

Land-surface Cycling for Better Hydrometeorology

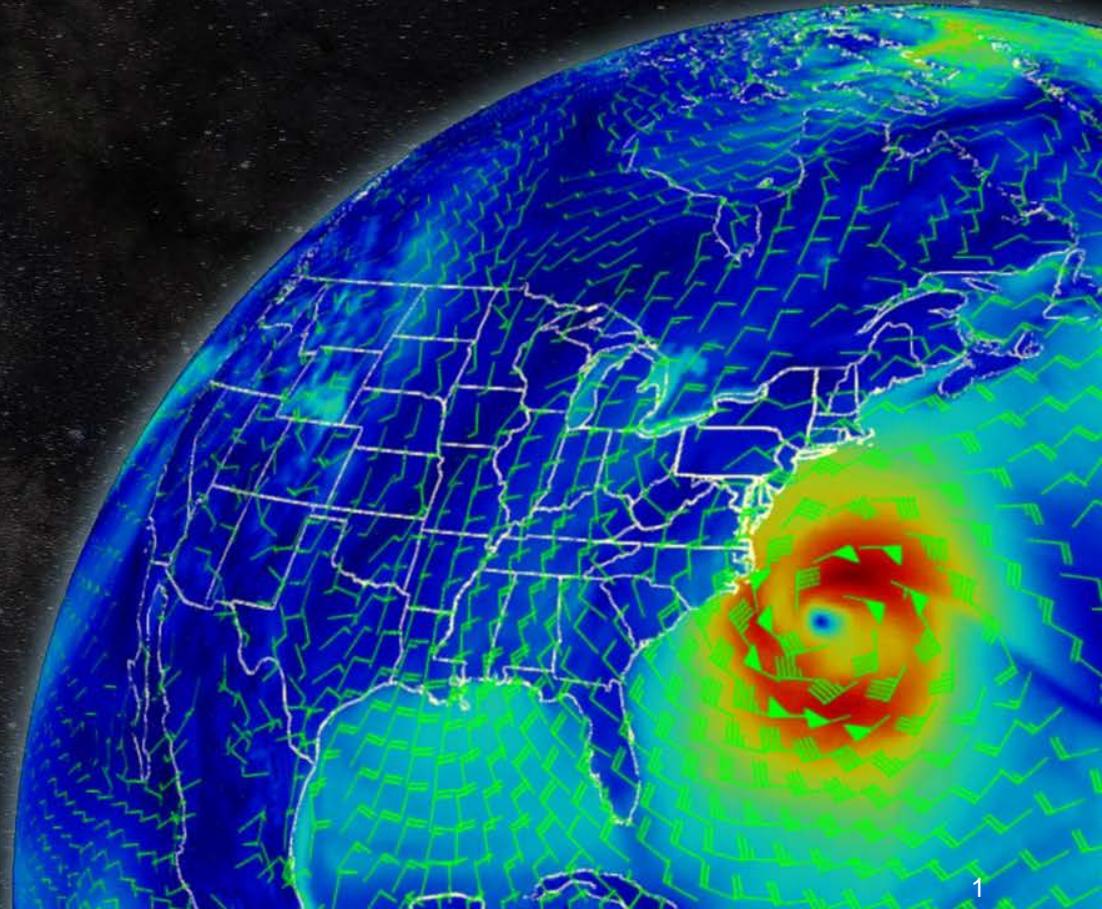
Tanya Smirnova

CIRES

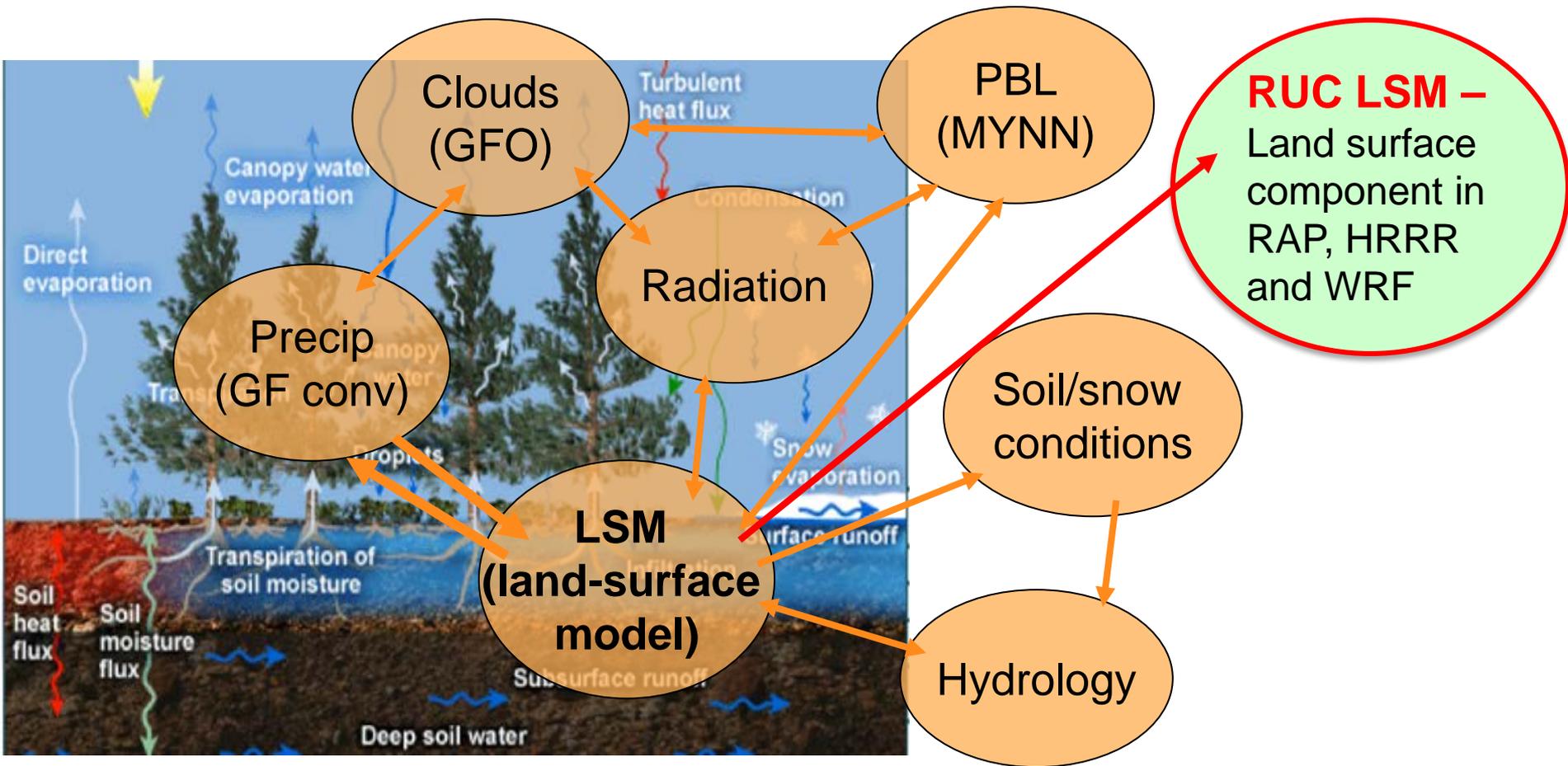
Performing work for NOAA/ESRL/GSD



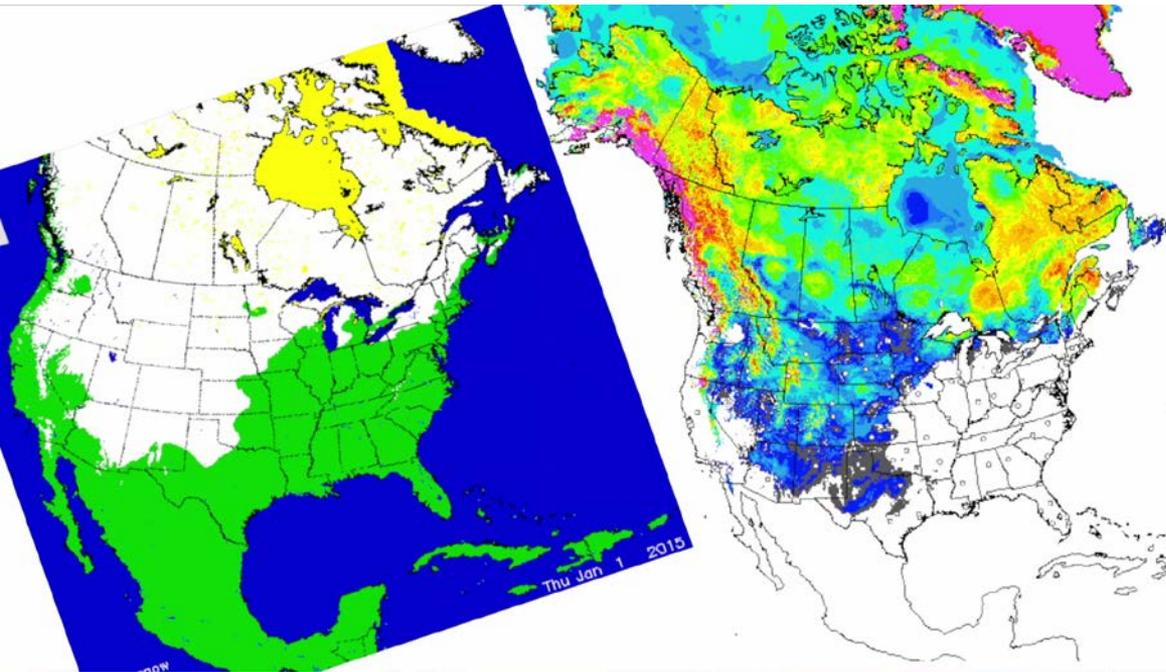
GSD Science Review
3-5 Nov 2015



Complicated Physics Interactions



Cycled Soil/Snow State in RAP and HRRR



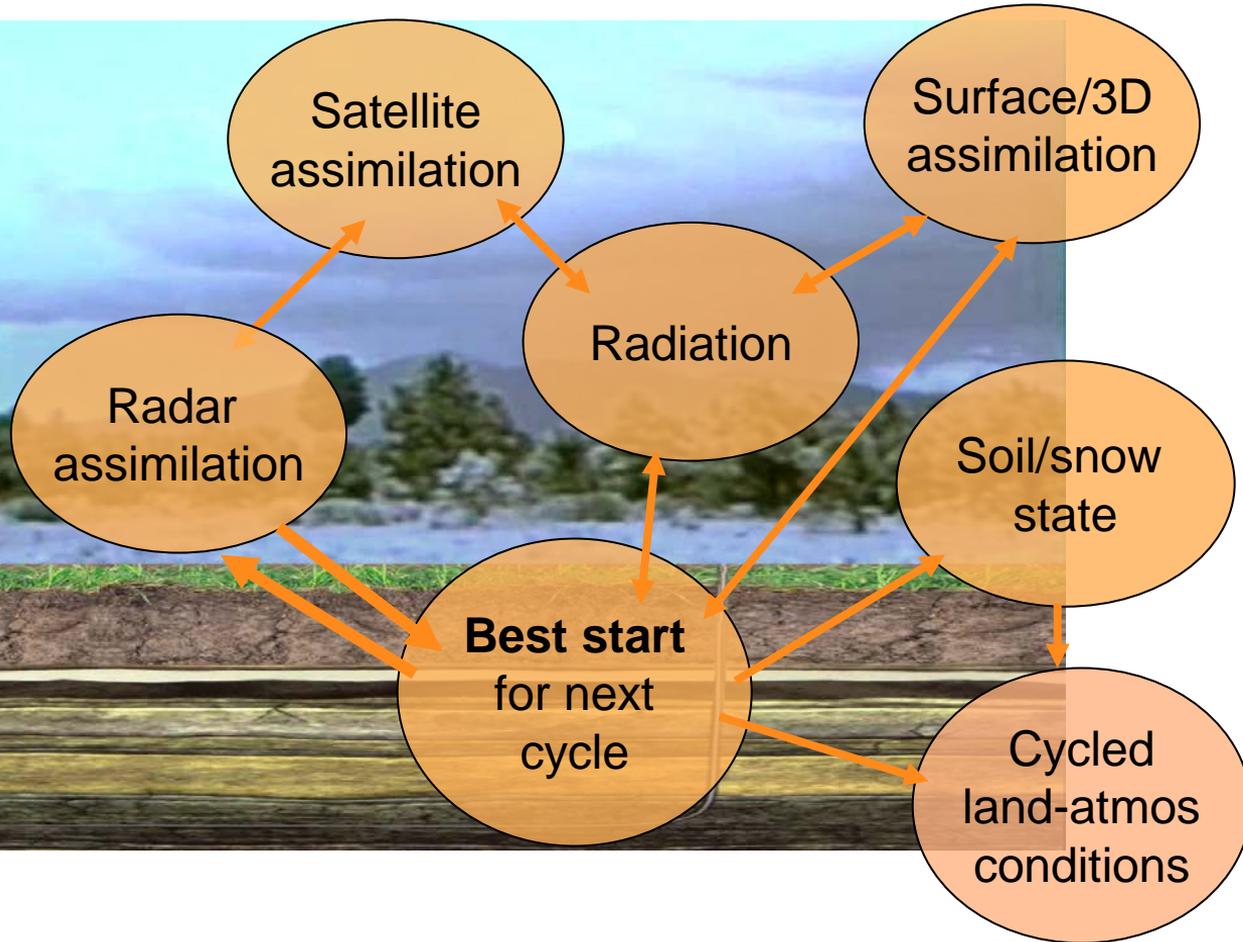
NESDIS Snow and Ice
Analysis
Daily, 1-10 January 2015

RAP cycled snow water
equivalent
Hourly, 1-10 January 2015

- Soil temperature/moisture and snow temperature/depth cycling – **unique** in RAP and HRRR
- Updating snow and sea ice from 4-km NESDIS Snow and Ice Analysis
- Adjustment of soil temperature and moisture from surface analysis increments in GSI – **unique** in RAP and HRRR

Data Assimilation for Improved Land State

NWC | NATIONAL WATER CENTER



Develop fully coupled data assimilation and forecast system across the atmosphere/land-surface interface

Collaborations and Future Work

- NOHRSC / NWC



- Snow analysis - uses RAP and HRRR background
- HRRR precipitation for WRF-Hydro forcing

- NASA Land Information System (LIS) – RUC LSM implementation in LIS 7.2 version – Spring 2016



- WRF-Hydro, NLDAS and GLDAS applications

- WRF model community

- The World Climate Research Programme (WCRP)



- GCIP, PILPS, SnowMIP experiments

- Include RUC LSM into RAP/HRRR physics suite for NGGPS models and FIM (GSD challenge #2)

- *work in progress*

