



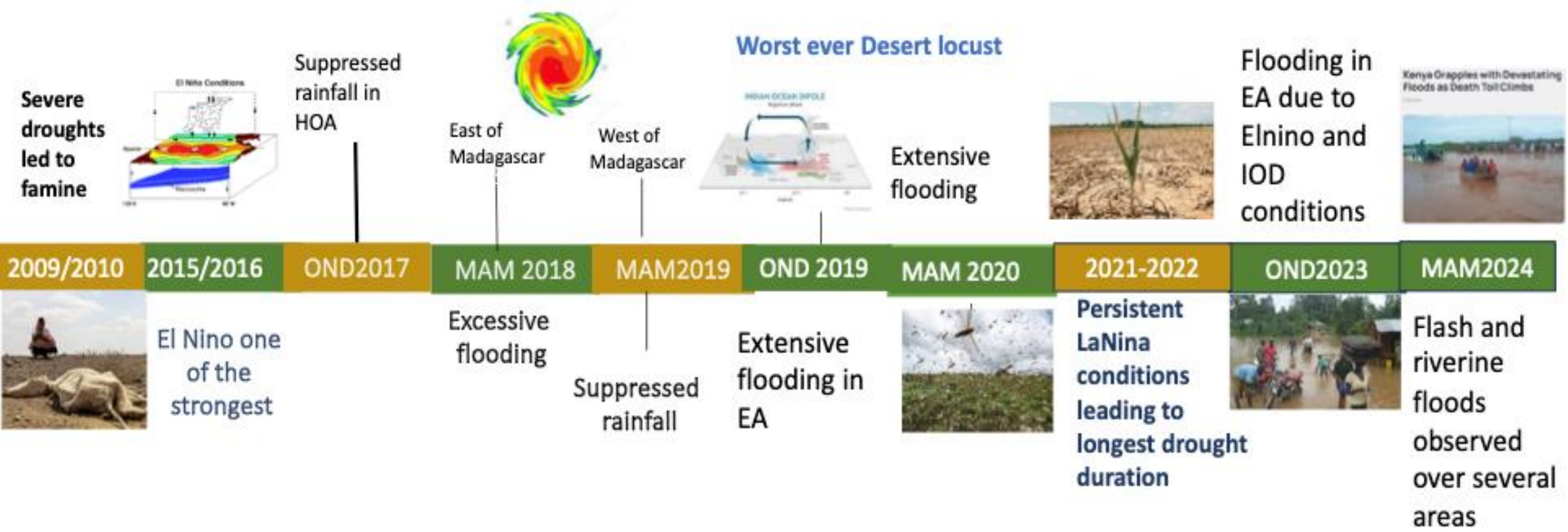
ICPAC

SUB-SEASONAL TO INTER-DECADAL FORECASTING OVER EASTERN AFRICA

5 November 2024

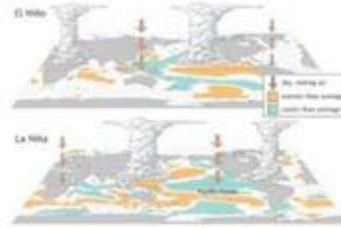


Recent Extreme Events



Drivers of Extreme Rainfall

ENSO



MAM

Minimum impact through studies have shown La Nina conditions (negative phase) could lead to depressed rainfall

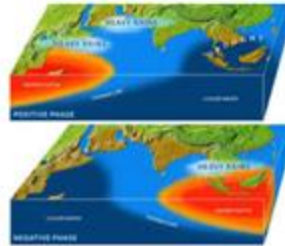
JJAS

Enhanced Rainfall during the negative phase and depressed rainfall during the positive phase

OND

Enhanced Rainfall during the positive phase and depressed rainfall during the negative phase

INDIAN OCEAN DIPOLE

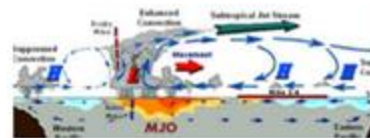


No known impact

No known impact

Enhanced Rainfall during the positive phase and depressed rainfall during the negative phase

MADDEN JULIAN OSCILLATION



Enhanced rainfall when in phases 1 to 4

No known impact

Enhanced rainfall when in phases 1 to 4

TROPICAL CYCLONES



Enhanced rainfall when they originate to the east of Madagascar and depressed when they are to the west

No Tropical Cyclone activity

Enhanced rainfall over parts of Eastern Africa

Current operational status for the different timescales



Training Initiatives

Foundational Training-
Focuses on the seasonal
timescales and done once
a year

Capacity building
workshops before the
Climate outlook Forum :
Done 3 times a year

Sub-seasonal Forecasting:
Done for both Southern
and Eastern Africa-
conducted in September
2024 in Botswana

USER ENGAGEMENT INITIATIVES



Summary for decision makers is produced

Focus Group discussions with farmers on Communication and Feedback mechanisms



Publications over the Region on S2D

forecasts

Meteorological Applications

Science and Technology for Weather and Climate

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Drivers of sub-seasonal extreme rainfall and their representation in ECMWF forecasts during the Eastern African March-to-May seasons of 2018–2020

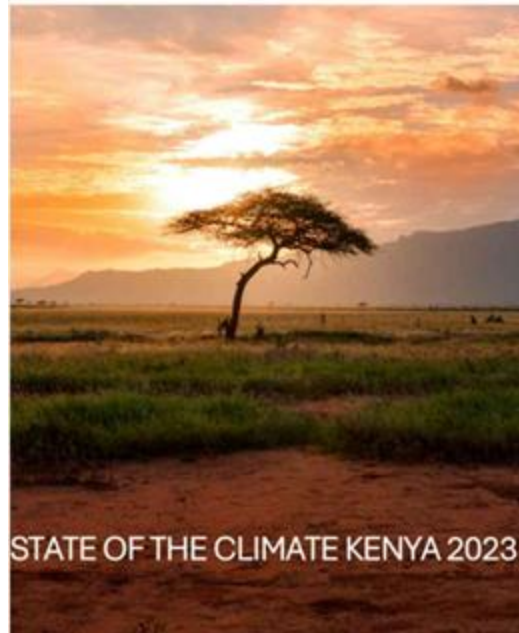
Masilin Gudoshava Patricia Nyinguro, Joshua Talib, Caroline Wainwright, Anthony Mwanthi, Linda Hirons, Felipe de Andrade, Joseph Mutemi, Wilson Gitau, Elisabeth Thompson ... [See all authors](#)

Drivers and Subseasonal Predictability of Heavy Rainfall in Equatorial East Africa and Relationship with Flood Risk

David A MacLeod , Rutger Dankers, Richard Graham, Kiswendsida Guigma, Luke Jenkins, Martin C. Todd, Augustine Kiptum, Mary Kilavi, Andrew Njogu, and Emmah Mwanqi

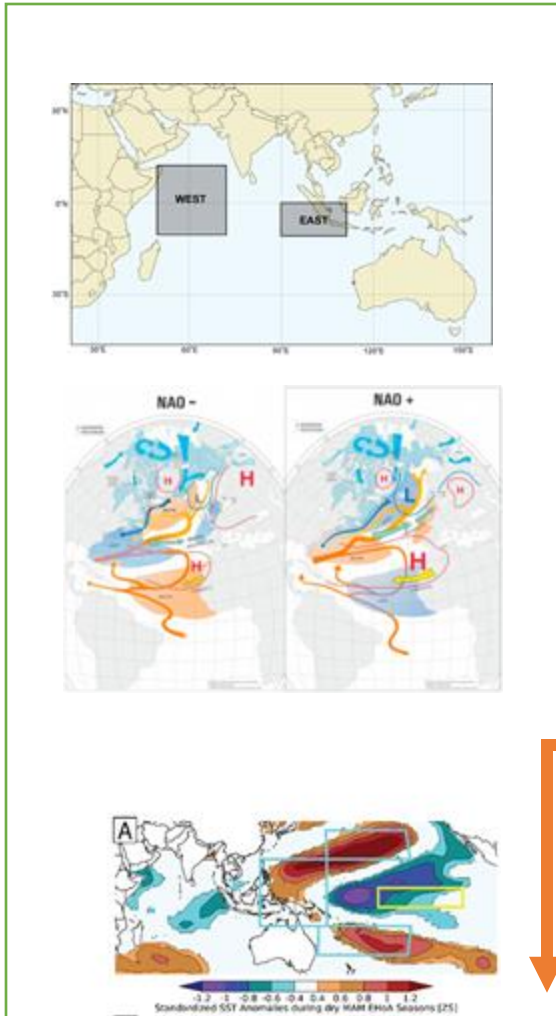
Using co-production to improve the appropriate use of sub-seasonal forecasts in Africa

Linda Hirons , Elisabeth Thompson ^a, Cheikh Dione ^c, Victor S. Indasi ^c, Mary Kilavi ^e, Elias Nkiaka ^f, Joshua Talib ^b, Emma Visman ^b, Elijah A. Adefisan ^c, Felipe de Andrade ^a, Jesse Ashong ^g, Jasper Batureine Mwesigwa ^{d n}, Victoria L. Boulton ^a, Tidiane Diédhiou ^h, Oumar Konte ^h, Masilin Gudoshava ^d, Chris Kiptum ^e, Richmond Konadu Amoah ^o, Benjamin Lamptey ^f, Kamoru Abiodun Lawal ^{i j}...Steve Woolnough ^a

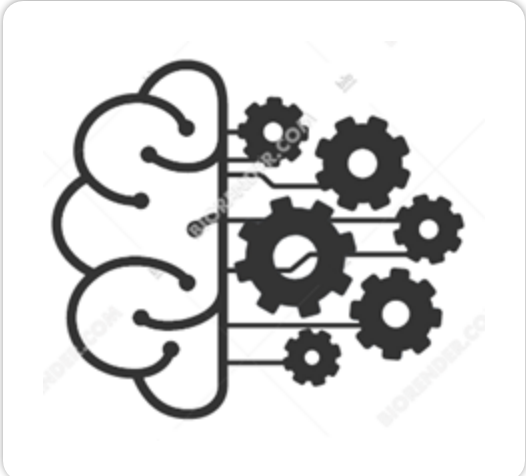


STATE OF THE CLIMATE KENYA 2023

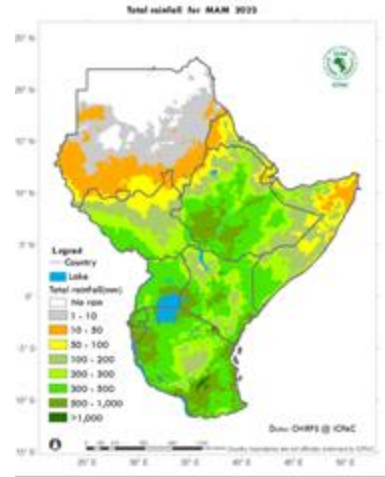
Machine Learning to improve the Long Rains Forecasting system



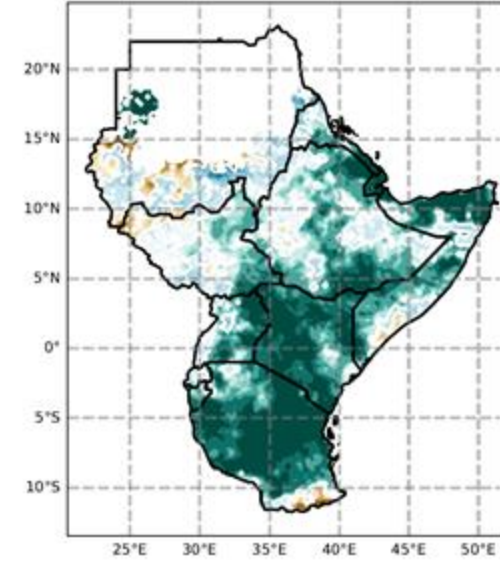
MODEL



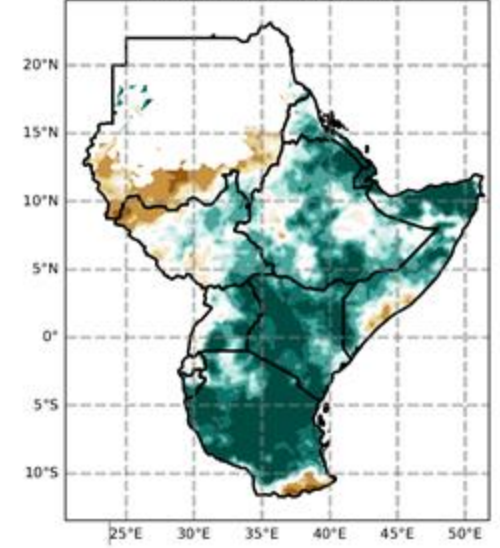
TARGET



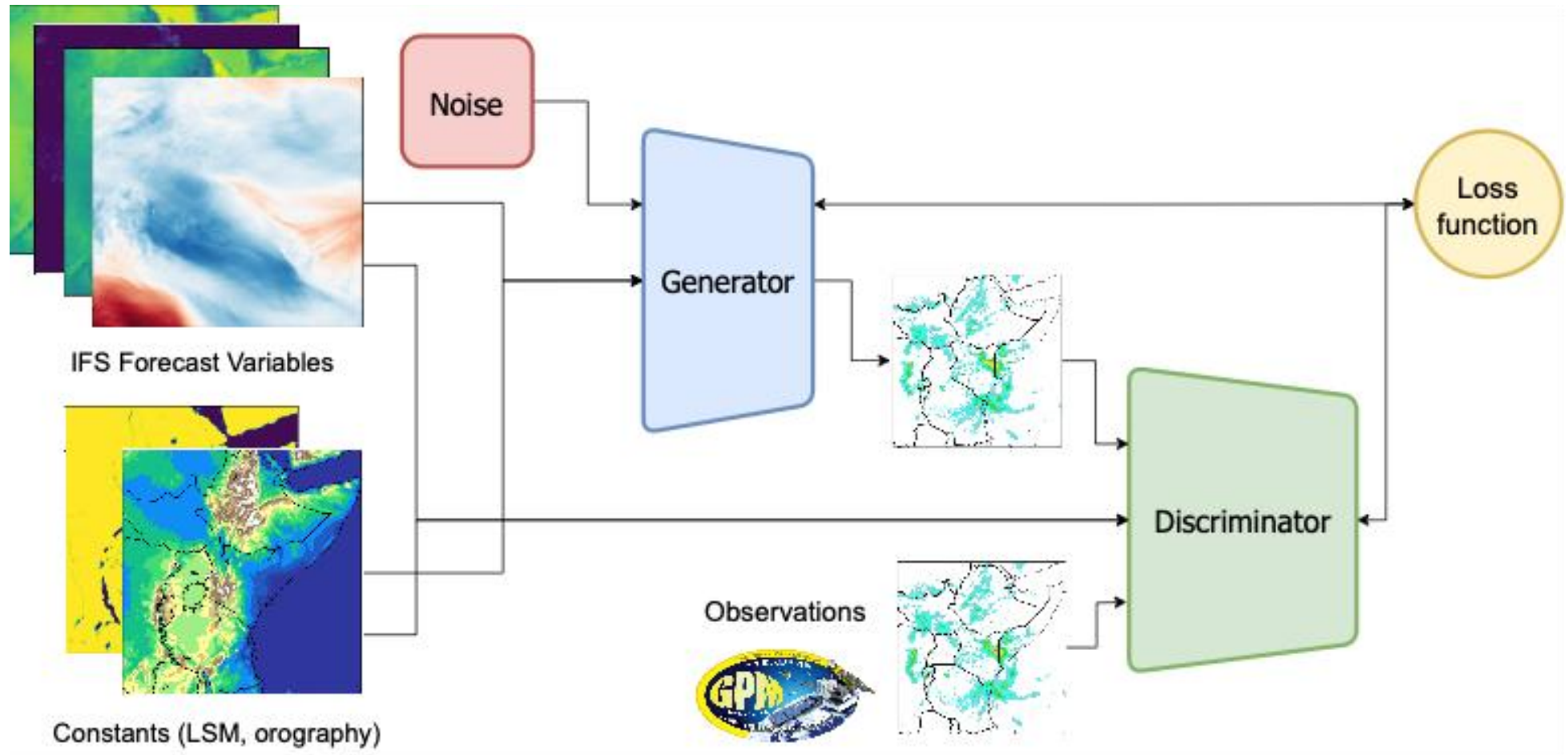
MAM 2020 RAINFALL FORECAST



MAM 2020 OBSERVED RAINFALL



Hybrid AI models – sub-seasonal forecasts – planned



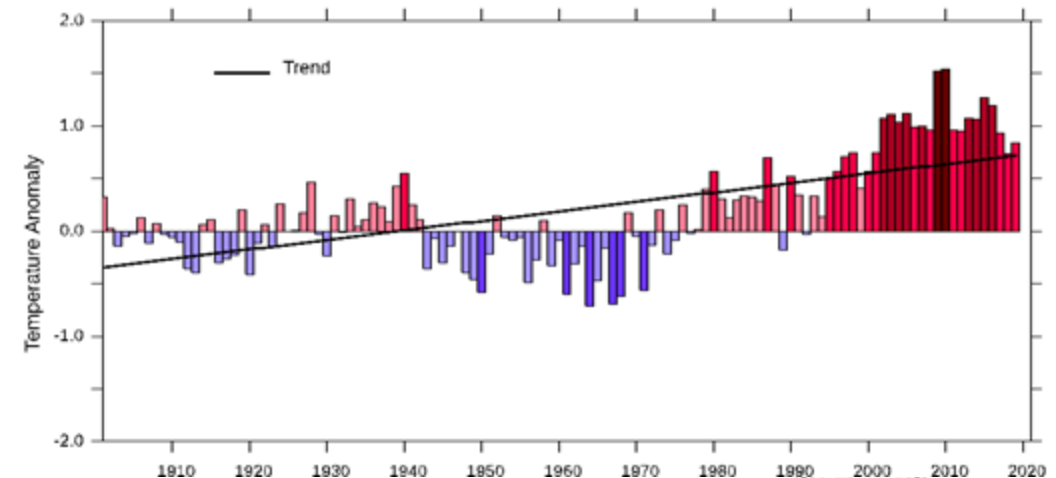
Future Plans

- Enhance the uptake of sub-seasonal forecasts over the region
- Further develop the machine learning techniques for other seasons and also at sub-seasonal timescales- use of both hybrid and purely machine learning techniques
- Produce more temperature forecasts

Extreme Heat Wave Pushes South Sudan to Close Schools

Climate change already worsened floods and droughts in the young nation. Now, soaring temperatures are forecast for two weeks.

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