Report of Splinter Joint Session 9

- Innovative methods and tools for data analysis: talks
  - Dmitri: overview talk; principal component analysis;
  - Yoshi: RB-DA with particle filter; estimated hiss and diffusion coefficients
  - Natalia: partial least square regression method
  - Yuri: DA of CRRES and Akebono

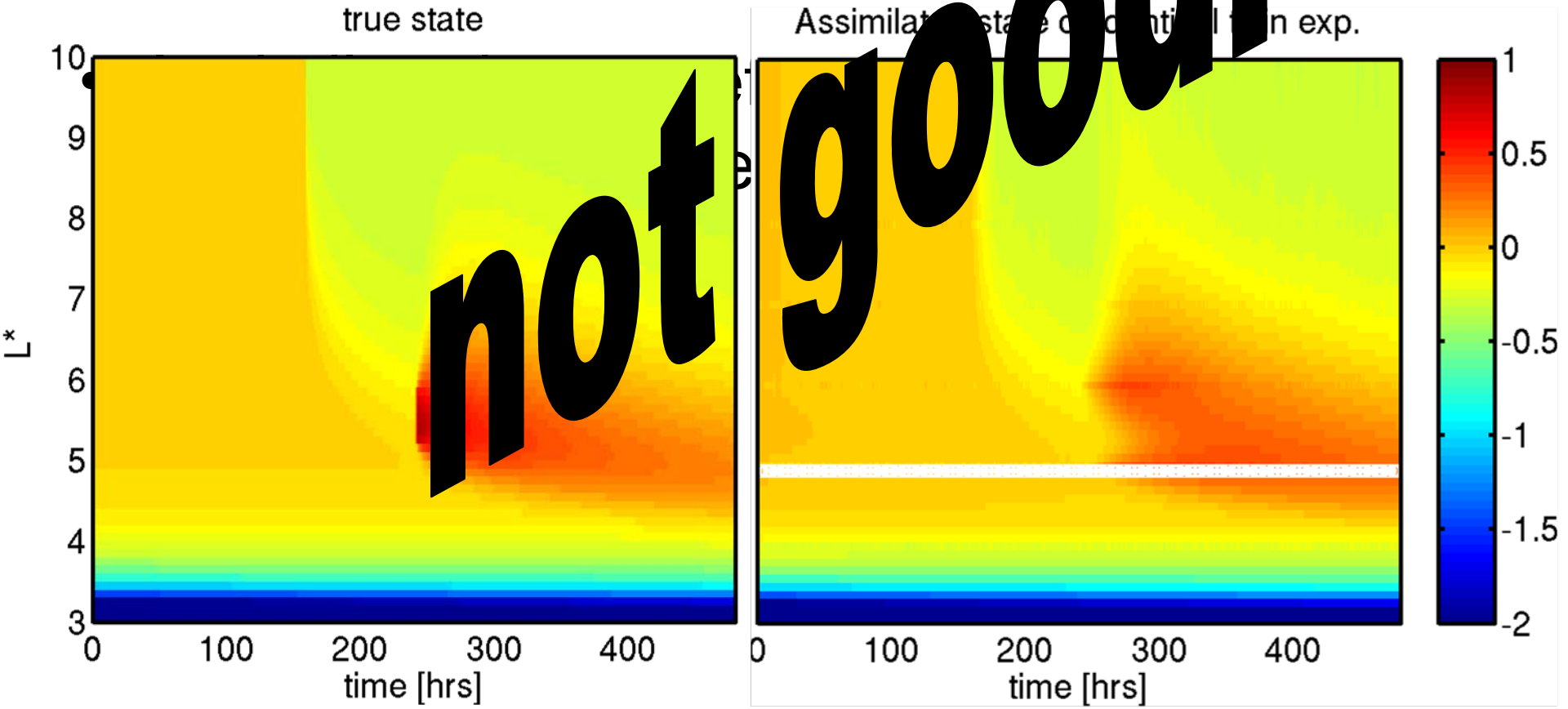
Metrics: Verification and Validation

- Verification: is checking if the computer model does what it's supposed to do
  - Convergence studies
  - Method of manufactured solutions
- Validation: is checking if the physics in the model is representative of the real world (use observations)
  - Simple error analysis for 1D data
  - spectral decomposition (active field of research)

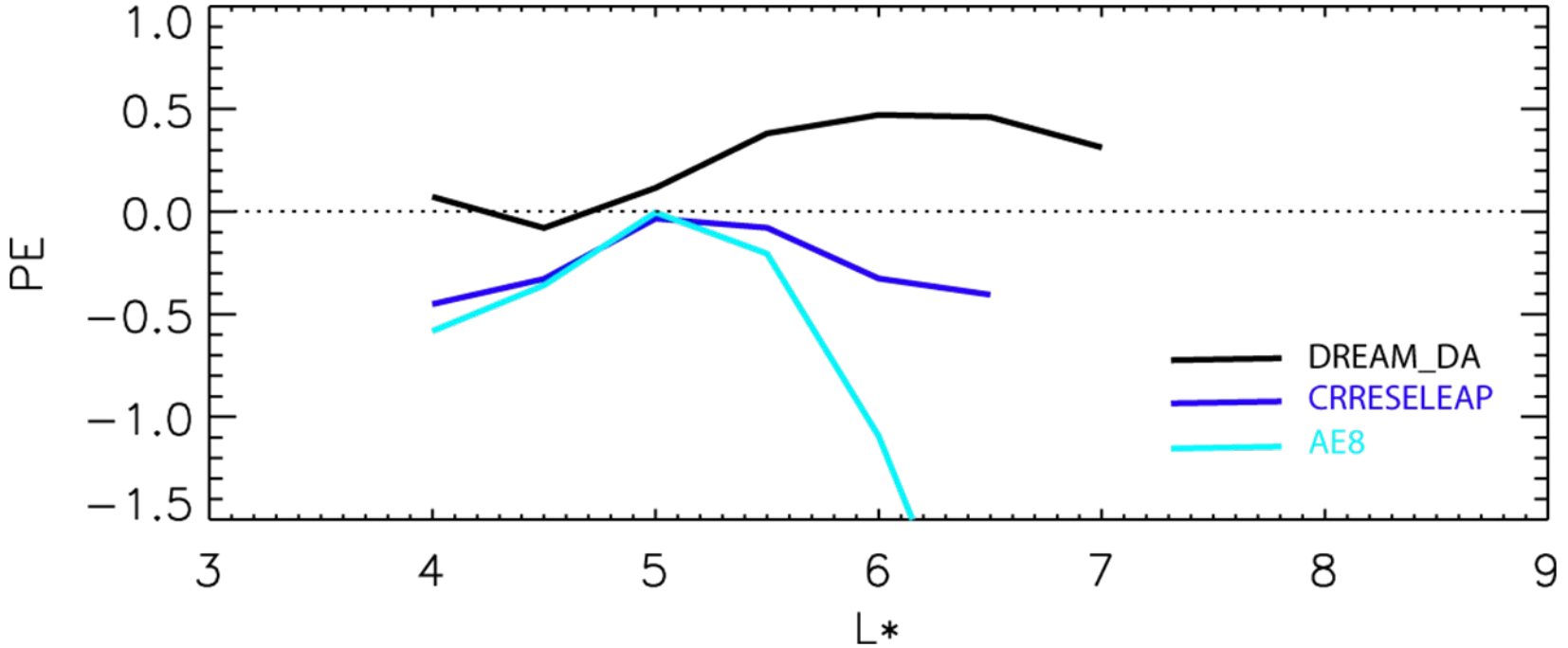
Identical Twin Experiment

$$\frac{\partial f}{\partial t} = L^2 \frac{\partial}{\partial L}\left(\frac{D_{\mathrm{LL}}}{L^2}\frac{\partial f}{\partial L}\right) \text{ with } D_{\mathrm{LL}} = D_0 L^p$$

- Model: Diffusion equation without source:



Prediction Efficiency for global specification tests spatial nowcast



- Prediction Efficiency: 1 = perfect match
- PE = 1 - $\frac{\Sigma \text{ (model - measurement)}}{\Sigma \text{ (measure - <measure>)}}$

Geoscientific Model Development

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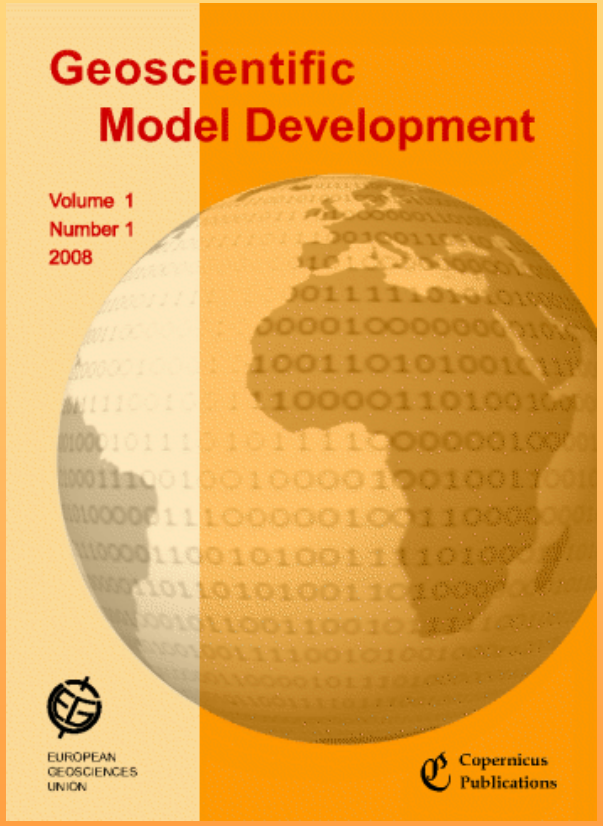

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