

# Leveraging the past record

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This initiative faces the challenge of synthesizing diversity

# Science questions emerging from New York discussion

How are changes in circulation (Hadley, Ferrell, Walker cells) interacting with clouds? How do extratropical clouds interact with the large-scale circulation?

How do cloud mediate the coupling between the atmosphere and the surface?

Why is cloud microphysics so central to climate simulations? Is nature equally sensitive?

How does convective organization couple to the large-scale atmosphere?

# Barriers and opportunities

What observational networks are required for studying the coupling between clouds and circulation?

The golden age of cloud observations is now

Gaps may be in observations of the atmospheric state

Could ambitious observations more tightly constrain relationships between clouds and circulation?

# Barriers and opportunities

How might observations be synthesized to facilitate coupling studies?

Eg. could re-analyses add conservation constraints?

How can temporal inhomogeneities in the observational record be minimized?

What are the uncertainties and biases in observational constraints?  
How can these be communicated and reduced?