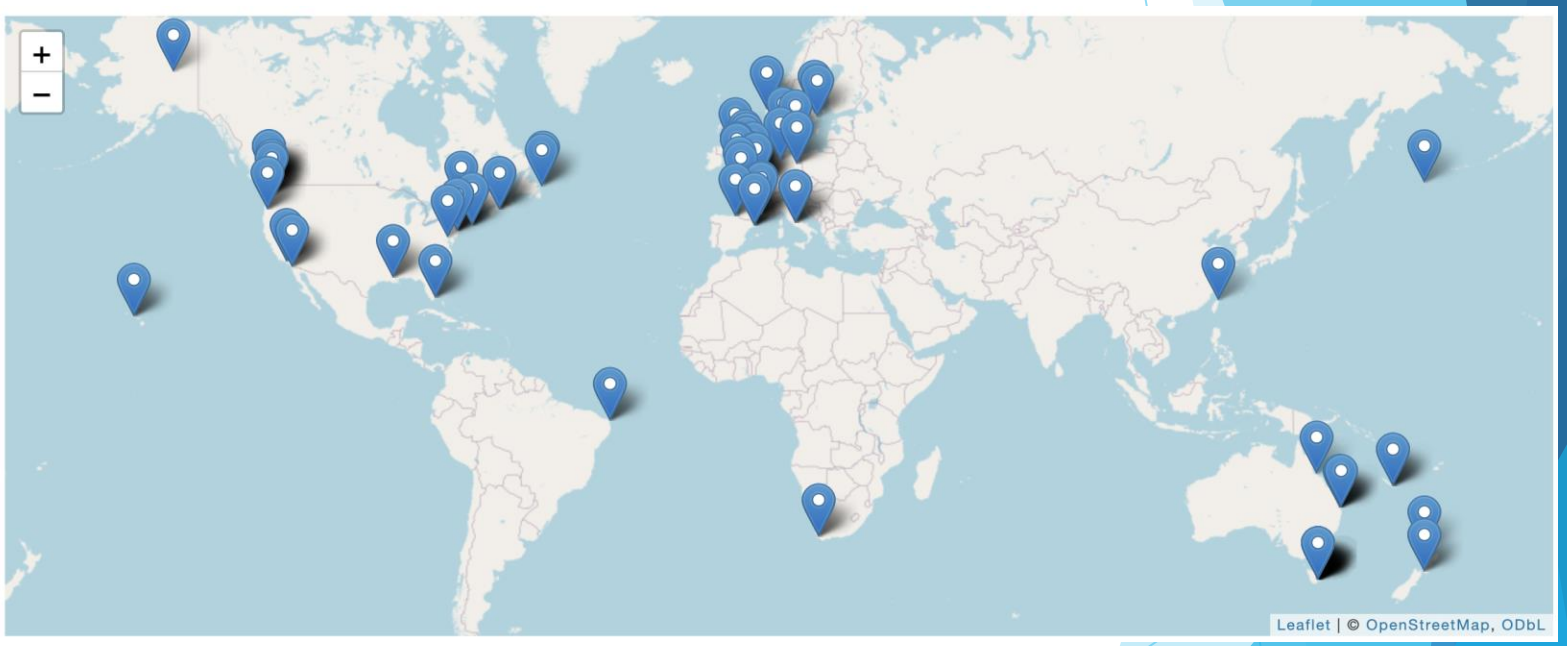
1. Widespread losses in fish biomass are projected under high emissions with strong benefits of reducing emissions. Urgent need for climate adaptation planning, across the North Pacific.

2. Our results are being used in risk assessments and wider economic models, to help guide scenarios and conversations about adaptation options. Use of our projections requires careful understanding and communication of limitations, assumptions, and uncertainties.

3. Significant opportunities for internationally coordinated climate impact modelling and assessment across North Pacific– support needed for regionally-focused working groups (NOMEME).

Thank you for your attention.
And to all FishMIP coordinators, members, and contributors

Scan the QR code to download the FAO report



www.fishmip.org/joinus

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