Anomaly-induced state changes

Initial ecosystem states
Plant and soil carbon stocks, water and nutrients, demographics and species composition

Climatology-induced state changes

External forcing
Radiation, temperature, humidity, precipitation, disturbance, atmospheric CO₂.

Functional response: net productivity responses to initial soil moisture, leaf area and root biomass states; heterotrophic responses to initial dead organic mass states.

Functional shift: demographics and species composition changes attributable to post-disturbance recovery, succession, delayed mortality, nutrient limitations and CO₂ fertilization effect.

Lagged effects
Ecosystem state changes in the absence of forcing anomaly.

Concurrent effects
Ecosystem state changes attributable to contemporaneous forcing anomaly.

Climatological mean forcing
Forcing anomaly

Total ecosystem state changes