### Code structure:

**How to study? How to explain?**

- DOXYGEN produces lists (Ok!)... and graphs (???)
- Producing graphs, DOXYGEN promises to provide the minimum number of intersections. But they are still almost useless.
- How to unravel the graph?

#### Idea:

- **Plain routine**: is called only once, contains CALLs
- **Utility**: is called from many places, contains no CALLs, contains simple methods
- **Block routine**: is called from many places, contains CALLs, contains complicated methods

### DA for lakes

**EKF**: Experiments with LWST in-situ obs from SYKE + selected MODIS obs for early spring, open water period, summer 2011

- Cross-validation for 4 lakes: RMSE decreases strongly!
- Some a posteriori statistics: the impact of obs is high!
- Preliminary study of the filter components (Jacobian, Kalman gain, background error cov): no divergence, annual cycle
- The performance of the mean water and bottom temperatures is strongly dependent on the quality of early spring observations. Testing with deep water temperature obs is important!
- Decoupling problem in summer: difficult to correct the LWST

**Bug fixes**

- New structure functions for LWST different from that for SST - ongoing, Homa Kheyrollah Pour, UW

#### SICE:

- Constant ice depth, tuning parameter (~0.75m)
- Solution of the heat diffusion equation for N layers in ice
- Snow on ice with ES from SURFEX is technically possible
- The ice fraction is from the analysis
- No analysis for temperature: starts from the previous forecast or from the interpolated/extrapolated ECMWF ice surface temperature analysis and the linear temperature profile in ice

#### Tests over AROME Arctic domain

- SST and SIC fields in fiords need to be improved

### By-product: ideas for the model documentation

- **Code structure**: How to study? How to explain?
- **DOXYGEN** produces lists (Ok!)... and graphs (???)
- Producing graphs, DOXYGEN promises to provide the minimum number of intersections. But they are still almost useless.
- How to unravel the graph?
- **Idea**: to consider 3 main types of routines

**Plain routine**

- : is called only once, contains CALLs

**Utility**

- : is called from many places, contains no CALLs, contains simple methods

**Block routine**

- : is called from many places, contains CALLs, contains complicated methods

Every **Block routine** starts the new graph!

- **Automatic documentation is possible!**
- : ongoing, welcome to join!