The role of models in facilitating the first Marine Ecosystem Assessment for the Southern Ocean (MEASO)

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Need for assessments

National and international agencies need regular ecological assessments in order to sustain natural systems and maintain the delivery or services.
What is an assessment?

- Relative abundance of different taxa
- Estimation of status and trends
- Derivative assessments
- Index assessments

Lyver et al. 2014

Turner et al. 2009
What is MEASO?

A consensus compilation using available materials and model analysis to evaluate the status and trends of Southern Ocean habitats, species and food webs.
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Contribute to the maintenance of a precautionary approach to ecosystem based management in Antarctica.
What is MEASO?

MEASO is engaging the broader scientific community, across disciplines, policy makers and stakeholders.
MEASO process

What do we know from previous surveys, synthesis, models and assessments?

McCormack in prep.
Environmental surveys

Australian Coastal and Oceans Modelling and Observations workshop 2018
Community surveys
Community surveys

Bellingshausen Sea

West Antarctic Peninsula

Benthos  Plankton  Pelagos  Fish  Birds  Penguins  Seals  Whales
Syntheses and assessments

- SCAR Atlas covers most taxonomic groups following the Census of Antarctic Marine Life sampling
- Diversity and biogeographic data Vs abundance
- Reviewed coverage of single species and derivative assessments

De Broyer et al. 2014
Constable et al. 2017
Turner et al. 2009
How can models help us turn observations into meaningful statements on status and trends at an ecosystem level?

• Filling in gaps in space and time

• Projections of future states under changing conditions

• Provide timely results at relevant scales for decision makers
Models for MEASO

Observations

- Statistical and dynamic models
- Research driven
- Peer reviewed papers

Ecosystem models
- Flexible scales
- Status and trends

Stock assessment models
- Fishery areas
- Catch limits

MEASO
- Commissions
  - IWC, CCAMLR etc

Models and methods
- Scales
- Summaries
- End users

Derivative assessment

Ecosystem assessment

Stock assessment

Australian Coastal and Oceans Modelling and Observations workshop 2018

ANTARCTIC CLIMATE & ECOSYSTEMS COOPERATIVE RESEARCH CENTRE (ACE CRC)
What’s changing?

Australian Coastal and Oceans Modelling and Observations workshop 2018
What needs to be considered

Integrated ecosystem models
Ecosystem modelling for East Antarctica

Atlantis

Dynamic size spectra

Foodweb
More about MEASO?

http://www.measo2018.aq/

http://soki.aq/

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Thank you