

Breakout Group 2: Arctic

1. Obtain better winter observations
 - Understanding flux through ice: flux towers
2. Constrain the fate of primary production
 - a. Addressing unknown burial rates
 - Mapping carbon content of existing sediments
 - b. Lateral transport
 - Focused deposition; off-shelf transport
3. Improving satellite algorithms
 - Arctic COLORS (NASA)

Breakout Group 3: Great Lakes/Arctic

	Where are we now?	Next steps	Next Next Steps
Arctic	<ul style="list-style-type: none"> • Robust physical/ ice models, but ice still needs major development; • Ecosystem box models exist, but do not incorporate biogeochemistry; • Some preliminary thoughts about what an ultimate coupled physics-ice-BGC model would look like 	<p>5 year timescale</p> <ul style="list-style-type: none"> • Box Models for BGC; can validate presently for summer observations. • Need to better understand ice flux, PP in the high Arctic from satellites before development will be robust 	<p>10-year timescale</p> <ul style="list-style-type: none"> • Understanding • Robust coupled physical, ice, BGC model • Needs: sediment understanding, burial.
Great Lakes	<ul style="list-style-type: none"> • One of the key challenges is a plethora of individual efforts but no central coordination; • Physics and ice are well developed for some lakes (NOAA/GLERL). <ul style="list-style-type: none"> • Some models incorporate biogeochemistry, but not perhaps carbon. • Ice still needs some development, • Physics need to be better for some lakes 	<p>1-year timescale</p> <ul style="list-style-type: none"> • Modeling workshop or working group, leading to a science plan or proposals or a consortium • Vision: modeling the response to multiple efforts • Standardized methods, protocols • Coordinate individual efforts by disparate agencies towards development of a centralized model effort 	<p>5-year timescale</p> <ul style="list-style-type: none"> • Bringing together everyone that's working would be such a huge leap forward, that integrated model would emerge quite easily • Data needs: <ul style="list-style-type: none"> • Modern data necessary! • Understanding satellite data quality (quant. and qual. perspectives)