1) What (if anything) makes mass fluxes at high latitudes different from fluxes in the tropics or mid latitudes?

A) From an observational perspective

i) Lack of sufficient ground truth; almost no high latitude obs; very few over snow/ice

ii) Quality of ground observations

iii) Right now no remote sensing methods for* mean *concentrations

B) From a modeling perspective

i) Requires coupled-air ocean *biological *models

ii) Some parameterization variables not carried in models (wave breaking).

2) Are all flux parameterizations similar in their estimates of fluxes? (No)

A) Why not?

i) Simple wind-speed based vs

ii) Processed based: whitecaps, bubbles, wave breaking

iii) Different approaches to measure k (tracers, eddy covariance, etc)

B) What additional physical processes do we need to consider (over ice and over water)?

i) Not sure there is a model for over ice/snow

ii) Very chemically specific

C) What accuracy are we likely to be able to achieve with current algorithms? Are there issues in addition to those mentioned in (2)?

i) No idea

ii) The spatial/temporal sampling of mean concentrations a big problem

iii) Can we separate these issues?

3) What do people think it will take to do better?

i) From an observational perspective

a) Need a long term program of direct, in situ measurements

b) Need a long term program to improve satellite methods

ii) From a modeling perspective