# West-WRF NRT Forecast Simulations

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## Introduction

- The Center for Western Weather and Water Extremes (CW3E) produces near real-time (NRT) forecasts with the West-WRF model daily during the wet season (December-March)
- West-WRF NRT simulations are tailored for the simulation of Atmospheric Rivers (ARs) and west coast precipitation
- With increased computing capacity, CW3E expanded the NRT simulations for Water Year 2022 (WY22) in spatial domain, lead times, simulations, and ensemble size

## West-WRF NRT Description

- Four sets of simulations this season:
  - GFS-based deterministic (v. 4.3.1), 100 levels, 9-km outer domain, 3-km inner domain
  - ECMWF-based deterministic (v. 4.3.1), 100 levels, 9-km outer domain, 3-km inner domain
  - GFS-based deterministic (v. 4.1.2), 60 levels (frozen since WY20, for machine learning purposes), 9-km outer domain, 3-km inner domain
  - 200-member ensemble (v. 4.3.1), 60 levels, 9-km only
- Daily 00 UTC initializations, officially Dec-Mar
- Lead times: 10 days for 9-km, 5 days for 3-km
- Hourly full model output (Deterministic), 3-hourly full model output (Ensemble)
- 15-minute select 2-D variables (including precipitation)

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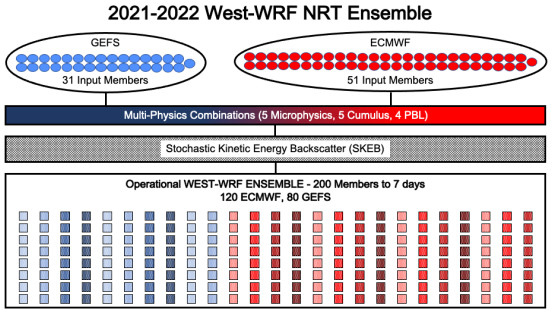
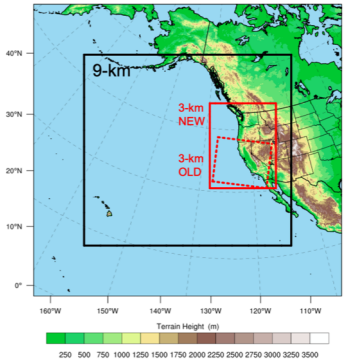
## West-WRF NRT Ensemble

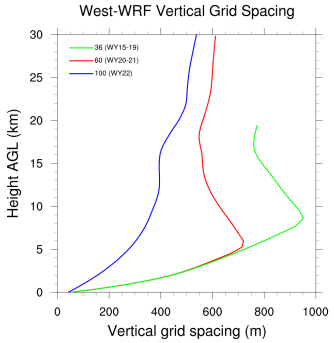
- **200 Members**
- 80 GEFS members, 120 ECMWF members
- Multi-physics and SKEB
- 7 days lead time
- 60 vertical levels
- 3 hourly full output, 15 minute output of select 2-D variables




## West-WRF NRT WY22 Improvements

- Expanded 3-km domain to cover all of U.S. West Coast
- Improved vertical resolution in lower troposphere
- Use of daily 4-km UA Snow product to improve initialization of snow pack (courtesy of Jorge Arevalo and Xubin Zeng at Univ. of Arizona)




## Decision Support Tools – Examples