Lower and Upper Trophic Break Out

- Seasonality of measurements and cruise timing
  - Shoulder seasons are of growing importance as sea ice retreats earlier
  - Missing the blooms and the ice-biology connections
  - Dependent on ship availability, need for ice breakers, working with multiple agencies
  - Use of sediment traps and mooring data to justify this to program managers
- Cruise schedules in advance of field season – International Programs
- Establishing virtual teams for coordinated measurements
  1. Nutrients
  2. Phytoplankton/HABs
  3. Zoops/Larval Fish
  4. Benthic
  5. Birds
  6. Mammals
  7. Fish
  8. Physical Oceanography/Moorings*
- Protocol manuals/ SOPs for each of the measurements
  - Build off existing materials from MOSAiC and Nansen Legacy, modified for DBO.
  - No expectation for researchers to change their methods
  - Will benefit time series analyses where instrumentation shifts

Lower and Upper Trophic Break Out cont…

- Science gaps
  - Under sampling at some DBO regions
  - Beaufort Sea
  - Develop a heat map of sample collection at DBO sites
  - Carbon export
- Using technology to address science gaps
- Future directions….. eDNA?
  - Triggers for adaptive sampling
- Modeling, forecasting and data issues
  - Spatial resolution insufficient for modeling and forecasts, particularly for plankton/primary production
  - Lack of rate measurements, rates are what modelers want
  - Data repositories and data managers
- Marine mammal observations
  - Ship based obs + moorings are working well together
  - Limited by funding to have observers out, volunteer based initiatives would help but experience required