

3rd QUEST_Fish PI and Advisory Group meeting Plymouth 14-15 October 2008

Attending: Icarus Allen (PML), Marie-Caroline Badjeck (WorldFish/ UEA), Manuel Barange (PML), Julia Blanchard (CEFAS), Ben Drakeford (CEMARE), Nick Dulvy (SFU, Canada), James Harle (POL), Rob Holmes (PML), Jason Holt (POL), Simon Jennings (CEFAS), Jason Lowe (MetO), Gorka Merino (PML/ UoP), Graham Pilling (CEFAS), Emma Tompkins (Leeds), Cisco Werner (Rutgers, USA)

Apologies: Neil Adger (UEA), Eddie Allison (WorldFish), Laurent Bopp (CNRS, France), Keith Brander (DTU, Denmark), Christian Mullon (IRD), Lynda Rodwell (UoP).

Main discussion points and decisions

General

- All – Remember to acknowledge QUEST_Fish in publications and email me references and documents to place on the webpage.
- MB – To contact Jo House to ensure links with other QUEST projects of relevance (e.g. QUEST_GSI)

Module 1

- Agreed to use only 2 emission scenarios and increase the run-time from 5 to 10 years. This will result in 4 time slices (1859, present, 2050, 2100) x 2 emissions x 10 years.
- JH – To explore the feasibility of increasing the run time from 10 to 15y, to capture climate variability better. This may include considering such an extension to apply to the case study LME's only. JH to report at the next meeting.
- After discussion agreed to use the A1B SRES scenario to start with, and based on the initial results select the second scenario (currently between B1 SRES or potentially the new IPCC AR5 E1 scenario, which is not yet properly documented).
- JL – to start contact with JH, JHa and IA to speed up security clearance to access HadCM3 high frequency data. This is urgent.
- IA – to contact Laurent Bopp to enquire as to whether there is a pre-industrial run in the IPSL French model. If so IPSL could substitute HadCM3 in our analyses, but preferably be an additional model to allow model intercomparisons.
- Raised, and flagged for later assessment, the potential effects of including a coarse bathymetry (1/4° resolution) in the 1/10°-resolution hydrodynamic models.
- Delivery timeline: agreed to have PRESENT Runs for all domains (20 LME) and the runs for the 4 time slices (for a A1B emissions scenario) for the Humboldt LME by the end of 2008.
- Next priority LMEs: European shelf and South China Sea (order to be decided by JH/ JHa)

Module 2

- MB/ GP – To contact Nigel Arnell and relevant people in QUEST_GSI to meet (either at the January scenarios meeting – **GORKA: Please provide details** or at the March 2009 QUEST ASC) to ensure we follow consistent approaches to scenario selection/ development.
- Suggested to include, as a delivery from Module 1, primary production separated between “useful” and “non-useful” (rather than new vs recycled). ND to liaise with IA as required.
- Suggested to use recent past SeaWIFS data to do model intercomparisons between ND's approach and SJ's approach. **Simon – Is this clear enough?**

- GM – to approach Rashiid Sumaila to access their database of fish prices per size class, for potential use when Module 2 fish biomass results become available (Note: this is not a promised delivery under QUEST_Fish, but a potential area for growth).
- Briefly discussed how the 10-year runs in Module 1 would allow probabilistic treatment of Module 2 outputs: this may be worth discussing at the next PI meeting?
- Briefly discussed the possibility of using JB dynamic model outputs to parameterize future fishing mortalities in association with the 2 emission scenarios. This may be worth discussing at the next PI meeting.
- Off-line discussed that it may be necessary to send a member of Module 2 to POL or PML at some stage, for a couple of days, to facilitate the transfer of data (and understanding of the data) from Module 1 to Module 2. JB/GP/SJ and JH to liaise as necessary. Funding will be provided if necessary.

Module 3

- GM to discuss with C Mullon the possibility of updating the 10-year global fishmeal equilibrium model with parameters for 2050 and 2100 along the emission scenarios storylines. The objective would then be using Module 2 outputs to generate new 10-y simulations around 2050 (possibly not logical to expand this exercise to the 2100 time frame), particularly if any of the emission scenarios results in a drastic change in Humboldt current fish production.
- BD – to try and constrain his salmon substitution model (e.g. using growth rate as % of weight to account for experiments with different size fish; use only a range of preferred temperatures rather than full spectra use in experiments). The need is for a simple model for ecological and economic substitution, dependent on price of the commodities, for inclusion in GM's model. BD to complete this work by the next PIs meeting.
- BD – To explore doing a similar metadata exercise for shrimp substitution.
- M-C.B. to assist BD by enquiring in WorldFish about available data on shrimp substitution experiments.

Module 4

- Noted that socio-economic scenarios may not be very valuable for 2100, and so focus may be on the 2050 scenarios.
- Focus on 2 SRES storylines x 2 Fisheries Production scenarios = 4 scenarios in total.
- Global analysis:
 - Requires an international experts meeting. M-C.B. and ET to draft a 1-2 pager on this requirement for MB to take to QUEST and/or FAO, WorldBank, for funding.
- Regional studies
 - Humboldt (focused on Peru only)
 - Local consultation process conducted
 - “monkey-based” i-survey to be conducted to develop scenarios
 - 2 vulnerability scenarios to be completed by next PI meeting (to be presented at IHDP conference in March 2009) **MCB- what 2 scenarios are these? You mean 1 SRES x 2 Fish production scenarios?**
 - South China Sea (including Vietnam, Thailand and Indonesia. China would be ideal but not feasible in QUEST_Fish I timeline)
 - 1 field trip necessary. MCB to contact QUEST for access to studentships **(GM could help pointing her in the right direction).**
 - Results expected (optimistically) by July 2009, subject to Module 2 delivery.
 - NW Africa
 - Focused on Mauritania (fish accounts for 60% of agricultural exports) and Senegal (diet includes 29.9 kg/person/year).

- Not possible in QUEST_Fish I due to lack of funding and time, but potentially important if new funding is found of as part of a QUEST_Fish II.

Other issues

- **Chapter in the Proceedings of the symposium on “Coping with climate change in marine social-ecological systems”** in Blackwell’s FAR Series – agreement to use the opportunity to present “the Quest_Fish model”. Inputs to reach MB by November 1 if at all possible, for submission on November 10. More detail in Annex 1 below.
- **Next meeting:** Agreed to have it before the QUEST ASC, both because the latter clashes with the IHDP Conference in Bonn and because it would allow us to prepare our contribution to the QUEST ASC. Dates: please select your preferences for a 2-day meeting between 9 March and 10 April through <http://www.meetomatic.com/respond.php?id=M0D2F8> **as soon as possible**. The objectives of this meeting are:
 - Provide updates from each Module and revise timing of next deliverables
 - Present a complete analysis of QUEST_Fish model results (from Module 1 to Module 4) based on one emissions scenario (A1B) and 4 time slices for the Humboldt LME domain.
 - Possibly investigate preliminary results of the “present” runs for scenario A1B for the 20 LMEs.
 - Everyone invited
- **Following meeting:** Attached to the QUEST ASC. It will be proposed to host it on April 30 (the day after the ASC) hoping that those attending the IHDP meeting in Rome may be able to join. This meeting will be much limited in size and focused on scenario development. MB and GP to liaise with QUEST_GSI to see if they can work with us on this topic. All QUEST_PIs and students have always been invited to attend the **QUEST ASC meeting** at QUEST central budget expense. The meeting is planned 27 – 29 Apr 2009 at the Cotswold Water Park Hotel, Gloucestershire. AG members are not automatically invited, but if you are interested let me know and I will liaise with QUEST to seek invitations. More information will be circulated when available.
- **Ideas for QUEST_Fish follow up:** Could you all send me potential areas of work by Module, that you think would be worth including if we were to find funding for a phase 2 of QUEST_Fish? Particularly JH and IA for Module 1, ND/GP for Module 2 (SJ/GP/ND/JB), and M.C.B/ET for Module 4.
- **A matter of relevance I forgot to mention at the meeting: ICES and PICES have agreed to create a joint working group on “Forecasting Climate Change Impacts on Fish and Shellfish” (WGFCCIFS). Co-chairs are Anne Hollowed (NOAA, USA), Suam Kim (Pusan, Korea), Harald Loeng (IMR, Norway) and Manuel Barange (UK).** Potential working group members include: James Overland - USA, Shin-ichi Ito - Japan, Michael Foreman - Canada, Thomas Okey - Canada, Richard Beamish - Canada, Daniel Duplisea - Canada, Jason Holt - United Kingdom, Keith Brander - Denmark, Jürgen Alheit – Germany. The WG will meet in a mutually agreed venue (perhaps Seattle, Washington, U.S.A in March 2009 or in conjunction with the GLOBEC Synthesis meeting in Victoria B.C, Canada in June 2009) to:
 - discuss frameworks and methodologies for forecasting the impacts of climate change on the growth, distribution and abundance of marine life with particular emphasis on commercial fish and shellfish;
 - review the results of designated case studies to test methods;
 - plan for an intersessional meeting in early 2010 where scientists can present, discuss and publish forecasts of climate change impacts on the world’s commercial fish and shellfish resources;
 - establish techniques for estimating and communicating uncertainty in forecasts;
 - evaluate strategies for research and management under climate change scenarios, given the limitations of our forecasts.

QUEST_Fish is one of the flagship programme the WG plans to build on.

Appendix 1 – Book Chapter

Title: Predicting climate change impacts on global marine ecosystems and fisheries, and their socio-economic consequences: the QUEST_Fish framework

- Introduction (1000 words) – **Manuel**, Cisco
- Framing the problem (500 words), including sections on*:
 - The LME framework – **Manuel**
 - The role of GCMs – **Jason2/ James/**
 - Scope – **Manuel**
 - Others?
- Developing physical-biological models for the shelf seas (1500 w) – **Jason, James, Icarus, Rob?**
- Using macroecology to estimate potential fish production (1500 w)– **Simon, Julia, Nick, Graham**
- Estimating socio-economic consequences
 - Methodology for national vulnerability assessment (1000 w)– **Eddie, Marie Caroline, Emma**
 - Methodology for global assessment of marine commodities (1000 w)– **Gorka, Manuel, Christian, Ben**
- Conclusions, use of this approach, Alternative approaches, next steps, limitations (500 w)– **Manuel and All**
- References (600 w)

* MB to take the lead and pass on to Jason(s) and James to add their section (JS, JL, JHa: you can start drafting the section on the role of GCMs already)

Names underlined are to take the lead and submit their text to MB if possible by November 1.

Suggested: ~ 10 figures in total

Suggested: to include a conceptual diagram. See draft below. **Modify using attached ppt and return to MB asap.**

