# Recent Results on the Impact of Reconnaissance Data on TC Forecasts in both the Basin-Scale HWRF and GFSv16

**Sarah D. Ditchek[1,2] and Jason Sippel[2]**

Acknowledgements: Ghassan J. Alaka Jr.[2], Lidia Cucurull[2], Daryl Kleist[4], Stanley B. Goldenberg[2], Vijay Tallapragada[4], & Xingren Wu[3]

[1]Cooperative Institute for Marine and Atmospheric Studies (CIMAS)
[2]NOAA/AOML/Hurricane Research Division (HRD)
[3]I.M. Systems Group, Rockville, Maryland
[4]NOAA/NWS/NCEP/Environmental Modeling Center, College Park, Maryland

# Project Plan Snapshot

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| 2017-2020 | 634 | 92 | 41 (45%) |

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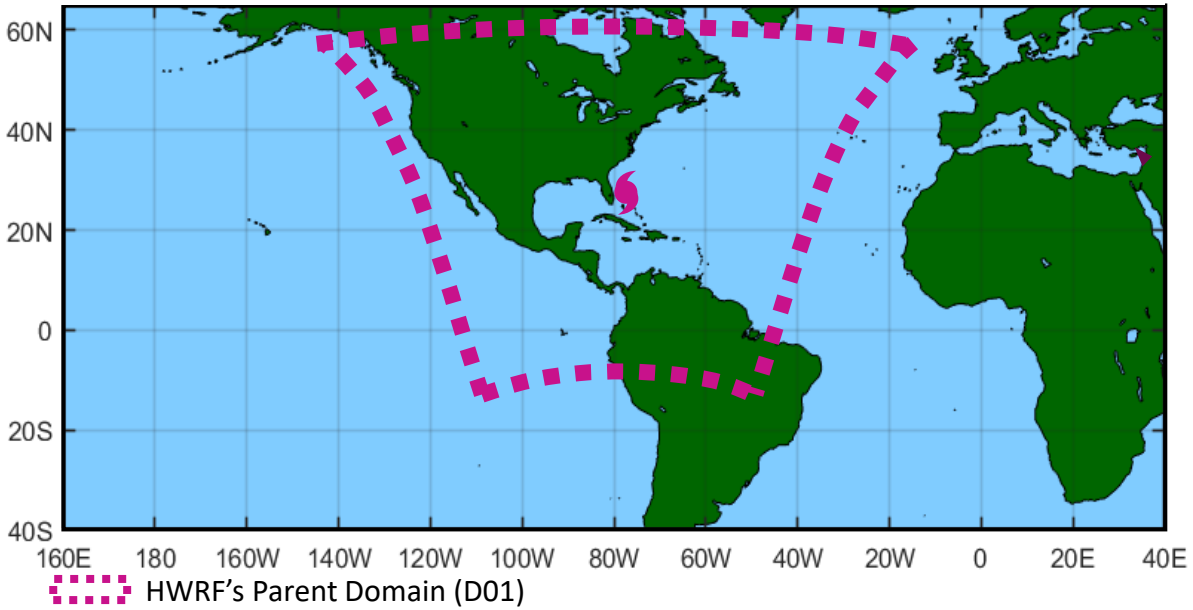

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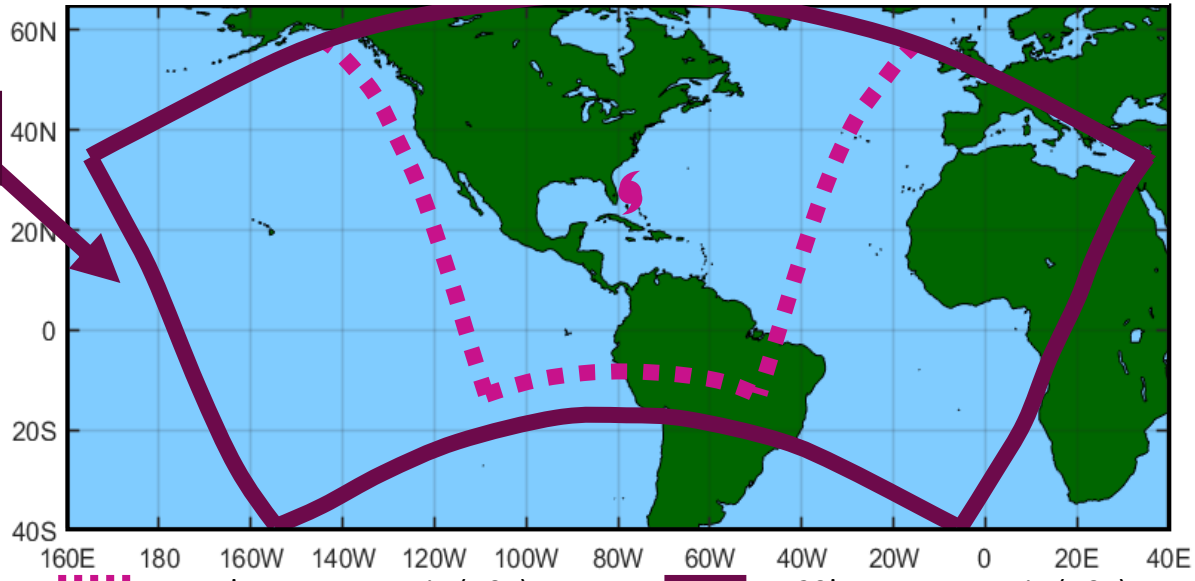


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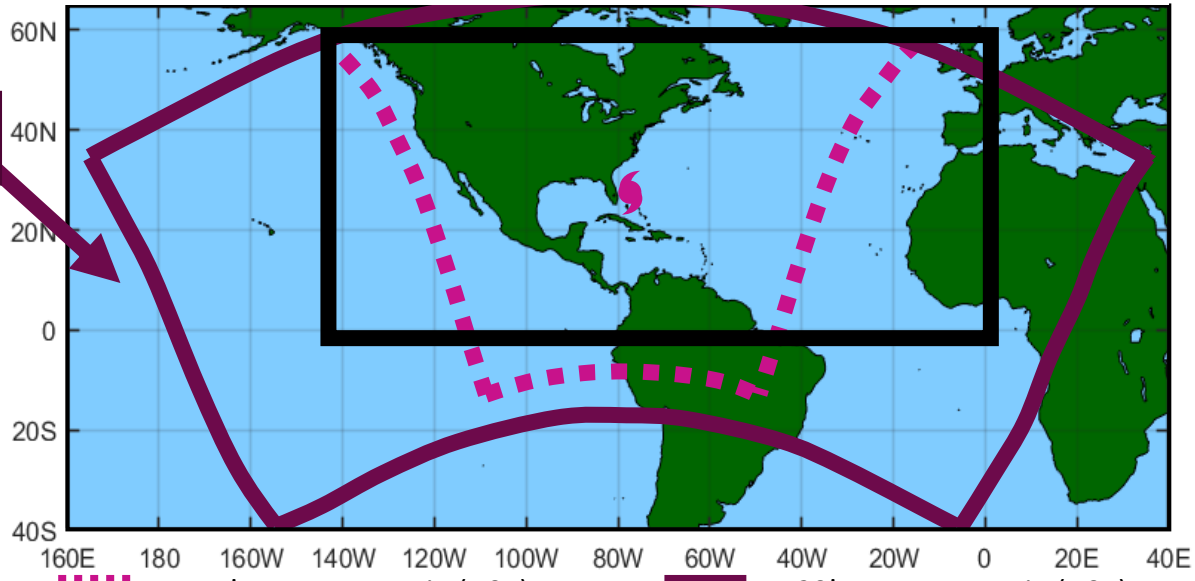

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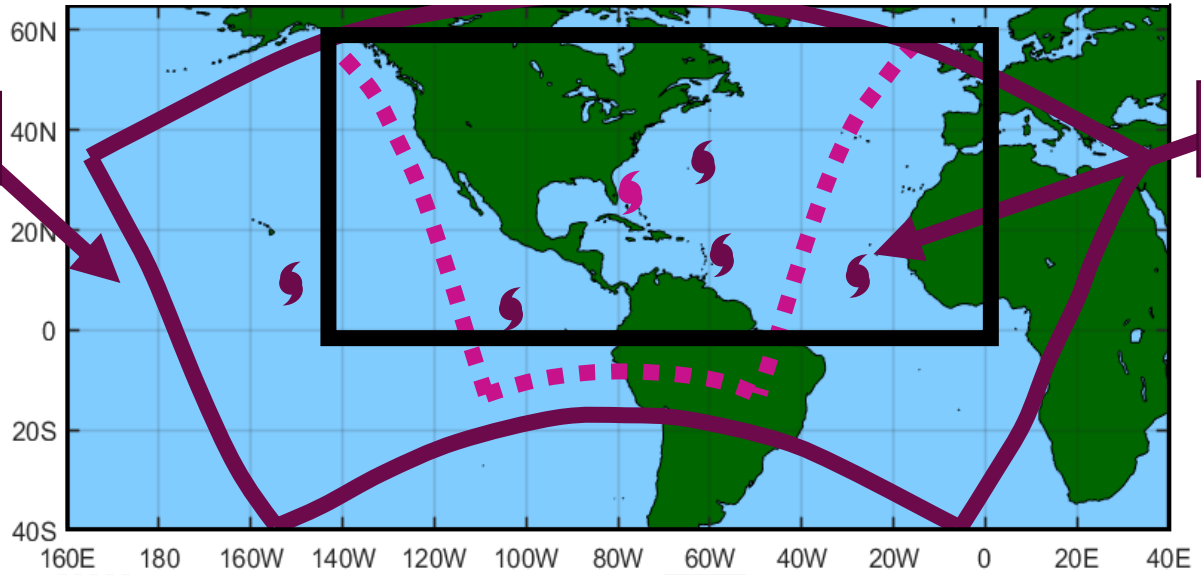


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**This section includes results for Takeaway #1 and Takeaway #4.**

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**Manuscript currently in HRD's Internal Review**

Ditchek, S.D., J. Sippel, G. Alaka, S.B. Goldenberg, and L. Cucurull 2022: A Systematic Assessment of the Overall Dropsonde Impact during the 2017-2020 Hurricane Seasons using the Basin-Scale HWRF.

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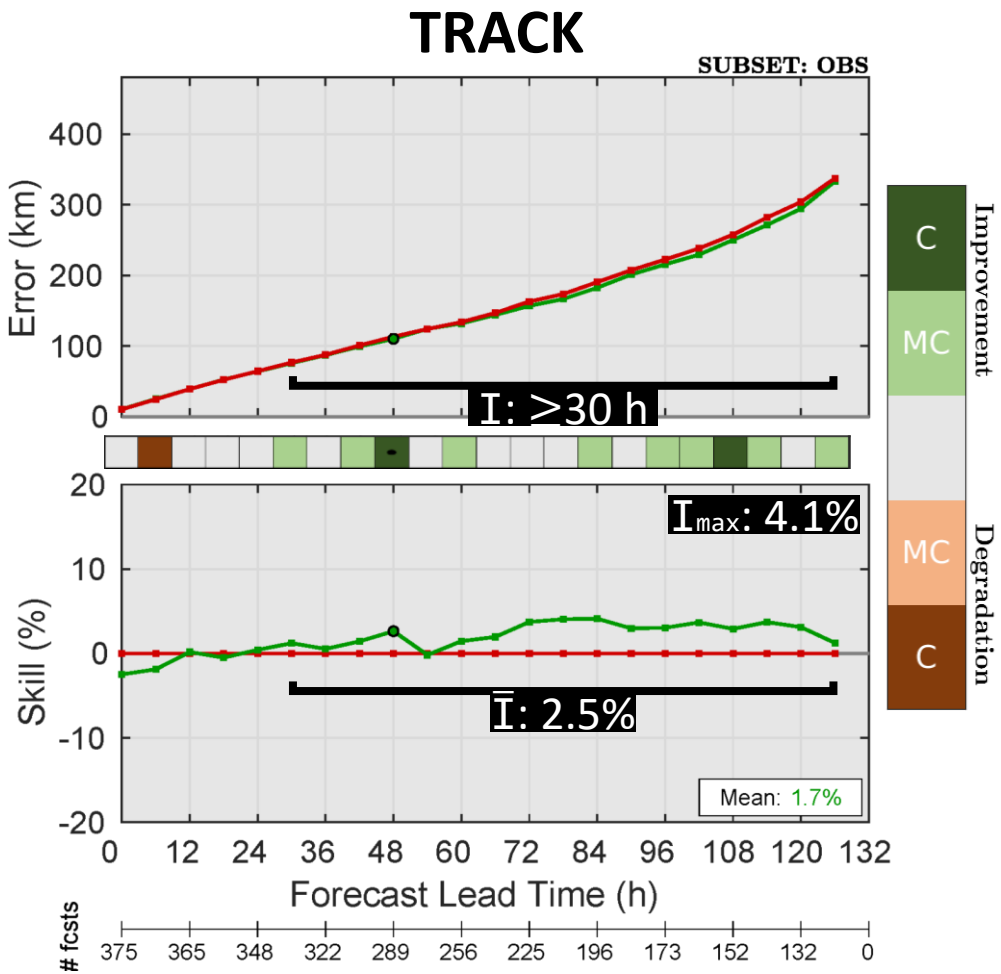

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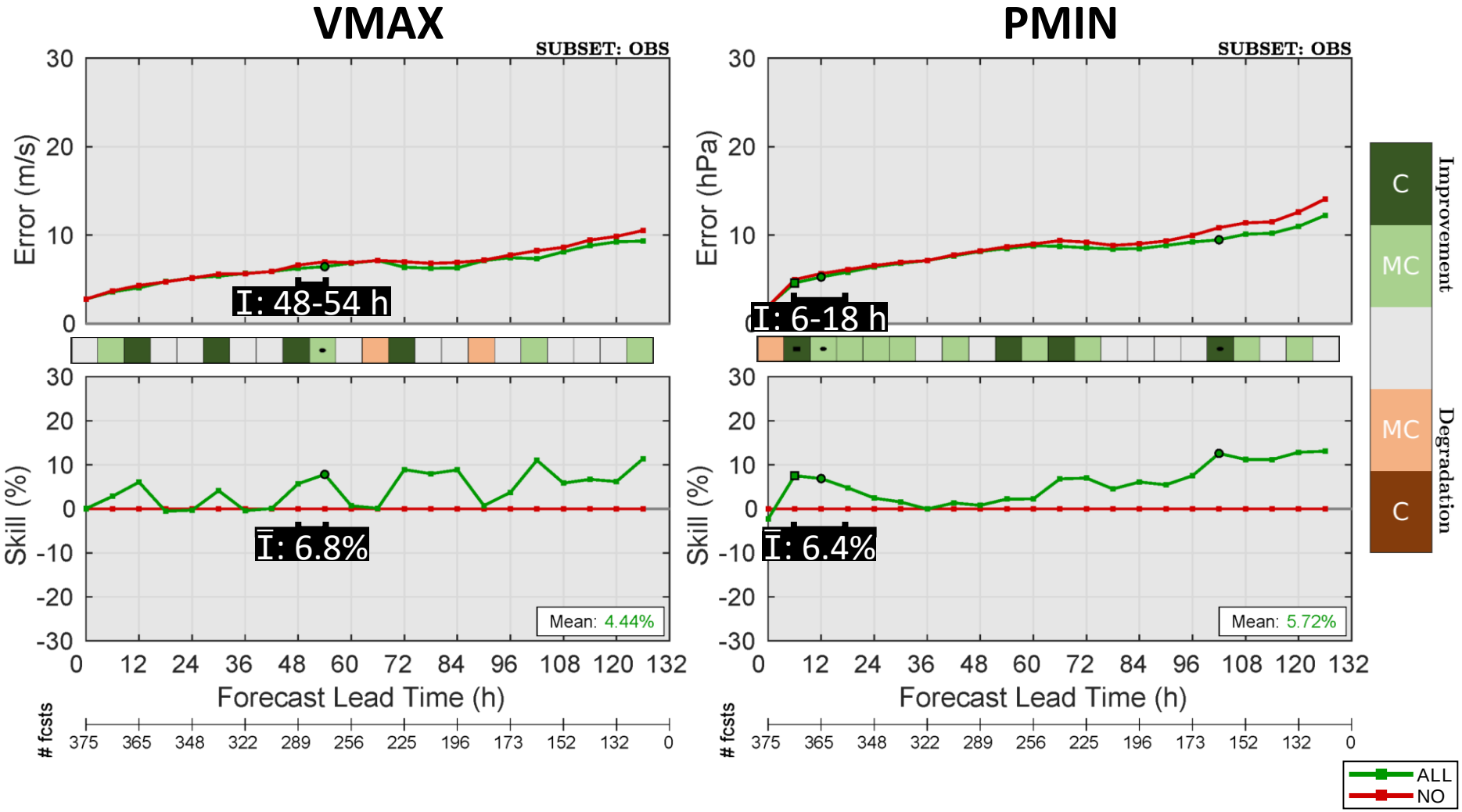

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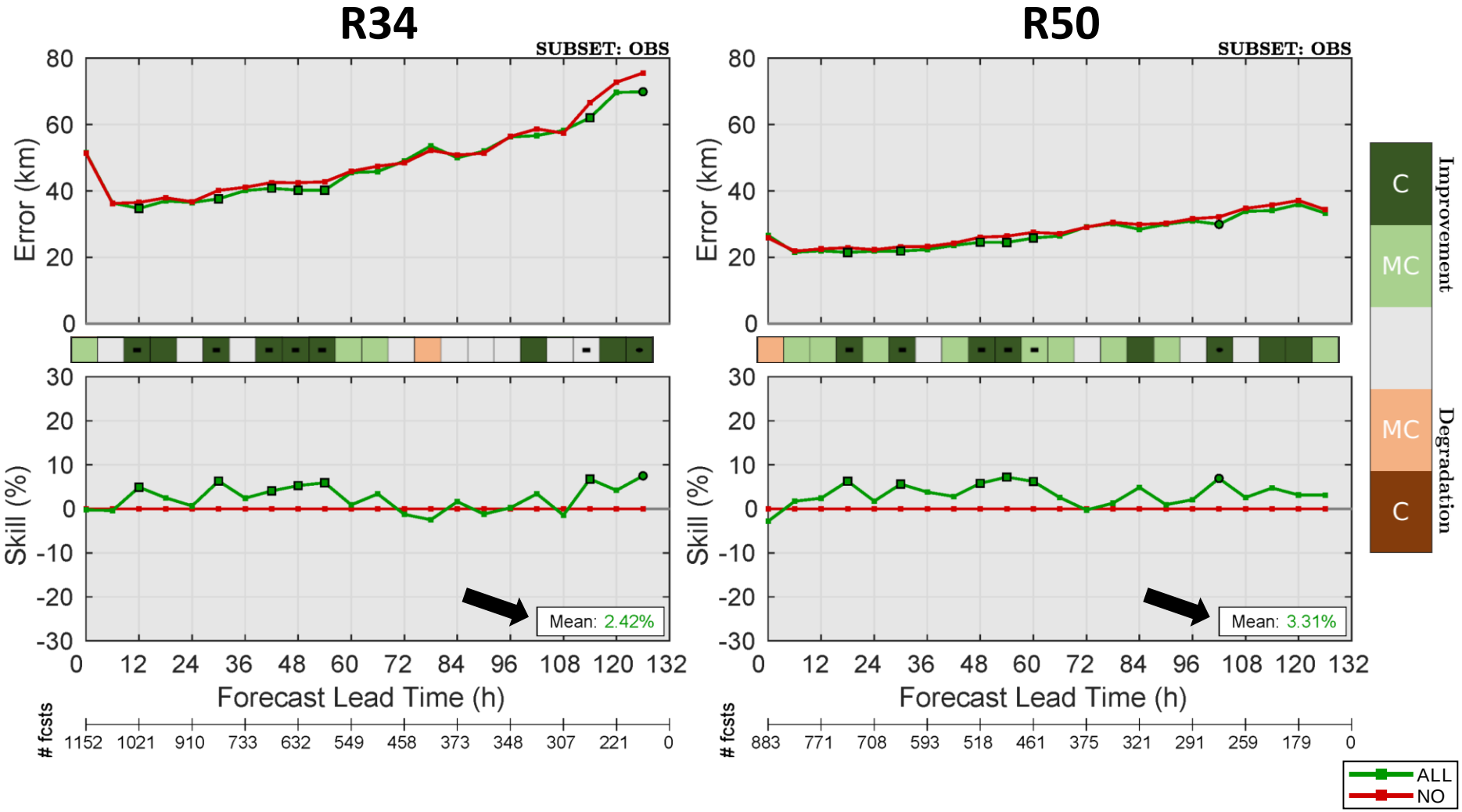

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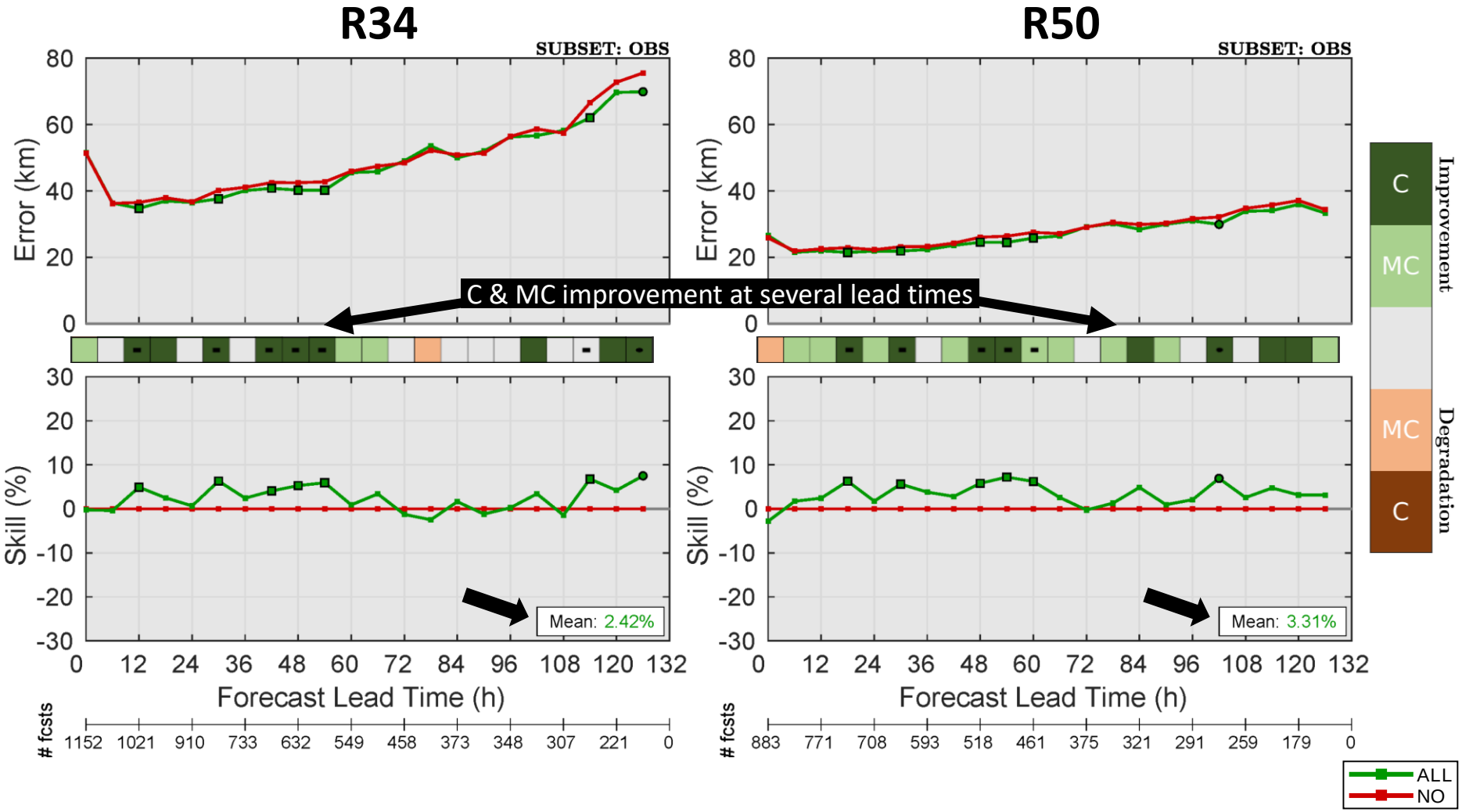

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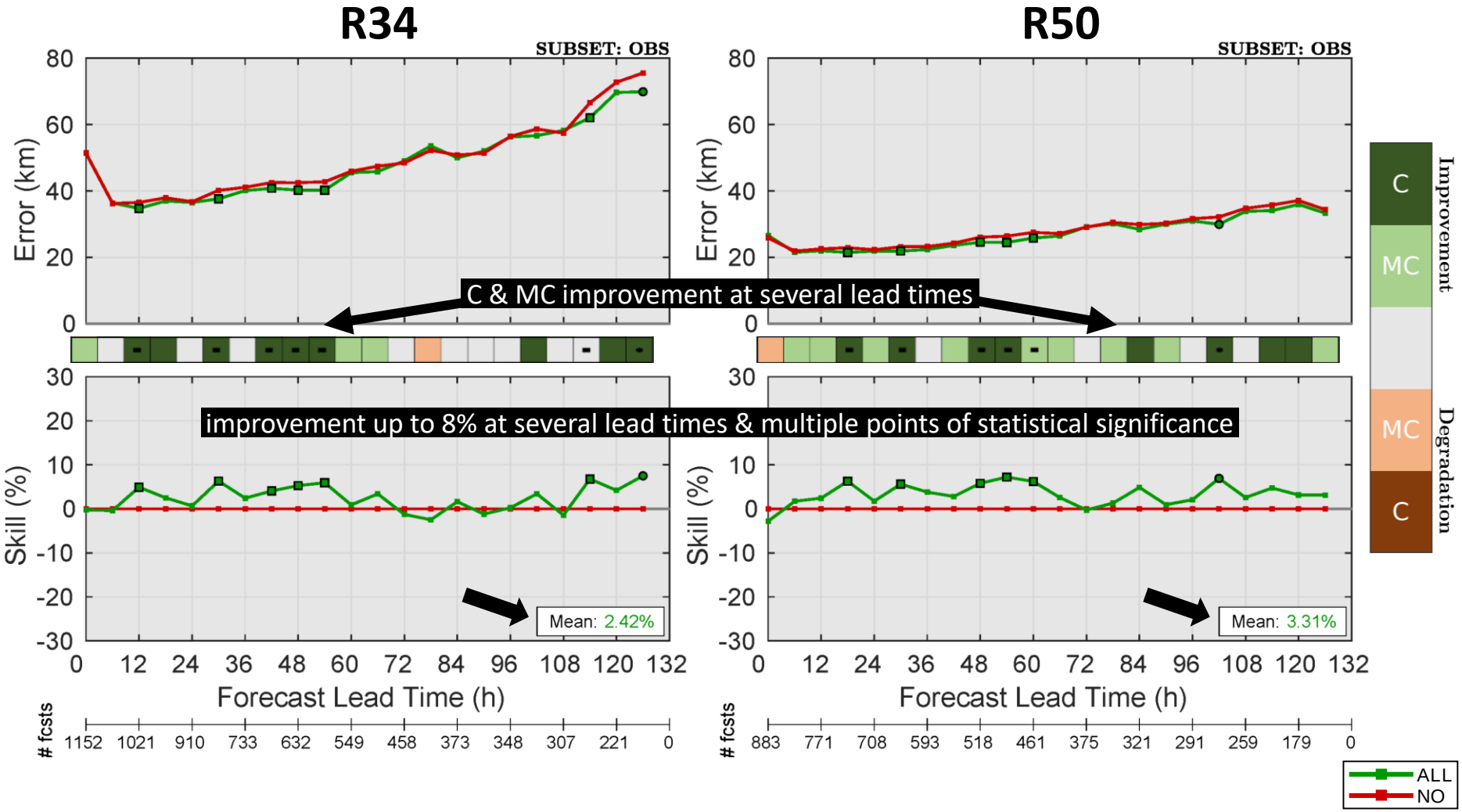

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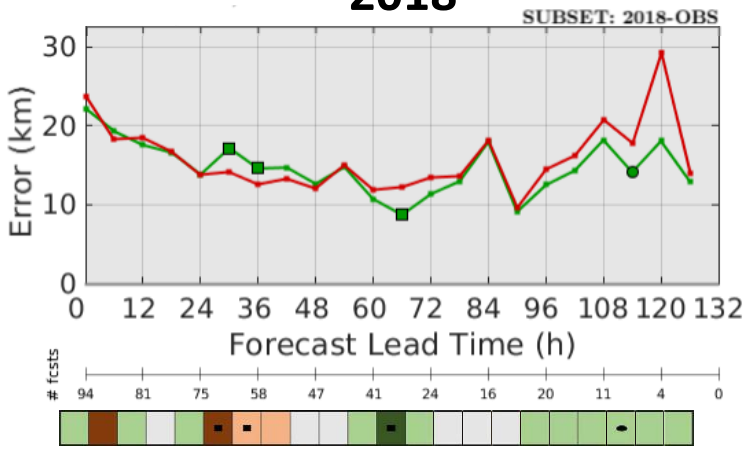
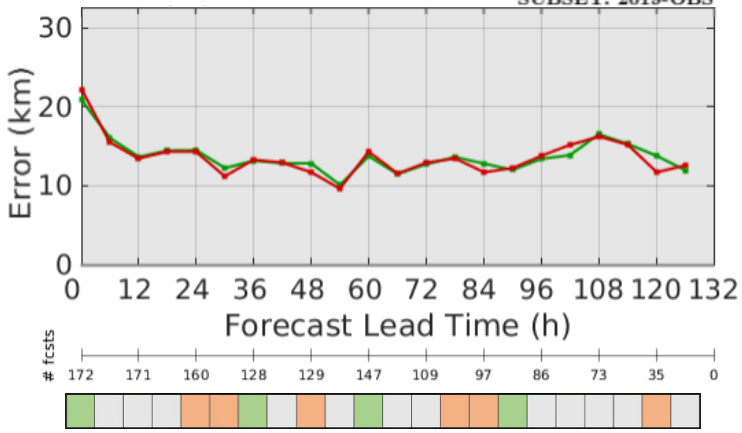



### 2019

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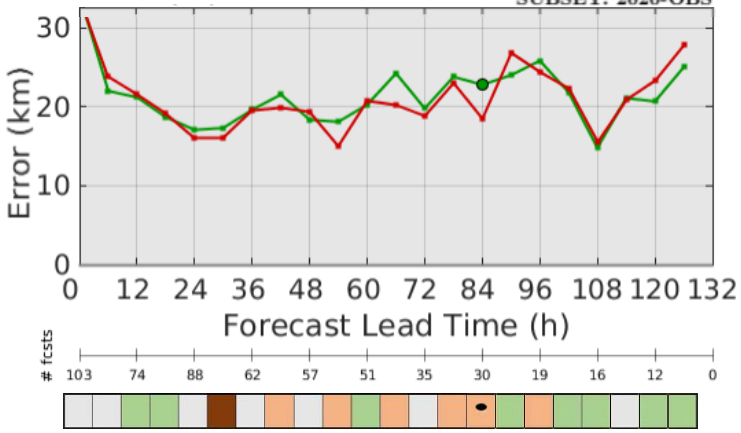



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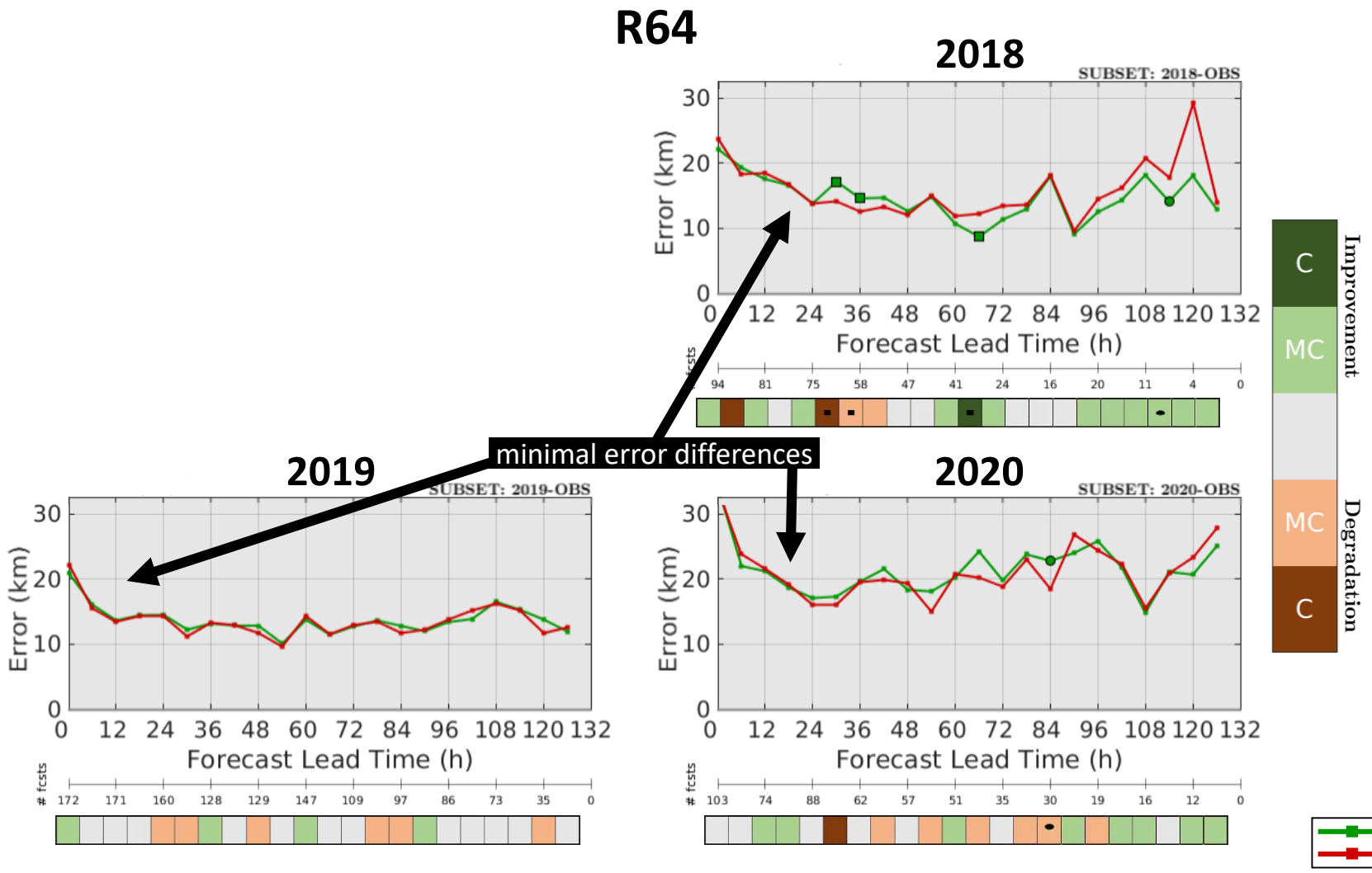

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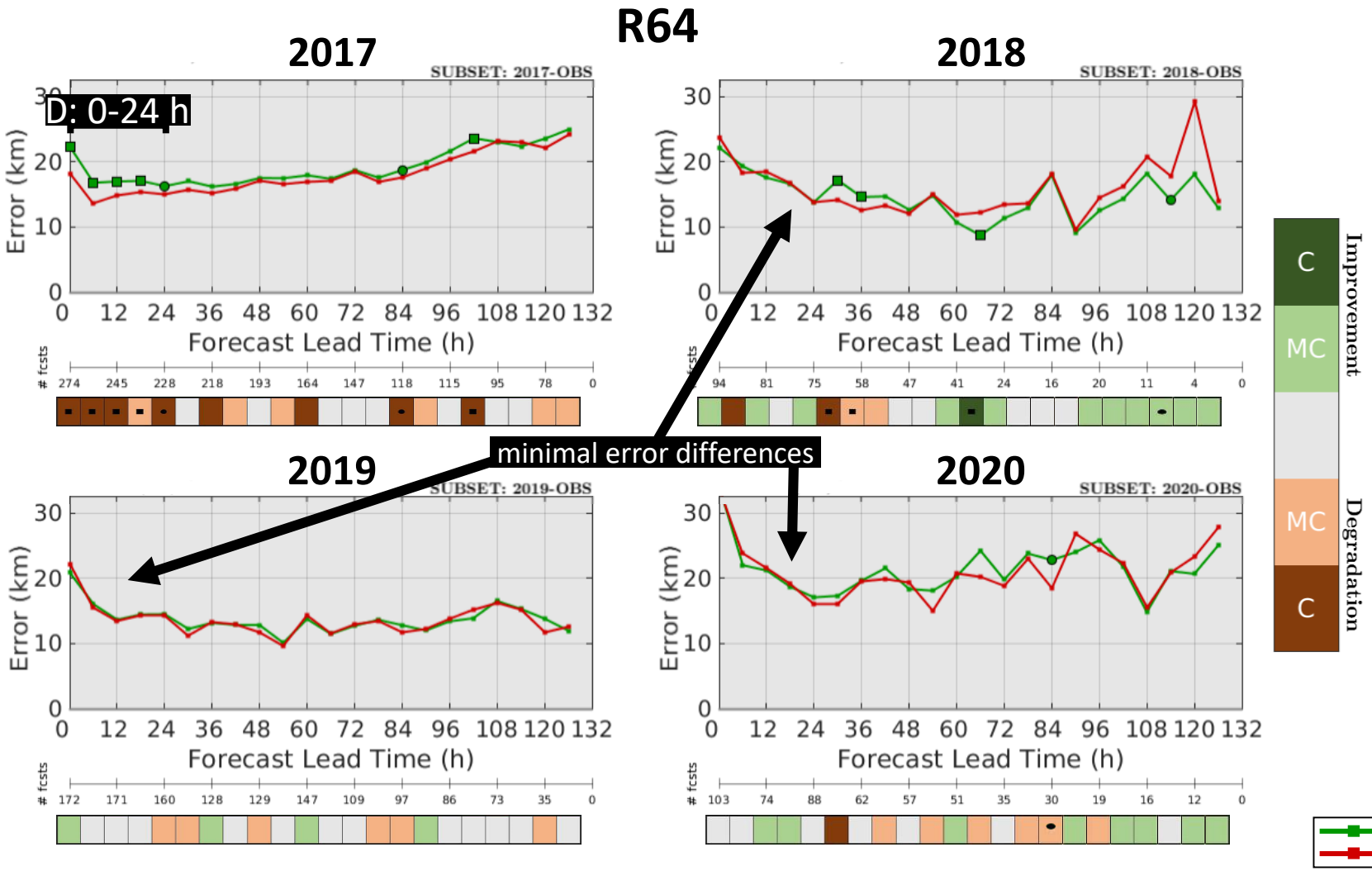

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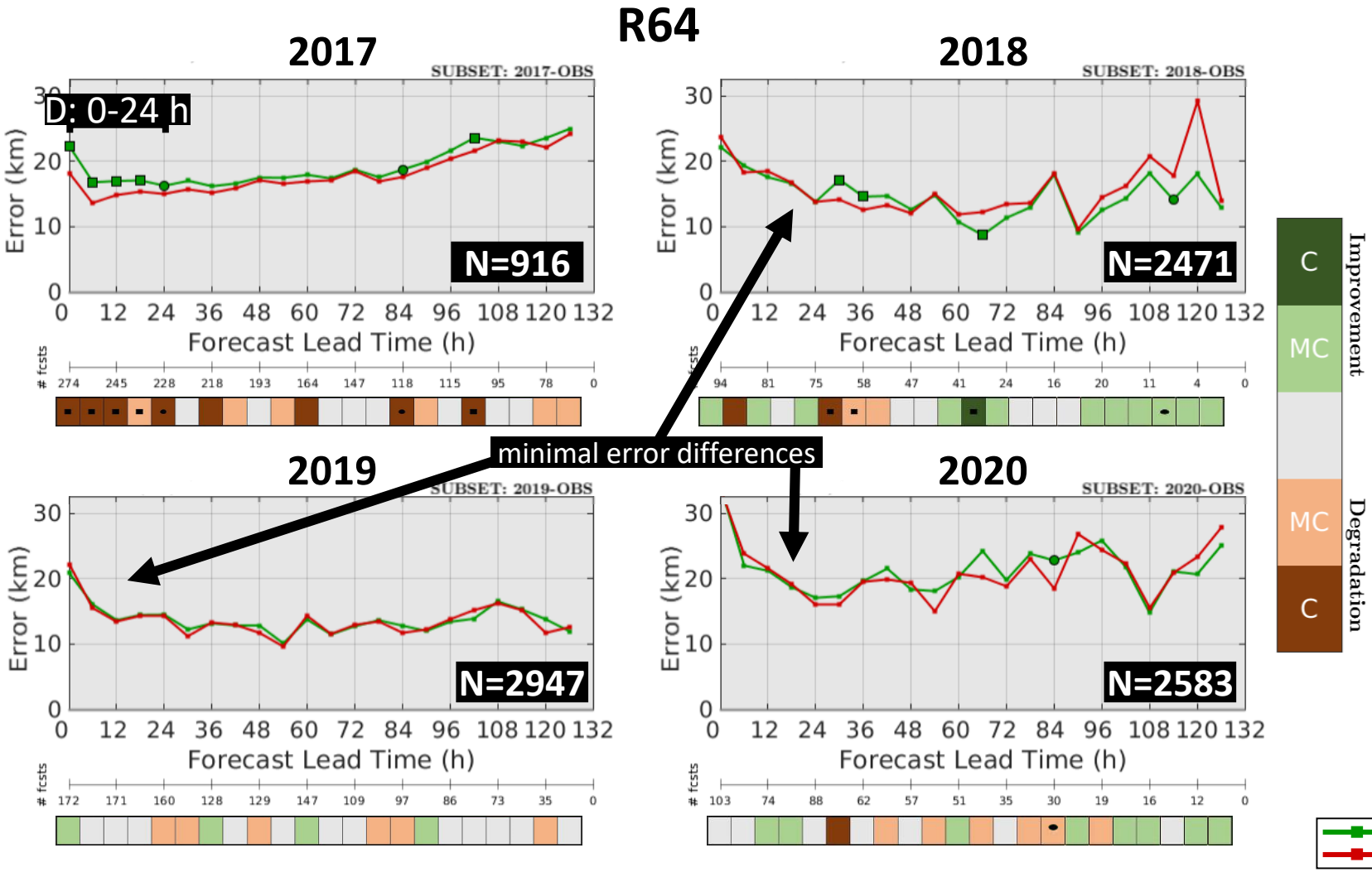

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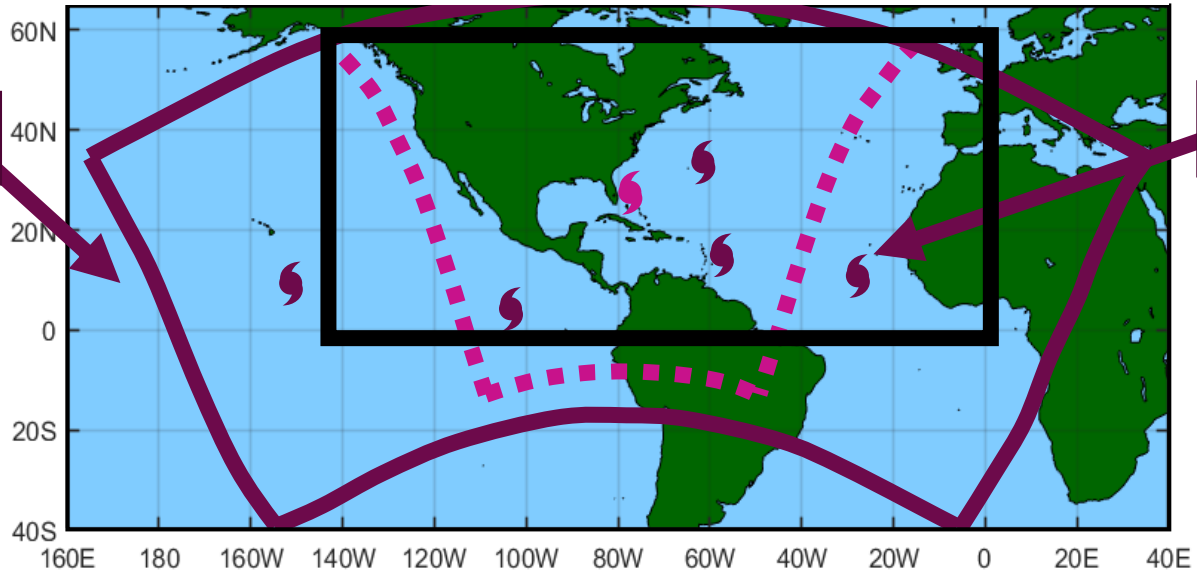


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**Manuscript In Prep**

Sippel, J., S.D. Ditchek, K. Ryan, C.W. Landsea 2022: The R2O2R2O Life Cycle of the Recently Implemented G-IV Inner-Ring Circumnavigation.

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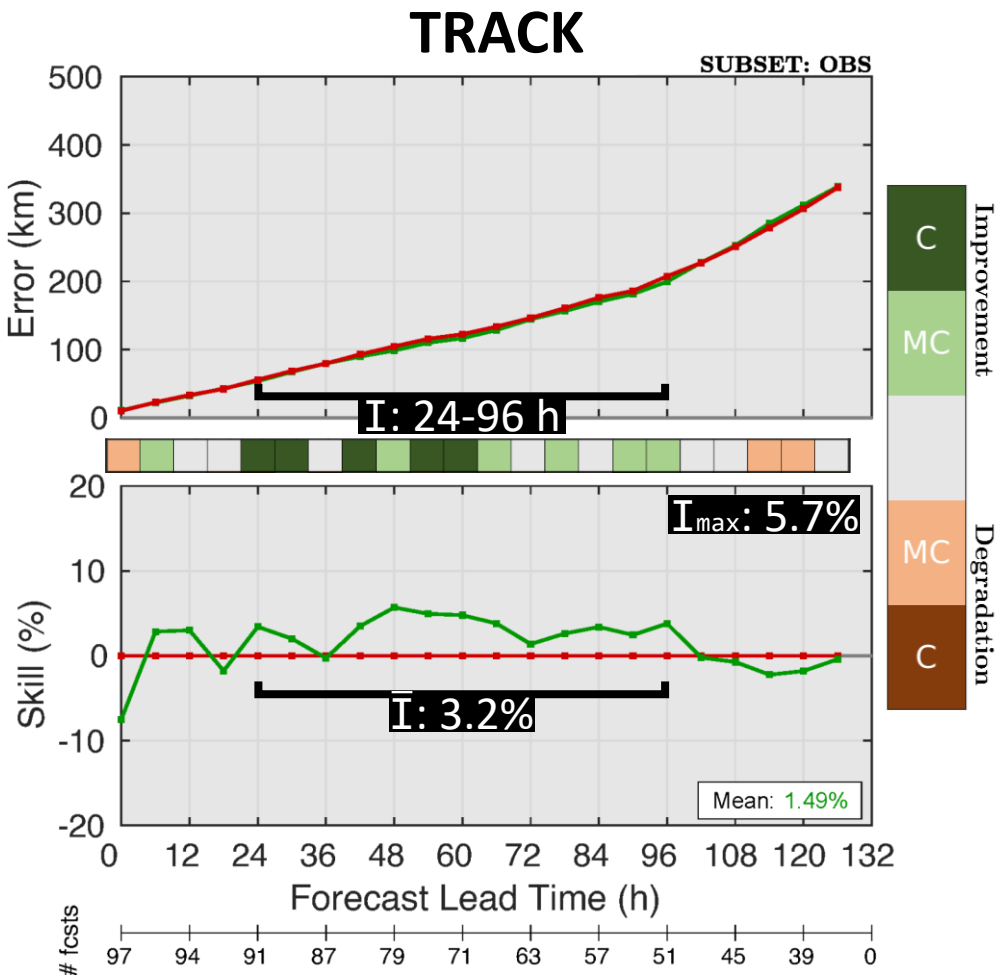

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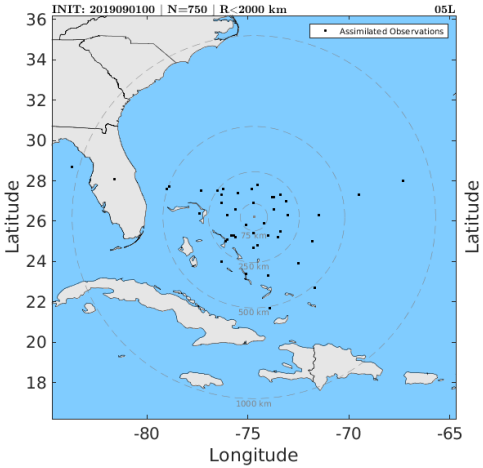
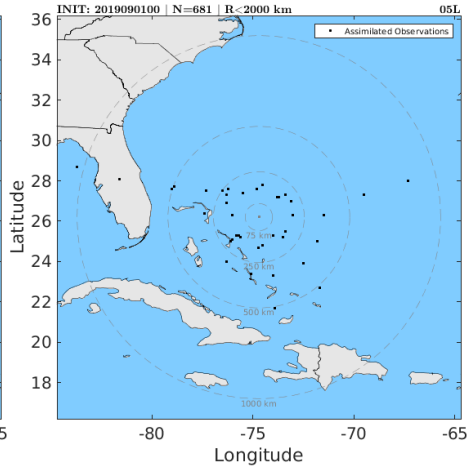



**N=750**

**OLD**

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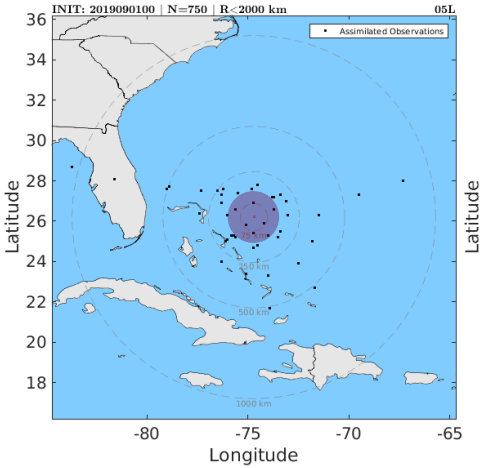


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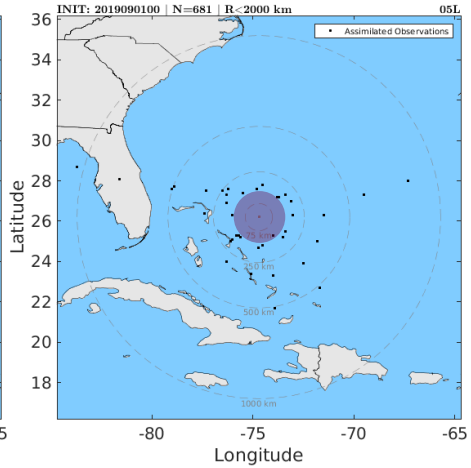
OLD

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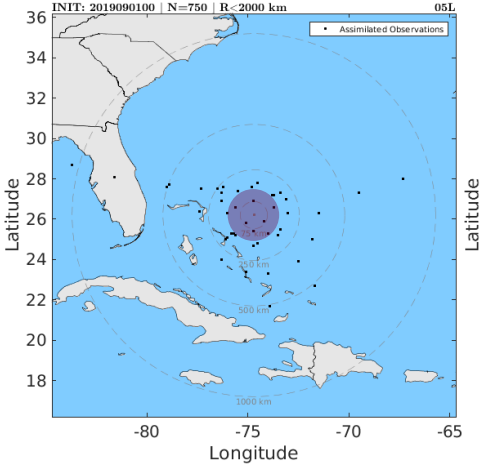


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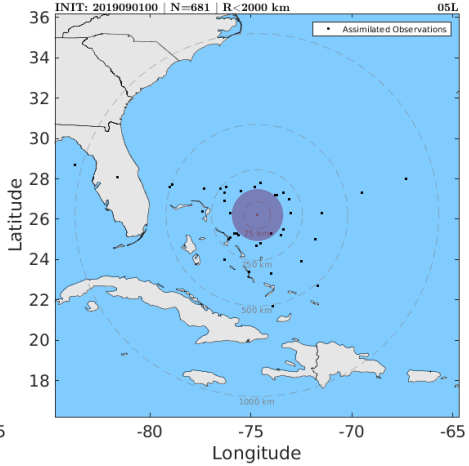


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### 2) First-Time Addition of HDOBs

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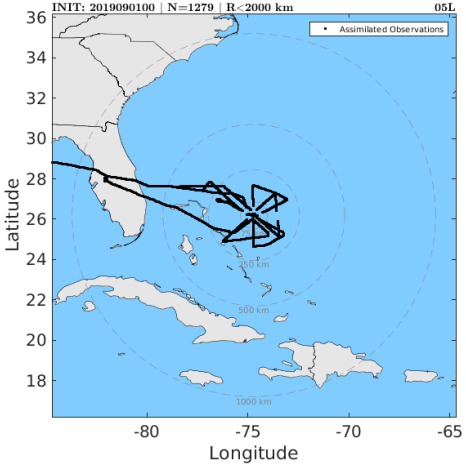


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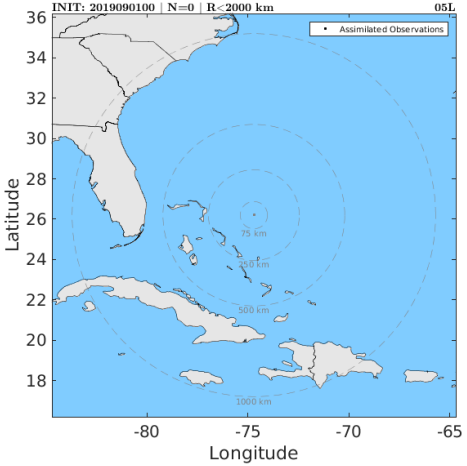
OLD




N=0

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**This section includes results for Takeaway #1.**

**Manuscript In Review @ AMS's WAF**

Sippel, J., X. Wu, S.D. Ditchek, V. Tallapragada, and D. Kleist 2022: Impacts of assimilating additional reconnaissance data on operational GFS tropical cyclone forecasts.

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**RECON:** Cycles from Atlantic basin TCs from the first cycle with assimilated reconnaissance data through the last cycle of the TC

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■ (●): 95% (90%) sig.

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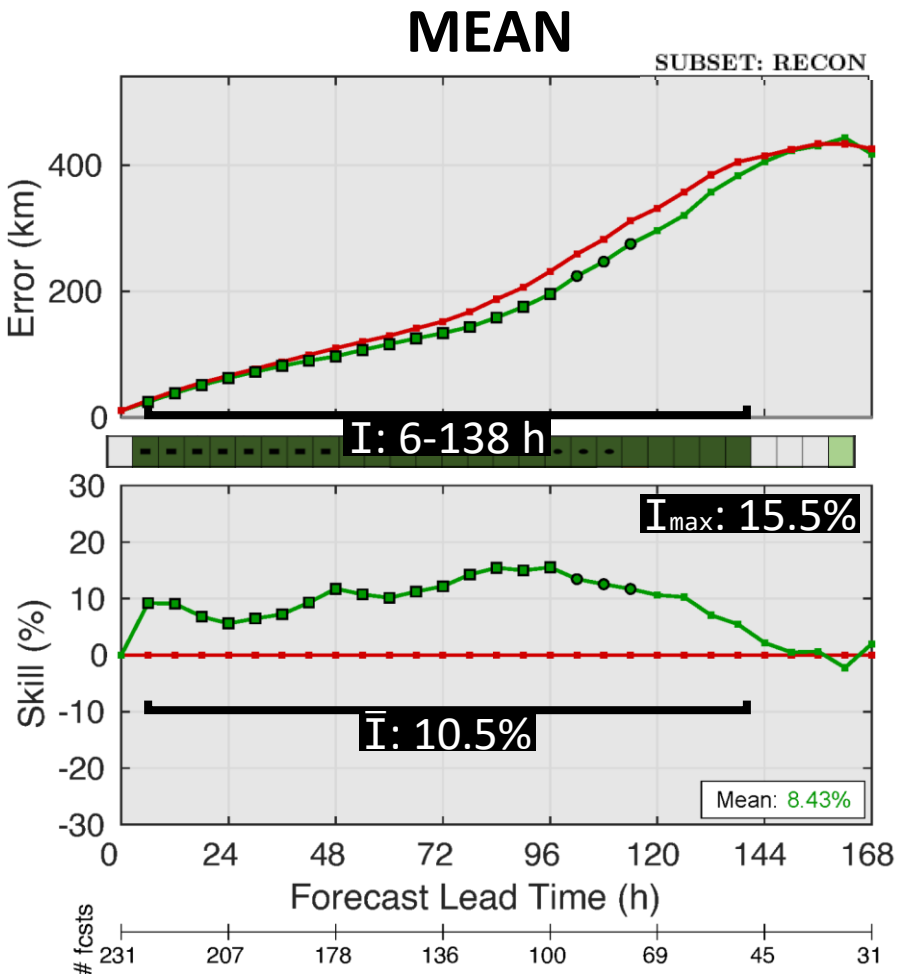


NEW
OLD

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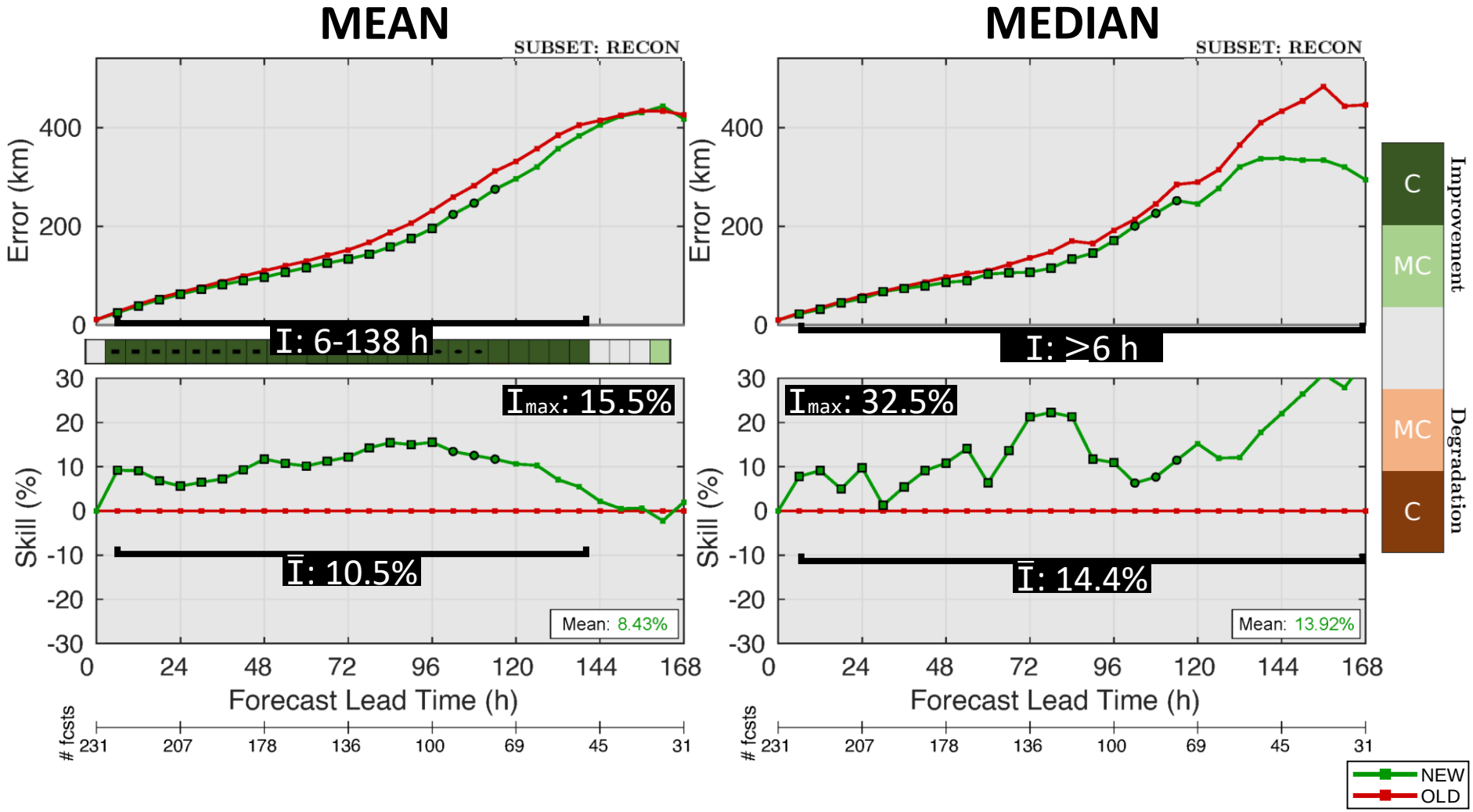

# The Takeaways

**Green:** discussed in this presentation

# The Takeaways

## HB20 Overall Dropsonde Impact

**1) Dropsondes directly improve TC forecasts**

2) Dropsondes indirectly improve TC intensity forecasts at long lead times and R34 forecasts at short lead times

3) Prioritizing sampling H12 would lead to the most forecast improvements

**4) Directly sampling the hurricane-force wind region improves R64 forecasts**

## HB20 G4IC Dropsonde Impact

**1) G4IC dropsondes directly improve TC track forecasts**

2) G4IC dropsondes have minimal direct impacts on TC intensity and structure forecasts

3) G4IC dropsondes indirectly improve TC intensity forecasts at long lead times and R50 & R64 forecasts at short lead times

## GFSv16 Dropsonde/HDOB Impact

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# The Takeaways

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**THANK YOU FOR LISTENING!**

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