



U.S. DEPARTMENT OF  
**ENERGY**

Office of Science

# Cross-WG Session II: Understanding Climate at the Intersection of CESM

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# The Intersection of CESM Components

Emphasis on intersections, interactions and interfaces

Where human impacts matter the most: 2-m temperature, surface winds, flooding, melt, waves

Where quantities are and will be used for determining policy

Where there is the greatest discontinuity: timescales, length scales, matter properties, assumptions

Where component exchange occurs (water, energy, constituents)

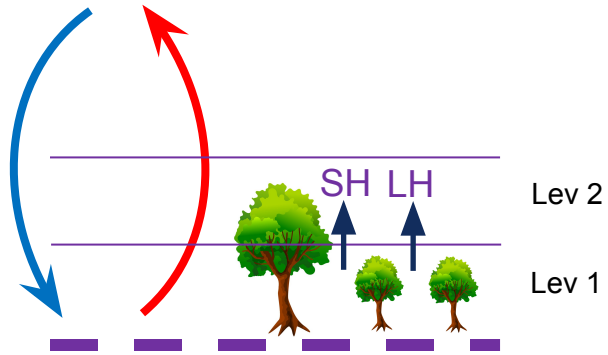
Where process interactions are the most complex

Where timescales are the fastest

Where resolution is the most important



# The Intersection of CESM Components



## Common Considerations

Coupling (DT: Frequency and when)

# A Motivating Example from CAM

Daily Averaged Temperature Tendencies from CAM6 **in the lowest model layer (1 year, every grid point)**  
Sensitivity to new vertical grid (L58) versus CAM6 (L32).  
Surface layer is **4x thinner** and **more sensitive**; leading to very large physics temperature tendencies

