

LST Model Breakout

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Questions

- State of the models LST
- Requirements of LST Data
- Addressing the gaps between model and remotely sensed LST

State of the Model LST

- Diagnostic vs prognostic skin temps (heat capacity included?) Mixed veg/bare or separate, computational constraints (numerical stability)
- Model cloudiness quality is suspect, both in total cloud amount and optical properties
- Limitation in Glacial ST and permanent land ice
- Improved documentation of model LST formulations is needed
- Combine different veg/bare LST - Include a LST diagnostic to get a skin temp if not in the parameterizations already – Lump all into one What are the inherent differences?
- LST quality is one component of E and Hs quality (also relates to SM and PBL/screen meteorology diagnostics air temp/moisture)
- Models could also use improved emissivity
- Vis and IR bands for land radiative forcing (none using more)

Requirements from models and assimilation

- 3 hourly 10km bare minimum time scale, hourly 1Km desirable in the 5-10 year range
- QC of retrieved LST products consistency/clouds – confidence levels at what time/space scale (cloud info in IR is very important),
- error bars – where and how are they obtained, not just related to homogeneous cal/val stations
- In general, need clear, cloudy and all sky LST – though clear only would still be useful (monthly mean clear sky can be misleading)
- In the data coordinates are required (location and over pass time) at each observation

Gaps in modeling and retrieving LST

- Suggest: Collaborate with a modeling group or center to better understand the model work and gain perspective also helps educate the modelers
 - Can contribute to understanding of IR and microwave differences
 - specific diagnostics can be output
 - Development of observational operators for radiative transfer
 - Models consider LW, which may be more robust than LST and emissivity
- Colocated data for use with model and RS development, some community accepted data for benchmark (well instrumented) push to CEOP, a number of super stations (e.g. Tibet, urban areas, other diverse areas)