Amazon rainforest increases photosynthesis in response to atmospheric dryness: (A very quick summary)

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Will the Amazon rainforest continue to be a carbon sink?

• High uncertainty due to climate change
• Feedbacks with atmospheric CO$_2$ and global climate
• Air dryness is predicted to increase while changes in precipitation and soil moisture are less clear

What do models say?

• Models show:
  • Increases in rainfall and radiation drive GPP
  • Increases in air dryness reduces GPP
What does data say?

• Data shows:
  • In the wettest parts of the Amazon rainforest, SIF increases with increases in VPD, and decreases with too much precipitation
  • This is more pronounced during the wet season
Conclusions

• Models inaccurately represent GPP sensitivity
  • SM
  • VPD
  • Over-estimate water stress
• GPP increases with increasing VPD in the wettest, forested regions
• There is less coupling between canopy conductance and atmospheric dryness the greater the moisture availability
• We stress the importance of accurately representing the response of photosynthesis to atmospheric dryness in the wettest ecosystems to reduce uncertainty in our climate projections