Marine-terminating glaciers are a large source of freshwater to the coastal environment in Svalbard, at the gateway to the Arctic Ocean. As the glacial meltwater flows out of the fjord we see that the integrated runoff from many individual glaciers influences coastal circulation, sea ice cover and exchange with the offshore Atlantic Water current. These in turn affect atmospheric conditions over the glaciers, which finally set the stage for snow accumulation in winter and, to complete the circuit, glacial melting and runoff in summer. This presentation connects observations from the vicinity of a glacier with data collected by instrumented moorings and from ships, both in Kongsfjorden and along the nearby continental slope. We will look at results and lessons from a number of projects, including field campaigns, time series from moorings as well as numerical modeling.

Modelling aspects include high-resolution runoff plume modelling, fjord-scale circulation and eddy-resolving regional scale ocean and sea ice model efforts.