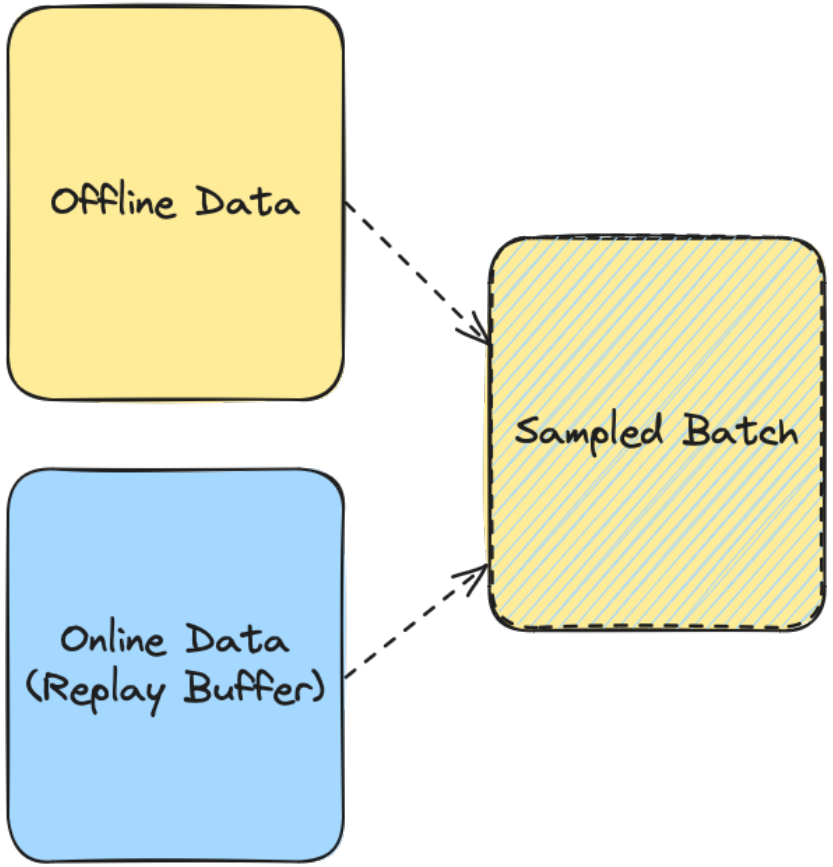
Efficient Online Reinforcement Learning with Offline Data [Ball et al., 2023]

Context and Challenges:

- Online RL lacks sample efficiency
- Existing solutions typically increase complexity

  (Pre-training, complex update strategies, …)

Research Question: Can existing off-policy methods be effectively adapted to leverage offline data in online learning environments?



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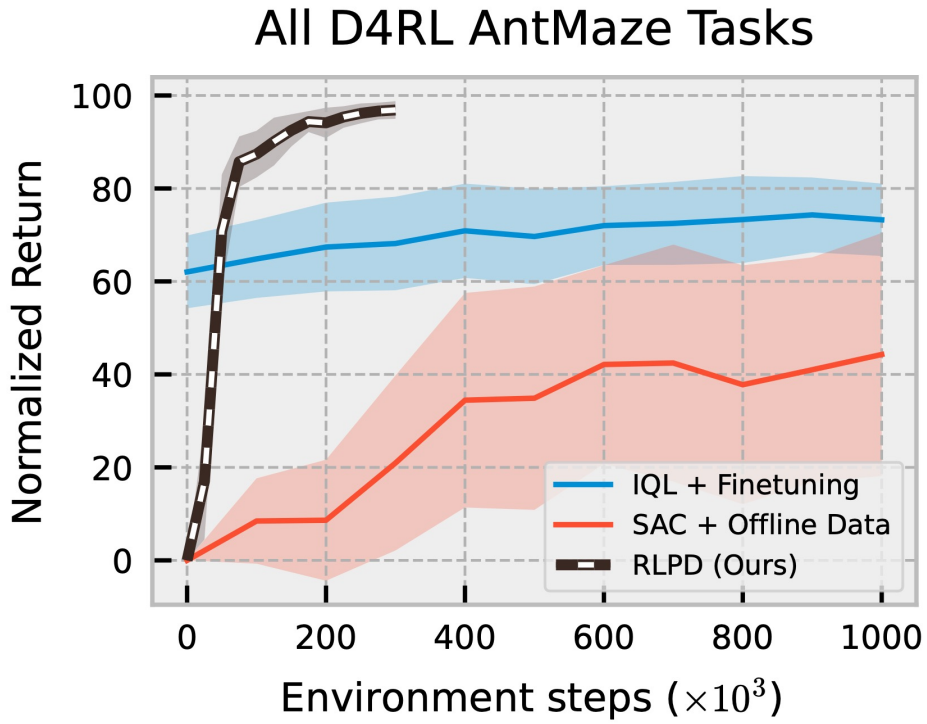
Design Choices (added to SAC):

1. **Two "buffers":** Incorporate offline data
2. **Layer Normalization:** Mitigate catastrophic overestimation for OOD actions
3. **Sample Efficient RL:** Higher Update-to-Data ratio + regularization (L2, Dropout, …)

+ environment specific design choices



[Ball et al., 2023]