The Nature of the Problem of Real Time Forecasting

Multi-scale synoptic circulation:

- Mesoscale, jet-scale
- Regional scale, sub-basin scale and large scale

Mesoscale variability is episodic and intermittent

- Mesoscales range from 0(10–100 km) and 0(weeks-months)
- Event scales range from 0(1–10 km) and 0(days)

Coastal scales are a multi-scale mix

- Time scales range from short period (eg gravity waves) to decadal and longer climate change
- Forced responses and internal dynamical processes; including wind, tide and boundary forced responses and mesoscale and event-scale processes analagous to the open ocean

Multiplicity of scales requires:

- Nested high-resolution observational domains
- Nested high-resolution modeling domains
- Sub-gridscale parameterization