1. GRACE measures gravity over land atmosphere solid earth

2. GRACE derived TWS anomalies (water heights)
   - include snow, soil moisture, \textit{groundwater} and surface water
   - monthly and effective resolution 150,000 km$^2$

GRACE captured the evolution of 2007-2008 drought in SE US.
Data assimilation of GRACE TWS improved land surface processes and drought monitoring

- Assimilating gridded GRACE
- GRACE TWS observations at 1x1°
- GRACE assimilated CLSM TWS at 0.25°
- Improved runoff estimates in Europe
- Improved groundwater storage estimates in US
- GRACE based groundwater and soil moisture drought indicators

Assimilating gridded GRACE
GRACE for NCEP/EMC

Noah-MP

- Noah-MP not implemented in LIS yet
- Assimilation of GRACE into Noah-MP
- Model configuration (temporal variability of groundwater)
- Model evaluation (ability to predict trend correctly)

References:


