8.2 The operational future of the Rapid-Refresh (RAP) and High-Resolution Rapid Refresh (HRRR).

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With the adoption of community-supported model components such as GSI, WRF-ARW and UPP, frequent contributions to the RAP and HRRR development have been possible, and as such, a more agile model development paradigm has been established with rapid prototyping for evolutionary upgrades to the RAP and HRRR including use of real-time experimental forecasts that permit operational forecaster feedback. This paradigm and close coordination with the National Center for Environmental Prediction (NCEP) Environmental Modeling Center (EMC) has facilitated a two-year research-to-operations (R2O) transition cycle for the RAP/HRRR between their operational inceptions in 2012/14 and present. We are now concluding the third and fourth R2O cycles of the HRRR and RAP respectively with another transition cycle planned for completion by mid-2020 that will include a HRRR storm-scale ensemble analysis capability, and eventually, ensemble prediction.
This presentation will review highlights of the RAP/HRRR and HRRR ensemble development including a look towards 2020 and eventual incorporation in an operational unified rapid refresh forecast system by 2022. Forecast skill improvements related to specific enhancements in RAP/HRRR WRF-ARW numerics, physical parameterizations and associated data assimilation in the 2018 and 2020 packages with be presented.