Examining the Impact of Airborne Radio Occultation Observations on Short Term Precipitation Forecasts of an Atmospheric River Using MPAS-JEDI

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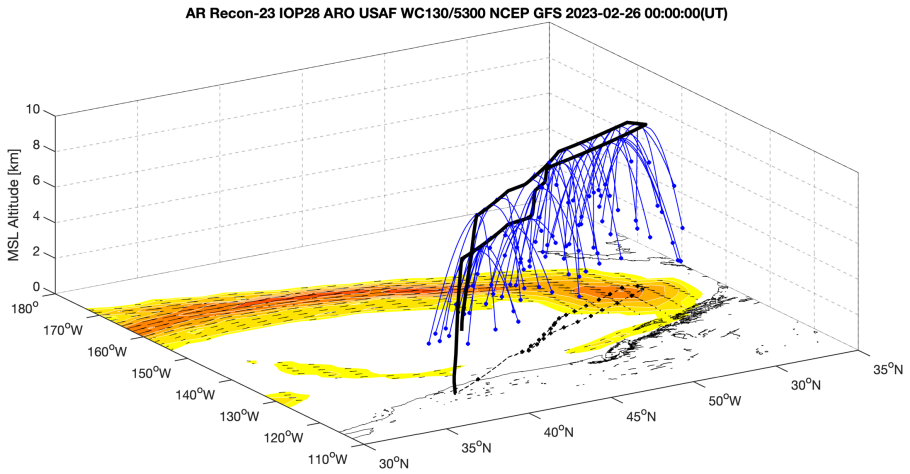
ARO: Slanted profiles stretch from the flight track sideways up to 400 km away.



MPAS-JEDI

Experiments	Assimilated observations					Assimilation methods	
	Surface pressure	Sondes	Aircraft	Atmospheric motion vectors	GNSS ARO (C130)	3DEnVar	LETKF
3denvar_ctrl	x	x	x	x		x	
3denvar_aro	x	x	x	x	x	x	
letkf_ctrl	x	x	x	x			x
letkf_aro	x	x	x	x	x		x

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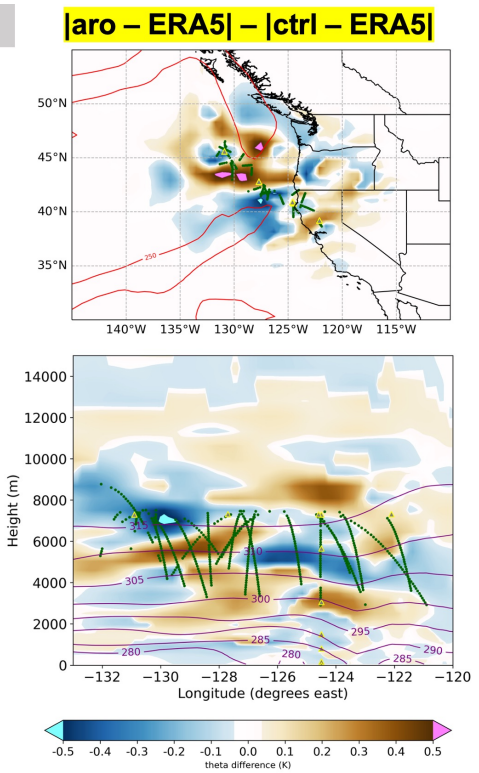
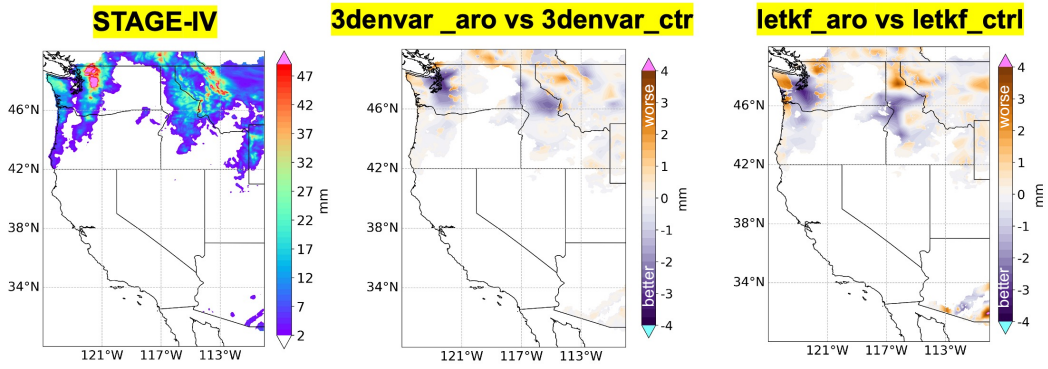
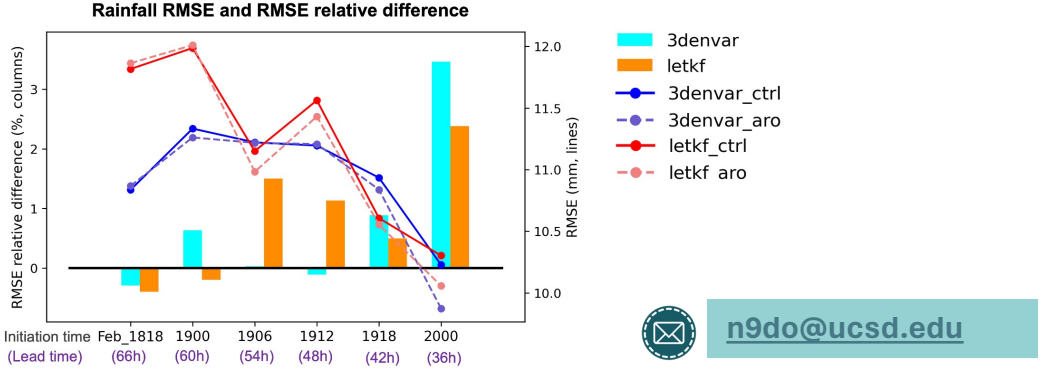


ARO corrects the moisture, temperature, and wind fields, and reduce the error in forecasting IVT at landfall.

- ARO reduces precipitation overestimation, bringing forecasts into closer to observations.
- Several challenges remain for future works: ARO observation errors, altitude of the model top, and sensing the lower troposphere.





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