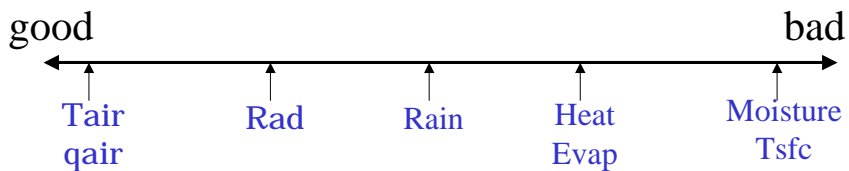


How to interpret in-situ observation → Implication in model inter-comparison

Kun Yang, University of Tokyo

CEOP Workshop/UC Irvine/8th-Mar-2004

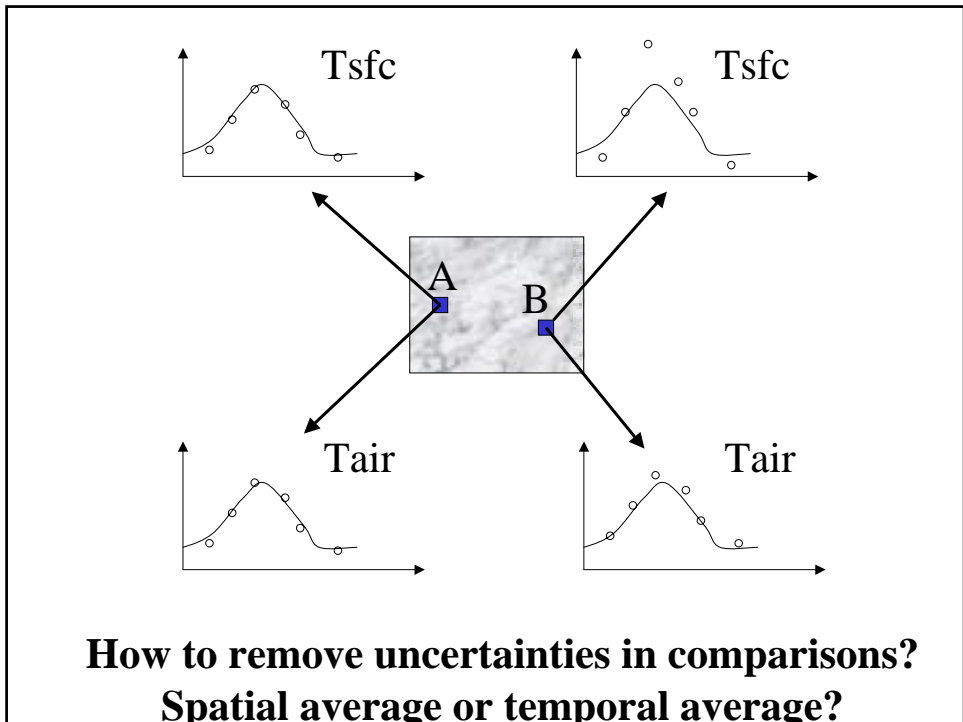
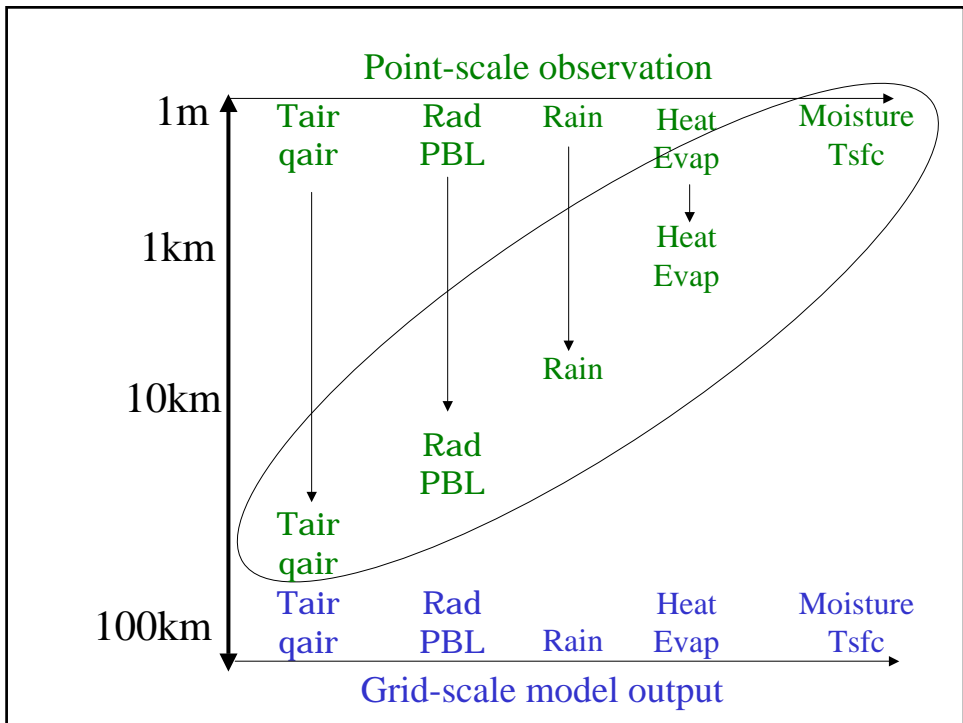
Goodness of comparison

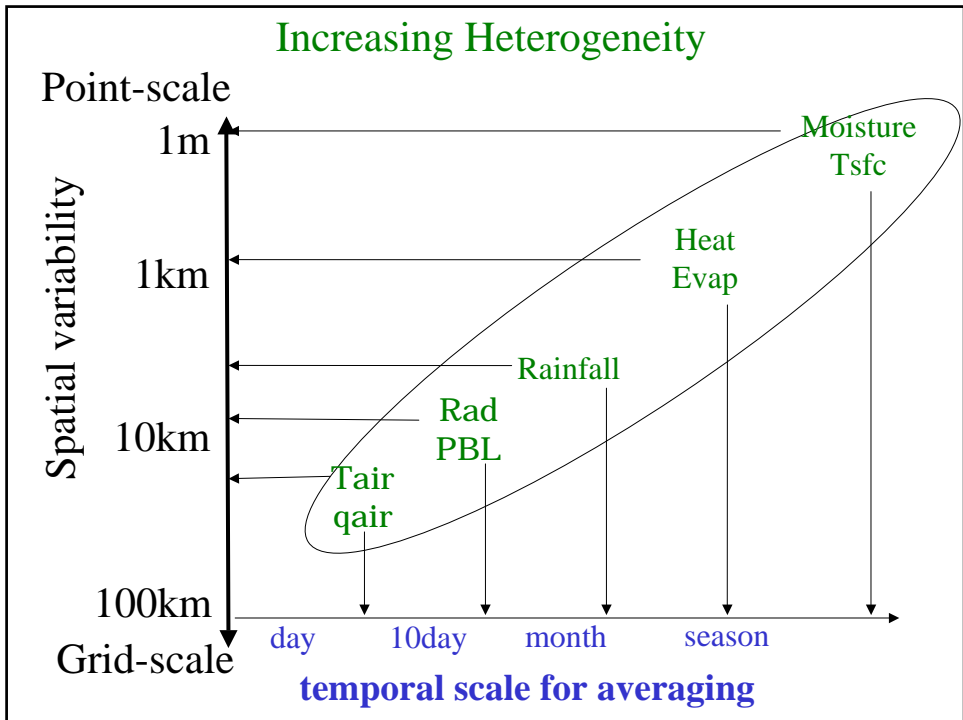
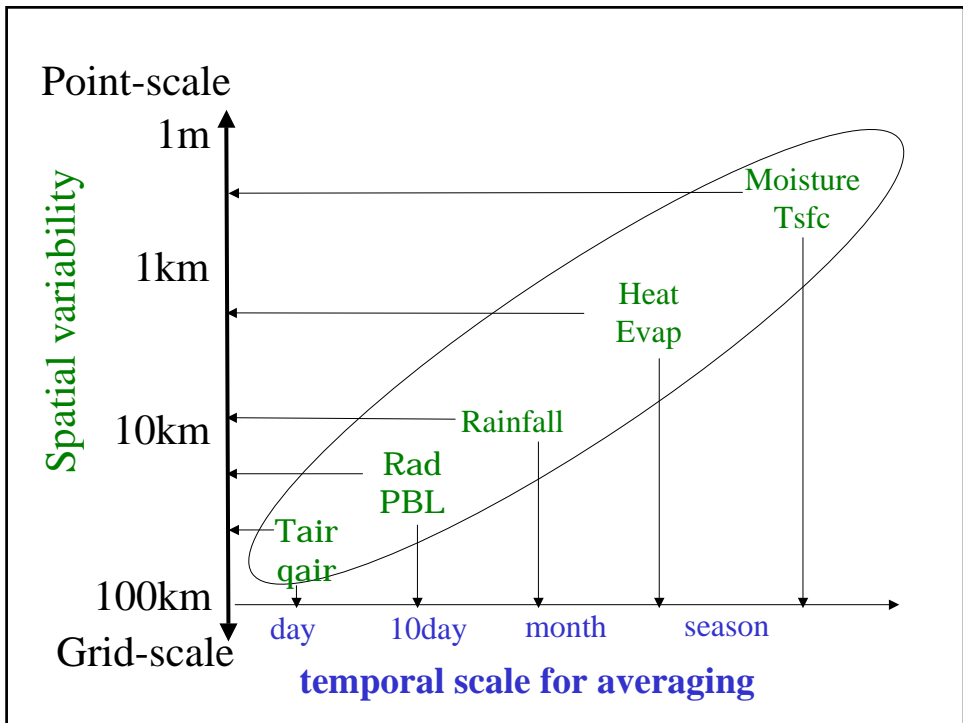


Why?

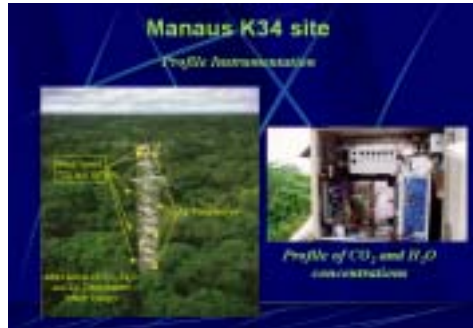
Modeling is good for some quantities?

Spatial variability problem?





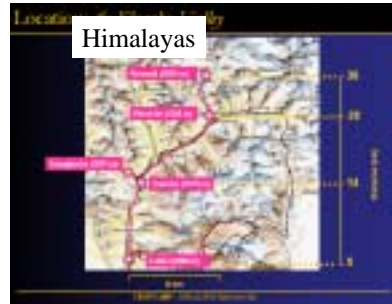
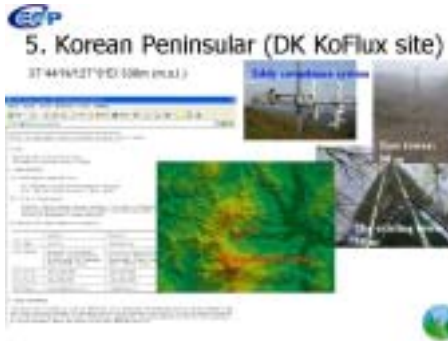
Low surface variability



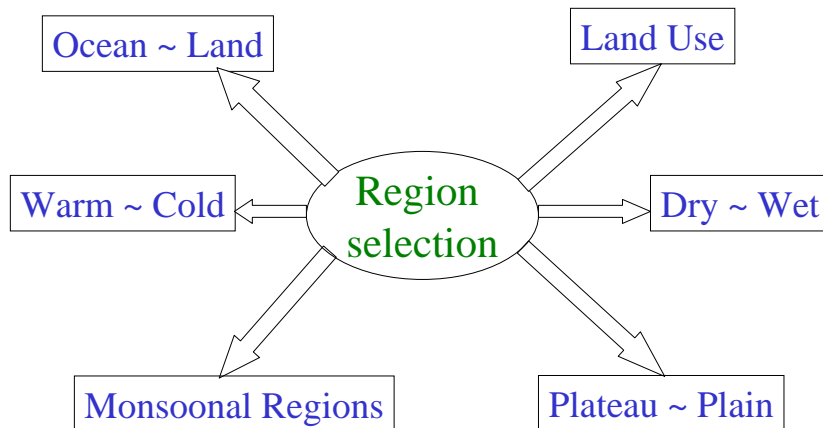
Moderate surface variability



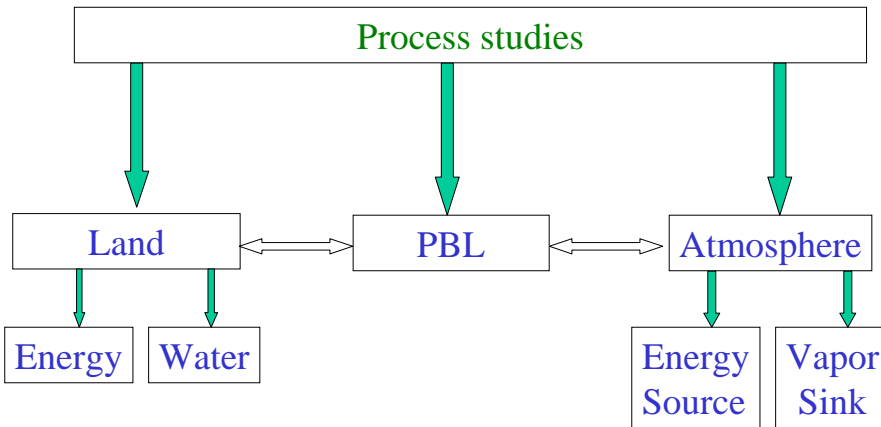
High surface variability



Evaluate model skills for various regions



Evaluate model skills for various processes



Summary

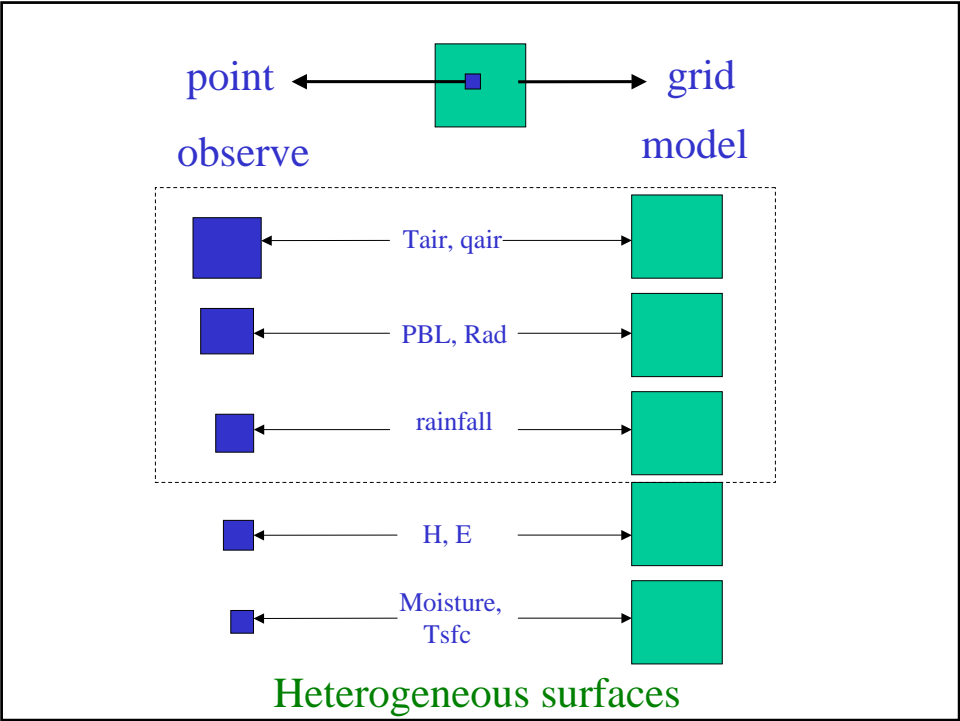
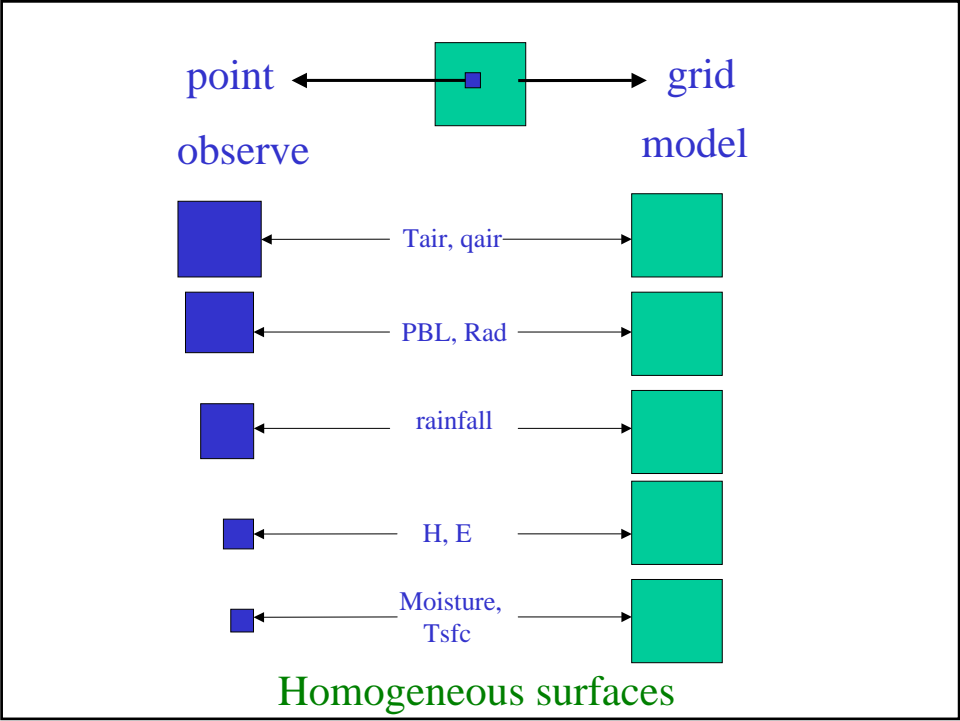
- The spatial scale represented by in-situ observations is different for each variable and increases with surface heterogeneity.
- Reasonable comparisons between model output and observations require temporal average. The time scale for the averaging should depend on the spatial variability of variables.
- For comprehensive evaluation of model performance, various comparisons should be carried out for major processes in various climatic regions.

Outline

- Spatial scales represented by in-situ data
- Time-scale for averaging
- Region selection
- Process evaluation

Spatial scales represented by in-situ data

Variables	Spatial variability	Observation footprint	Representative scale
Moisture Tsfc	~m	~point	~m
H E	~m	~km	~km
Rainfall	~km-10km	~point	~km-10km
PBL Rad	~10km	~point	~10km
Tair qair	~10~100km	~point	~10-100km

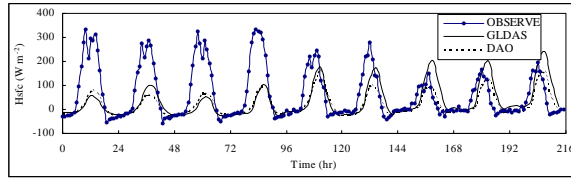


Spatially averaged heat flux

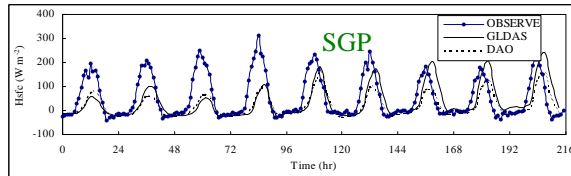


SGP

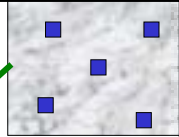
4 stations



24 stations

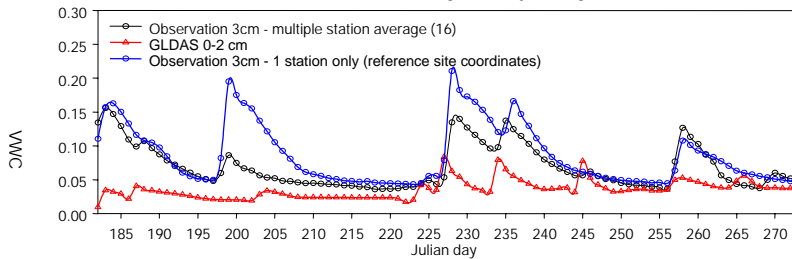


Spatially averaged soil moisture



Mongolia

Soil moisture - Mongolia: daily averages

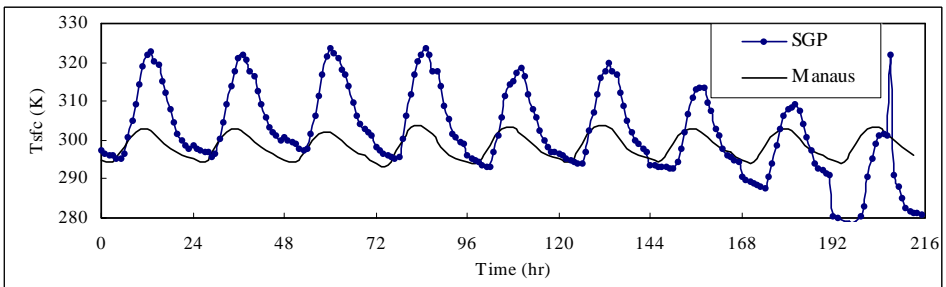
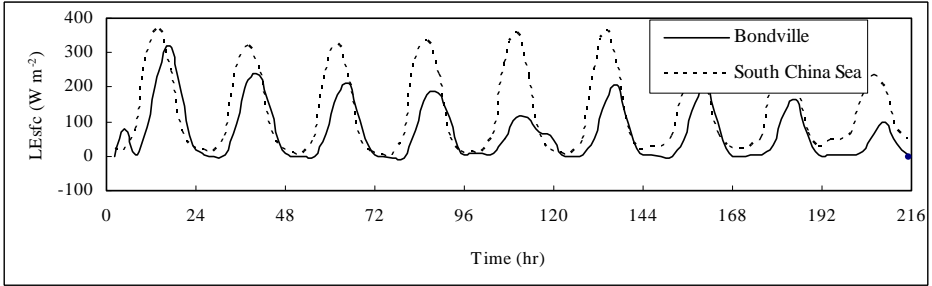


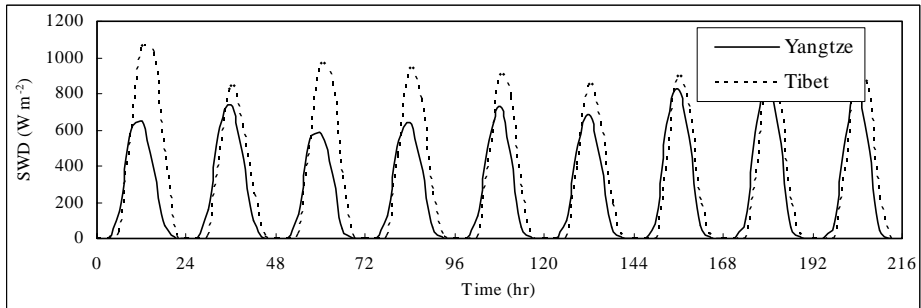
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Outline

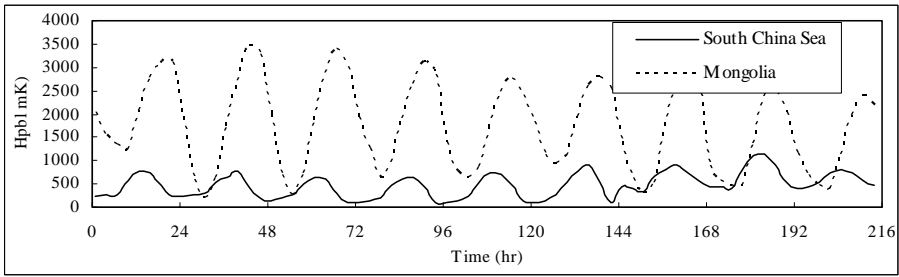
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Outline

- Spatial scales represented by in-situ data
- Time-scale for averaging
- Region selection
- Process evaluation



10 days mean diurnal cycle

