

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON  
THE ATLANTIS MODEL REVIEW

Dr. Isaac Kaplan (NWFSC) presented an overview of the Atlantis model for the California Current ecosystem and its potential applications for Council decision-making. During June 30-July 2, 2014, a panel of outside experts from the Center for Independent Experts (CIE), Scientific and Statistical Committee (SSC) Ecosystem Subcommittee members, and National Marine Fisheries Service (NMFS) researchers reviewed the model following the Council's Terms of Reference for Methodology Review. Dr. Kaplan and Dr. Martin Dorn (Alaska Fisheries Science Center) summarized the Methodology Panel report (Agenda Item H.1.a, Attachment 1.). The Panel reviewed two implementations of Atlantis, the most recent established model (Horne et al. 2010) and a model under development that has increased geographic coverage, provides greater detail for lower trophic levels, and links to the IO-PAC model. The SSC concurs with the findings of the Methodology Review Panel and supports continued model development to assist the Council in evaluating ecosystem impacts of fisheries management actions.

The SSC emphasizes several key points from the review:

- (1) Atlantis results should be presented and interpreted qualitatively rather than quantitatively for Council applications.
- (2) Atlantis applications and results should be used for addressing strategic issues rather than tactical issues. For example, Atlantis could be used to evaluate the impact of increased ocean acidification on the performance of harvest policies. Atlantis is not intended to replace single-species stock assessments, nor should it be used to determine annual overfishing limits (OFLs) or acceptable biological catches (ABCs) to set precise quotas.
- (3) Standards for model performance should be developed prior to model calibration. The model calibration process is otherwise generally appropriate, but some key species groups demonstrate unrealistic model behavior, including sardines and hake. The Atlantis team is taking steps to address this in the model under development.
- (4) Best practice in the field of ecosystem modeling is to run a carefully chosen set of scenarios to characterize the uncertainty and sensitivity of the results. The SSC recommends that Atlantis model applications for Council purposes include appropriate exploration of uncertainty.
- (5) Full and formal documentation should be made available.
- (6) The Atlantis team should continue their engagement with the Council and its advisory bodies, both to foster understanding of ecosystem modeling by the Council and advisory groups and to collaboratively develop relevant management scenarios.

(7) The Atlantis model is an appropriate tool for addressing several of the Ecosystem-Based Management initiatives in the Council's Fishery Ecosystem Plan, including food web impacts of fisheries and the evaluation of risks of climate change and ocean acidification. Specific applications of the model will need to be reviewed by the SSC.

PFMC  
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