

Program for GETM Developing Meeting 2010.

Accommodation is in Bückmann-Haus, Hafenstrasse (number must be 38 or so, check maps.google.com). Call Hans at +49-170-3810051 when you come late.

If you come from Westerland by bus, leave at the final stop List-Hafen.

From there and from the ferry jetty (for those who come from Havneby by boat) it is a few 100 m to walk to the Bückmann-Haus and to the Wattenmeerstation.

Monday, January 25

17:00: Join in Meeting room of Wattenmeerstation

Start: 17:30 h

Participants introduce each others.

Responsible persons for GETM parts must be announced, to be discussed on Thursday.

Subjects to be administrated:

- *getm.eu web site*
- *documentation, howtos*
- *particle tracking tool*
- *test cases*
- *regular automatic code testing*
- *non-hydrostatic, LES*
- *GETM core*
- *pressure gradient schemes*
- *advection schemes*
- *coupling to wave model*
- *release team, version control*
- *biological module*
- *air-sea (sea-ice module)*
- *getm-utils*
- *flexible output*

Richard, Hannes
\begin{Knut,Ulf,Saeed}
Bianca, Ulf
Karsten, Hannes
Bjarne, Richard
Knut, Hans
Hans, Karsten
Richard, Adolf
Hans, Hannes
Ulf, Saeed
Karsten, Bjarne, Richard
Jorn, Markus, Karsten
Adolf, Jesper, Johan
Bjarne, Richard
Karsten, Markus, Bjarne

Display getm.eu statistics on web.

19:00: Food and drinks at Gosch (Alte Bootshalle, List harbour, see <http://www.gosch.de/standorte/gosch-auf-sylt/alte-bootshalle/>)

Tuesday, January 26, 9:00 – 13:00 h

Future GETM infrastructure

- Separation between GOTM & GETM, such as air-sea, eos – 20 min.
- Potential new build system for GOTM/GETM (Karsten) - 20 min
- How to interface new features, such as particle tracking, waves, atmosphere, biology
- GETM with biology (Jorn, Karsten, Markus) – 30 min.
- coding conventions – 15 min.

Need for stand-alone modules such as air-sea, biology, particle-tracking.

An external coupler will be needed for coupling GETM & SWAN. Once such a system is working for GETM, then it could also be used for coupling a particle tracking module. MCT seems to be a good option as a coupler, since also ROMS is using it. The coupler could later also be used for coupling the meteo forcing into GETM, including a sea ice model. Ulf will later introduce the MCT coupler.

GETM biology: We need a break-out group for this. GOTM-Bio should go from one-d to zero-d.

The problems of synchronization of the GOTM-Bio and the GETM development are solved. Now, the developers versions of GOTM and GETM work together. This had been demonstrating with the North Sea 6 nm set-up.

Coding conventions: There is a file CodingStyle directly in the GETM directory, given general information how to code. There should be a hint on the web site to this file. On more specific questions (such as loop boundaries), we need a howto.

Potential built system: cmake is a promising option, Wilhelm Korrengk is trying it out for GOTM, Jorn is also testing it.

Major GETM extentions:

- Coupling GETM & SWAN (Ulf & Saeed) – 40 min.
- From the non-hydrostatic extension to LES modelling, LES (Knut, Hans) – 30 min.
- Particle tracking (Hans, Bianca) – 30 min.
- Sea ice model (Adolf) – 20 min.

*Non-hydrostatic extension not yet included in developers version. Should be done soon.
Responsible: Knut.*

LES: next step will be including a 2D Poisson solver to allow for rigid-lid approximation. Together with a proper (simple) subgrid-scale parameterisation for the mixing and periodic boundary conditions, this gives ground for LES.

Sea ice dynamics: A thermodynamic sea-ice model will be developed between Adolf and Bjarne (together with DaMSA colleagues). → break-out group II.

Tuesday, January 26, 14:00 – 15:00 h

Enhancing GETM's performance:

- Adaptive grids (Richard) – 15 min.
- Optimised pressure gradient schemes (Richard) – 15 min.

- Less diffusive advection schemes (Hans, Hannes) – 15 min.
- Geopotential coordinates (Adolf) – 15 min.

Geopotential coordinates are not assumed to improve the numerical dilution problems of deep water in Black Sea and Baltic Sea. The more promising way would be adaptive grids, improved pressure gradient schemes, higher resolution and better advection schemes.

IOW has a PhD position for investigating effects of momentum advection schemes on numerical dissipation and tracer advection schemes on numerical mixing of tracers.

Tuesday, January 26, 15:00 – 16:00 h

Public scientific presentation on GETM application

- The role of estuarine circulation in the Wadden Sea (Hans) – 60 min.

Tuesday, January 26, 17:00 – 19:00 h

GETM technical features

- OpenMP in GETM and implications on computational speed and accuracy (Bjarne) – 30 min.
- Flexible output (Karsten) – 40 min.
- Periodic (cyclic) boundary conditions (Karsten, Hans) - 20 min.

So far OpenMP is implemented into about 80% of the loops, but results are so far not promising. Speed-up for parallel set-ups is about 20% only.

Wednesday, January 27, 9:00 – 13:00 h

GETM tools

- Python/Octant based GOTM/GUI tools in GETM (Jorn, Richard) - 40 min.
- Presenting large data sets (Hannes) – 20 min.

Octant: does not really work in a robust way. Bjarne features an email to Rob Hetland (cc to GETM developers) to propose a way forward towards a tool which can generate grids and interpolate bathymetry data into it.

GETM administration

- Automatic code testing & administration of test cases (Bjarne) - 40 min.
- Administration of getm-utils (Karsten) – 20 min.
- Website getm.eu – how to make it more usable? Would a wiki help? (Richard) – 20 min.
- GETM Users Guide (Knut) – 15 min.
- GETM release cycle (Karsten) – 10 min.
- More effective version control systems (Richard) – 20 min.

One stable release per year. (April 1st).

Next release will include non-hydrostatic dynamics and adaptive coordinates. Should also have the

numerical mixing analysis in.

Miscellaneous

- Non-resolved issues in GETM (all) - 40 min. (Make a list of (smaller) things that do not work/should be changed. Something in bdy_3d.F90. Something with vert_cord=3. Is special sub-domain layouts covered (advection))

Wednesday, January 27, 13:00 – 17:00 h

- Some kind of lunch & excursion

Wednesday, January 27, 17:00 – 19:00 h

GETM public relations

- GETM review paper (Richard) – 30 min.

The way forward: GETM in 2015

- Open discussion (all) – 30 min.

Break out groups:

GOTM-Bio: Next stable release with 1D, diagnostics to be implemented with zero-d later, Modified Patankar (pp-dd) does not need to work with future test cases, but should always be working with the NPZD.

Air-sea and sea-ice: It would still be optimal to move the air-sea module away from GETM, and do it all in GOTM. But for the moment, there is no-one available for this fairly complex task. Therefore, sea-ice will be for now implemented in GETM.

Particle tracking: Promote low-order solution which is working also for curvi-linear grids. Analytical solution approach for the advective part may be overkill. Tool should be independent of GETM ...

Thursday, January 28

- Early departure for all