SCHEDULE IN BRIEF

	January 8	January 9	January 10
08:00	**BREAKFAST**	**BREAKFAST**	**BREAKFAST**
08:30	**BREAKFAST**	**BREAKFAST**	**BREAKFAST**
09:00	Welcome and Introductions	Recap of previous day	Hackathon
09:30	Goals of workshop	Case study #2: Multivariate AR(1)	Hackathon
10:00	Introduction to Bayes for dynamic systems	Case study #2: Multivariate AR(1)	Hackathon
10:15	**BREAK**	**BREAK**	**BREAK**
10:30	The Process Models: Dynamic Systems	Case study #2: Multivariate AR(1)	Hackathon
11:00	The Data Model: the Likelihood	Case study #3: Macromolecular model	Hackathon
11:30	Prior Information	Case study #3: Macromolecular model	Hackathon
12:00	**LUNCH**	**LUNCH**	**LUNCH**
12:30	**LUNCH**	**LUNCH**	**LUNCH**
01:00	Introduction to MCMC	Case study #3: Macromolecular model	Hackathon
01:30	Introduction to MCMC	Case study #4: SeaFlow matrix model	Hackathon
02:00	Introduction to Stan	Case study #4: SeaFlow matrix model	Hackathon
02:30	Introduction to Stan	Case study #4: SeaFlow matrix model	Hackathon
02:45	**BREAK**	**BREAK**	**BREAK**
03:00	Case study#1: NPZ Model	Form groups + brainstorm	Hackathon
03:30	Case study#1: NPZ Model	Form groups + brainstorm	Hackathon
04:00	Case study#1: NPZ Model	Discussion of analysis ideas	Group presentations
04:30	Case study#1: NPZ Model	Discussion of analysis ideas	Group presentations
05:00			
05:30	**DINNER**	**DINNER**	**DINNER**
06:00	**DINNER**	**DINNER**	**DINNER**
06:30	**DINNER**	**DINNER**	**DINNER**
07:00	**DINNER**	**DINNER**	**DINNER**

SCHEDULE IN DETAIL

	January 8	January 9	January 10
08:00	**BREAKFAST**	**BREAKFAST**	**BREAKFAST**
08:30	**BREAKFAST**	**BREAKFAST**	**BREAKFAST**
09:00	Welcome and Introductions (Individual introductions; everyone say something about what they work on, what you want to get out of the workshop, did you bring your own data?, level of experience)	Recap of previous day (Mike gives overview of technical comments;	Hackathon
09:30	Goals of workshop (GOAL: Fit and evaluate dynamical models using Bayesian methods; what does 'dynamical' mean?; what is Bayesian statistics? What is the benefit over traditional	MV AR(1) (Greg introduces the MV AR(1) model framework; interpretation: fitting the first order stochastic dynamics from time series; generate synthetic data)	Hackathon

	methods; First introduction to Bayes theorem;)		
10:00	Intro to Probability + Bayes 1	MV AR(1) (Implement MV AR(1) in Stan; use time to reiterate the structure of a Stan program)	Hackathon (Recap
10:30	Hands on	Hands on	Hackathon
10:15	**BREAK**	**BREAK**	**BREAK**
11:00	Intro to Probability + Bayes 2	Macromolecular model (AW scientific introduction; brief review of scientific motivation and current work)	Hackathon
11:30	Hands on	Hands on (Greg introduces the Stan code for the macromolecular model; try fitting it as a group; analyze and interpret the posterior results)	Hackathon (Continue hacking)
12:00	**LUNCH**	**LUNCH**	**LUNCH**
12:30	**LUNCH**	**LUNCH**	**LUNCH**
01:00	Dynamical systems via Bayes	Macromolecular model cont'd (fit a slightly modified version of the macromolecular model; compare the results to the previous fit via analysis of the posterior; suggest further extensions for hackathon)	Hackathon (Check in how groups are doing; brief update from each group; what problems are you seeing? Any easy recommendations?)
01:30	Dynamical systems via Bayes	SeaFlow matrix model (Francois scientific introduction; brief review of science motivation and current work; discussion of sub-population problem)	Hackathon (Continue hacking)
02:00	Dynamical systems via Bayes (Introduce P growth model in Stan?)	Hands on (Paul introduces Stan code for model; try fitting as a group; analyze and interpret posterior results)	Hackathon (Continue hacking)
02:30	Hands on	Hands on (Fit the basic sub-population model as a group; suggest possible extensions for hackathon)	Hackathon (Continue hacking)
02:45	**BREAK**	**BREAK**	**BREAK**
03:00	NPZ model in Stan (Introduce basic model structure/underlying science; show Stan implementation)	Form groups + brainstorm (Individuals will join one of four groups: NPZ, MV AR(1), macromolecular, SeaFlow; discuss potential extensions/analyses for hackathon)	Hackathon (Continue hacking)

03:30	Hands on (simulate from the model using different parameters; try fitting the model using different parameters)	Form groups + brainstorm	Hackathon (Continue hacking)
04:00	Hand on (try putting priors on the parameters; different functional forms for light dependence; other dependencies)	Discussion of analysis ideas	Group presentations (~10 minute presentation
04:30	Hands on	Discussion of analysis ideas	Group presentations
05:00	**DAY WRAP UP**	**DAY WRAP UP**	**DAY WRAP UP**
05:30	**DINNER**	**DINNER**	**DINNER**
06:00	**DINNER**	**DINNER**	**DINNER**
06:30	**DINNER**	**DINNER**	**DINNER**
07:00	**DINNER**	**DINNER**	**DINNER**