Experimental Regional Reanalysis
with the WRF-based Local Ensemble Transform Kalman Filter (LETKF)
Using Two-Way-Nested Heterogeneous Grids

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1. Goals
- An efficient approach to high-resolution reanalysis: use of nested domains
- A seamless approach to data assimilation with nested domains is explored.

2. Methodology
- We use the existing WRF-LETKF system (Miyoshi and Kunii 2012) with minimal modifications.
- Apply a single LETKF to nested domains efficiently.
- Enhanced localization
  More localization in the higher-resolution inner domain

Taking advantage of grid-point independence of the LETKF

3. Results
- 2-month reanalysis has been performed in the Western North Pacific in August-September, 2008.
- 60/20-km two-way nested domains are used.
- Background error correlations (U-wind in the lower troposphere)
  60-km grid spacing
  400-km localization
  20-km grid spacing
  200-km localization

- Better representation of Tropical Cyclones

4. Conclusion
- The seamless data assimilation with two-way-nested heterogeneous grids may be useful for efficient high-resolution reanalysis.