EWE UPDATES SINCE WORKSHOP 1: "HYPOXIA EFFECTS ON FISH AND FISHERIES" FEB 6, 2017, NEW ORLEANS, LA.

ADVISORY PANEL CALL 3, JULY 5, 2017
KIM DE MUTSERT

Kim de Mutsert, George Mason University; Matthew Campbell, NMFS Mississippi Laboratories; Stephen Brandt and Cynthia Sellinger, Oregon State University; Kristy Lewis, St. Mary's College; Arnaud Laurent, Dalhousie University; Joe Buszowski and Jeroen Steenbeek, Ecopath International Initiative

GEORGE MASON UNIVERSITY

WEB PAGE

https://demutsertlab.wordpress.com/ngomex/

SUGGESTIONS RESULTING FROM WORKSHOP 1 BREAKOUT SESSIONS:

Ecospace species choices:

-Keep current species list included in the Ecospace model, and add Gulf Butterfish

DONE

SUGGESTIONS RESULTING FROM WORKSHOP 1 BREAKOUT SESSIONS:

Ecospace model area:

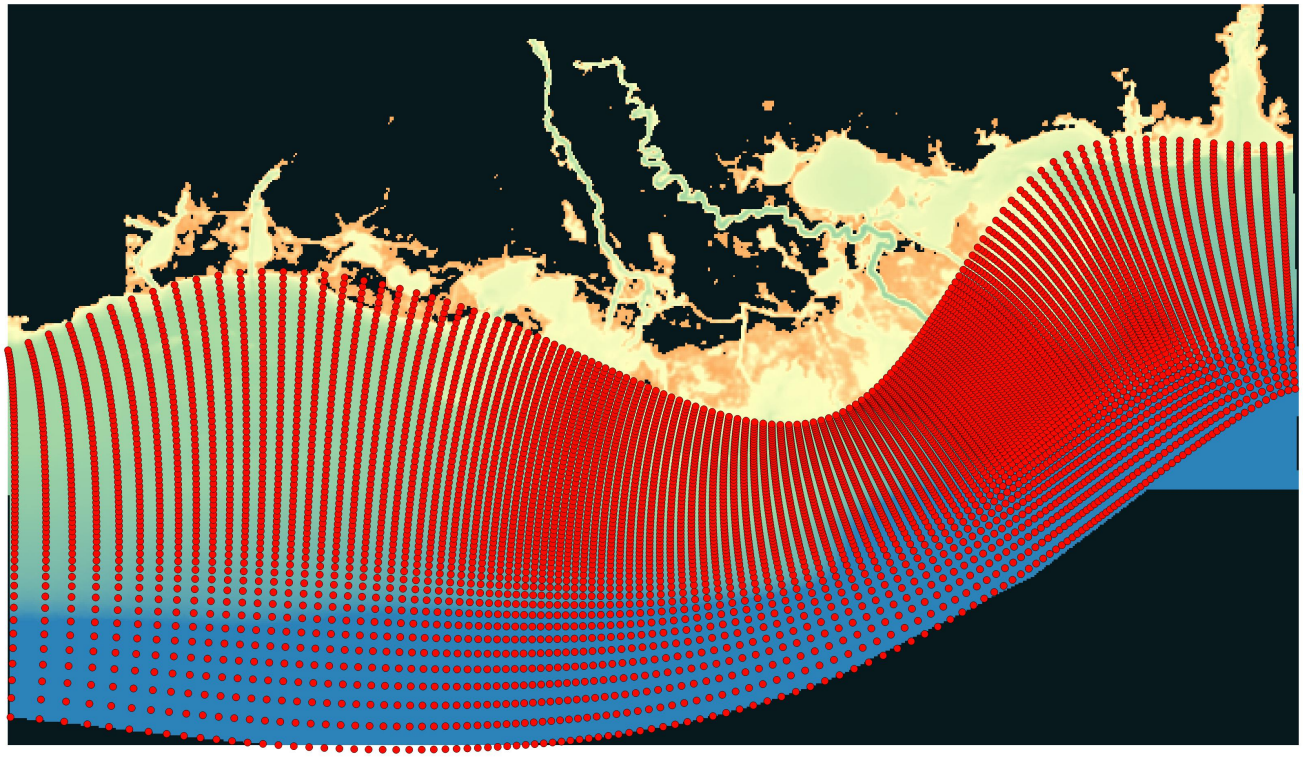
-Develop a new basemap based on newer bathymetry/topography information available since the last iteration of this model

-Expand the NGOMEX model area slightly to the east to include the east side of the Mississippi River

-Continue with a 5km^2 grid, but also create a 10km^2 grid and a 1km^2 grid and explore if this changes model output.

MODEL AREA

Old



New

Image: Joe Buszowksi

SUGGESTIONS RESULTING FROM WORKSHOP 1 BREAKOUT SESSIONS:

Hypoxia scenarios:

-Develop a scenario of a 20% reduction in Nitrogen load from the Mississippi River

-Develop a scenario of a nitrogen reduction that would lead to a hypoxic area of 5000 km^2

HYPOXIA SCENARIOS

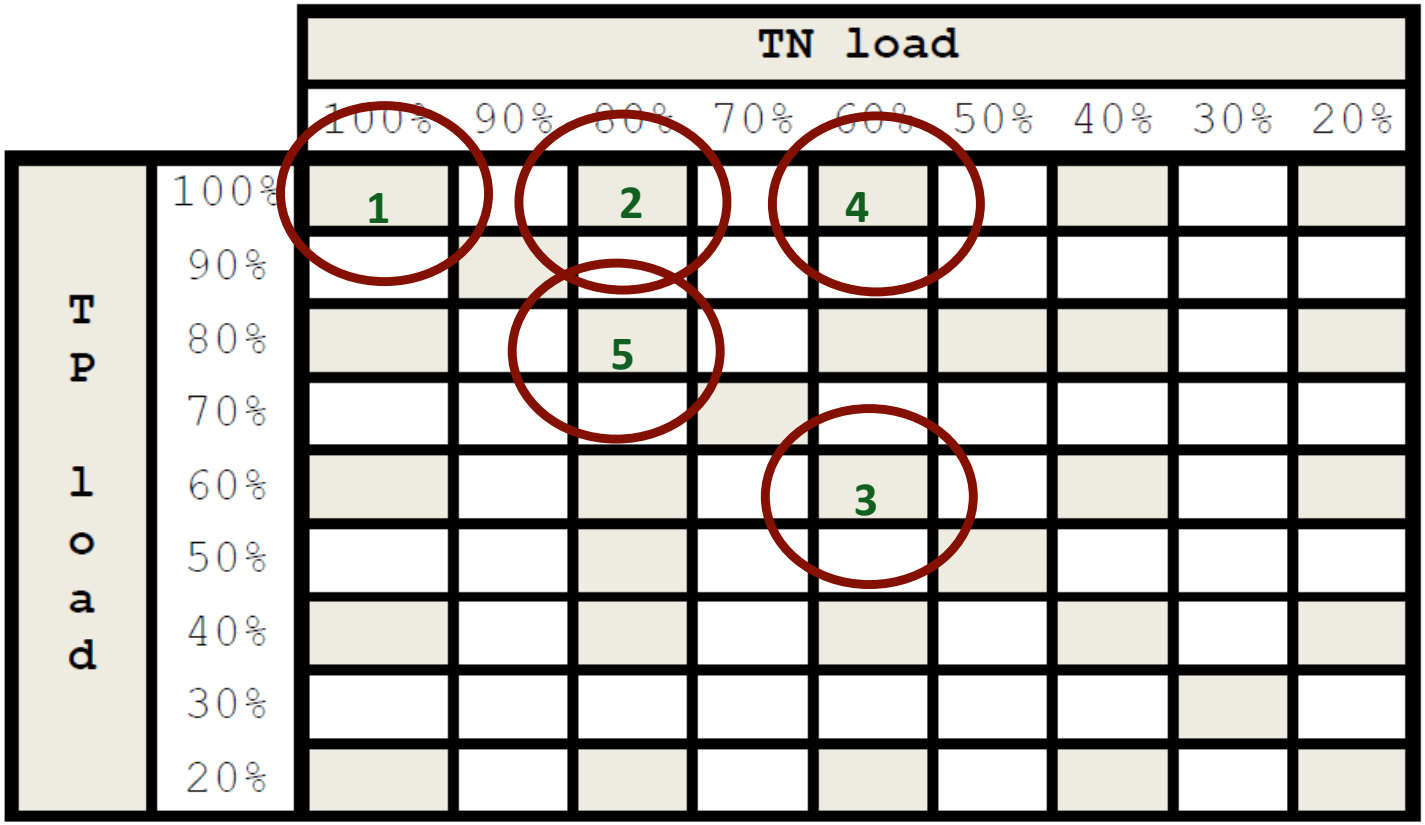


Image: Arnaud Laurent

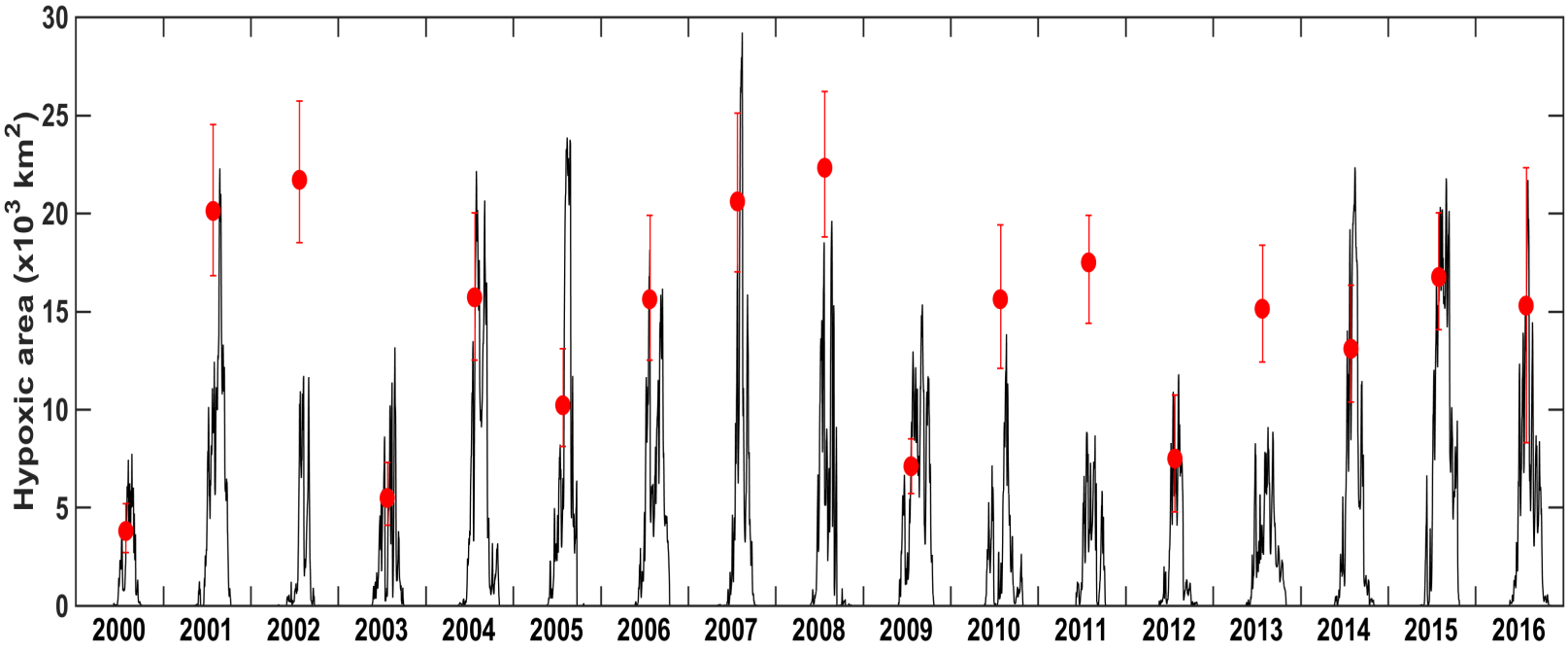
1: 100% N and P load represents no action: calibration scenario and base for comparison as a no action scenario

2: 20% reduction in N load

3: 40% N&P reduction: scenario best representing hypoxic area reduction to 5000 km^2

4&5: scenario 3 without P reduction and scenario 2 with P reduction

Scenario 100% N&P: calibration period



Comparison between simulated (black) and observed mid-summer hypoxic area from the LUMCON cruises (red). The 2016 data point is a multi model forecast from NOAA.

Image: Arnaud Laurent

ALIGNMENT WITH SYNERGISTIC PROJECTS

Calibration period:

-All three NGOMEX projects agreed upon focusing on the time period 2000-2016 as a calibration period, to facilitate model output comparison, possible use of each other's output, and/or model linking

Future ideas:

- Use Dan Obenour's work for hypoxia model validation and/or as an additional hypoxia scenario as driver of the Ecospace model
- Use hypoxia scenarios from Dubravko Justic's FVCOM model as driver in Ecospace
  - use high resolution map, and activate nearshore/estuarine areas for which FVCOM output is available
  - Evaluate difference between planned largescale diversions open and closed

OTHER EWE MODEL CHANGES

Inputs:

-Ecopath biomass for each group recalculated based on 2000-2005 SEAMAP data

-P/B, and Q/B parameters revised when new information is available

-Diets revised using GOMEXSI

-Fishing mortality added as driver using SEDAR reports

-Fleets and landings reevaluated using NOAAs landings query

-Temperature and Salinity added as drivers

-DO response curves revised, salinity and temperature curves added

Next steps:

-Model balancing (Ecopath)

-Model recalibration (Ecosim)

-Loading spatial-temporal DO, Chl *a*, Temperature, and Salinity layers (Ecospace)

-Creating validation maps

OTHER DEVELOPMENTS

Conferences:

AFS (August 20-24)

- Assessing Effects of Reduced Nutrients and Hypoxia on Living Resources in the Gulf of Mexico Using a Coupled Ecosystem Modeling Approach. Kim de Mutsert, Stephen Brandt, Kristy Lewis, Arnaud Laurent, Jeroen Steenbeek and Joe Buszowski
- Project/advisory panel meeting with those interested and present?

CERF (Nov 5-9)

- Session accepted: "**Ecological and Fisheries Impacts of Hypoxia on Coastal Ecosystems**" Session chairs: Kim de Mutsert, Stephen Brandt, Mike Roman, Denise Breitburg, Timothy Targett, Kenny Rose