# Diurnal Variability Working Group

Breakout Report

Gary Wick

# Group Focus

- Desired approaches/requirements for diurnally resolved SST
  - Provision of diurnal warming estimates
    - Temporal frequency
    - Representative depth
    - Representative spatial scale
  - Direct provision of models/parameterizations
  - Provision of error characteristics for existing models and predictions
  - Increasing available validation data
  - Understanding of basic physics

# Current Activities

- Product refinement for TWP+ experiment
- Dedicated matchup database for diurnal variability
- Demonstrated value of near-surface Argo measurements
- Evaluation of approaches for foundation temperature estimation
- Diurnal warming prediction from NWP forecast fields
- New observations of turbulence fields for model evaluation

# Future Activites

- Briefing on WHOI Argo activities
- Dedicated experiment “perfectly doable”
  - Majority of new floats use iridium communications
  - Float could repeatedly sample near-surface ocean for period of 3-5 days
  - Willing to explore sampling closer to surface
- Group to develop plans for experiment of opportunity
  - Explore forecasting capability

# EARWiG Summary

Andy Harris

# Main Points

**GHRSST PO Requests**

- Approach to consensus in retrieval algorithms/cloud masking *etc*.
  - Is consensus possible?
    - **Maybe, but not yet**
  - Is it desirable?
    - **Not right now. It would stifle innovation**
- Approaches for interacting GSICS and using real-time corrections
  - Meteosat SEVIRI is now operational and other geostationary sensors will follow
  - Noone is using it yet (that we are aware of)
  - N.B. Only for geostationary sensors
  - Using the matchup data to derive actual fixes for calibration would be better, but those data are not being made available publically

# Main Points

- 8 presentations shows that there continues to be a lot of activity and interest
  - Not bad for a group whose very raison d'etre was questioned at the outset
- Physical retrieval methodologies are coming to the fore
  - Radiative transfer, instrument calibration and NWP input are issues
  - Need a good source of aerosol data to include (preferably 3-d)
  - Metrics which calculate quality of SST retrieval on a pixel-by-pixel basis have potential to improve SSES
  - Additional channels of new instruments offer prospect of improved retrievals (more complex state state vector)
  - Can consider iterative methods
  - Smoothing inputs related to 'atmospheric' parameters shows promise
- Improvements to cloud detection
  - Bayesian gives ~20% ('traditional' methods ~10%)
  - Implication that a good retrieval is possible for ~30% of data
- Other comments
  - Is it necessary to have many variations on certain algorithms (e.g. NLSST)
  - Include 'SST sensitivity' metric in assessment of algorithms
  - Consensus on metrics is desirable – obvious link to STVAL