

# How does the MJO affect extreme rainfall around the (sub)Tropics?

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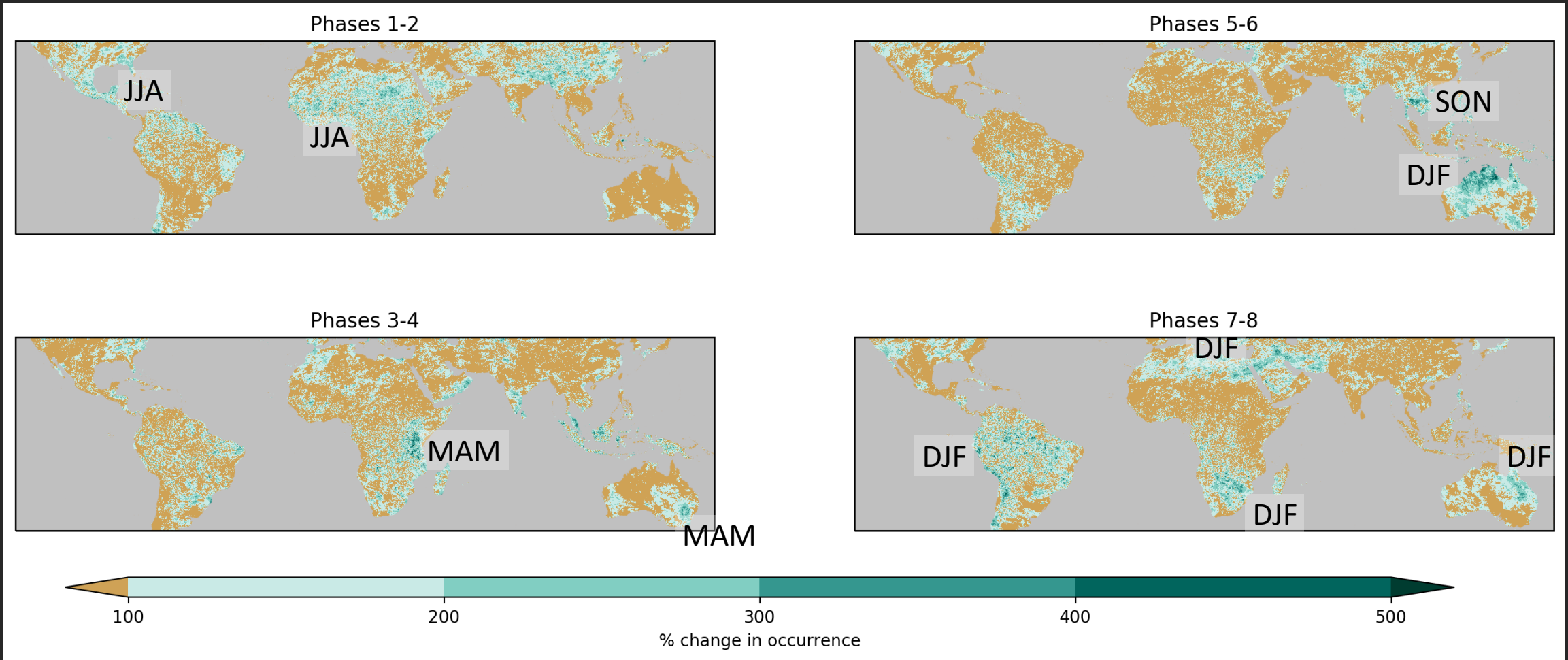
Methods

Global DJF

Seasons

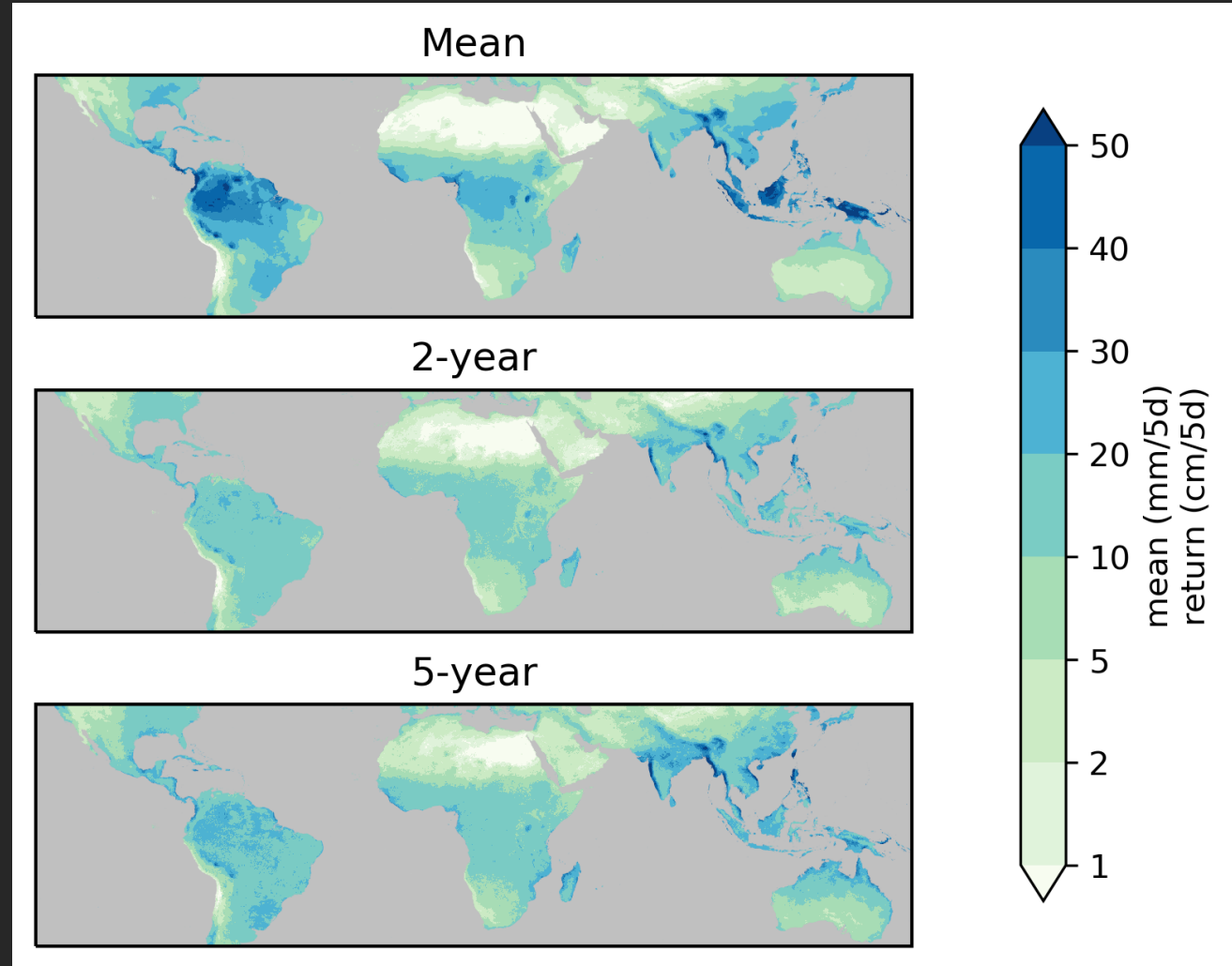
Regions

# MJO affects heavy rain events more in the subtropics than the tropics

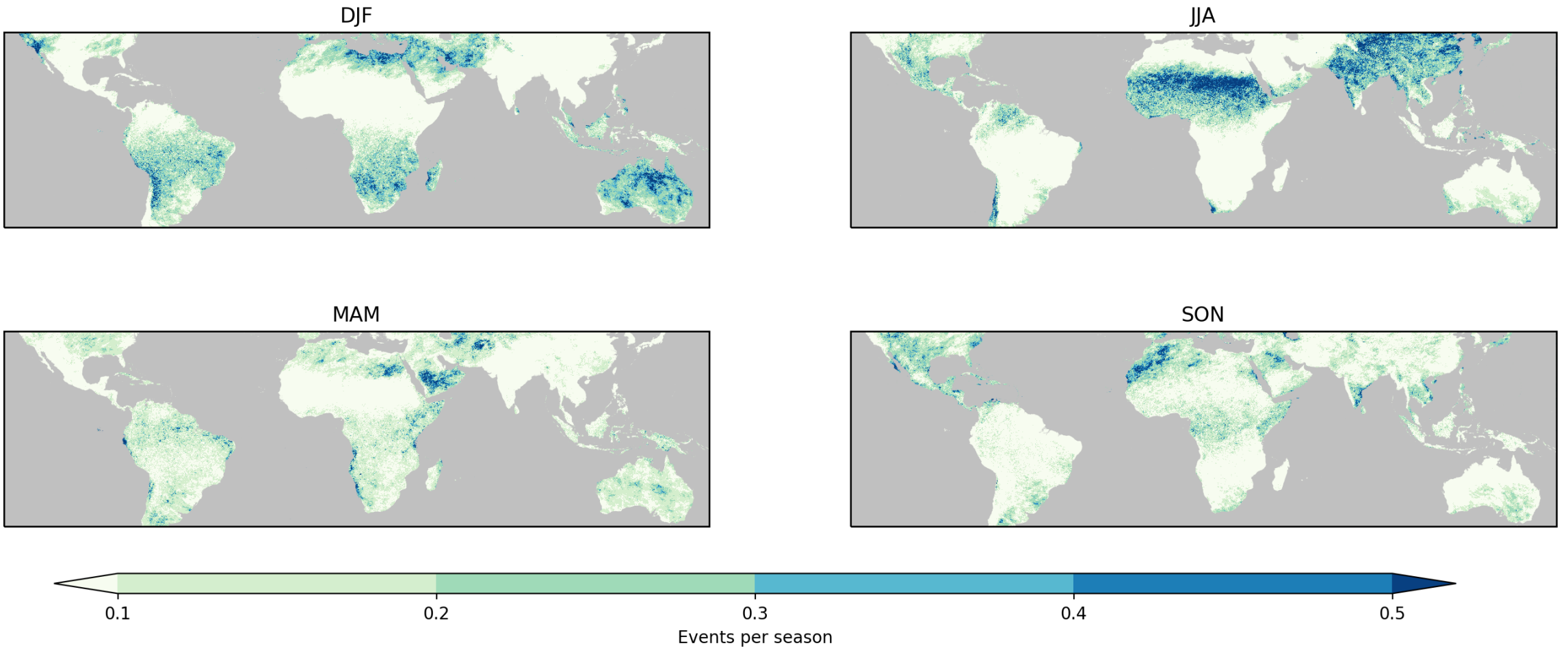


# Method

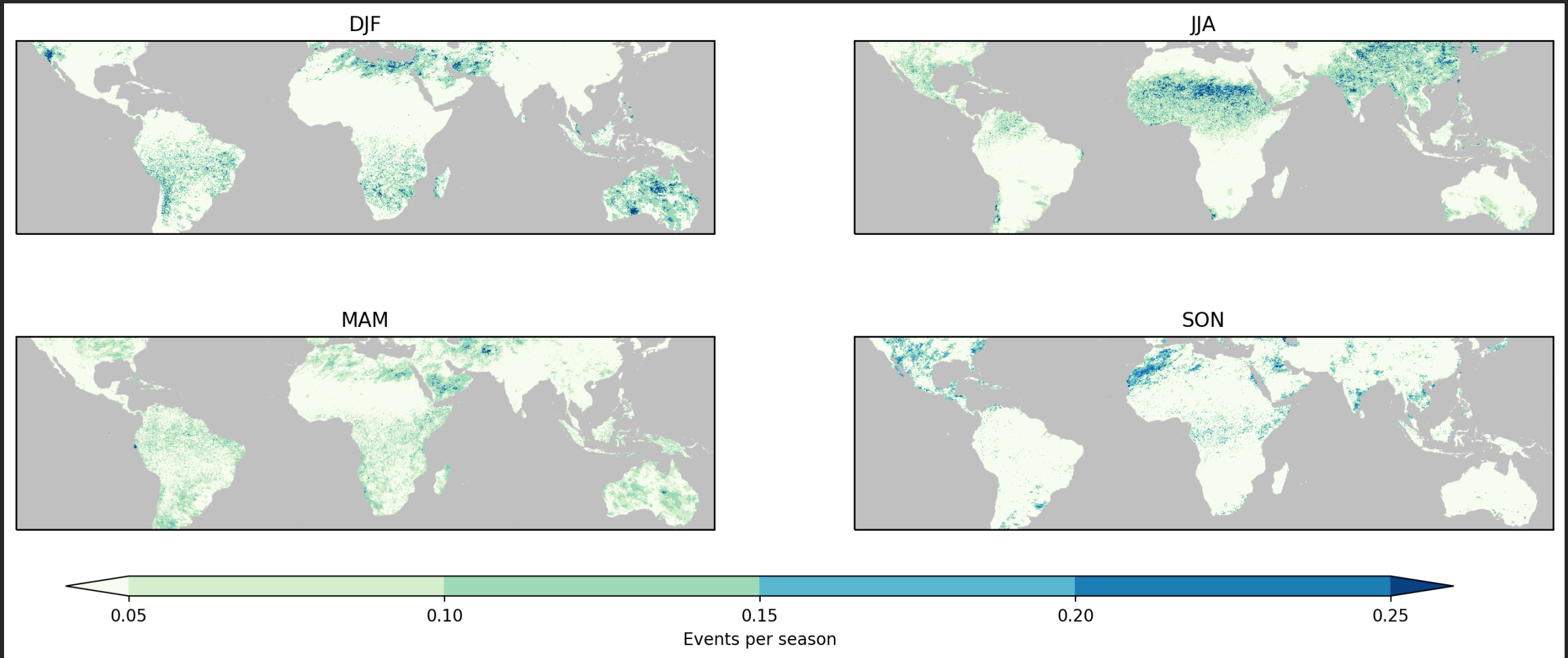
- 5-day running means of NASA IMERG rainfall
- Calculate annual max at each gridpoint for 2001–2019
  - Use median as 2-year event
  - Use 80<sup>th</sup> percentile as 5-year event
- Bin events based on the MJO phase during middle of pentad if MJO amplitude >1



# Two-year Events by Season

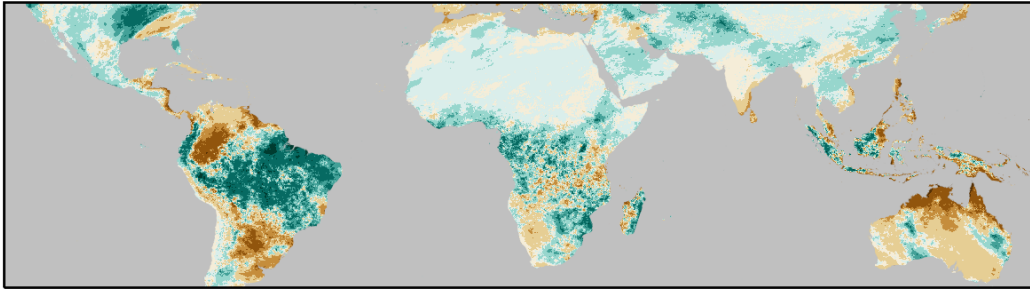


# Five-year Events by Season

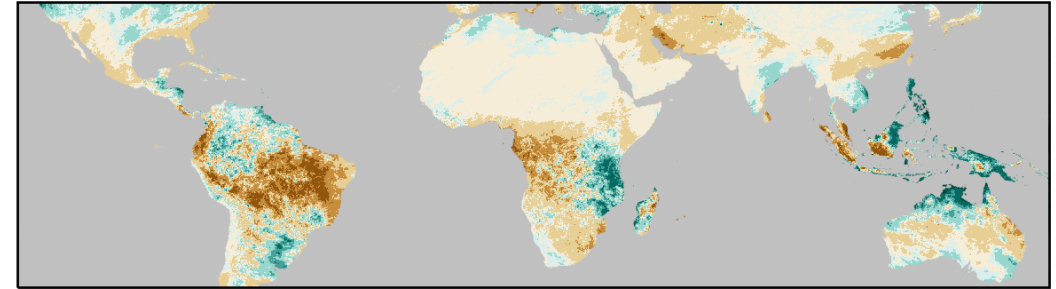


# Anomalies from Mean (DJF)

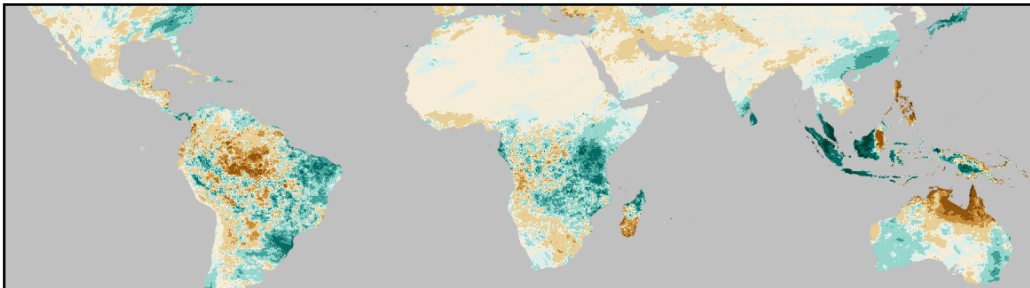
Phases 1-2



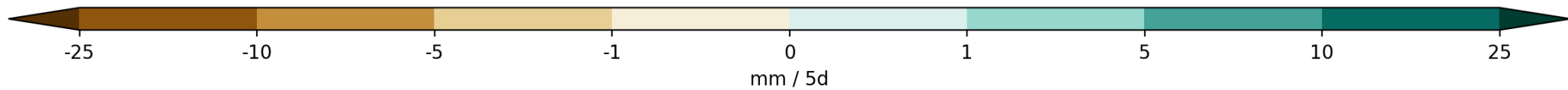
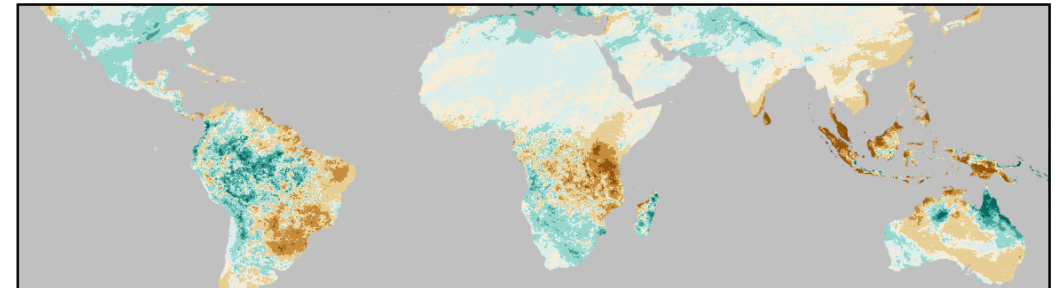
Phases 5-6



Phases 3-4

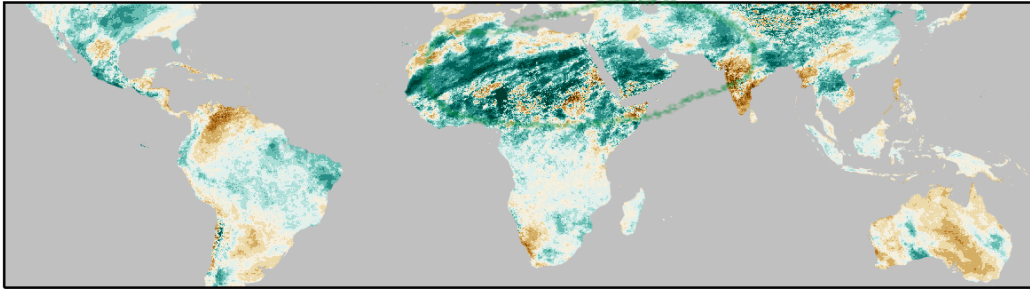


Phases 7-8

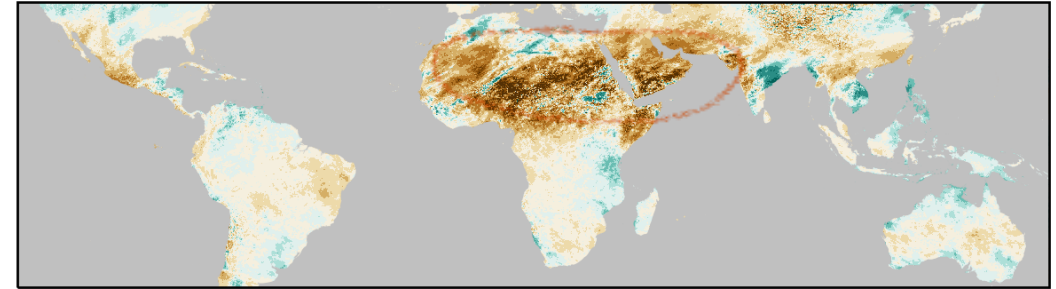


# Percent of Normal (DJF)

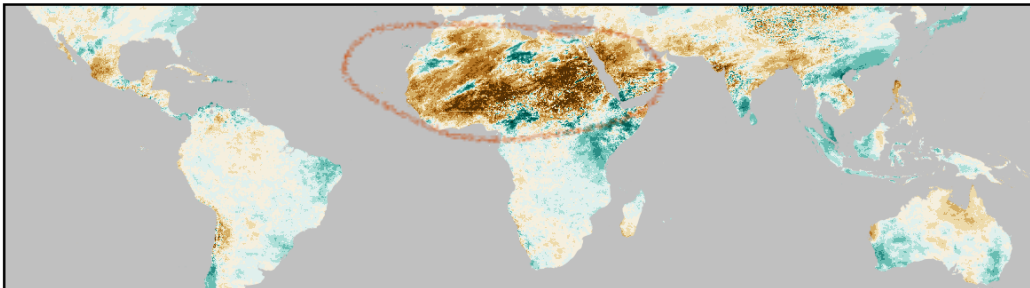
Phases 1-2



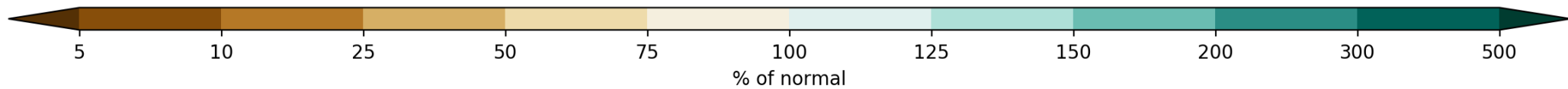
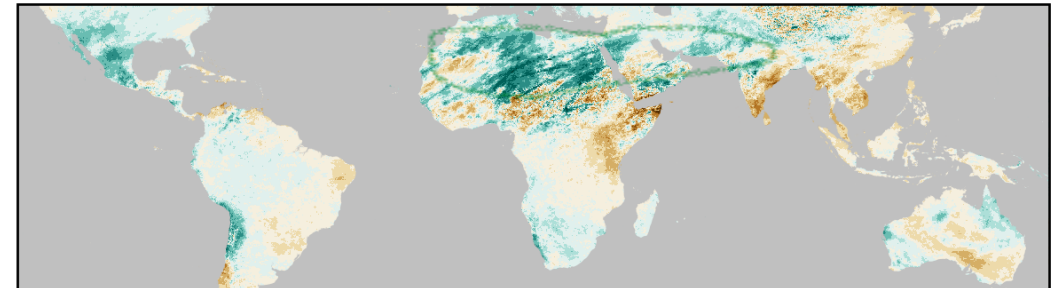
Phases 5-6



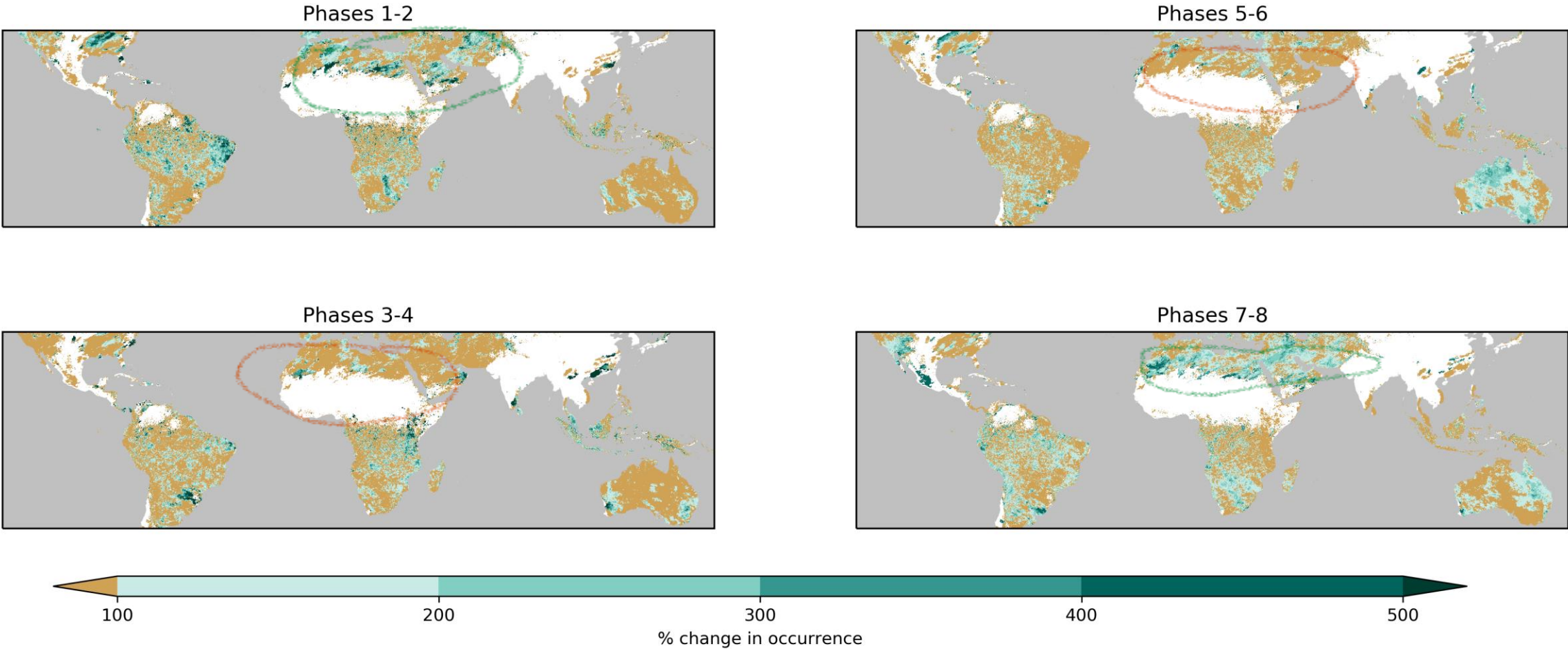
Phases 3-4



Phases 7-8

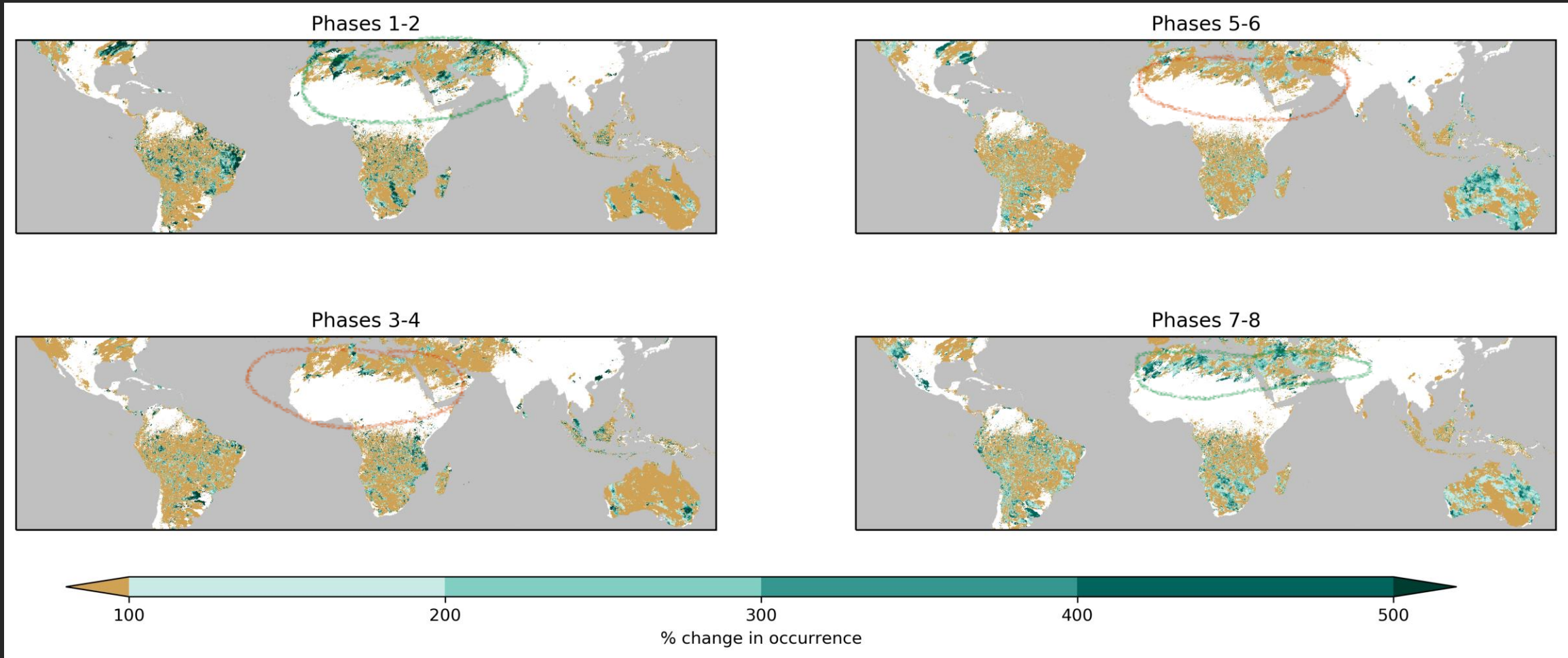


# Two-year Events (DJF)

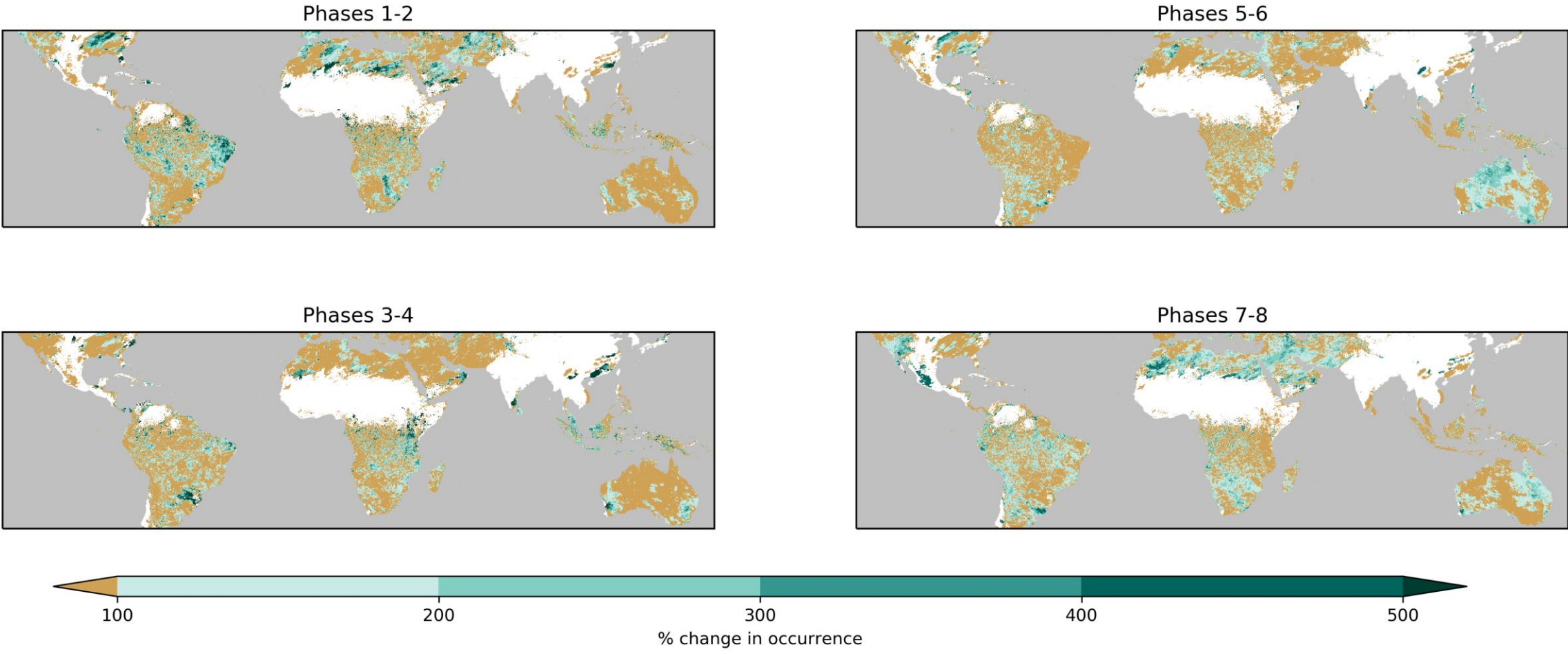




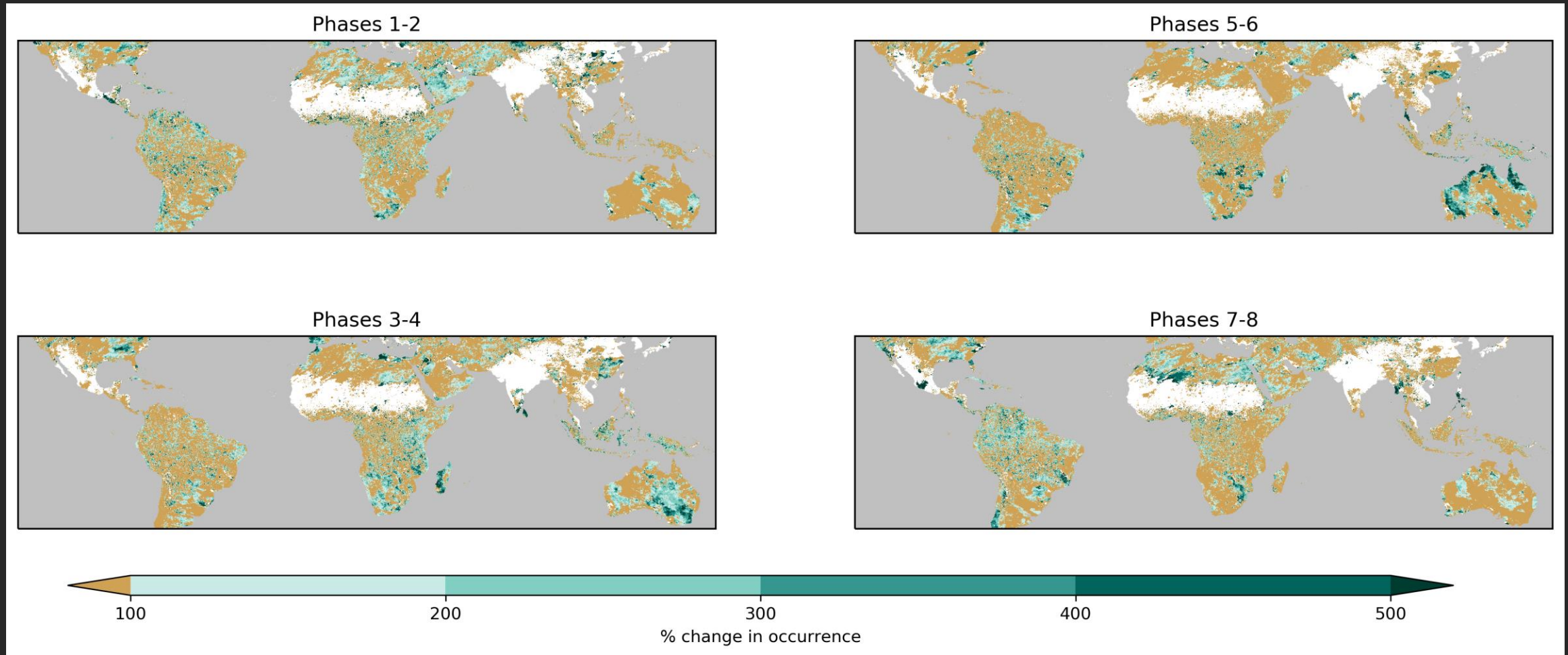
# Five-year Events (DJF)



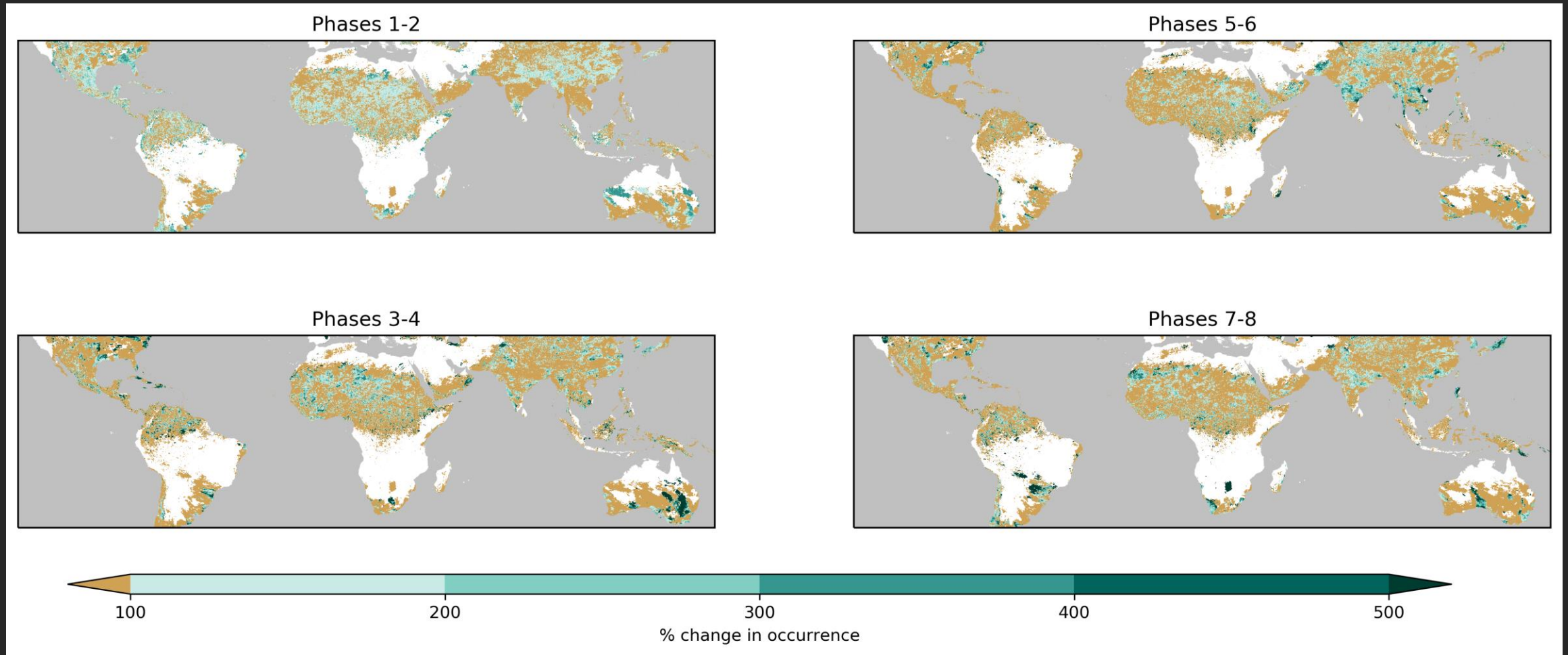
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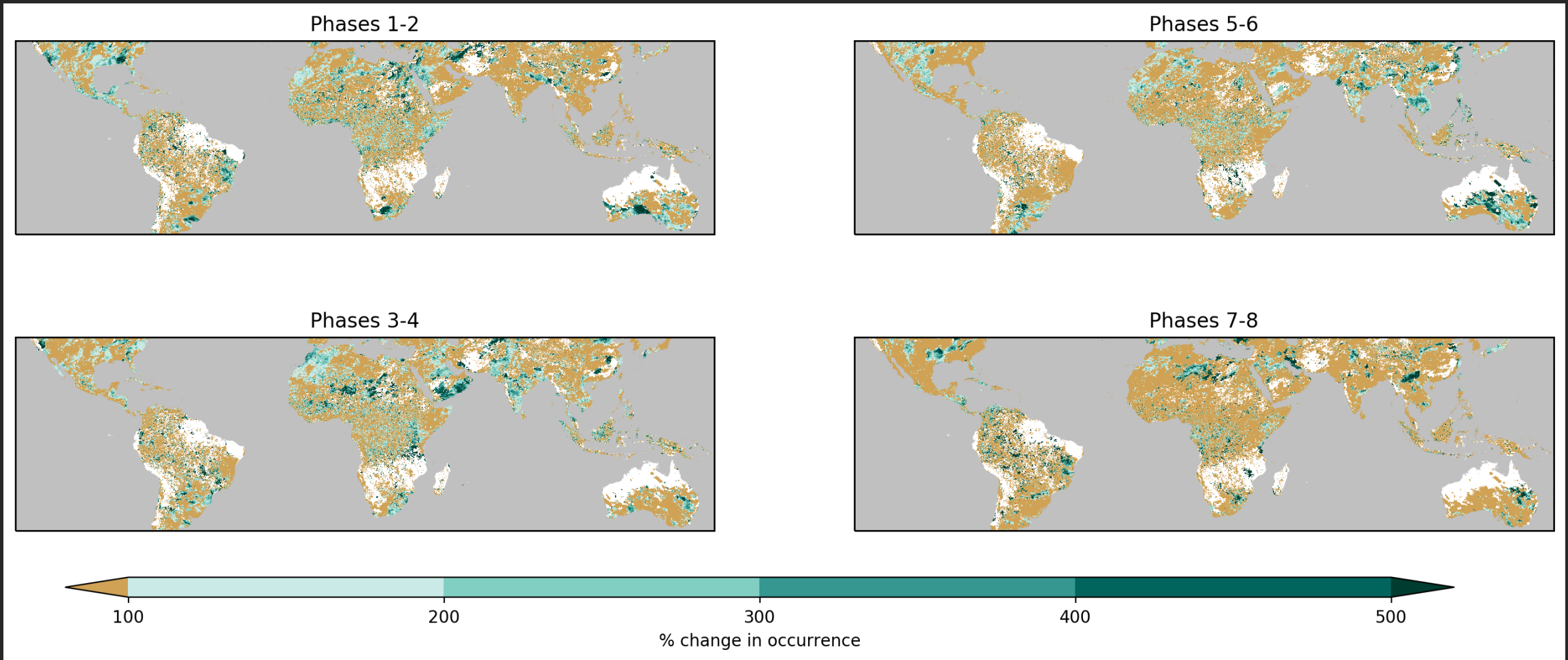
# Two-year Events (MAM)



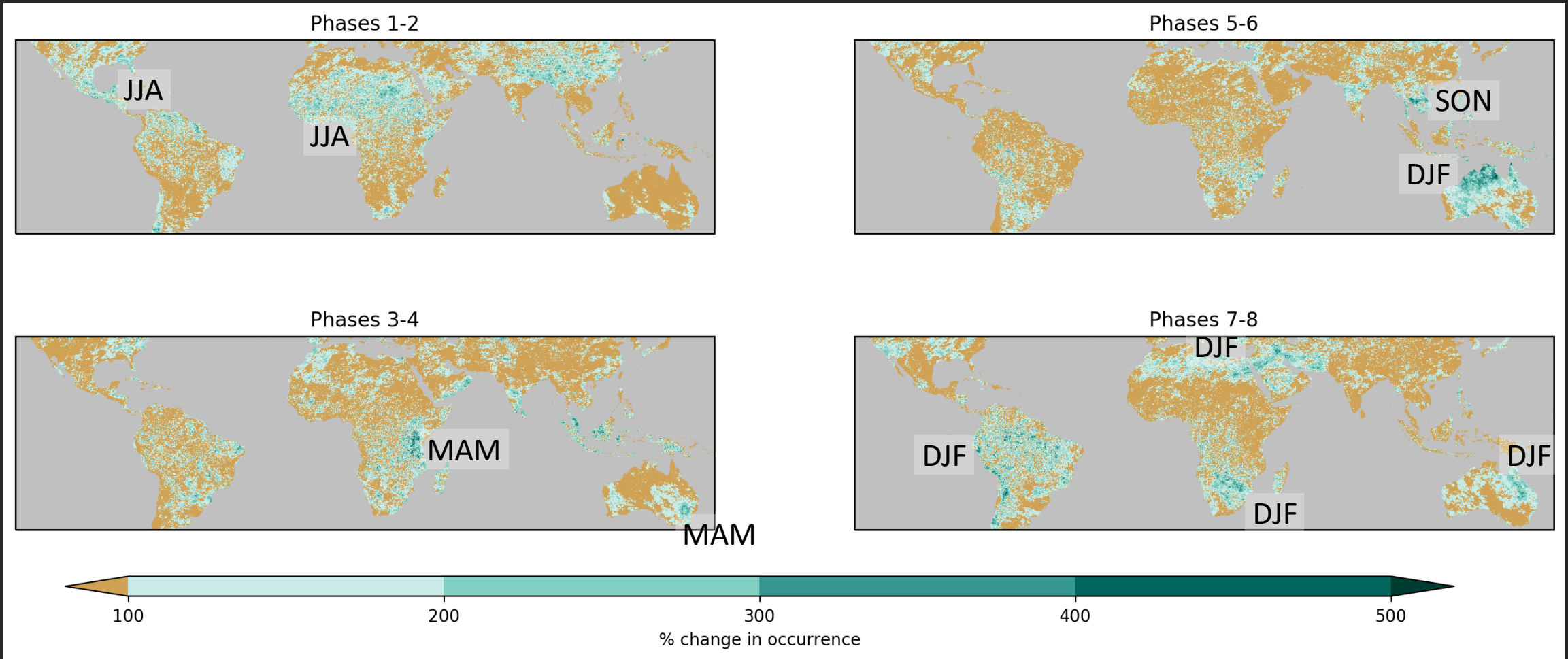
# Two-year Events (JJA)



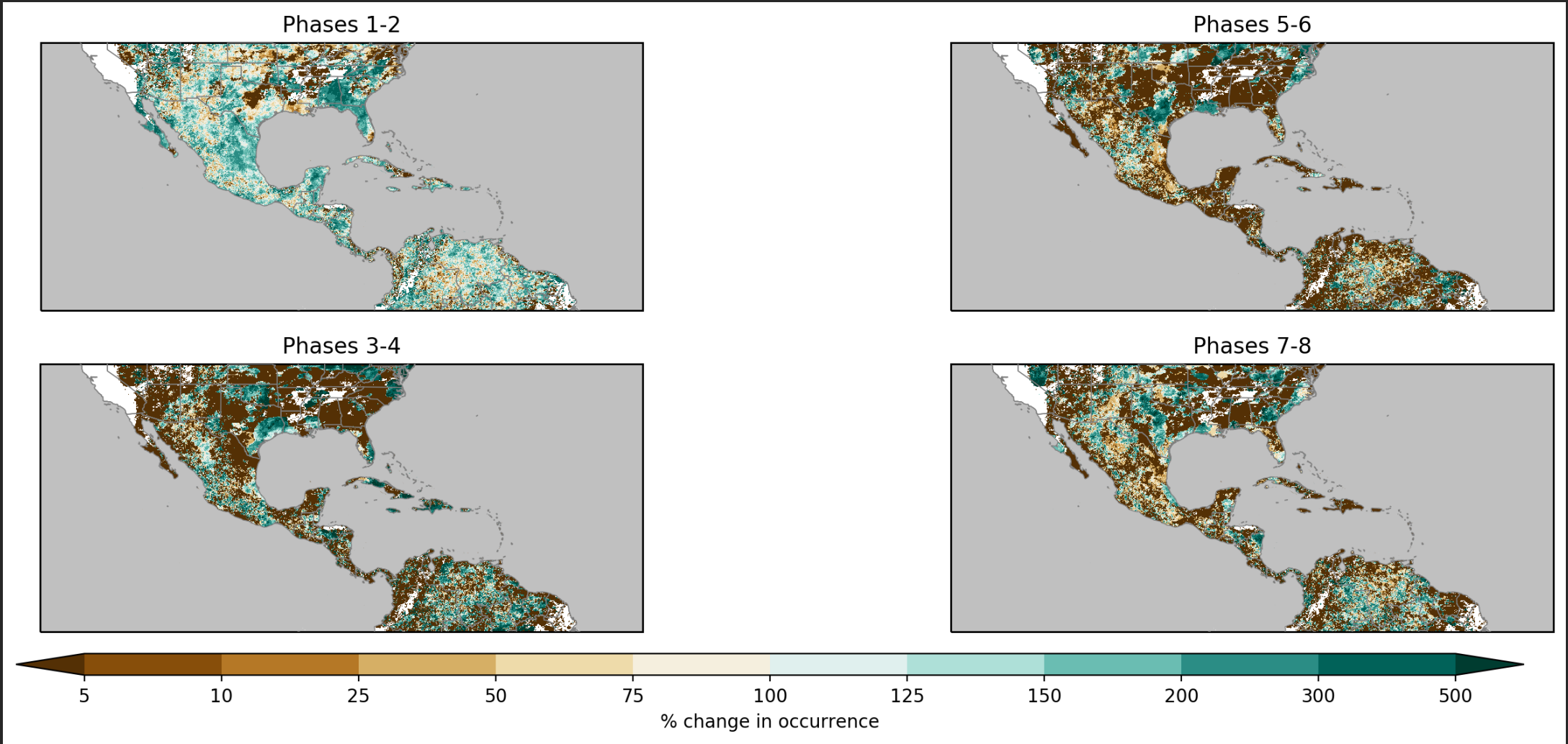
# Two-year Events (SON)



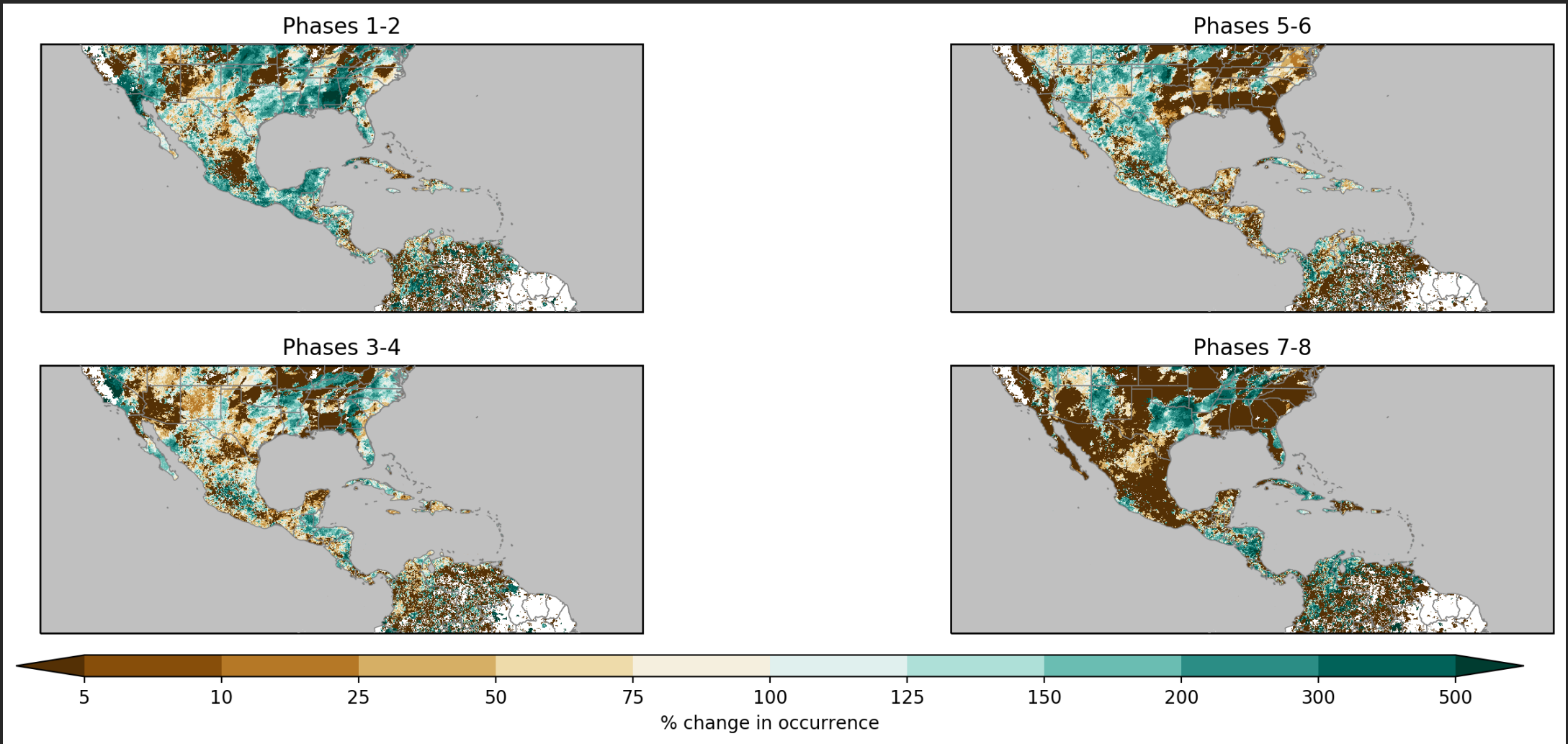
# Two-year Events (All Months)



# Americas (JJA)



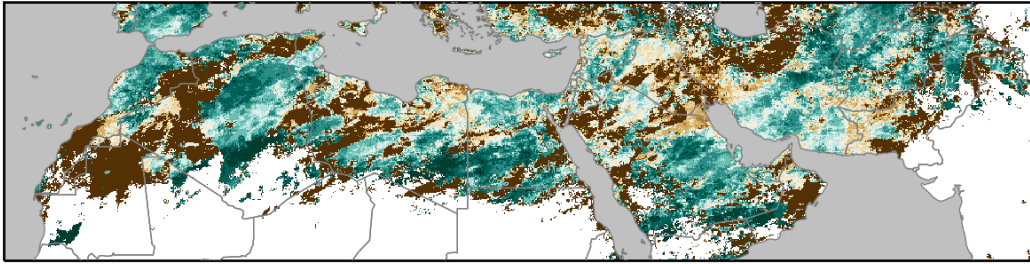
# Americas (SON)



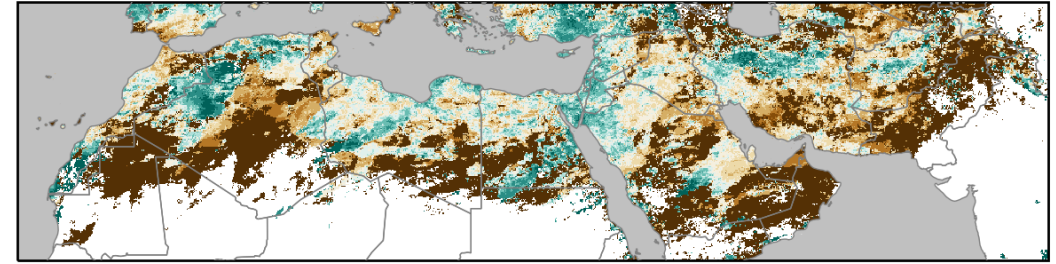


# North Africa and Middle East (DJF)

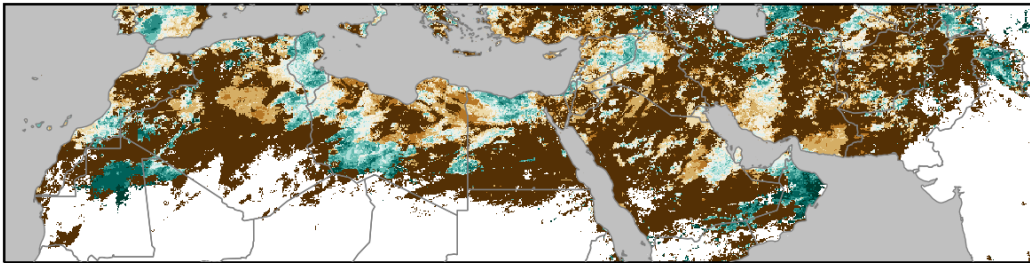
Phases 1-2



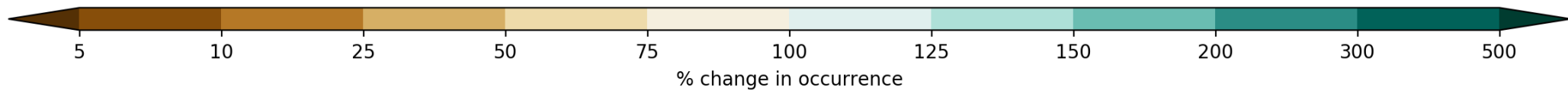
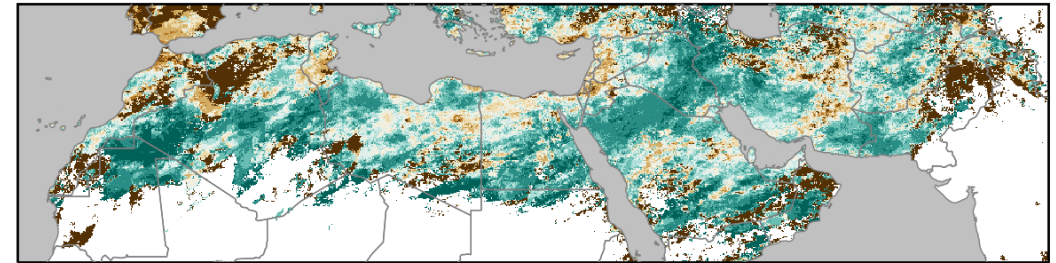
Phases 5-6



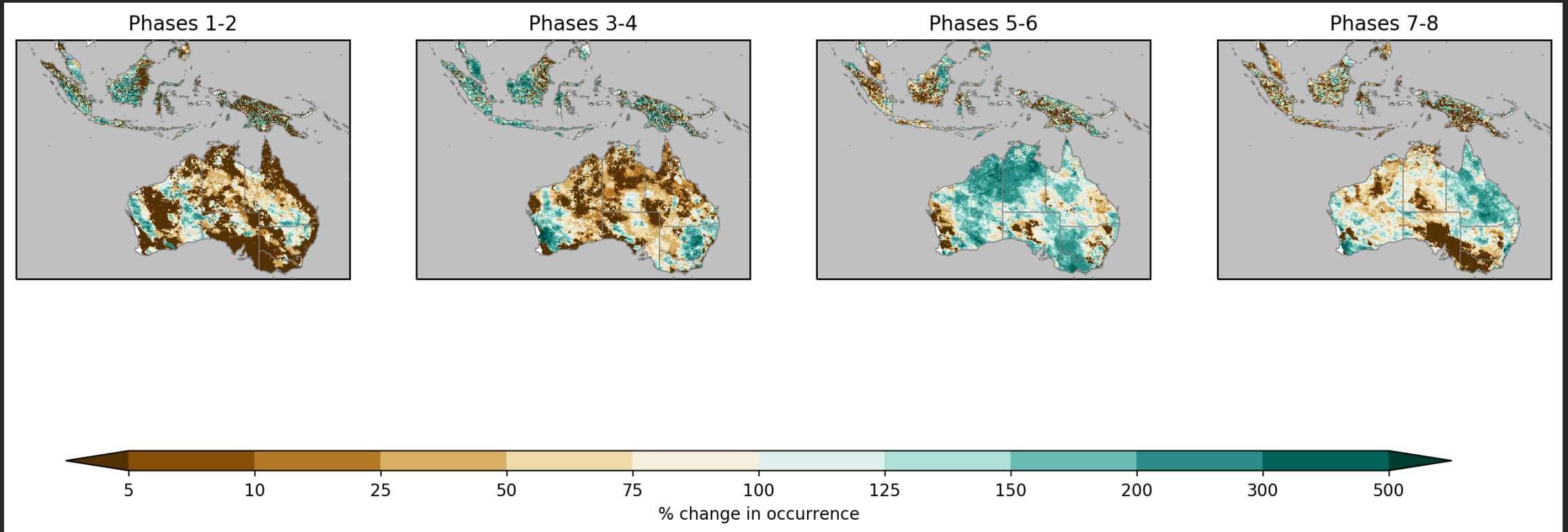
Phases 3-4



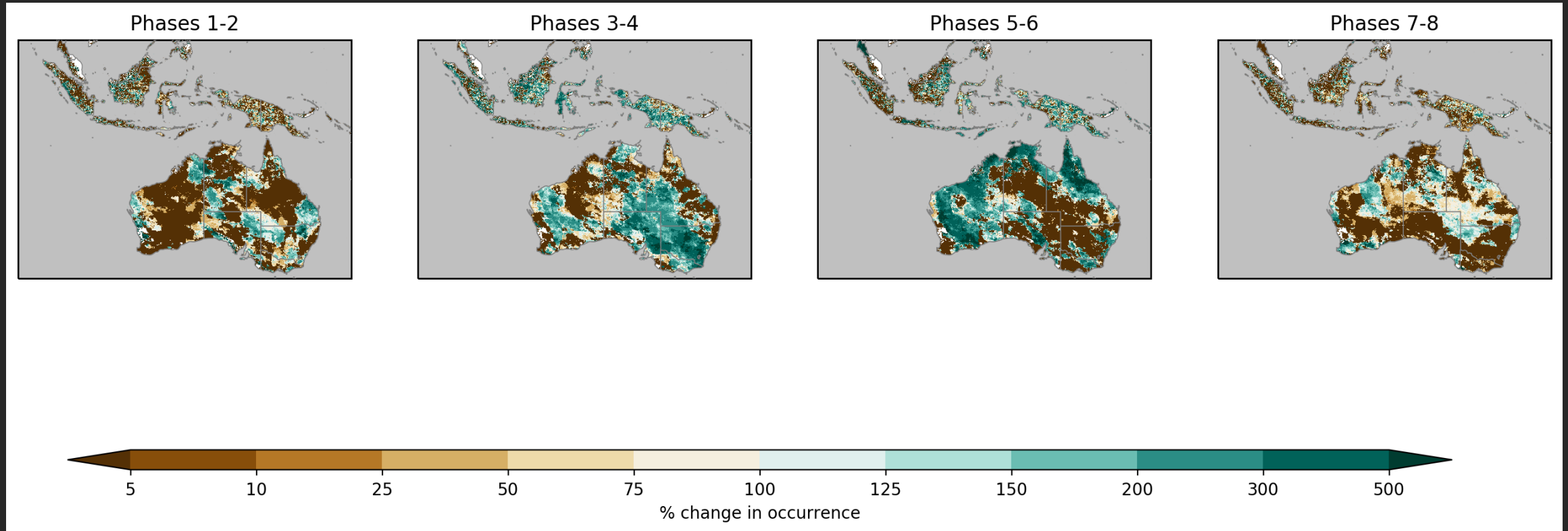
Phases 7-8



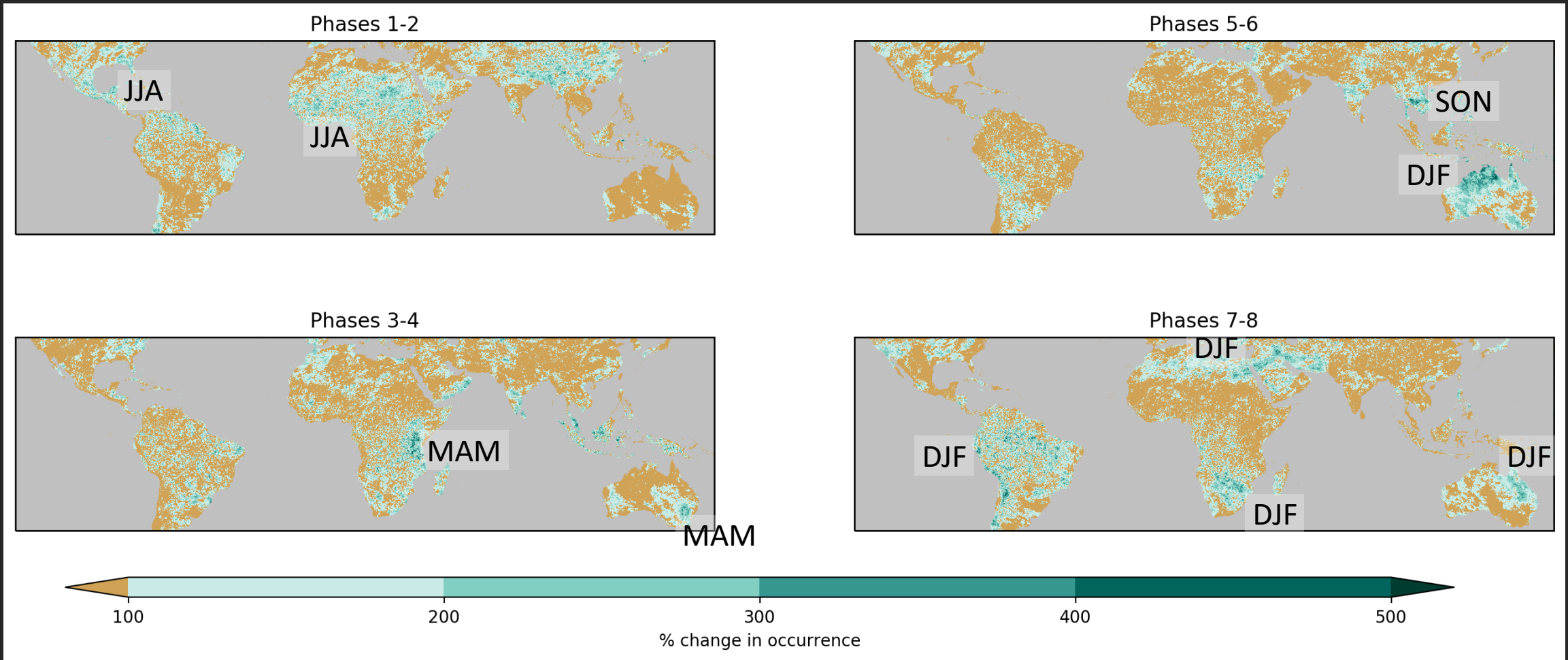
# Australia (DJF)



# Australia (MAM)



# MJO affects heavy rain events more in the subtropics than the tropics



# Future Work

- Spatial Aggregation
- Other MJO indices and subseasonal modes
- Model diagnostics
  - Can models replicate this?
  - Can we forecast events from model RMM forecasts?
- **Your ideas!!!**