Recommendations from the first IARC ASM workshop

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Who was there and what did we achieve?

- 48 people, mainly from UAF.
- Arrived at a ‘straw man strategy’ for a Community ASM.

Summary of the preliminary Arctic System Model workshop is available at: http://www.iarc.uaf.edu/workshops/2008/arctic_system_model_08/downloads.php
Vision, Motivation, Needs and Deliverables

- Vision based on scientific goals.
- Motivation based on clearly defined research questions.
- A definition of what the ‘arctic system’ is and what it excludes.
- Development of a community ASM “should stimulate the exchange of knowledge between modelers and observers.” - Andrey Proshutinsky
- A set of clearly defined deliverables.
Use existing efforts as a starting point

“Do not reinvent any wheels. Avoid the impulse to ‘do it all’. Develop strategic partnerships to avoid duplication of effort, and maximize the science that gets done.” - Dale Haidvogel

“...identify model developers and real users to be invited to participate...” - Andrey Proshutinsky

If IARC is to be involved in leadership of this effort, have a clear understanding of what IARC is bringing to the table.
What should an ASM include?

How ready are these components?

<table>
<thead>
<tr>
<th>Component</th>
<th>Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>atmosphere</td>
<td>(1) most ready</td>
</tr>
<tr>
<td>ocean</td>
<td>(1) most ready</td>
</tr>
<tr>
<td>sea ice</td>
<td>(1) most ready</td>
</tr>
<tr>
<td>land hydrology/permafrost/lake models/snow</td>
<td>(1) most ready</td>
</tr>
<tr>
<td>urban model</td>
<td>(2) almost ready</td>
</tr>
<tr>
<td>human dimensions – subsistence/demographics/ agriculture</td>
<td>(3+) far to go</td>
</tr>
<tr>
<td>mountain glaciers</td>
<td>(2+) near to ready</td>
</tr>
<tr>
<td>icesheets</td>
<td>(2) almost ready</td>
</tr>
<tr>
<td>marine ecosystem/biogeochemistry</td>
<td>(2) nearly ready</td>
</tr>
<tr>
<td>terrestrial ecosystems/biogeochemistry</td>
<td>(2) nearly ready</td>
</tr>
<tr>
<td>atmospheric chemistry/aerosols</td>
<td>(2) nearly ready</td>
</tr>
<tr>
<td>non-biogenic gases/hydrates</td>
<td>(3) very far</td>
</tr>
<tr>
<td>coastal systems model</td>
<td>(2) nearly ready</td>
</tr>
</tbody>
</table>

1=“most ready”, 3=”a long way from ready” for coupling.
Modularity

“The concept of modularity, e.g. easy swapping in and out of models, is an attractive one, but one that may not be realistic, especially in a fully coupled system where the peculiarities of each component model simulation may not always integrate well with another model.” - David Lawrence
Project Management

- Should we follow the CCSM working group example?

  - Establish protocols for sharing of code and model output
  - Establish code / diagnostics / data standards
  - Computational expense evaluation
Flexibility verses pragmatism

“..much thought needs to be put into what this Arctic System Model is and perhaps more importantly, what it is not. It is sensible to build in flexibility for future developments at the outset of the project. However I think that there is a risk in getting too hung up on this point at the expense of getting things moving along.”

“Some early successes with the project will probably result in more buy-in and commitment from the scientific community.” - Marika Holland
This Arctic System Modeling workshop

Our Agenda

- Define existing efforts: Regional Arctic Modeling Projects
- Key science questions best answered with regional coupled arctic models
- Community compass: How should this project be managed and should we aim for many component models or a single end-to-end Arctic System Model?
- What infrastructure is available now to get things moving?
- Can we use this project as vehicle for validation, modelers and observers exchanging ideas and for model inter-comparison?
- Community collaboration: Can we aim for early success?