# Summary of replies to: Survey on the use of river run-off data in ocean circulation models

*j.w.nielsen, dmi oct 2020 - on behalf of NOOS*

This survey was carried out as a prerequisite for establishing Best Practice in the implementation of river run-off in ocean circulation models set up to include the North Sea, or parts thereof. You were assumed to be involved in the running of such a model, and otherwise encouraged to please pass on to a colleague who was.

**Turnout:**

I have gotten a rather meagre 4 replies, including our own. This may reflect the level of interest.

NOC, BSH, METNO, DMI

I should perhaps say I have had mailbox issues.

**Question 1:** Does your ocean model in any way include river run-off? (yes/no)

**Reply 1:**

√√√√ Yes from all.

No replies from applications with no rivers, with or without future plans.

So we do not know how common use of run-off is, or if anybody makes do without.

**Question 2:** Is/are your implementation(s)

**Reply 2:**

√√√ Operational (most)

√√√ Historical / Climatological

√√(√) For future climate

Other: no.

**Question 3:** Which kind of river data do you use?

**Reply 3:**

√√ Observations

√√√ Model data

√√√ Climatology

Other / Combination

METNO plans to combine obs+clim.

**Question 4** if observations: How do you obtain the data you need?

**Reply 4:**

* Which is/are your data source(s) ?
* Near real-time

National sources preferred.

* Data archive

NOC has obtained archived data from a total of 8 agencies, British Isles and continent.

**Question 5** if model data: Which is the data source

**Reply 5:**

Near real-time

√√ SMHI E-HYPE

√√ BfG German rivers

Modelled data archive

√√ SMHI E-HYPE

√ CMIP precipitation / run-off

**Question 6** if climatology:

**Reply 6:**

* What is the data source

Generated from observations

Generated from SMHI E-HYPE

* Do you use

√ Annual climatology

√ Monthly climatology

√√ Daily climatology

Other time resolution

**Question 7:** How do you get access to data

**Reply 7:**

These methods are used:

√√ Commercial

√√√ Bi-lateral co-operation, single or multiple, national or international

√√ Free download / Published data sets

No-one seems to have adequate data in-house. There is always work involved in obtaining.

**Question 8:** How do you ascribe a water temperature to the run-off volume?

**Reply 8:**

These methods are used:

√√ It comes with the data

√√√ Temperature of outlet point

Even if data comes with temperature, receiving cell temp. may be used.

**Question 9:** How is the implementation of the run-off flux?

**Reply 9:**

Both of these methods are used:

√√√ 2-D map of outlets

√√√ Table of outlet points

DMI note: in parallel computing, more than one river per outlet point is not permitted.

**Question 10:** How is the run-off distributed vertically at the receiving locations? Details are welcome.

**Reply 10:**

No consensus, All of these methods are used:

√√ Surface grid cell

√(√) Whole water column

√√ Part of the water column

**Question 11:** How is the run-off time variation in your model run?

**Reply 11:**

* If the run is a short or medium-range forecast
  + √√√ Constant throughout
  + Varying in time (please give details)
* If the run is a long-term hind-cast or a projection forward in time
  + Constant in time
  + √√ One-day steps
  + √ Monthly steps
  + Time varying on model time step
  + Other

**Question 12:** Are you content with your implementation, or do you plan to change?

**Reply 12:**

√ No plans for change

√√ √ Plans (please describe in brief)

Combine observations with climatology

Overhaul the model implementation of run-off as part of an investigation into salinity biases.

Check and update the run-off dataset which currently uses data from several sources and needs to be checked for consistency/accuracy of processing.

Introduce a hydrological model to close the water cycle in coupled atmosphere/ocean climate runs

Time varying river run-off in short/medium-range forecast using runoff-forecasts

**Question 13:** Your wishes form the NOOS community to facilitate your work in this respect

**Reply 13:**

“Data exchange from hydrological forecast models”

“A common database for historical data and climatologies for the NOOS area”

“A common NOOS runoff model for NRT applications would be a perfect solution.”

“Common NOOS agreement with hydrological model data provider rather than bi-lateral”

“Access to a run-off dataset.

“Recommendations for model implementation methods. “

**Question 14:** Your comments, anything I forgot to ask about.

**Reply 14:**

“Joint forces for bio-load data, as there are even less observations and nrt/forecast data (model and observations)”

My own:

For hydrological modelling, a correct run-off budget is crucial in maintaining long-term salt balance in semi-enclosed seas. The exact timing may be less important, and in the rather open North Sea even less so.

For marine ecology modelling, a combination of run-off and bio-loads/nutrients data is of course of central importance. Bio-loads were not part of this survey.