

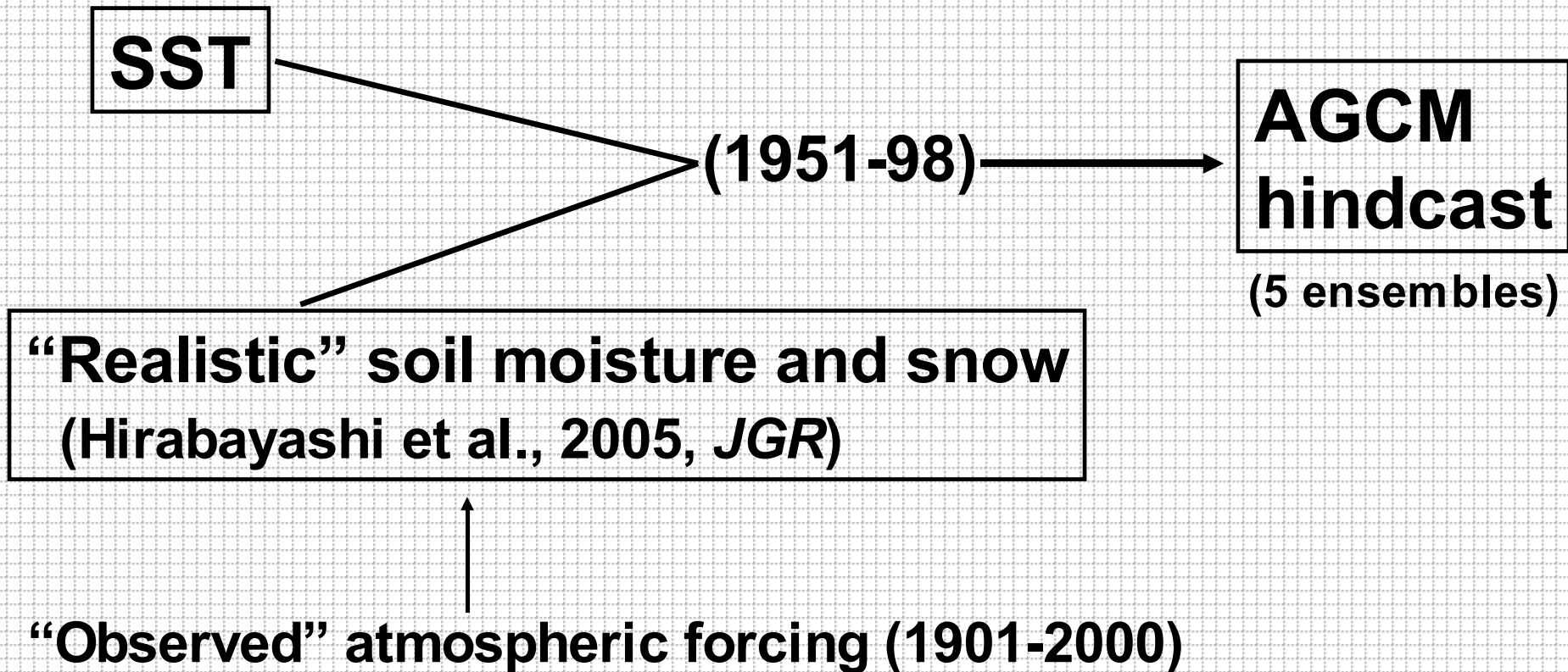
Atmospheric and Hydrological Modeling

Shinjiro KANAE
RIHN, Kyoto, Japan
Univ of Tokyo, Japan

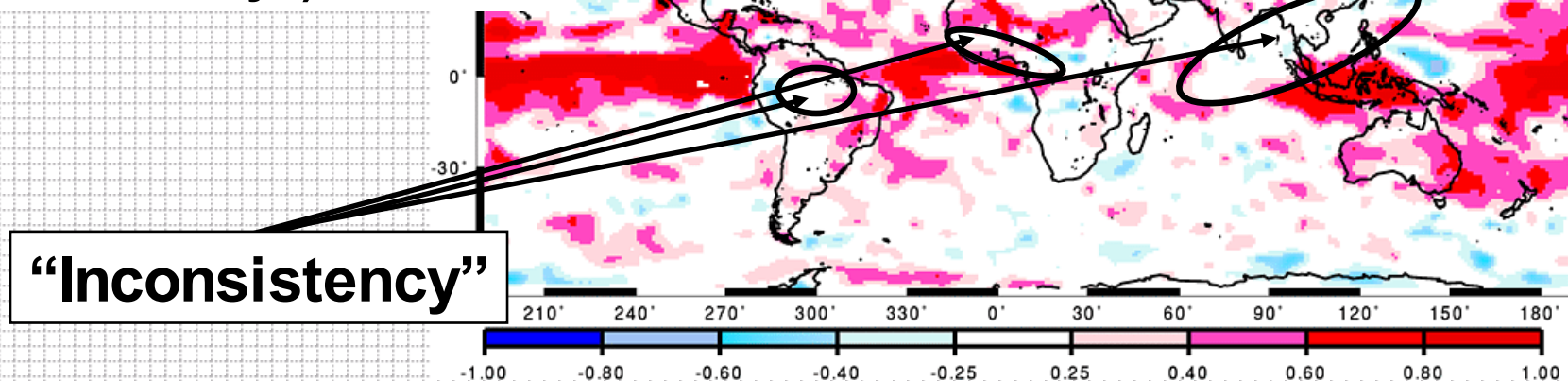
- (Kanae:impact of land on seasonal-p)
- C. Tam: Seasonal prediction
- T. Satomura, J. Chan:
Regional model, diurnal - ISO
- K. Tanaka: Land surface model
- Hansa, V.: Hydrological model
- ShahNewaz: Hydrological model (for very large river)
- B. Wang: Ocean - atmos

Impact of land wetness on predictability of seasonal rainfall

Kanae et al. (2006, *J. Climate*)



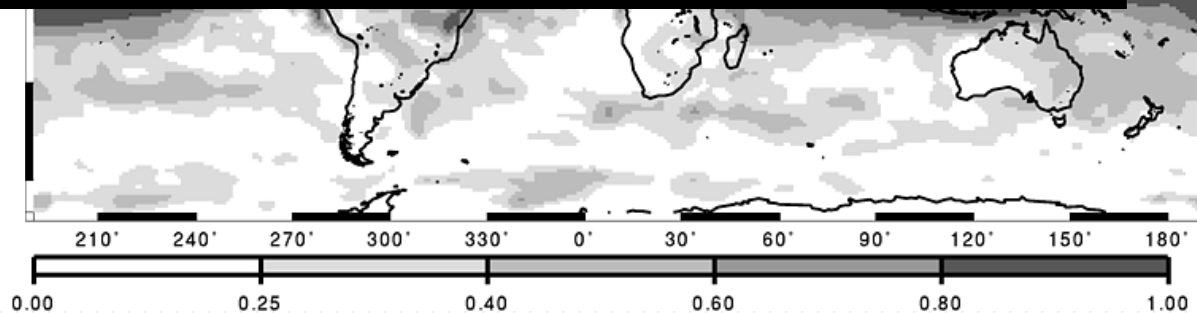
Correlation between JJA observation and simulation
(=“predictability”)



Pote
Pred
calcu
 σ_{forced}

Simply implementing land information into current AGCMs may not give us a promise!!

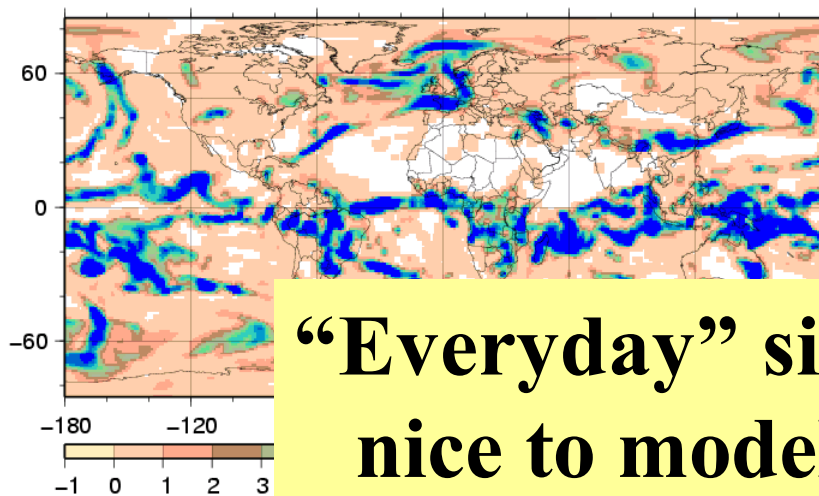
(with a perfect model assumption)
(= similarity within an ensemble)



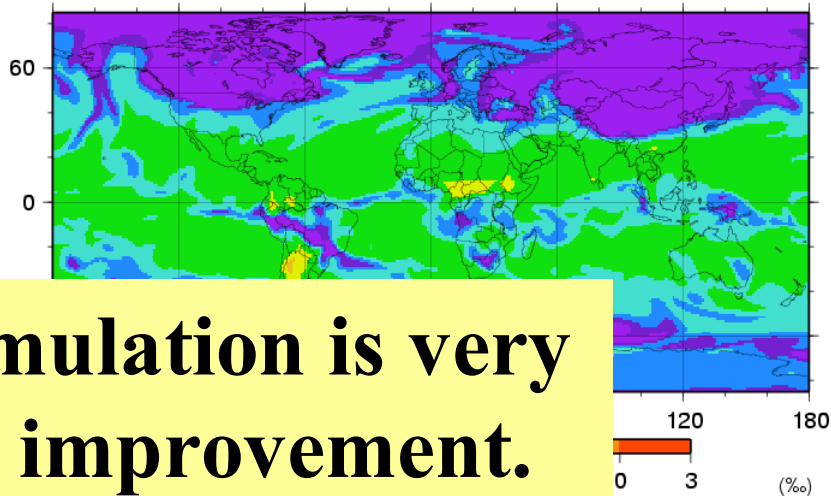
Today's Earth

<http://hydro.iis.u-tokyo.ac.jp/Earth>

GPV-IsoMAT PRECIP Z=1 6hr-Ave. 2006/02/15 18:00

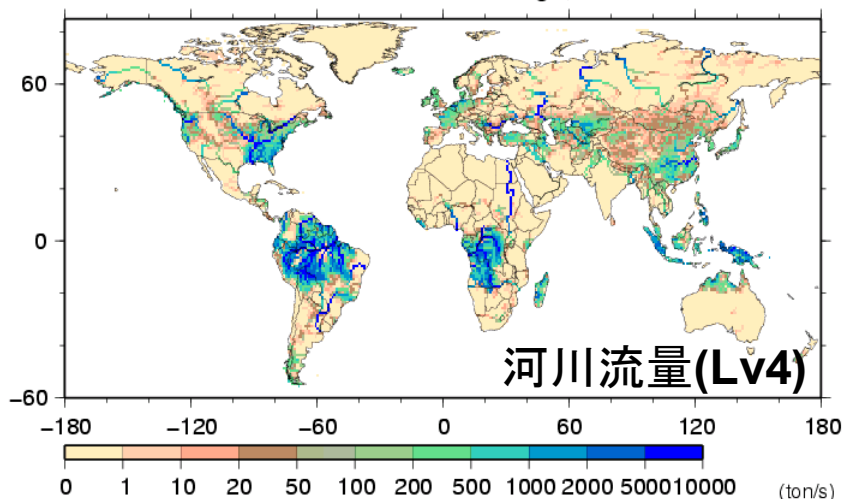


GPV-IsoMAT VAP_δ¹⁸O Z=1 6hr-Ave. 2006/02/15 18:00

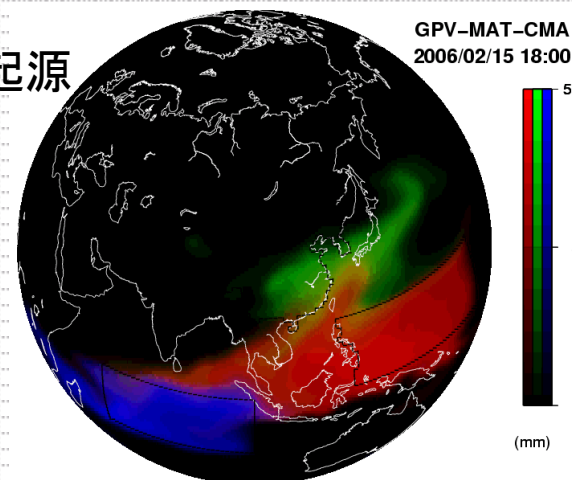


“Everyday” simulation is very nice to model improvement.

GPV-IsoMAT-1°TRIP River Discharge, 2006/02/15 18:00



水蒸気起源
(Lv4)



Atmospheric and Hydrological Modeling

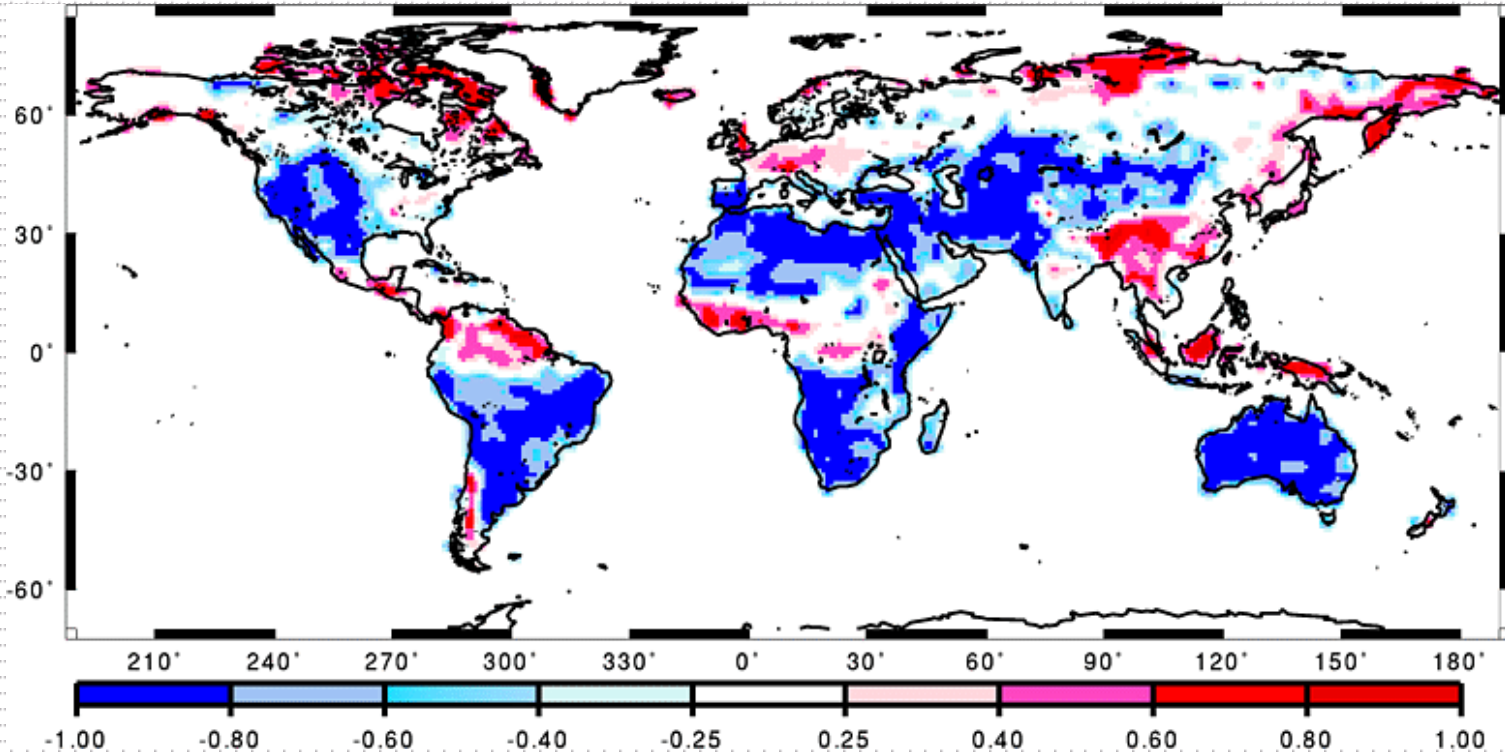
- (Kanae:impact of land on seasonal-p)
C. Tam: Seasonal prediction
T. Satomura, J. Chan:
Regional model, diurnal - ISO
K. Tanaka: Land surface model
Hansa, V.: Hydrological model
ShahNewaz: Hydrological model (for very large river)
B. Wang: Ocean - atmos

Expected discussion focuses

- What are the bottlenecks?
What are the key-targets?
- Coordination between observations (in AMY) and model studies.
- Collaboration between atmospheric modeling, ocean modeling, and land hydro modeling.
- Which Institutes will be “Model-Centers”?
-

Correlation between sensible and latent heat fluxes

(1951-1998, interannual correlation, JJA mean, LAND)



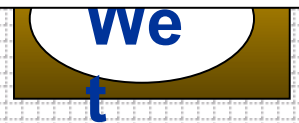
“Semi-arid” ↔ Negative correlation

“Inconsistency” ↔ Positive correlation

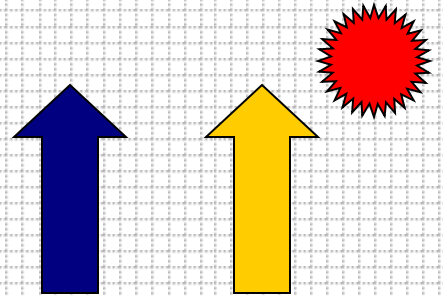
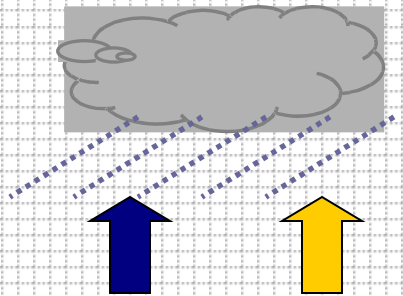
“Semi-arid” ↔ Negative correlation between IE & H

Evap Sens

“Soil water” determines IE and H
→ then, to the atmosphere



“Inconsistency” ↔ Positive correlation between IE & H



“Atmosphere” determines IE and H
← Remote impact on the atmos(?)